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AIIC 2014 08-12 July, Azores, Portugal



2nd Annual International Interdisciplinary Conference AIIC 2014



Governo dos Açores



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PROCEEDINGS

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ACQUISITION OF YOUTH LIFE SKILLS

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Abstract

A successful life position for any person is based on different types of knowledge and their acquisition and enrichment probability; awareness of own abilities, their development and personal interest in the process; a system of positive attitudes as an integrated wholeness of personality traits which are formed in life experience, knowledge acquisition and will effort unit and are manifested in values, goals, ideals and norms. Successful role performance guarantees confident young people's functioning in the society, thereby creating the sense of security and confidence in themselves and their actions. In order to fulfil social roles it is necessary to acquire the general, social, as well as personal skills, which are generally referred to as life skills. If they are acquired successfully, young people are able to build successful relationships with their peers and also adults, are able to be active members of social life. Life skills guarantee success to young people in their personal life formation. They are able to be more independent and also be responsible for their actions and take responsibility for it.

Thus one of the school tasks is to promote the pupils' personal and social development. I Rubane (Rubane, 2000) has acknowledged self-cognition and self-determination, awareness and defence of own rights, stress management, resistance to psychological pressure, critical thinking, decision making, problem solution, social adaptation, cooperation, efficient communication as important life skills. However, the mentioned life skills can be called as important only conditionally, for no personal skills are mentioned what the young people could find a solution to different life situations with. These skills include self-care, cooking, personal budgeting, housework performance, usage of home/office appliances, daily routine planning, healthy lifestyle adherence etc.

Keywords: Life, general, personal and social skills, youth age range

Introduction

As it is mentioned in the document of the European Information Network on Education (Eurydice, 2002), globalization and its manifestations in culture, economics and environment are the base of the radical changes in economics and social sector in European countries. The scientific and technological progress has promoted the international integration and cooperation, increased competition.

The Europe 2020 strategy is about delivering growth that is: smart, through more effective investments in education, research and innovation; sustainable, thanks to a decisive move towards a low-carbon economy; and inclusive, with a strong emphasis on job creation and poverty reduction. The strategy is focused on five ambitious goals in the areas of employment, innovation, education, poverty reduction and climate/energy.

Knowledge is acknowledged as the most valuable resource of growth promotion in order to respond to challenges quickly. It is the tool for economic and cultural boom promotion. Knowledge is acknowledged as the driving force for personal and professional

development. When people obtain knowledge, acquire skills and change them into a competence to be used purposefully, they not only promote the progress of economics and technology, but also obtain a great personal satisfaction and well-being.

The European Commission supports the setting up of European Sector Skills Councils designed to anticipate the need for skills in specific sectors more effectively and achieve a better match between skills and labour market needs. These councils aim mainly to provide more and better information about the skills situation in different sectors; to help develop skills governance in each sector and national skills policies by encouraging: national organisations to cater more effectively to the needs of the various sectors, organisations active in the same field to learn from each other, all organisations concerned to share information and experience.

Youth preparation for society's challenges and usage of its offered possibilities and achievements become a significant goal of the education system. The acquisition of life skills at school is the prerequisite in order everybody could adapt to changes in society, compete in the labour market, build successful relationships with people, be an active member of social life and happy in personal life. The ability to compete in the labour market is an important aspect especially among the youth, because the choice of profession happens just at this age and also lots of young people start an independent life, entering employment relations. I. Bluka and I.M.Rubana (Bluka, Rubana, 2002) consider that the acquisition of life skills allows not only a successful functioning in the society, but also creates the sense of security and confidence, promotes spiritual well-being.

Research goal

Study the influencing factors of youth life skills.

Young people's psychological characterization in the life skills formation context

In order to assess the young people's opportunities in the life skills acquisition, attention should be paid to the main characteristics of the young people's age. The teenagers and youth age limit is not strictly determined and for different authors these limits fluctuate. However, the age from 15 to 25 is considered the youth age range. I Kons (Kons, 1985) thinks that the youth age is the literal meaning of the "third world," which exists between childhood and the adult's world. Biologically it is the final stage of the physical maturity. On the one hand, young people feel mature and they want to be independent, but, on the other hand, it is a high responsibility which requires lots of life wisdom and skills. The young people cannot be called children any more but, nevertheless, they are not adults yet. The personal action and role structure during this period obtain new, adult person's characteristics.

The social and personal self-determination problem is topical to young people, which does not mean autonomy in relation to adults, but precise orientation and their place determination in the adults' world. Young people's self-determination is an extremely important personality formation stage.

The issue of profession choice is a very essential and important task for young people, for it affects their future in the most direct sense. The main social task is the profession choice. It is important to be aware of own interests and understand what they are the best at in order to choose an appropriate profession. The young person's self-esteem and formation of "I" image is strengthened with the career choice. E.Erikson (Eriksons, 1998) mentions that mostly young people are worried about the disability to choose their professional identity. To maintain their integrity they over-identify themselves with the heroes of the crowd or different cliques for some time. Criminality and proneness to mental illness among young people can be explained with the identity confusion, when the doubt-appear about their ethnic

or sexual identity, or when the role confusion joins the long-lasting hopelessness. The young person who is not sure about their identity avoids shyly any kind of intimacy with another person. Also J. Kulberg (Kulbergs, 1998) mentions that when a negative identity has been formed, the character features, which are possibly different from the desired and expected ones by the bystanders, look for their manifestation chances, e.g. joining asocial gangs. Identity diffusion is expressed in the fear and despair form, which sometimes leads even to a short-term loss of reality sense.

E. Želvé (Želvé, 2011) mentions that the sense of own autonomy is important in the youth age. On the one hand, the young people broaden their horizons, trying out different social roles and slipping into them. On the other hand, they form their individuality. Young people perceive themselves as adults (and the society perceives them the same way), and appropriate behaviour and social responsibility are required from them as from an adult. It is important for young people not only to perform a social role, but also feel the compliance of this role with their individuality.

The differentiation of bigger emotional reactions and emotional state expressions characterizes the youth age (in comparison with teenagers' age), as well as the increase of self-control and self-regulation. For young people the emotional moods are a lot more persistent and deliberate than teenagers. Just because of this fact it is not recommended to push young people to do the things which oppose their interests or assurance, but try to find a compromise, so the young people could feel like an individuality and personality, which are respected by the surrounding people, especially their parents.

Characterization of life skills

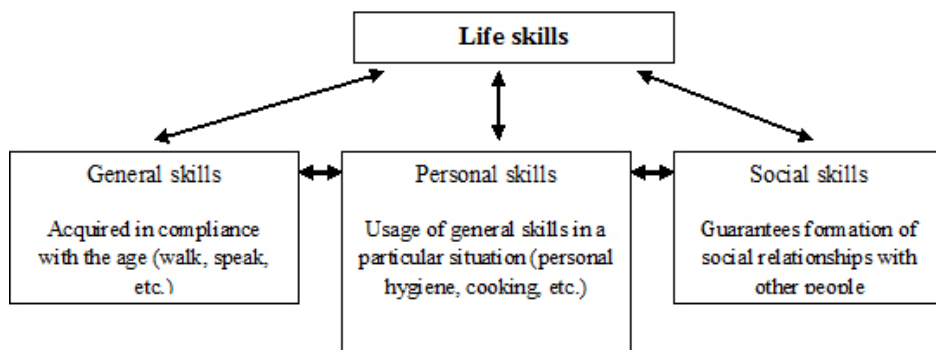
Already in 1993 the World Health Organisation described the necessary skills for life activity as a positive, to external conditions appropriate behavioural ability, which allows dealing with the daily life requirements and taking up its challenges. The World Health Organization indicates that life skills education is designed to facilitate the practice and reinforcement of psychological skills in a culturally and developmentally appropriate way: it contributes to the promotion of personal and social development, the prevention of health and social problems, and protection of Human Rights.

There are very few institutes in the world producing the trainers for life skills education for the training to the students at school level. Central Board of Secondary Education (India) presents an interesting approach to the acquisition of life skills. The life skills are abilities for adaptive and positive behaviour that enables individuals to deal effectively with the demands and challenges of everyday life. The core life skills are:

1. the social skills (self awareness, effective communication, interpersonal relationship, empathy);
2. the thinking skills (critical thinking, creative thinking, decision making, problem solving);
3. the emotional skills(coping with stress, coping with emotions).

Objectives of the programme are: to familiarize the students in the theoretical foundation in the life skills education; to train students in training methodologies; to enable students to apply life skills in various spheres; to develop professionals in life skills education; to empower youth with the ability to contribute as youth worker specialized in the area of life skills education.

Life skills help to respond appropriately in different life and domestic situations, to find them an effective solution and they consist of several skill groups: Let's look at another division of the life skills:



Picture 1. Components of life skills (2004)

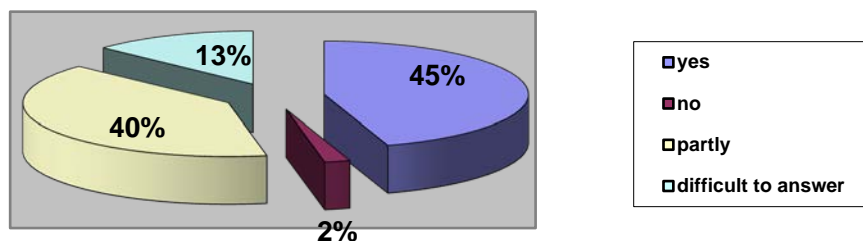
The general, personal and social skills are equally important in the young people's life, because they are related to each other and it is not possible to highlight one of them as the most or least important. If the general skills have not been acquired, it is impossible to acquire the personal skills, thus the social skills are not acquired either.

General skills have earned much attention; they are also called as the subject-independent or transversal skills. They can be used for a wide range of different subjects and sectors. According to B.Rey (Rey, 1996) the term transversal does not apply to the elements which are common to different subject-related competencies, but to extra subject content unrelated competencies, which can be used in other sectors. Transfer and adaptation of general skills make them as an especially valuable tool for a successful activity in fast changing conditions. Some of the main general skills are the communication skills, problem solving skills, reasoning abilities, leadership ability, creative ability, motivation, team work and ability to learn. Recently the ability to learn has caused a special interest in the life-long learning context.

Personal skills are obtained during the lifetime. Self-management, strong self-motivation and the desire to understand new ideas, acquire and use the knowledge take an important place, which guarantee the personal reaction and attitude towards the responsibilities and challenges at work and in life. In order to set real and clearly defined long-term and short-term goals, it is necessary to be able to focus one's attention and effort in a particular period of time.

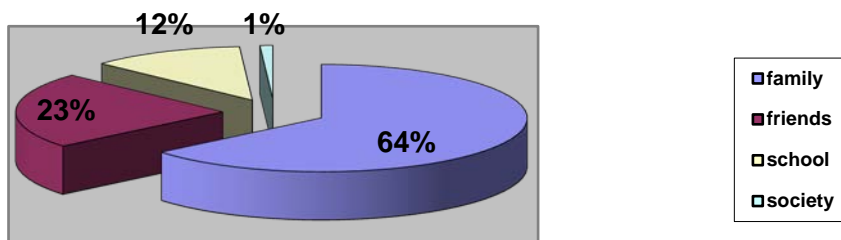
R. Andersone (Andersone, 2004) emphasizes that social skills are needed for human cooperation. They help operate successfully in a group and acquire training exercises. Social skills give a chance to everybody to use own experience in a group and learn from each other, self-awareness, own values and awareness of other people as unique values, interest and care of each other and about the total work outcome of the group, human and emotional mutual relationships with others, the skill to take upon responsibility for themselves and others.

Answers to the question: "How good are acquired life skills for living independently?" reveals opinion of young people. Clarifying young people thinking about their skills, it is possible to see that the thought of it is different:



Picture 2. Youth life skills acquisition for living independently

Life skills are a prerequisite for the youth's ability to function successfully in society and fulfill social roles. Successful life skills provide the ability for young people to be regardless and assume responsibility for their actions. Life skills help to reduce the negative behavior and its consequences. The young people confirm that they get the help in the process of life-skills formation:

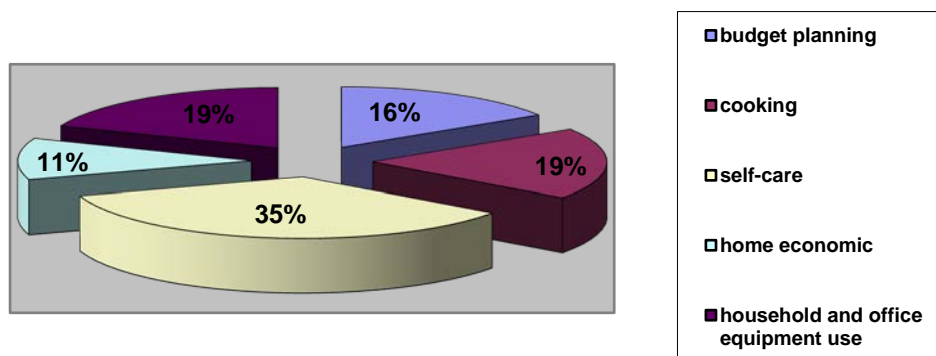


Picture 3. Assistants for young people to acquisition of life skills

In the responses the family occupies the highest ranking. It is important to increase school and society impact.

Family as the life skills builder

It is very important to assess what role a family takes in the young people's life skills acquisition. The family in which all basic functions work systematically, supplement and enrich each other, in which each its member feels beloved, supported and understood, can be considered as an optimal, thus – functional (Vikmane, 2007). A positive and emotionally favourable environment characterizes such a family, where each member of family performs own social roles, is able to develop on their own, and also helps other members of family develop. According to Ā.Karpova (Karpova, 2006) the functional family is flexible with open free mutual relationships, with possible exchange of roles, clearly formulated family laws. A healthy family is a place where intimacy and love is disclosed. One of the main components in a well functioning family structure is the parents' solidarity in relationships with their children. A family is based not on a parental dominance over children, but on the fact that parents' authority ensures their children's safety.



Picture 4. Better acquired life skills

Parents provide the implementation of the family's basic functions and creation of a positive and favourable environment for their children's and their own development. As life skills are successfully built in an action, then in a family it is achieved by the performance of social roles and family functions which is guaranteed by their close mutual relationships.

Just the educational function has got an important role in the family, because while upbringing the children, parents transfer their knowledge and life wisdom, but the children, while learning from their parents, acquire their life skills. Also the everyday household function has got an important role in the family, for while acquiring and performing household chores, children learn practically to perform different tasks both independently and together with their family members. Life skills acquired in the family are an invaluable benefit.

The positive family environment and atmosphere creates conditions in which the acquisition of the young people's life skills is promoted. The relationships in the family which are based on solidarity and mutual family members' respect promote the acquisition of different skills already in early childhood. Children acquire these skills while working together with their parents, individually, as well as while observing and imitating. Young people, while acquiring their life skills and building their independent life, choose as the base the values, norms and life wisdom, which have been taught and accepted by their parents. The acquisition of life skills is best implemented in a functional family because interaction between parents and children takes place during the implementation process of roles and family functions.

Unlike functional families, there are dysfunctional families which are characterized with different difficulties in the performance of family functions and roles, as well as social problems and risks. In the research "Assessment Criteria of Risk Factors in Dysfunctional Families" a family, in which there are difficult problems to be solved, limited opportunities to provide favourable life conditions for a wholesome development for all family members, is considered as a social risk family. Social risks and problems exist in these families. They might be connected with family formation, external conditions which influence the national and public situation (low-income families, families with bad living conditions, refugees' families, unemployed families, etc.); internal factors such as family members' asocial behaviour (dipsomania, drug abuse, violation of law, etc.).



Picture 5. The main risk factors in the social risk families

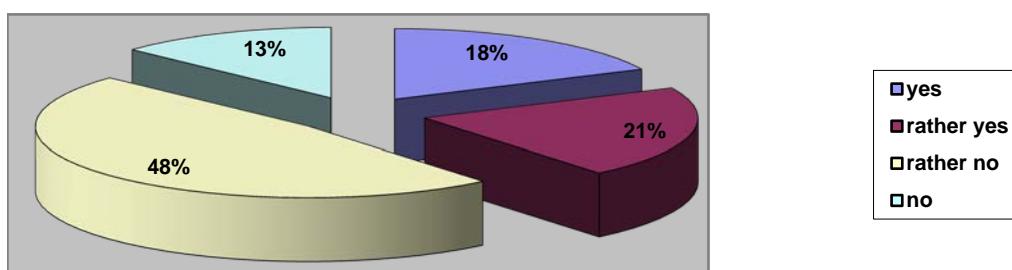
In such families there is usually one of the risk factors: depression, indifference, dipsomania, drug abuse, the risk of violence increases and criminogenic situations appear. Without seeing a solution to the hopelessness, the family usually chooses the destructive path. The unequal social status promotes the social exclusion risk of the families and children

in the society. A big part of the children in these families do not receive a sufficient care, wholesome nutrition, children live in an unfavourable social environment which has the risk of violence and crime.

The mentioned family parameters in relation to a dysfunctional family show that the acquisition of life skills in such a family is obviously disturbed. No cooperation between children and parents is formed, the basic functions of a family are not performed optimally, and also the environment and atmosphere in the family can be assessed as a negative one. The acquisition of social and personal life skills does not happen as successfully as in a functional family.

The acquisition of life skills in extra-familial care

Children orphans and children without parents' care and young people do not gain their social and life skills in a family, but in extra-familial care. Nevertheless the work in an orphanage is organized, so that the environment where children live would be closer to the family environment. However, when starting an independent life young children and young people frequently have not acquired different life skills and abilities that are needed in their further lives.



Picture 6. Children orphans and children without parents' care life skills acquisition for living independently

As shown by the survey, young orphanage does not acquire enough life skills to feel secure in the independent life. I. Plaude (Plaude, 2001) points out that the pedagogic activity of an orphanage is directed to the opportunity to attain that children and youth return in families, prepare them for upbringing in other families or family-alike life form; as well as to promote and support the formation of young people's independence.

In the governmental programme of the improvement of children and family condition for 2010 it is pointed out that for the development of family-alike environment in extra-familial care there are "Youth Houses" created. It is emphasised that knowledge and skills in the planning of personal budget, in management of house keeping, taking care of one-self and so on is an essential precondition for a successful start of an independent life. Although the Latvian currently operates eight youth home, it is not enough. According to data from the Ministry of Welfare, a total 1,793 children living in orphanages without parental care or in foster families, of whom 805 are children between the ages of 13 and 18 years.

In the families state policy guidelines for 2011-2017 it is pointed out that in accordance to the research "Extra-familial Care (extra-familial care institutions, foster families, custody) and the study of adoption system and suggestions for its improvement" data: 41% of children of extra-familial care feel fully prepared and have acquired the necessary skills to start of an independent life after leaving the institution. The data shows that so far the development of family-alike environment in children extra-familial care does not happen so successfully – it is not even a half of young people, who are in extra-familial care. Even though the creation of such a "Youth House" is a very positive and significant investment in the promotion of life skills acquisition, where young people can cook, do

housework, take care of the order and do other things that would be necessary for further life, it can be concluded that it is necessary to look for possibilities to improve the activity.

The research reveals reasons why children and young people at an orphanage do not acquire enough life skills. Firstly, children and young people in extra-familial care institutions do not have as great freedom of action as it is in families, where children mostly organize their own free time and plan their agenda. Secondly, children do not do many social life activities themselves, but it is done by the staff and teachers, which does not promote the acquisition such life skills, as well as cooking, doing housework and others. Thirdly, the relationships between the orphanage students can frequently be bad, which does not promote the acquisition of life skills, because there are different conflict situations that create a stressful atmosphere, frequent fights for their place in the group.

School options for the promotion of young people's life skills acquisition

To help the youth so that they become a wholesome member of society is an important task not only to the family, but school and young people themselves. L. Braše (Braše, 2010) makes topical the school tasks, when preparing students for their further life actions. The professional activity of teachers has to promote the perfection of indicators, which confirm the readiness to life activities: live independently, take responsibility for the trusted obligation, perceive a person realistically, acting, creating positive communication, to evaluate oneself, to adapt to a new environment, to set real life goals, to achieve the set goals.

In order to become a wholesome member of the society, it is needed to acquire life skills successfully. In the methodical material "The Acquisition of Life Skills at School"(Bluka, Rubana, 2002) it is pointed out that life skills are the precondition, so that everyone could adapt to the changes in society, to compete in the labour market, to created successful relationships with people, to be an active member of social life and happy in personal life. Z. Rudņicka (Rudņicka, 2001) emphasizes that one of human resources, that promotes the development of children and young people life skills is the social pedagogue, who provides social protection and welfare for children, youth and their families at educational and foster institutions, cooperating with governmental and non-governmental institutions, helping to overcome situations of crisis.

A. Jefimova and A. Tarasova (Jefimova, Tarasova, 2008) promote the consultation as one of the most effective methods of social pedagogue's activities, during which they give some advice, information, affecting individual, group/family awareness, feelings, emotions, environment, give them knowledge, support, create skills, in that way helping to solve problems and promoting the course of socializing process. A consultation is very effective in the work with young people to promote the social skill acquisition, because it is used both in the preventive work, in the work with an individual, as well as in the work with a group or family.

Conclusion

Life skills are a precondition for the youth ability to function successfully in society and to fulfil social roles, because a successful acquisition of life skills provides the ability for youth to be independent, to be responsible for their action, to diminish the negative behaviour and its consequences. In a functional family the family functions and social roles are fulfilled systematically and successfully, in that way providing optimal conditions for creation of youth life skills, in opposition to a dysfunctional family, which is characterized not only by different social problems and risks, but also the acquisition of life skills of children and young people do not happen so successfully.

A family, which can provide children's development and the acquisition of different life skills, can be regarded as the best environment for a child and young people, when

starting their own independent life follow the example of their parents and more or less reproduce the family model of parents. The fact that one of the main tasks of orphanages is to return the child to a family shows that the most favourable environment for child's development is a functional family. Young people from extra-familial care institutions can practically acquire different life skills in the founded Youth Houses.

Social pedagogues have an important place in the promotion of young people's life skills acquisition. Applying different methods, they have the opportunity to interest young people to improve their life skills. Although young people feel that they have acquired life skills successfully, there is a large part of young people who want to develop them more, which is a very positive aspect in the teachers and parents' activity in the promotion of young people's life skills acquisition.

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TEACHER EDUCATION STRAGIES IN INTERDISCIPLINARY TEACHING IN SCIENCE, MATHEMATICS AND TECHINICAL/VOCATIONAL CURRICULA. TEACHER EDUCATION STRATEGIES IN THE INTERDISCIPLINARY TEACHING OF SCIENCE, MATHEMATICS, AND TECHNICAL/VOCATIONAL CURRICULA

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Abstract

Educational development at the present time, and the year 2006 is characterized by two main aims: to enhance the content of education by making it more relevant and to improve the teaching/learning process.

In science, both these aims have given rise to a number of projects which have attempted to link together the concepts and principles into an interdisciplinary or unified whole. The curricular materials generally include materials (texts and kits) for the students and guides for the teachers, once these are worked out way in advance; often these are so closely tied to the project/curriculum that teacher not *directly* involved in the project concerned have been only marginally influenced. It has also been observed/noted that when the trial phase of the interdisciplinary project (during which intensive training of teachers takes place) is over, many of teachers found it difficult to sustain the rhythm of implementation for a variety of reasons, much lip-service has been paid to the fact that teachers are agents of change and that central to any development or innovation is the role that they must play in language about that change, but little has been done to develop a theoretical framework in support of this role. In this direct, Professional Development Laboratory, PDL, has been working feverishly to produce a *Model*.

Much teaching in the past emphasized *content*, today, the shift away from teaching facts to teaching skills pose a challenge if not a threat to all who are engaged in this enterprise.

Keywords: Technical, Vocational, Curricula

Introduction

Teaching is essentially a process of developing, clarifying, enlarging and presenting information ideas and meanings to others. It is simply causing the child to learn. Its ultimate aim is that of preparing people for life in the real world. The qualities and skills necessary to do this effectively is still a matter of considerable controversy. However, certain characteristics seem to be agreed upon as part of the reservoir of skills and dispositions that a teacher should possess. These include:

- Open-minded and faith in the ability of people to change;
- An ability to see thematic consistencies in diverse information with skills in organizing and communicating these differences;
- An ability to conceptualize many sides of a controversial issue;

- An ability to learn from experience;
- Empathy;
- Well developed cognition and meta-cognition;
- Personal motivation, enthusiasm and;
- Maturity.

Much depends on the teacher's ability to manipulate the classroom situation, which in turn depends on how much he knows of his subject areas, how much he understands children's needs in relation to those of their society, and how flexible he is and often to change.

In the planning and implementation of any teacher training program (teacher/adjunct), consideration must also be given to the needs and concerns of the student-teacher and to the fact that teaching styles areas diverse as learning styles and that the needs of the teacher change with time.

Interrelated Teaching

There is no precise definition of interrelated teaching but the term does imply some form of *linking* of bodies of knowledge together in a meaningful way. The real difficulty lies in locating the organizing centers of such an approach.

There are three possible approaches to interrelated teaching: interdisciplinary, multidisciplinary and trans-disciplinary. The first two use the subject or subject matter as focal points while the third uses situations as a basis for organizing the learning. There is a virtue in raising all three approaches with the aim giving students a functional knowledge of the interactions between the different factions and components and the constant evolutions of the natural and human environment of which they are part: Organizing teaching so that subjects are interdisciplinary is a complex undertaking, the magnitude of which cannot be overstated. It includes:

1. Willingness of teachers,
2. Learning/pairing of teachers per subject,
3. Curriculum outcomes,
4. Goals, objectives, standards, indications, lesson plans, evaluations, summative, and formative,
5. Project work,
6. Evaluation strategies,
7. Continuous insurance training and retaining,
8. Portfolio assessment,
9. Daily diary about the program,
10. Certificate of recognition,
11. Parent teachers, faculty meetings, assembly, outside resources, museums, visits, and trips,
12. Display of work.

While situations maybe used as the organizing centre of the curriculum these focusing on the *learner*, there are advantages in not completely discarding the classification of knowledge into disciplines. Disciplines have their own method and epistemology, and by their very nature of their specificity should be treated in such a way so as to preserve their impact on the systematic training of the mind. There is good reason for retaining them at a higher level though every effort should be made to de-emphasize the teaching information as an end in itself and to interrelate subjects by drawing on the various methodologies and explanatory theories of the disciplinary concerned.

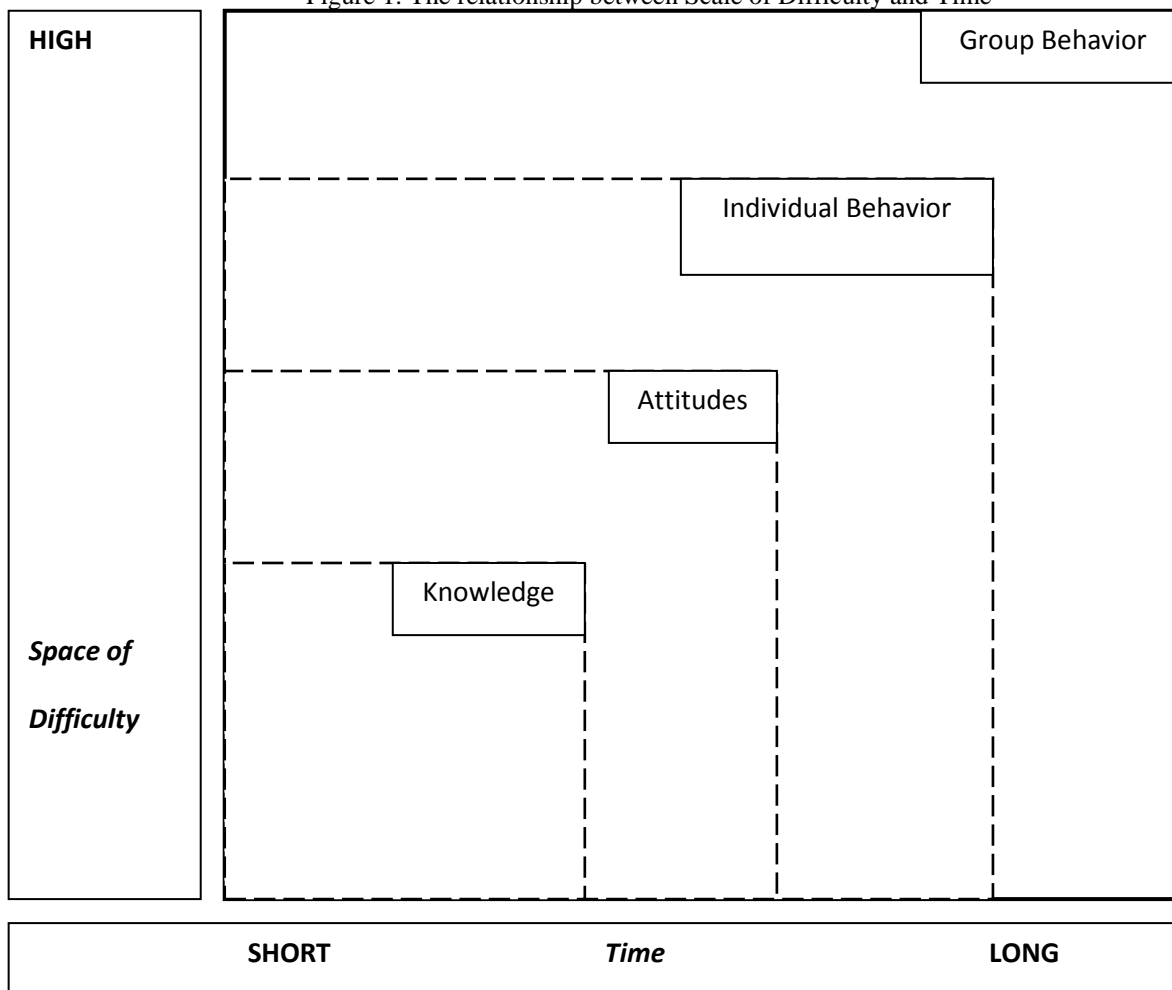
What do Interdisciplinary studies demand in Teacher Training?

Interdisciplinary studies demand intellectual breadth, knowledge and insight from college tutor, consultant and teacher trainee in training. In any cultural setting interdisciplinary studies in schools will contrast sharply with the status quo, the expectations tutors and students have of teaching, and the popular concept of schooling, its goals and outcomes.

The nature of the change/*approach interdisciplinary* presupposed a number of conditions they are:

- *Each teacher trainee has experience of a knowledge structure which interrelates the various disciplines.*
 - a. The extent and depth of knowledge structure is greatly influenced by ability, schooling, and apprehension.
 - b. Early constructs in the basis for more formal work of later schooling.
 - c. The natural occurrence of interdisciplinary studies in the informal learning setting of clubs, museums, art and science centers for both children and adults provides a useful *models* of observation in interrelated knowledge in action.
- *For most students interdisciplinary studies demand a change in “experiences,” that is, a change in the belief structure rather than a change in educational technique (pedagogy).*
 - a. School is a place where one learns “subjects” where time is regulated by succeeding applied time of mathematics, science, social studies, art, etc.
 - b. Conversion to another view of schooling will of necessity be slow and difficult to achieve. There maybe a resistance to the interdisciplinary approach.
- *Science and its mode of operation is in conflict with traditional thoughts, and will demand a change of view at both personal and professional levels.*
 - a. Given this premise it is likely that interdisciplinary studies will present a challenge to an established way of thinking and will demand a change of view of many students and teachers.
- *Through the teaching of interdisciplinary studies it is believed that students will develop a knowledge structure relevant to experience and readily adaptive and transferable, and a diversity of concepts developed within the context of need to know rather than formal discipline.*
- *Supervised practice in conducting interdisciplinary studies in schools in a prerequisite to effective teaching.*
 - a. Interdisciplinary teaching demands a change in attitude and behavior, both requiring time, and a support system with extends beyond the training period, it calls for a great deal of open-mindedness and mutual confidence and understanding.

Figure 1. The relationship between Scale of Difficulty and Time



Training of Teachers for Interdisciplinary Teaching – Teacher/Adjunct

In considering strategies needed, it will be necessary to distinguish between pre-service programs which teachers will be teaching. It is assumed that any program/project will include professional areas of Philosophy of Education, Sociology and Educational Psychology.

Organization of the Context – Teacher

The teacher should have the kind of background that reflects what science really is, a willingness to be innovative and certain competences which include:

1. A thorough knowledge of at least one of the sciences and a basic understanding of its interdisciplinary nature with the technical and vocational fields;
2. An ability to select and develop or implement curricular materials and strategies leading to desired behavior in the learner;
3. An understanding of the cultural values inherent in scientific activity;
4. An appreciation of the role that mathematics play in the understanding of reality;
5. An apprehension of the value of indigenous cultural roots;
6. Competencies in a variety of training-learning strategies and techniques including evaluation aimed at promoting the development of inquiry skills in learner;
7. Open-mindedness and flexibility in personal style that accommodations coping with change.

Since teachers will be entering the course from a variety of background and interests, it could be described to structure that content in the form of *modules* to allow for different entry points and to facilitate alternative routes through the program.

A common core of knowledge based on the “big ideas” or conceptual schemes of science way serve as the main branch with off-schools leading into the technical vocational fields.

Ex: Energy, shape and pattern, materials and structures, time and space are same topics that way be used as *major themes* for interdisciplinary studies.

The materials chosen for curriculum development should interrelate varying bodies of knowledge, reflective world of work and be based on the ‘scientific’ approach.

There are three levels of curriculum materials:

LEVEL 1 – Individual Challenges

LEVEL 2 – Thematic Challenges

LEVEL 3 – Integrative/Interdisciplinary Challenges

These levels, which are arranged in hierarchical order, are aimed at developing creative thinking, one of the attributes required for interdisciplinary teaching. *Creative thinking* maybe said to comprise the ability to recognize problems, produce novel ideas, organize ideas and evaluate the results.

Ex:

Level 1: Design and use a trap to capture small animals

- A specific and small scale challenge
- Incorporate thinking and manipulative skills
- Knowledge of the phenomena to be investigated
- Relate to every day life situation
- Challenge embodies understanding at both the level of first hand experience and at conceptual level

Level 2: To design and construct a bridge 40cm long to hold at least 1kg using only wax paper and straws

- Requires group activity with problem solving in a social context – cooperative learning.

Level 3: Charcoal

- This is the most complex array of challenges
- Interdisciplinary – bring ideas together which are from varying fields of human knowledge
- Teachers/adjuncts can build a network of concepts and themes relevant to local situations.

Figure 2

Strategies of Delivery – Role of Teacher

How information acquired and delivered. A proposed strategy involves:

- Teacher/team (from school) undergoes training
- Adjunct/teacher (peer teaching) – discussion
- Team teaching a cross subject boundaries as a method of presenting the teacher with information through lectures, demonstrations, projects, seminars and workshops.
- Teacher will play an acute role-selecting topics and materials, teaching, and grading.
- Microteaching
- Use of video-taping, cassette tape
- Self teaching devices and video conferencing will play important roles.

The ability to read and communicate information part of the cognitive behavior of a scientist:

- Uniformity in the use of symbols; reduce confusion
- Teachers should know about particular readings in science and interdisciplinary readings.
- To write curriculum materials
- Training in the various models of communication

Strategies for evaluation

Feedback mechanisms designed for diagnostic and achievement purposes seem to be appropriate. Teacher need to develop confidence in their own ability to teach in the new way and to evaluate themselves – willing to make mistakes, free to experiment. Emotional stress needs to be reduced if the teacher is to be innovative and acquire self-confidence.

Continuous assessment through written papers, laboratory work, portfolio, project work including designing curricular units, making equipment from local materials, micro-teaching and peer group assessment are desirable. A credit system using profile ratings is recommended since these have advantages of high uplifting each faults of the multidimensional strengths which the new interdisciplinary approach demands

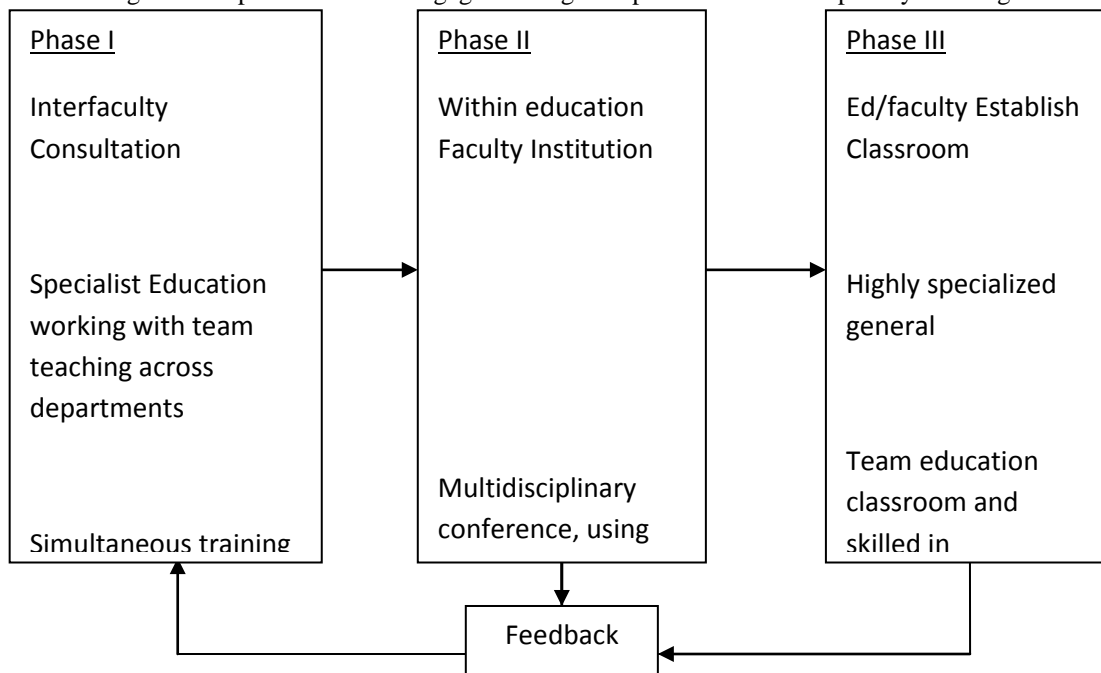
Implementation

Teaching in an interdisciplinary manner will require a reappraisal and restructuring of the in house school system

- Selection of students
- Teacher volunteer
- Programs
- Scheduling of teachers
- Back to back pairing
- Common prep time
- After school meeting initiations
- Grading
- Assembly
- Portfolio
- Budgeting and funding

Teachers play a central role in curriculum change. Not only will the proposed change affect pre and in-service training programs but a massive retraining of teacher will be necessary if we are to meet the challenges of education in the year 2006.

Figure 3: Implementation is engaged in stages or phases as interdisciplinary teaching evolves



Without practice and support little can be achieved in the long-term. Guided experiences in school and in training will be required. A base in context, pedagogy and sense of security and competence are important. Two teachers working together then provide to a common experience for cooperation, discussion and debate.

Implications

It is expected that interdisciplinary teaching may well disrupt the school system. However, the simultaneous training of teacher education and adjuncts together with cross fertilization provided by team work across department should act as stimulants rather than deterrents. Sunday school time-tables will need reorganization cooperation if the principal and staff are vital.

Since examination RCT/Regents have a powerful influence on teaching methods it maybe possible to capitalize on their influence by modifying them to include school-based assessment component in the form of projects.

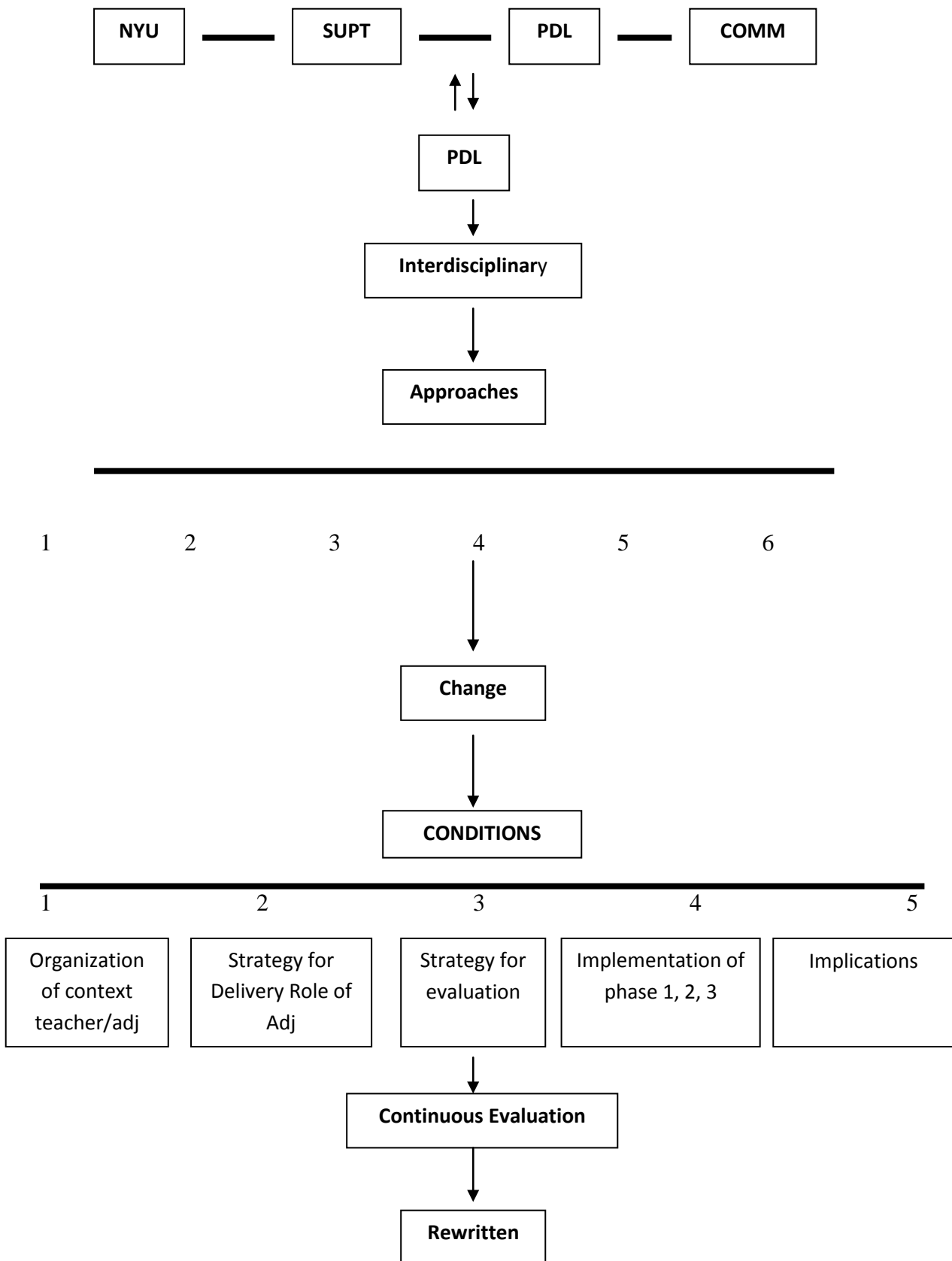
There will be need for closer links between teachers of technical and vocational subjects and science and mathematics. At the moment, there is a tendency to view the technical – vocational subject as inferior to science and mathematics. The areas of study should be seen as complementary of teachers themselves make a conscious effort to work together as a team it is highly probable that the artificial barrier will begin to break down. Teachers cannot operate in water tight compartments and cellular and molecular biology requires an understanding of fundamental chemistry.

Science teachers' education/research programs should be utilized and the skills acquired put into practice fully. The use of indigenous materials and low cost equipment is worth the while considering.

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Flow Chart



ENTREPRENEURIAL MINDSETS IN ENTREPRENEURIAL SCHOOLS

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Abstract

Schools should be active partners in the process of building entrepreneurship as well as fostering entrepreneurs, new heroes for the future! The role of the educational leader is important to reflect on this aspect of the major changes. Can the leader turn apparent problems into challenges, and challenges into creative opportunities? This paper is a presentation of results from research based on interviews with school leaders who have also been students at courses in pedagogical entrepreneurship. The course has been designed with a special purpose in mind: the implementation of entrepreneurial measures at the student's own school in order to help promote entrepreneurship at the school.

The importance of the ability to exercise entrepreneurial activity in society is that it forms the basis of achieving economic growth and social security. This well-documented principle applies both to industrialised countries and to countries that are undergoing intensive development. Within the commercial sector it is not unusual even today to see entrepreneurship defined narrowly in terms of establishing companies. But research also demonstrates important links between education, creative business development and production quality. When it can be documented that entrepreneurial training yield an increase in entrepreneurs who can produce qualitatively better results, this will naturally be an important justification for new investment.

This paper is also based on a concentrated survey of literature in addition to an empirical study. So – our research question is: *What kind of leadership needs an entrepreneurial school?* Entrepreneurship is on the agenda in various contexts within the Norwegian society. However this is not typical for Norway, but because of a lack of an entrepreneurial culture, and the importance to have a leading edge in this development, a goal must be to strengthen the competitive ability in schools through emphasising entrepreneurship. Entrepreneurship is a mindset as well as a force behind developing activities in schools and society. In Norway curriculum for entrepreneurship has been a growing field of interest among politicians, in universities, colleges, and in public school. To start a discussion on entrepreneurship in schools, it should be useful to look at definitions of entrepreneurial education. How is *entrepreneurship education* defined, and what are the critical components of entrepreneurial training in different contexts? Entrepreneurship education needs to be defined more broadly than business management in that it includes *fostering creativity and innovation*, traits not normally nurtured in a standard business environment.

Keywords: Entrepreneurship, entrepreneurial cultures, mindset, creativity, education, innovation

Introduction

Within the definition of education in the field of entrepreneurship in Europe, emphasis is now placed on the extension of the concept much further than simply learning

how to start up a new company. If we accept that entrepreneurship can be rooted in other places than merely pure economic and commercial contexts, this will enable us to gain an understanding of the school's role in fostering future entrepreneurs.

Fostering an entrepreneurial mindset

Entrepreneurship is firstly a mindset. As attitudes take shape already at an early age, school education can greatly contribute to fostering entrepreneurial mindsets, starting from primary school to the University level. The growth of entrepreneurship education and the associated research regarding the impact of such education present several important policy questions. (Raposo et.al.2009)

According to Raposo and do Paco, the important thing is to create entrepreneurial attitudes and skills amongst children and young people, both in terms of creativity and personal development. Such concepts can be defined and quantified as in the case of, for instance, the Norwegian strategy plan for entrepreneurship in education and training (Ministry of Education and Research 2004).

The educational system has a role to play in stimulating attitudes and behaviour that promote the capacity for collaboration, creativity and innovation in children and young people. This must take place through long-term work with satisfactory progression. The young must be allowed to believe in their own creative powers and the ability to see and utilize local resources as a basis for creating values, developing workplaces and taking responsibility in their local community... Entrepreneurship in the education system shall renew education in this and create quality and multiplicity in order to foster creativity and innovation. (Ministry of Education and Research (MER), 2004:3)

The national curriculum for primary, secondary and adult education in Norway introduces the idea of a wide learning perspective.

Education must be dedicated to the personal qualities we wish to develop and not solely to subject matter. The key is to create an environment that provides ample opportunities for children and young people to evolve social responsibility and practical capability for their future roles as adults. (MER 2004:32)

Is it possible to nurture an entrepreneurial culture in schools? What could be described as entrepreneurship in the educational system for children and youths in the age range 6 to 18 years? Will this school be different from the school we traditionally know from the Norwegian education system – and why should entrepreneurship be a theme in the primary and secondary school system at all?

Theory - literature

Our theoretical references are learning philosophy and constructivist theory. The theory for learning – whether explicitly expressed or held implicitly – usually includes a view of what knowledge is. The building up of knowledge occurs both as an individual and as a social process, in that the personal acquisition of knowledge happens whenever an individual interprets another's utterance. An assertion will, according to constructivist theory, be interpreted in accordance with the background (cultural context) of an individual's understanding of the topic, and will be taken in to the individual recipient's system of concepts. Knowledge, therefore, is not "transferred" unaltered from one individual to another or from one school to another, but is mediated, and "construed" anew by the recipient. Mason claims that successful online-based learning must build upon a constructivist theory of knowledge. The social-constructivist approach emphasises that the construction of knowledge is not an individual but a collective process, with language as the bearer of the collective understanding and cultural innovation. (Imsen 2000, Lund 2005, Mason 2003, Schøn 1987)

In order to create a picture of how it is possible to transform a traditional school into an entrepreneurial school we are analysing data with the help a conceptual framework that may be used to transform organisations. It may be necessary to define the concept of school development, since this can have multiple meanings. A necessary question in our context is therefore how we can understand school development in an entrepreneurial context (El Sawy 2001, Patten 2004)).

Bogotch, Miron and Biesta (2007) relate the concept historically to two different directions, both of which are analysed in research terms – *school effectiveness* and *school improvement*. The first can be understood as results directed and connected to quantitative analysis and with little focus on examining the content and methodology of the school teaching. Bogotch, Miron and Biesta demonstrate that this has often led to an emphasis on finding the right technology to yield the best-possible test results.

We discuss the understanding of different strategies and operational plans as curriculum and renewing the Norwegian school system by means of focussing on entrepreneurship as a mindset. Another important school-development skill will be to transform national curricula into something relevant to the local learning context – and thus create local curricula. These should not replace the national plans but give them a *local relevance* on the basis of the various local conditions. When the school leaders attempt to conceptualise entrepreneurship in school on the basis of conditions in their local communities we understand this as a form of local curriculum development in entrepreneurship.

Schools at a crossroad

Peter Drucker (1985) describes an entrepreneur as a person who sees change as the norm who searches constantly for opportunity and then exploits that opportunity. The entrepreneur *practises* innovation in a *disciplined and systematic* way, combining existing resources in new and more productive ways. Entrepreneurship is difficult to attain. Rosabeth M. Kanter (1984) says that entrepreneurs are guided by *the future*, not the past. They measure themselves not by the standards of the past, but of the future – thinking not of what they have achieved, but of how far they still have to go. Peters and Waterman (1982) see entrepreneurship as creating total customer responsiveness eliminating bureaucratic rules and developing an inspiring vision. Cultures which support entrepreneurship can be created, and people can be liberated, inspired and empowered to face an uncertain future with optimism, to seize the opportunities it offers, and to develop creative solutions to its problems.

Leadership

The school leadership at creative and innovative schools is a key factor. Crowther and Caldwell give seven distinctive characteristics of those educational leaders who demonstrate entrepreneurial flair (1991). We will use these characteristics to reflect on the leadership quality.

- 1 *Loving change*. Entrepreneurs love change, seeing it as an exciting challenge which presents them with opportunities to create new ideas, products or processes.
- 2 *Future orientation*. Entrepreneurs have a future orientation, and are continually searching their environment for new trends and emerging concepts.
- 3 *A problem is an opportunity*. Entrepreneurs have a confidence in their ability to respond to problems; they tend to view “problems” as opportunities to generate new ideas, products or processes.
- 4 *New combinations*. Entrepreneurs are able to think laterally, combining existing resources, skills and knowledge into new configurations and thereby finding solutions that others cannot see.
- 5 *Visions*. Entrepreneurs are passionately committed to the pursuit of their vision.

- 6 *Innovation.* Entrepreneurs have a passionate belief that their solution is of benefit to their supporters, their industry, their nation or their fellow humans.
- 7 *Inspire.* Entrepreneurs are able to inspire champions and patrons who support them and are able to win support for them in the community.

Can characteristics like this be nurtured in students and teachers at school? We have to examine that. The opportunity may lie in the creation of *a school culture that values entrepreneurial spirit* and actually supports its development by valorising entrepreneurial spirit.

Research questions: If entrepreneurship in education is to have the twin perspectives of the future entrepreneurial skills of the students and of renewing the education system to create quality, and multiplicity that will foster creativity and innovation, we will address the following questions that will be answered partly theoretical, partly by empirical results. Our main question is:

What impact do the leadership have and how can traditional schools be changed into entrepreneurial schools?

Research questions like these will be empiric examined: How do leaders understand their own role as leaders of such innovation processes and how do they assess the effects of the pedagogic entrepreneurship course in relation to this?

Method

Our research has been conducted as a process of text analysis performed in two major steps. The first step was to analyse interviews with 6 school leaders, the action group in this study. The second step was to do a similar analysis of the categories in relation to the selected theories.

The approach to all text material was to a great extent built on the principles of "Grounded Theories" (Glaser & Strauss 1985, Spilling 1998), from the principles of abduction (Blaikie 2000), from the principles of hermeneutic studies (Gadamer 1997, Lund 2005) and from general principles of qualitative text analysis (Kvale 1997). Such analysis involves a process of changing focus between the texts in their entirety to the basic unit of analysis.

Using Glaser & Strauss (1967/1970) we will adapt a process of text analysis in three phases; open coding, axial coding and selective coding. Open coding is the first phase, in which the phenomenon is identified. This phenomenon may be concrete, like things and activities, or of an abstract character like emotions, relations and organisations. Axial coding is then phased in where relationships between those phenomena identified in the first phase are discovered. In the basic principles of Grounded Theory the researcher is recommended to focus on relationships of the type nexus of cause and effect. Selective coding is used in the last phase where a core category is chosen. This is a category to which other dimensions will be related. As a narrative this could be described as findings, or as a "storyline" that brings meaning to the material.

Selection – study group

Five school-cases, represented by six leaders, participated in the empirical study. The six subjects simultaneously participated in a school-development project designed as a formal 2-year higher qualification within pedagogic entrepreneurship (PE) with the goal of implementing entrepreneurship in the school in accordance with the Strategic Plan [16]. The intention of the project is therefore to contribute to the development of understanding the characteristics of an entrepreneurial school. Data collected through reports and tasks during the course of the project, joint discussion (audit) and a final semi-structured interview.

Design and method: Action-directed school development with elements of evaluation carried out in the process and in the final evaluation. The evaluation is in respect of the school's identity and self understanding as an innovative and entrepreneurial school.

Qualitative analysis: Interpretation and analysis of data is based on methods mainly used within grounded theory. The main findings are drawn out through selective analyses for which the goal is to develop the concepts of what marks a school and the leadership as entrepreneurial.

Reliability and validity: The results from the study are analysed and discussed with the intention of developing an understanding the characteristics of an entrepreneurial school: content, working patterns, leadership, qualifications, structure and strategies. The empirical concepts are also theoretically validated by means of comparisons in the discussion section, using data from the literature and theory.

The material used in the survey consists of a) data from interviews with six school leaders who have higher qualifications in pedagogic entrepreneurship, b) data from supervisory discussions with the same school leaders during the course, c) analyses of written reports submitted by the leaders in this connection, d) data from a discussion with staff at four of the five schools.

Results

Data from the five schools (6 leaders at primary and lower secondary schools) have been assembled for this study. The school leaders describe their reflections around the challenges in relation to transforming their schools from more-or-less traditional institutions to what might be termed entrepreneurial schools¹. But the study is based on interviews and analyses of written sources and is therefore relatively extensive and demands time-consuming textual analysis. The information is to be used to define the meaning of the term "pedagogic entrepreneurship". With the help of school leaders who are working towards implementing entrepreneurship in their schools, the goal is to acquire an empirical basis on which to limit and define the concept.

The interview subjects were asked to categorise their own school culture by answering the question: *To what extent do you have an entrepreneurial school culture in your school?*

Table 1: Ranking of entrepreneurial school cultures by the heads

- "to a relatively-great extent – not many who resist"	High degree - H	1	High or fairly high 3 replies
- "on the way to being fairly entrepreneurial" - "come a good way along the road"	Fairly high - FH	2	
- "little over average – have got going with processes but not a high degree of ..."	Medium - M	1	Medium 1 reply
- "a little – to some extent – and in individual areas, but not consistently"	Fairly low - FL	1	Fairly low or low degree 2 reply
- "at the lower end of the scale ..."	Low degree - L ²	1	

¹The closeness of the relationship between the school leaders and one of the authors of this article poses an analytical challenge. Pedersen has been responsible for most of the teaching on the entrepreneurship course and has also led courses at several of the schools. On the one hand this has provided a great deal of information over a long time period, but on the other hand it is a problem in terms of maintaining a sufficiently critical distance.

²The results are based on a small body of interviews, but they express credible assessments so far as we are familiar with the schools. Placing into categories such as "fairly high degree" or "high degree" is of course affected by subjective opinion. The Head and Deputy Head at the same school differ between "fairly high degree" and "medium".

The three heads are those who use the three highest rankings. In other words, the heads regard themselves as leading schools that have a culture of entrepreneurship. The subject who placed his own school in the lowest grouping reports of a school that is right at the start of a process of change in which the individual concerns wishes to participate, but which is also regarded as difficult and where there is a low degree of understanding of entrepreneurship amongst the staff.

Local curriculum within pedagogic entrepreneurship

The school leaders focus on putting the national strategy and action plan into effect within a local context. This has also been one of the main emphases in the context of the course. In relation to how this is envisaged as part of a local curriculum in pedagogic entrepreneurship we can structure the findings in the following categories:

Table 2: Local curriculum in pedagogic entrepreneurship

Selective coding ³	Axial coding	From raw data to open coding
Local curriculum	System level	<i>Entrepreneurship as a <u>framework around</u> all the activity in the school and as the glue that binds all the activities</i>
	Skills development	<i>Pedagogical entrepreneurship as a <u>key skill</u> for both school development and for learning activities and strategies in the classrooms</i>
	Learning activities	<i>Conceptual learning in cooperation with their <u>local society</u> and in a perspective of building self confidence, responsibility, innovation ability, risk willingness and creativity</i>
Better schools and better learning		
Better schools	Organisational development	<i>Pedagogic Entrepreneurship can be important in providing a new way in which to organise the school system and in giving us a new perspective on learning processes.</i>
	Active learning	<i>Improve the learning environment by means of focus on new, active forms of learning, new learning arenas and new forms of interaction between pupil and teacher in comparison with the traditional school</i>
Skills		
Skills (competence development)	Knowledge / skills	<i>Fundamental understanding for entrepreneurship and teaching</i>
	Attitudes	<i>Believe that pupils can shape their own lives</i>
	Initiator skills	<i>Have the ability to know how this can be put into practice and to be entrepreneurial in their actions</i>
Course in pedagogic entrepreneurship		
Course evaluation	What they are satisfied with	<i>We believed we would be ordinary students, but in fact there was mental involvement and work in relation to change. It was the right course in relation to modern school issues.</i>
	Potential for improvement	<i>Even more focus on experiencing through personal experiences</i>

All groups in the school should be obliged to respect the plan, that everyone should have a role to play in the work and that systematic follow-up is required that balances demands and support. They also maintain that pedagogic entrepreneurship must be made into an integrated part of the activity plan of the whole school and that the curriculum goals in the national curriculum must be connected up to entrepreneurship. The four schools which score most highly in their self-assessment of entrepreneurial culture have made a start on this.

³ Main categories

The course is regarded as very important by all the subjects. The same four schools mentioned above have teachers who are taking training in pedagogic entrepreneurship or have planned this. One of the schools wishes to give its whole staff in-service training as a part of the school's development project. In addition, the school leaders mention courses in pedagogic entrepreneurship that they have held or planned for teachers as being an important element in developing a common understanding amongst the staff.

Activities mentioned as examples include cultural projects, the highlighting of pupils through externally-directed projects in which they have to extend themselves in a socio-cultural perspective, business camps run and led by the pupils themselves and including participants from other schools, pupil companies and other programmes

All schools have experiences back to the 1990's with pupil companies. Today, only two of the schools have pupil companies in the classical sense. The one school is very satisfied with the pupil company in the lower-secondary school and point to positive behavioural changes, increased motivation and greater effort as important elements. Two of the schools have a strategic wish to reduce the focus on pupil companies in favour of programmes from Young Entrepreneurship.

Better schools

It was also interesting to know what the subjects regard as areas in which entrepreneurship can be significant in terms of creating a better school. The subjects strongly emphasise the. The answers can be grouped under the two following main categories: development of *the organisation* and its *learning forms*.

Pedagogic entrepreneurship is seen as important for meeting the demands of society for creativity and innovation as part of the work of the school. Learning about school-development processes is seen as an important part of the study process and teachers at the school who are qualified in pedagogic entrepreneurship are regarded as a resource group for active use as collegial mentors.

Pupils should be principal players in their own learning process. This is an important premise for good learning. They emphasise the local area and local society as important for learning and pupils must experience seeing themselves in relation to the resources, opportunities and needs of the local community. Learning in general should be regarded in relation to real life and the real world and theory should so far as possible be linked with practice.

Skills

It is also important to know what kind of skills the leaders view themselves and the teaching staff as needing if they are to contribute actively to this type of school development. We wished therefore to know what they consider should be the intention of entrepreneurship training for teachers and school leadership. The subjects wish training within pedagogic entrepreneurship to give students a basis in learning theory for entrepreneurship work in the school, that they should learn about action strategies, innovation and leadership for change and to be able to read and analyse a school culture and work with processes of change.

The attitude category can again be divided into three sub-categories:

- 1) Understanding teaching and learning
- 2) Organisational development
- 3) Personal development.

The school leaders emphasise that teachers must be able to use pedagogic entrepreneurship actively as part of their work, to develop a broader register of teaching methods and to see pedagogic entrepreneurship in relation to curriculum goals. Several mention skills in project work as an important entrepreneurial skill within pedagogy.

The course in pedagogic entrepreneurship

In relation to skills development, it has also been important to receive reports on the effect of the course of study they have followed. Pedagogic entrepreneurship differs in many respects from traditional post-qualification training, whether school-related or educational studies of one sort or another. The school leaders mentioned changes of attitudes amongst the teachers who had been students. Many of them have become resources for the school in a different sense than formerly – especially in relation to being development focussed and having a new outlook on teaching.

Amongst points for *improvement* is mentioned a desire to learn even more initiating action. They would like more examples of good practice from other schools. In organisational terms, they would like a greater professional input during the intervals between meetings by means of more web-based teaching. This is particularly the case in respect of the course that has had nine, two-day meetings as opposed to the six, three-day meetings during the first year of study, with a greater degree of reflection and in-depth study on the other version of the course.

Dynamic school development

When we wish to acquire a picture of how it is possible to transform a traditional school into an entrepreneurial school, we analyse data with the help of Leavitt's theory of organisational development (1965) in a modified form postulated by El Sawy (2001) and Patten (2004). The systemised interview data is shown in the table below. Pedagogic entrepreneurship is regarded as an opportunity *to re-create the local flexibility* that the school once had and to move from a text-book-based teaching style to one of learning in a local context. The school needs dynamic transforming strategies.

Table 3: Dynamic transformation

	Task	Structure	Technology	People
System level	<ul style="list-style-type: none"> - innovation processes in joint leadership, teacher inclusion, changes in learning focus, increased collaboration with society outside the school 	<ul style="list-style-type: none"> - changes need to be incorporated into the system (takes time) - changes in working-hours agreements and the traditional timetable that is currently in force (2 schools) - partnership agreements - concrete project + action-based learning - new organisation of the school day 	<ul style="list-style-type: none"> - study participation - staff courses - focus on the need for change in all relevant connections 	<ul style="list-style-type: none"> - leadership important - teachers must be included, supported and followed up by the leadership - leadership must draw attention to examples of good practice - leaders/entrepreneurship teachers must understand the scepticism and resistance within the staff but not allow this to stop the process
Pupil and learning level	<ul style="list-style-type: none"> - try out new and entrepreneurial teaching methods in new teaching arenas 	<ul style="list-style-type: none"> - time and resources - information for parents and collaborative partners - local-authority budget for applications for good projects (LG school) - link curriculum goals to pedagogic entrepreneurship - see the general part of the 2006 national curriculum + national list of obligations for schools - interdisciplinary projects 	<ul style="list-style-type: none"> - participation in courses - staff courses - project in action-based learning 	<ul style="list-style-type: none"> - focus on areas in which teachers are successful and which the school will be able to carry out (makes it easier to present potential for improvement) - focus on the good examples and show that they work + reflection on why they work - new sense of reality for teachers and parents in respect of social change and the need for new and entrepreneurial skills to deal with future society

The role of the school leadership

In this study we are particularly anxious to establish a picture of the school leaders' understanding of their own role in the process of transformation. We would like to know something about how an entrepreneurial school leader acts by asking leaders.

Table 4: Defining the leadership role

Definition of entrepreneurial leadership	Substance of the role
<ul style="list-style-type: none"> - someone with the courage to be open to new routes to knowledge <ul style="list-style-type: none"> - a school developer - someone who can see opportunities and turn the development within the staff from negativity to positivity - someone who believes in entrepreneurship - someone who dares to think differently, take chances and allow the teachers freedom - someone who dares to invest in new ideas at the school <ul style="list-style-type: none"> - someone with an understanding of entrepreneurship both as organisational development, teaching/learning strategy and future skill for pupils - someone who sees the need for change in the school <ul style="list-style-type: none"> - someone who includes the staff <ul style="list-style-type: none"> - an innovator - someone who sees both teachers and pupils as co-researchers in their own practice - someone who is good at motivating and leading and at getting a desired development to happen 	<ul style="list-style-type: none"> - support teacher initiatives - front this in relation to staff who complain that "teachers are leaking" - be able to live within the dichotomy between external pressure for measurable results and at the same time exploring unknown waters - make active use of teachers and resources to attain organisational goals - be able to inspire new thoughts and actions - be able to down-prioritise some teacher tasks in order to make room for new ones - be able to lead processes of change and to maintain entrepreneurial attitudes

Discussion

Norwegian schools have been through many transformation processes during the past decades. Not all of these have been equally well received either by the schools or amongst educational researchers. In relation to the goal of creating a school that promotes entrepreneurial skills amongst its pupils, we believe that this will be difficult to achieve if changes are not made at the same time in the school as a system. Many teachers and schools have tested out various models of entrepreneurship in the school, including through educational companies. Where this works well the educational companies can be very good arenas for learning, but this does not happen by itself.

The way in which school leaders in the study describe development work in their own schools is to a great extent an *improvement* philosophy that is highlighted in the interviews:

- pedagogic entrepreneurship can help us to meet the requirements of society for creativity and innovation as a part of the work of the school; and in that case the whole school must be engaged in this work
- effective strategies and actions are important
- mentoring in relation to staff
(use of colleagues within the school with pedagogic entrepreneurship skills as a resource group)
- new organisation and a new learning philosophy
- we need to turn pedagogic entrepreneurship into an integrated part of the activity plan for the whole school
- link the curriculum plan with entrepreneurship activity

They also highlight elements of *effectiveness* by making demands of their own organisation relating to commitment, systematic follow-up and ensuring that the school' staff

is a partner in the process. This will nevertheless be a slightly different emphasis in terms of the concept than that with which we have become familiar from the focus over the past few years on testing and results in the Norwegian school.

In relation to our school leaders we have found that three of the five schools can essentially be said to have strong elements of such a culture of improvement. One school is somewhat behind and the last school can be described as having a small degree of this sort of cultural basis. This also corresponds with the school leaders' assessment of their own schools. When they describe their own visions for entrepreneurial development work at the school, all six however identify factors that are amongst the nine identifiers of a culture of improvement.

Entrepreneurial leadership for entrepreneurial schools

A perspective that we have not touched upon so far is the extent to which the school leaders can be regarded as entrepreneurs themselves. Based on axial coding Crowther and Caldwell's seven distinctive characteristics of those educational leaders who demonstrate entrepreneurial flair, we can see that they behave entrepreneurially both within the school and in other connections (1991).

What is the role of the school leader in the development of an entrepreneurial school?

All the three head teachers have, or have had, various forms of leadership or development functions in establishing a private company, politics or cultural life respectively. They are good at seeing new opportunities, at being innovative and at being inspirational. One of the deputy heads also spoke of an event that can be connected to '*a problem is an opportunity*'.

The three schools score the highest in terms of entrepreneurship culture have all used the model in connection with study and have consciously worked to see these relationships. They regard the most important area as being that of people – where the staff presently are. Without placing a special emphasis on including the staff in the development processes it can be difficult to attain an entrepreneurial school. This is probably the area in which the other two schools have the most difficulty. They are having difficulty with teacher attitudes in terms of understanding the entrepreneurship concept and its relationship to the school and to learning. All the school leaders in the survey emphasise the importance of training in pedagogic entrepreneurship and personal development in local curriculum work and school development as key factors in this work. Based on our research and experiences entrepreneurial schools develop a culture of improvement within the school, develop a collaborative culture within the staff, focus' on better learning – on achieving learning goals in relation to national and local curricula – based on socio-cultural theory, interaction with global society and the workplace and through creative and innovative learning methods, focus on entrepreneurial goals connected to: national strategies and action plans, local curriculum in entrepreneurship, perspective of the pupils' futures, perspective of pupil identity and perspective of pupil learning. Interview data can be organised as shown in the text table below.

The concept of educational entrepreneurship

This article is primarily a contribution to conceptualising the term educational entrepreneurship. Completing a 1-2-year training course gives the participants good opportunities to work with their own understanding of the entrepreneurship concept. They spend a long period working both with their personal conceptualisation and with the relationship of this to theory and to other people's understanding of what the term means. In the evaluation they are asked to express their own reflected understanding of the

entrepreneurship concept. In this survey the opinions of the leaders can be summarised as follows:

Table 5: The concept educational entrepreneurship

Variation in the teaching	<ul style="list-style-type: none"> - Finding other routes to learning - Some people enjoy exploring the world through text books, whilst others enjoy exploring the world through a meeting with reality <ul style="list-style-type: none"> - Another way of learning - Motivation through personal discovery and overcoming challenges <ul style="list-style-type: none"> - Being open to new thoughts and ideas - Enrichment, growth, inner drive - Joined-up thinking
Extended learning environment	<ul style="list-style-type: none"> - innovation - use of the local community and immediate area in learning processes - more use of practical learning arenas in all relevant connections within the school <ul style="list-style-type: none"> - contextual learning conditions - organisational development
Personal development	<ul style="list-style-type: none"> - acquisition of entrepreneurial ways of thinking and acting - a personal/individual aspect within entrepreneurship that has an effect on leaders as a person - learning through interaction (on the basis of a socio—cultural view of learning) <ul style="list-style-type: none"> - searching for development potential and new opportunities <ul style="list-style-type: none"> - alternative learning - creative learning - learning based on understanding that all youngsters are different - become more open-minded and pay more attention to the whole person reflection in situations of action

It is important to note that no-one highlights business establishment or setting up commercial activity even though this is also a part of the curriculum. Perhaps it is related to the fact that this is the last question in a series that has had a consistent focus on school and learning or that the economic perspective has become a less significant aspect of entrepreneurship training.

Conclusion

The entrepreneurship course is regarded as a key factor in the implementation of pedagogic entrepreneurship. Teacher attitudes are regarded as a greater challenge than structural conditions, but the subjects nevertheless focus strongly on structure: local plans with measureable processes, follow-up, information routines and partnership agreements.

In the conceptualisation of pedagogic entrepreneurship as an area of school development the economic perspective does not occupy centre stage. This means that focusing on production, organisation of pupil businesses do not occupy as prominent a role as we may be given to understand. We can understand this more as a humanistic entrepreneurship philosophy focussing on personal growth, staff, pupil and school development with a focus on creativity and innovation; all directed towards providing pupils with skills necessary for the future.

For entrepreneurship to flourish, *a supportive environment* is needed. Therefore, those who are involved in fostering entrepreneurship should not only influence local development policies, but also facilitate the development of national and regional supporting institutions.

The strengthening of local education is of great importance, and an important element within this is implementing a program for pupil enterprise in schools. This is in accordance with the statement: “*entrepreneurs are made rather than born*”. It is also important that the educational programmes are coupled up to local industry. At the same time we must educate for the future and prepare for times ahead. In this work it is important to identify what links traditions to the future.

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IMPLICATIONS OF OPEN EDUCATIONAL RESOURCES FOR YOUR MEMORY OF LINKS

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Abstract

Open contents also open the door for acquiring a large variety and quantity of new knowledge. They are always available for us, and once they are located and selected, we only need to wait as long as necessary to have enough time to learn them. Storing contents on very different ICT devices may contribute to freeze the overload of our memory, but some studies affirm that a smaller cognitive effort is made when we know the contents are ready out there, in the Web. This article is focused into the implications of incorporating different digital open resources in your 'Memory of Links' (MoL). This concept, the MoL, represents the space of memory which needs to be allocated in the brain for storing those links. The seeking and selection processes, the memorization and storage of links, the ability to remember some notions about the stored information and the need of organization of those linked resources in external devices vary according to the different individuals. This fact has been checked through a study carried out with 58 students who were surveyed and interviewed in order to obtain information about the way they filled their MoL. The individuals showed distinct behaviors in respect of the number and type of the stored links, storage devices, structuration of information, link management tools, etc.

Keywords: Open Educational Resources, Memory of Links, Connectivism, Resource Allocation, Skill Acquisition, Lifelong Learning

Introduction

The vast amount of open resources residing in Internet is changing the way we learn (Brown & Adler, 2008). Actually, a huge part of the Internet is open for education. In addition to these contents, which are stored in Web sites that specifically include the word 'open' (Open Knowledge, Open Books, Open Journals, Open Badges, Open CourseWare – OCW– , Massive Open Online Courses –MOOC–, Open Educational Resources –OER– , Open Distance Learning –ODL–...), there is a vast ocean of free resources. The William and Flora Hewlett Foundation defines OER as “teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge” (The William and Flora Hewlett Foundation, 2013:16). Within this paper the term 'open' is used to refer a free access resource. This foundation admits that since more players are adopting 'openness', the definition of 'open' can be diluted (ibíd.). Indeed, there are multiple definitions of open learning. Open learning is a learning model which does not force the students to follow the same path, the same contents, the same thinking, but on the contrary it fosters that each individual can custom-design their own education, build their own syllabus, with different resources, different methodology, different assessment forms and, what is better, at his/her

own pace. From this point of view open contents could be all those assets that can freely take part in the learning experience of an individual.

There is an intense debate to determine whether having so many resources only one click away is damaging learning. After the pioneering work of Bush (1945), Nelson (1965) and others, laying the foundations of the future Web and hypertext, today this facility has changed the search-and-select habits of the people. Carr (2008) is even wondering..., is Google making us stupid? He emphasizes the results of a study whose conclusions indicated that online researchers typically read no more than one or two pages of an article or book before they would 'bounce' out to another site. In a similar vein, the experiments conducted by Sparrow et al. (2011) found that people are less likely to remember information when they are aware of its availability on online search engines. Gray et al. (2006) state that when we try to measure the trends to choose between the internal memory and the information stored in external devices, individuals draw upon one or another store depending on the time which is supposed for retrieving the information, regardless of where it is.

There is no denying that Internet has dramatically changed the state of education over the past 20 years or so. Furthermore, a wide range of secondary type memories, Internet spaces and devices, make possible that individuals choose where they prefer to store their resources. The time required to find the needed information is lower than before the existence of Internet but, at the same time, we spend more time seeking, selecting and archiving a much higher amount of contents. According to Bergman et al. (2009), people have a resistance to deletion. As a result, a very large quantity and variety of resources, including texts, images, videos, music, 3D objects, software, e-mail messages, people comments, etc., must be stored or bookmarked in different ICT devices. Therefore, links between our biological memory and the external resources are being created all the time. In this document the term 'link' is being used in reference to the location of any educational object we have stored or bookmarked (not necessarily an URL online, in the Web, but any educational digital object saved on any ICT device). So, a part of our brain memory, which we call the 'Memory of Links' (MoL), is constantly used for keeping the locations where our most precious assets reside.

Often, we make an effort to remember the location of these resources, that is, to retrieve the link from our MoL. The locations which we are able to recall have become part of our Memory of Links. This association process is near to connectivism (Siemens, 2005). In his book, Downes (2012:325) argues that "connectivism is the thesis that knowledge is distributed across a network of connections". But connectivism does not make emphasis in the importance of remembering the links, and managing and reviewing them for the future learning. These are the important implications that the existence of such a group of open contents has for our MoL.

The MoL concept is only related to memory, whereas distributed cognition (Hutchins, 1995), embodiment (Clark, 2008) and even connectivism (Siemens, 2005) have mainly to do with cognitive reasoning processes which are substituted or helped by the social community or by the machines. Sutton et al. (2010) have studied the collaborative recall phenomenon. They describe an empirical research on socially distributed remembering, aimed at identifying conditions for mnemonic emergence in collaborative groups. Another research is addressing the problem of the massive storage of personal information; people is collecting media and building their 'memories for life', but "this abundance of digital media means that people are now required to organize their personal data, since there is a lack of useful commercial products doing it for them" (van den Hoven, Sas & Whittaker, 2012:2).

The resources, which have been bookmarked or stored, are usually in digital format somewhere; they constitute the extended memory. Probably, you will save them in your physical or virtual hard disk, in a folder of your pendrive, in your phone memory card, or you will bookmark them in your browser favorites, or you will write an entry about them in your

blog or in a social network... or all of these places at the same time. But if there is no link from your MoL towards them, they will have the same usefulness for you as if they did not exist and they will be unable to produce further learning.

These open contents, that we have at our immediate disposal in our ICT devices, allow us to build our custom-made learning path. Thus, free resources make easier to selectively choose the information which is near our preferences. They foster non-formal and lifelong learning. One disadvantage is that the self-selection of contents is usually made without supervision (except in MOOC). There is a risk to browse open contents which are far from the individual's zone of proximal development, referred by Vygostky (1978). That means that the individuals' audacity may take them towards resources which are far from their immediate comprehension range. Fortunately, on the Internet there is an army of people ready to help and intelligent recommender systems are developing quickly. But the memorization problem remains.

In short, the MoL is inside our biological memory and it contains the links or connections to external resources. These addresses may be URLs, but usually the MoL recalls the location in the form of a device, or a part of a device, like a hard disk, a folder, a pendrive, a smarphone card, a browser bookmark or some list of links. All these external resources, as long as they exist and the link continues being part of our MoL, make up our extended memory. The MoL and extended memory concepts have been represented in Fig. 1.

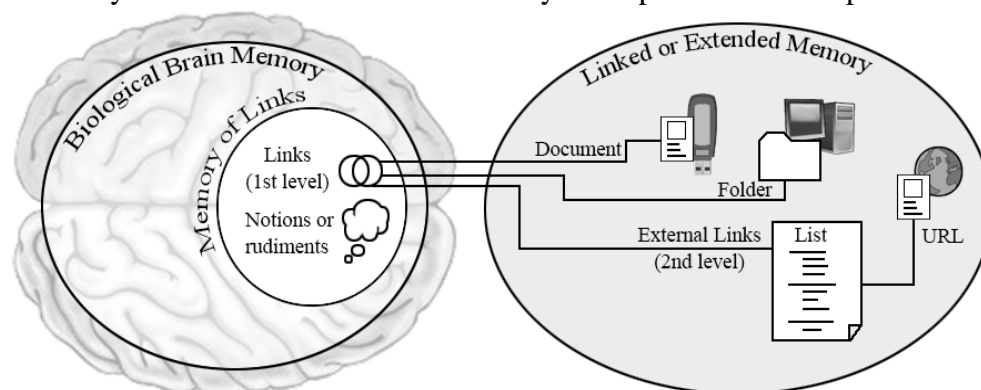


Figure 1. Conceptual representation of MoL as a part of the brain biological memory and its connections with external information (extended memory)

Objectives of the Research

We think that the explained concepts may have an essential importance in the educational progress of an individual. The consequences derived from a poor or inadequate management of the MoL (internal connections) and their associated extended memory (external resources) may suppose a learning disadvantage in the long term. So, it has been intended to shed a bit of light on some questions which are:

- To know how the students proceed when they select and store open educational resources for building their own knowledge. Do they select distinct types of resources? Do the instructor's action serves as a stimulus?
- To know what are the students' preferred methods to organize their selected contents. Do they store or bookmark them? Do they use many devices or storage locations? What is the structure of their extended memory?

Whereas content curation, collaborative filtering and content-based recommender systems are being theoretical and empirically studied, little or nothing is known about the behavior of the users to organize these contents in their brains and how successfully they recall them with learning purposes.

The following study may contribute to clarify this matter.

Methodology

A sample group of 68 volunteer students was initially considered. All of them pertained to the same population and were studying a university education degree. Every student had at least one institutional e-Mail account, access to the institutional Moodle and access to a shared folder in Google Docs. This was important because these tools were used as medium to communicate with them.

The whole group was asked to build their own learning path using open contents. They had to select contents about a theme they did not master. The chosen topic was 'astronomy', which was away from their current studies. The only conditions were two: 1) the set of resources collected by them had to be greater or equal than 10, and 2) the contents should be simple, educational and motivational for them. Initially, the most part of the students knew almost nothing about the topic, only some notion or Web site at best. 10 students acknowledged having some knowledge about astronomy. They were discarded from the sample because they could have already selected resources on this matter. In this way, the bias was removed for the purpose of this research. The final sample (the 58 remaining students) was randomly divided in two equal-sized groups, called 'treatment' and 'control' ($n_1=n_2=29$).

Both groups of students had to search and select information from different Web sites during one week for elaborating their astronomy self-learning collection. No instruction was given about the subsequent storage of the selected resources. The treatment group (G1) received 15 interesting astronomy-related links to open contents, including videos, speeches, interactive activities, blogs, etc. These links were delivered by the teacher via e-Mail (5 of them), Moodle (another 5) and through a shared Google Docs folder (the last 5). They included references to digital videos, presentations, blogs, interactive activities, real-time data sites, conventional Web pages, etc., all of them in Internet. The control group (G2) received no link.

As a sample of the links delivered to the treatment group:

- Video: How bigs are the objects floating in our Universe?
<https://www.youtube.com/watch?v=sUqmamlW9cc>
- HTML Page: Cassini-Huygens Mission to Saturn
http://www.nasa.gov/mission_pages/cassini/multimedia
- Interactive App: Google Sky
<http://www.google.com/sky>
- Interactive App: 360° Panoramas of Mars
<http://www.panoramas.dk/mars/>

Several quantitative data were gathered through a questionnaire applied to all the participants. The resulting Cronbach's alpha coefficient for the whole set of items was 0.8. Additionally, 10 members of the G1 group were interviewed in order to unveil some qualitative data related to their habits and extended memory structure.

Results and discussion

A. Questionnaire results

The questionnaire showed interesting data about the number of different devices the students had used to store the information, the number of links and the type of resources collected. No information was obtained about the number of times each resource had been visited. This last data would have been helpful in a longitudinal study to check the long-term behavior of the students in respect of the stored resources, that is, if they select and store resources and afterwards forget about them, or, on the contrary, they turn to them periodically.

In order to check if the delivery of resources by the teacher had influence into the 'number of resources collected by themselves' (*NumOERThem*) a t-test was used (Table 1). Previously, Kolgomorov-Smirnov and Shapiro-Wilk tests indicated normality for both samples, G1 and G2, in relation to the *NumOERThem* variable. There were no significant differences in respect of variance according to the Levene test. The t-test for two independent variables indicated significant differences in means ($\text{sig}=0.004$). Therefore, there is a high probability to consider that the 15 links delivered by the teacher served as a stimulus to foster the discovery of other resources.

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2- tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
<i>NumThem</i>	Equal variances assumed	.177	.676	2.965	56	.004	4.68966	1.58160	1.52134	7.85797

Table 1. T-test applied to the number of assets collected by themselves between treatment and control groups.

The resources were downloaded and stored in offline devices or bookmarked or saved in online spaces. These variables did not show significant differences. The percentages are similar in both groups, but when comparing the number of resources stored offline in opposition to online, the percentage was approximately 3 times higher in favor of the online resources.

The number of locations used to store was higher for the G1 group, but it could be due mainly to the influence of the delivery of links by the teacher through 3 different channels. Many students left the resources in the same medium by which they had received them.

The presence of mixed offline and online resources and the existence of a relatively high number of locations where the OERs were stored or bookmarked, for a simple set of astronomy contents, confirms the dimension and complexity that the MoL and extended memory can reach.

Finally, the students collected resources of six different types. Table 2 shows what amount of resources of each type did they collected by themselves. Videos, HTML pages and PDF documents were predominant (it was considered that HTML pages contained text-and-image contents or image galleries).

B. Interview results

The interviews revealed that students' habits differ from one another. Some of them prefer 'offline storing' while others opt for 'online storing'. The first ones usually keep their resources in offline devices as pendrives, hard disks or phone cards. This behaviour has been found for all kind of resources except video, which is usually bookmarked, not downloaded. The participants said that video is complex to download and it occupies a lot of space. The second ones are those who prefer to link in bookmark lists in their browser or leave them in their email inbox or virtual drives. Some of them use indistinctly both mechanism 'offline' and 'online'. They face the greatest challenge to organize their MoL, because they have to remember different places and the possibilities of synchronization among these storage locations are usually limited.

The structure of organization of the OER was also obtained from the personal interviews. They had to explain where the resources were and how. Students acknowledged to have visited the links delivered by the teacher and they described them as very interesting, but they did not move the links from the place in which they had received them. That means that the received links remained in their email box, Moodle space or Google Docs shared folder, respectively. This is very important because, in the future, it will be very difficult for

them to remember where those links were stored. Centralization, synchronization and organization habits were not detected in almost any interviewed student.

However, in respect of the contents they had found by themselves, it was noticed that they organized them in browsers by means of folders or bookmarks. The structure of bookmarks was lineal or in a two-level hierarchy. Some contents were downloaded and stored in pendrives or hard disks, especially PDF. But HTML pages and videos were mainly accessed from their links of reference, not downloaded. Helpful management tools for bookmarks or files were not detected in any interviewed student. Moreover, anyone knew or had used tools like *Diigo*, *EverNote*, *OneNote*, *LastPass*, etc. This absence of use of management tools is a serious handicap for learning because this software is extremely useful to help in the organization of our MoL and extended memory.

Some questions were done about the subject matter related to the resources selected by them. They had some notions of the most part of resources, especially on images and videos, but in relation to texts, sometimes they had no idea of the contents of resources they freely saved or bookmarked. The recall of notions about a resource is as important as the retrieving of the link, because if either of both fails it means that the strength of the link in our memory is weak or null.

Group	NumOERProf	NumOERThem	Total	StoredOffline	StoredOnline	NumLoc	TypeThey
	<i>Number of OER they kept from those 15 delivered by the teacher</i>	<i>Number of OER collected by themselves</i>	<i>Total number of OER they kept (including the teacher's delivery)</i>	<i>Number of total OER which were downloaded and stored offline</i>	<i>Number of total OER which were bookmarked or saved online</i>	<i>Total number of locations used to store the OER*</i>	<i>Type of OER collected by themselves (average)</i>
G1 treat	mean=13.82 (36.6% of total)	mean=23.93 (63.4% of total)	mean=37.75 (100%)	mean=10.6 (28.0% of total)	mean=27.2 (72.0% of total)	mean=5.6	HTML: 5. Pages: 6 Games: 0 Interact.: 3. Apps: 5 Maps: 0. PDF: 4 Docs: 4. Presentations: 6 Sound/Speech: 2. Videos: 0 7. 6
G2 control	none (0% of total)	mean=19.24 (100% of total)	mean=19.24 (100%)	mean=5.2 (27.2% of total)	mean=14.0 (72.8% of total)	mean=3.4	HTML: 3. Pages: 9 Games: 0 Interact.: 2. Apps: 0 Maps: 1. PDF: 2 Docs: 4. Presentations: 0 Sound/Speech: 2. Videos: 6 0 5. 5

Table 2. Number and Types of Resources which were stored in MoL/Extended Memory

* The number of locations refers to the place in which the OER has been stored; for example, a folder in a pendrive, phone card, hard disk, a bookmark in a browser, in a virtual drive, an email box, etc.)

Conclusion

The educational MoL is the everyone's internal library of links which are connected to data and knowledge. It is self-made by the individual by means of the memorization of new connections to external resources. It resides in the brain memory and it represents the starting line of future learning processes. Open resources represent a free and available source to extend our MoL and external memory. The individual is responsible for searching, selecting and organizing or storing the resources found. Thus, this voluntary process may foster divergent and generative thinking and also metalearning, thus, better understanding their own learning.

The delivery of interesting resources by the teacher may lead to awaken the curiosity and inquisitiveness of the learner. In our study, those students who received interesting links from the instructor (treatment group) were more active gathering educational assets. Therefore, the instructors have to foster the interest of the students for searching and indexing new resources about our subjects. Perhaps, these collecting processes, in the long term, can even redirect the academic preferences of a student.

The participants used indistinctly an important number of offline and online external memories and devices. It gives an idea of the complexity to manage their whole set of locations. At the same time, they had no habits of information management, neither of centralization, synchronization, updating, reviewing, etc. This fact is in consonance with another research which reveals that personal data are not as well organized as their owners think (Whittaker, Bergmana and Clough, 2010). As if this was not enough, a lot of devices, for example USB memories, digital cameras, etc., have not an Internet connection, and it makes more difficult the extended memory management.

The challenge to deploy new and powerful tools which help us to simplify the requirements of our own MoL is launched.

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VOCATIONAL EDUCATION INTEGRATED TO SECONDARY SCHOOL AT A FEDERAL INSTITUTE IN THE NORTH OF BRAZIL: CONTRADICTIONS AND PERSPECTIVES

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Abstract

Held at the Federal Institute of Education, Science and Technology of Acre, the research aimed to identify the perception of the course of 44 students and 13 teachers from 4 classes of Technical Vocational Education in Middle Level Integrated to computer science of Câmpus Rio Branco, during the academic year of 2013, through questionnaires with five questions. The apparent lack of motivation among students proved to be dissatisfaction with the organizational structure. Teachers agreed that reform is paramount in the course offered.

Keywords: Vocational Education, Pedagogical Plan, School Failure

Introduction

As a student I have always considered myself motivated to study, nevertheless I have been through difficult situations in my life, as I believe most people have, they were never reasons for me to leave school. As a teacher, I should say I have been in very comfortable situation once I have as well taught inner motivated individuals; my experience had been in schools in the State of São Paulo (Southeast of Brazil) before moving to the State of Acre (North of the same Country).

Vocational education was originated especially to attend the poor, those who had not enough abilities, financial conditions nor knowledge to work as employers, who had their workforce demanded by the industrial production as it started in Europe. In Brazil, it has not been different at all, industry and profit hunger were the great demanders of professionalization, better education for every individual is not a present from our governors, it attends mostly the capital greed.

In 2008, the government created a new educational structure in the Country, the Federal Institutes of Education, Sciences and Technology aiming at spreading high quality vocational education. The Institutes offer courses in the forms of Integrated to Secondary Level, Technical Vocational Education, which comprehends developing abilities to specific professional function for whom has already finished regular Secondary Level and Technology Education of College Level.

In Rio Branco, State of Acre, in the North of the Country, the Federal Institute was the first federal institution of vocational education and second public school to offer academic level courses. Due to political interests or to lack of these, most part of what was promised was neglected. There was no organized library for the students, they had no cafeteria in the school, there was no healthy food around the neighborhood for them to buy, the curriculums of the courses were not well organized, among other promises from the administrators that were not fulfilled. Consequently, there had been a huge number of students leaving, asking for being transferred to other regular schools or simply quitting studying,

The institute started High School integrated to Computing under bad conditions, at a rented building without proper structure, teachers and professors were contracted although had no orientations at all, not at least about what a Federal Institute actually was, its history of foundation and purposes. Not even could professors count on pedagogical assistance, nor the students had psychological, pedagogical or any other necessary support.

Inevitably, those students, the majority of them from poor and segregated families, continued without better perspectives for their lives or studies, thus many of them quit or failed. Failure at these groups has been taken as something normal. As a teacher, I used to feel lost and very tired, everything I tried to do to help those students left the impression of being useless, and thus, I experienced the sensation of complete impotence.

It was not an exception to hear teachers complaining about those students, they seemed completely demotivated, neglected, they did not have the habit of studying at all, they missed and failed evaluation tests frequently. Observing that situation made me rethink and reconsider all my previous beliefs on what sense it really makes to study, desire a professional carrier, once this seemed to be of no importance for those young adolescents.

Therefore, I decided to hold a research to be able to find out what their thoughts were in fact, most of us teachers agreed that it was hopeless to try anything to turn them on to their studies.

How the Plan of the Course is 'dis'organized

The Vocational Secondary Education Integrated to regular high school at the Federal Institute of Acre (IFAC), Campus Rio Branco, is on Information and Communication Axis, it was created by Resolution No. 51 published on 29 December of 2011, authorizing the course to the city of Sena Madureira. It intends to be according to the National Catalogue of Vocational Courses, to be operated in morning and afternoon shifts, offering 40 vacancies from 2011, with 3755 hours in 8 semesters, culminating in Diploma of Computer Technician. The first group in Rio Branco, capital of Acre, during the first semester, had 62 students enrolled, 20 dropped out and 9 failed. In 2012, 33 students were enrolled in the second grade and 50 in the first, a total of 83 students, 25 dropped out and 10 failed at the end of the year.

In 2013, 94 students made enrollment in first, second and third series, ending the year with 27 dropouts and 21 failures. In 2014, we have 105 students distributed as follows: 47 in the first series; 22 in the second, from the 49 of the first series plus those who failed the second series of the previous year; 24 in third grade, 26 of the previous year plus those who failed. Only 12 in the fourth series from the 62 students enrolled in 2011.

The class of 2011 had great evasion every year; the 2012 class had great evasion in the first series only, in the second grade most students remained. A present feature in this class is greater parent participation in meetings; parents are constantly talking to the Coordination of the course aiming at accompanying the development and behavior of their children. The class of 2013 went from 59 to 22, the group was divided into two but students were leaving the school very quickly during the year.

The first Coordinator prepared the Course Pedagogical Plan (Plano Pedagógico do Curso - PPC), having undergone changes with each new Coordination. A team from the Teaching Department (*Pró-Reitoria de Ensino - PROEN*) assessed and resolved to adopt the same plan to Sena Madureira and Rio Branco. The last Coordination of Information and Communication Axis made changes in 2013, the plan is waiting for the approval of PROEN.

The document constitutes of the pedagogical project of the Middle Level Technical Course in Computing, in the integrated form. Based on legal guiding principles and educational levels such as in LDB (Lei de Diretrizes e Bases da Educação Nacional) No. 9.394/96, as well as the Decree 5.154/2004, CNE (*Conselho Nacional de Educação*) / CEB (*Câmara de Educação Básica*) No. 1/2004.

The CNE / CEB # 2 of January 2012 laying down National Curriculum Guidelines for Secondary Education, the CNE / CEB No. 11/2012 and Resolution No. 6 of September 20 on the National Curriculum Guidelines for Professional Education of Technical Middle Level are important references that are not mentioned in the Course Plan.

The guidelines to the proposal are that the institutional understanding is of education as a social practice, “which is materialized in the social function of IFAC, to promote scientific, technological and humanistic education, in order to form and qualify citizens, with an emphasis on local, regional and national socioeconomic development”.

The “vision” presented in the PPC is based on a phrase from the former Rector Marcelo Mingheli, that the new revolution at Acre would happen through education, science and technology, which is different from the vision of the Plan for Institutional Development 2009-2013, also available on the website of IFAC. This Plan is a document legally required for the approval of higher education and used for planning and as a management tool, “presents the identity of the institution and its strategies for fulfilling the institutional mission.” (PDI / IFAC, 2009-2013)

The Plan also proposes to offer Technical Course in Computer Integrated Secondary seeking to contribute to raising the quality of services rendered to the company, through a process of appropriation and production of scientific and technological knowledge, able to boost the economic development of the State of Acre.

Among the students from the first class in 2011, none was engaged in any project of a scientific or technological production, and so far no student from another class was in this situation. The course aims to train professionals for “implementation, evaluation, support and maintenance of systems and technologies, processing and transmission of data and information, including hardware and software, aiming at applications in the production of goods, services and knowledge”. As well as fully develop the learner, his ability “to generate knowledge from an interactive practice with reality” and with bold proposal to cause “high intellectual constructions, through the appropriation of concepts which are necessary for conscious intervention in reality”.

Regarding the education of our students, the course seems to require too much from developing a professional acting on different segments of IT, to “emphasize the development and maintenance of information systems, database, hardware maintenance, care and support users and also technical support on computer hardware and computer networks”. The formation can be assumed to be shallow since that at the National Catalogue of Vocational Education from MEC (*Ministério da Educação e Cultura*) Technical Informatics has the overemphasis on programs (software) as it describes the professional as someone who “Develops computer programs, following the specifications and paradigms of logic programming and programming languages. Uses systems development, operating systems and database environments. Performs testing of computer programs, maintaining records that enable analysis and refinement of the results. Performs maintenance of deployed computer programs”.

The internet was not mentioned before, but serves as a justification for this eclectic “profile”, refers to the insertion of the trainee in the workplace, but there is no substantial, reliable data on the local market, and the “space increasingly prominent” and “the internet as part of the strategic planning for the development of Acre” is vague and imprecise information.

There is no justification in the text of the Course Plan for such a qualification as though it would require over 3000 hours to make it possible, at least according to the National Catalogue. As it brings three other courses, each with at least 1,000 hours for the formation of Computer Technician for Internet Technician Maintenance and Informatics Support and Computer Network Technician. Besides, the Catalogue suggests five other

courses on the same axis: Computer Graphic Technician, Technician Programming Digital Games, Switching Systems Technician, Technician Transmission and Telecommunications Technician. Some of these courses might bring greater contribution to the "revolution" proposed in Acre.

The specific objectives of the course are confused between ultimate goals students training and course objectives,

- Act in the design and construction of software systems in general;
- Acquire conditions for analyzing organizational problems and to use appropriately and economically, hardware resources and software in their solution;
- Using different programming languages and different Management Systems Database;
- Know and understand the key techniques for modeling and specifying software systems;
- Implement software systems for Internet based on the proposed models;
- Validate and deploy software systems for various needs;
- Understand, detect and correct problems in hardware and computer networks;
- Understand the real needs of the working world, having the function to organize, coordinate and create technological solutions for processing;
- Encourage the preparation of the student for work and citizenship, to continue learning in order to be able to adapt flexibly to new conditions of occupancy or later processed;
- Provide a professional education that contributes to ethics training and development of intellectual autonomy and critical thinking.

The final profile, in my view, is another problem, because it proposes various attitudes and values that are not encouraged nor acquired in a course with a curriculum that contains various disciplines, distributed at intervals of 45 minutes of class with teachers who sometimes meet and introduce themselves in the corridors. The profile has confused understanding. It transcribes the professional profile from MEC's Catalog and does not mention the result of the development of skills that should be worked to maintain hardware or networks, for example.

The egress from the technician course in Computer integrated to high school will be a professional with a solid theoretical and practical training, humanistic and ethical stance with ability to learn continuously with logical reasoning that will enable understanding and problem solving. Able to participate in Professional teams, indispensable feature in today's world characterized by increasing quest for knowledge and new technologies and the intense connectivity, able to act in an entrepreneurial way with the world of work, working in the public or private initiatives, as well as the third sector that requires professionals in this area.

According to the National Catalogue of Vocational, the Computer Technician develops computer programs, following the specifications and paradigms of programming logic and programming languages. Uses systems development, operating systems and database environments. Performs testing of computer programs, maintaining records that enable analysis and refinement of the results. Performs maintenance of deployed computer programs.

The Plan also proposes the interdisciplinarity, integration, working with "complex issues", concepts that are not discussed among the teachers of the course.

The Technical Computing course aims to promote through integration between teaching, research and extension, extensive professional training that enables meet the significant demand for professionals in our region.

However, the most serious, I believe, is the mention of the integrated curriculum and "approaches based in the perspective of complex themes" and then:

But whatever the form of organization for the construction of the integrated curriculum is, it is essential to build the dialogue between experiences, the diagnosis of local realities and demands, the existence of an elaborate planning that is executed collectively and democratically. This indicates the need for periodic educational meetings for all involved in the process.

It is clear that there is no planning and organization, the document gives the understanding that this is yet to happen and that "IFAC will organize interdisciplinary projects", generalizing and failing to place the responsibility for someone or some sector or campus specifically. The first PDI of IFAC provides the student extracurricular service. It affirms that "we want to encourage critical thinking, creative thinking and flexibility" and that the educational activities should not be restricted to the context of lessons, students should have extra-care as a way to complement the activities in the classroom. (PDI-IFAC, 2009)

To try to alleviate the lack of such care, the Coordinator of Information and Communication Axis who assumed at the beginning of 2014 created the class "mentoring" for each class of Integrated high school there is a teacher who has the responsibility to monitor more closely the students. I have a class to "take care"; when talking to the students to check how they were doing, I received complaints about difficulty with the discipline of Physics. When talking with the teacher, he explained to me that he could not do much, he said that students needed to catch up. I asked what was wrong in his opinion and he told me they had a lot of disability in Mathematics and in interpretation of texts, that was why they did not do well in his classes. Math teacher could not help as he works full time.

Trying to find an alternative, I heard a student say that a classmate was very good at mathematics, we had the idea of asking him to study with colleagues, they liked the proposal, but this is an isolated and incipient action, there is the need of an educational support to solve these issues.

The curriculum of the course contradicts the proposal of working with complex themes or thematic projects. The professional practice, which presupposes the development of integrative activities, extension, research, product development and the profession does not seem to be planned, encouraged, organized and subsidized for this purpose. The library does not have all the literature, there is not a system that allows the loan of books, individual laboratories are not organized.

Conclusion

It was intended to conduct the research with 95 (ninety five) students of the three existing classes at the beginning of the year 2013 and 19 teachers, however, we reached only 44 (forty-four) students' responses, we had great evasion, mainly in first grade. And 13 teachers answered the questionnaire.

An open questionnaire was designed with questions aimed at investigating the motives of students for choosing the course, their expectations and course evaluation, as well as what they planned to do after graduation. The questionnaire to the teachers allowed us to identify what they expected of their students, their perception of the students' commitment, their course evaluation and requested suggestions for smoothing the failure and dropouts, and even what they visualized for students after course completion.

Upon completion of the preparation of the questionnaire and the terms of consent, parents were invited to attend a meeting to present the research proposal and to be asked to sign the terms. Students gathered in a room, they were asked to complete the questionnaire, I collected the forms, responses were transcribed and analyzed.

The statements of many teachers denote that they gave up these youths. At IFAC, the administrative and pedagogical 'dis'organization collaborates with tiredness, as the teacher, when trying to recover the motivation of their students, feels helpless. On the other hand,

students also feel helpless, we can say that they are alienated from the concept of Marx, because the student feels vexed, once studying at IFAC is necessary because it is imposed either by the family or the circumstances. The situation, for example, of the third year; studying at IFAC becomes a means to satisfy the need to go to college to learn specific abilities, however, the prospects of leaving IFAC with competence to work or be successful in an exam to go to college are minimal. Students do not recognize themselves in the course, we work with the perspective of forming people who will be able to work, but they themselves feel disadvantaged by lack of infrastructure.

The fact that several students get out of the classroom, not bothering to do the assessments, demonstrates the feeling of mortification and displeasure in studying. They feel they are free when chatting, when they are on the phone, or listening to music. "... In its specifically human functions, the worker gets animalized; in the exercise of their animal functions, one humanizes himself. "(PATTO, 1993, p. 16)

Both the government and the third sector companies are expanding the offer of vocational education, because this is the only alternative to the inclusion of the marginalized in the "process of circulation of goods"? This goal leads us to the welfare and economic character of early vocational education, linking the "capital reproduction" process to a, if there is one, social and political project "articulating the struggles of workers for their social, political and economic emancipation" (ditto), the latter being a closer idea of the purpose for which the Federal Institutes were created.

The Lula government has brought the possibility of debate between different agents, defining a more democratic way of establishing policies for professional education; however, it has preserved the economic development model of Fernando Henrique Cardoso, contradiction explicated by researchers.

In reality, the political integration of high school with a technical-vocational training was not actually implemented, unfortunately, as we note above, these measures are actually false in progress; simulacra that distract us while allowing the victory of the conservatives, who, in the midst of 'a change', keep everything as it was before (FRIGOTTO; CIAVATTA and RAMOS 2005a, p.1.090 in OLIVEIRA 2012, p.87)

Oliveira (2012) does not see the school as an area of "reproduction and spread of bourgeois ideology" nor as "insurer of mentalities committed to a new social order", but as "contradictory location because it is immersed in conflict interests in the wake of possibilities". Students, teachers, parents and administrators do not always perceive that reality, the school has the ability to reset its values and its actions. The dynamism and human capacity for learning is what gives meaning to school, our students are probably claiming that we should be dynamic, daring, however, we bring addictions from paralyzed in time and rigid institutions thus we are convinced that the only way is to reproduce the logic of capital.

Our effort can even be towards forming critical thinkers and citizens, but we do not have that capability yet, we ourselves are stuck to our training, our formation, we are deluded slaves and still our intention is to educate for freedom and creativity.

The expansion of the federal system has happened rapidly, from 2009 until today hundreds of new institutes and campuses were created. Thousands of new technicians and teachers have been hired, "but it has not been taken into account the time required for the construction of a political and pedagogical project collectively, compromising the quality and effectiveness of the actions of the institutes". (MOURA 2012, p 63).

For us teachers, it is inexorably necessary to undress from our fear of evaluation, the teacher must be evaluated as much as like their students are evaluated, they need to talk to their students and must allow them to be frank. It is natural that students commit erroneous judgments, however, it is very important to know and consider what they think and feel. Listen first, establish the rules and methodologies together, even with the participation of

students, we need to be eager to learn new "stuff", "things" of different natures, to get closer to the reality of the students. Knowing they are dealing with other subjects in this transitional stage of life of any human being, adolescence is a phase of great discoveries and experiments, that is nonetheless painful, because you want without really knowing yet how to achieve what you want or why.

Another indispensability is the training of new servers, at this point I was privileged, since participation in the Graduate Program in Agricultural Education gave me more than an academic degree, triggered massive transformation in my life history, in my social and professional relationship, in my pedagogical practice. After this experience, I will never have the same look and way to assess and conduct my duties; moreover, I will always know that there is an unknown universe of possibilities and knowledge.

I would like to emphasize that visiting other professional education institutions contributed to the understanding that we all have strengths and weaknesses, however, our focus has been our weaknesses, we have, undoubtedly, strengths and opportunities for constructing the identity of the Federal Institute of Acre and a solid and competent basis for our work. What we must avoid is the postponement of working together, there is no time for regrets; time now should be of enthusiasm, unity, cooperation and effective work toward the collective creation of the guiding documents of our pedagogical practice.

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COMPREHENSIVE ASSESSMENT GUIDELINES FOR QUALITY ASSURANCE IN THE EUROPEAN HIGHER EDUCATION AREA

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Abstract

Roughly speaking, the scientific literature seems to associate assessment with the score a student gets. However, assessment goes beyond that and is only real if students acquire learning. This can be achieved with feedback (formative evaluation). In the 2010-2011 academic year we created a space in "moodle" for students to participate actively in solving activities and case analysis for the subject "The school as an educational space" in the Degree in Teaching for Primary Education in the Faculty of Education (University of Zaragoza). This space allows students to acquire a complementary learning on the basis of self-regulation and according to the feedback they receive. It is also important to consider teaching styles and learning strategies. For this reason, along this paper we will examine how assessment with new tools and techniques can assure quality in the comprehensive assessment through the establishment of some guidelines and didactic strategies. To perform the evaluation of this course, students developed an e-portfolio, uploading it in "moodle" so the rest of students could observe the work other students had made, thus increasing their individual requirement level. The key issue was the authenticity, relevancy and appropriateness of the activities we raised. Undoubtedly, the development of the teaching-learning processes and their assessment can be highly enhanced by the introduction of appropriate tools in the classroom to encourage active student participation and their learning feedback.

Keywords: Assessment, authentic tasks, feedback, skills, learning strategies

Introduction

Roughly speaking, the concept of the teaching-learning processes that the teacher has influences the development of his classes. My conception of this process is that it includes the teaching-learning duality; *didaxis* develops teaching but always as a task directed to promoting learning, and this, of course, in an educational perspective (Contreras, 1990: 19; Alvarez, 2001: 36). "General Teaching" or "General Didactics" is the scientific discipline that studies this process, with the essential support of "Educational Psychology", –within it, of the "Psychology of Learning" (Luckesi, 1987: 29-30) – and from the perspective that both belong to the field of Educational Sciences.

Therefore, and for expository purposes only, in order to capture quite clearly my conception of the teaching-learning process, I will deal primarily with this, first from the perspective of teaching and later on from the point of view of learning, although in both I shall assume and reflect that global, holistic view of this combination that constitutes the learning or didactic process.

The conception of this process and, therefore, of education and teaching, is situated mainly on those paradigms of "General Teaching" called "mediational teacher-centered" and "mediational student-centered" (Pérez Gómez, 1983: 115 -125). These paradigmatic

ascriptions carry a certain interpretation of the role of teacher and of the pupil activity in the teaching-learning process that has its logical implications for design, development and evaluation.

Because I follow the mediational paradigm centered on the teacher, I consider the teacher as a reflective "planner" (Ibid.: 118) of his teaching who, abandoning the tradition of standardized models within the process-product paradigm, understands planning as a process in which he attempts to assess a priori and prepare adequate attention to the needs that his work will face before the diversity (of interests, abilities, cultures ...) of his group of students.

As teachers, we must plan and program from a previous analysis (initial assessment) of the educational needs of the class group that we have been entrusted, anticipating to the responses that the educational program raises in each and every one of the students. Consequently, the teaching guide must be contextualized and flexible enough to be adjusted, permanently, to the evolution of the class group.

Our task therefore is to assess not only the group of students before acting on them, i.e., when planning teaching, but we must do so permanently along the entire learning process (continuous assessment). In this way, we obtain the feedback necessary to make the changes we consider relevant.

In other words, teaching is "a process of decision-making" and the teacher is a permanent "decision maker" (Pérez Gómez, 1983: 116-117): when programming, we decide how we will act in class depending on the characteristics we have detected in our students; when carrying out what has been projected, and on the basis of the messages or responses that our students give to us, we shall decide whether to keep such programming or re-adapt it (formative evaluation).

This decision is necessary to take it on the go, while we make our intervention in the classroom, when we finish the class session ... and we evaluate the learning achieved (final evaluation, we will have a new feedback for the programming of the following processes of teaching and learning).

Certainly, the learning process of each student is different from the one followed by their peers, and so is the result. The knowledge that every one comes to conquer is a cognitive construction of his own, peculiar, possibly unique, –the student is the mediator par excellence for his own learning, the protagonist of it–in aspects such as his interests, previous life experiences, the knowledge he possesses and the cognitive processes he activates and how he activates them come into play.

This is the fundamental premise of the mediational paradigm focused on student –in line with the approaches of cognitive psychology of learning-teaching understood as a process that should lead to the construction of knowledge and the development of processing strategies of information from the student (Pérez Gómez, 1983, 120-122), both in his individual work and in cooperation with his peers, and under the guidance and support of the teacher.

To play this role of guidance or assistance, one must start from an educational program based on the knowledge level of students, the cognitive development of each student, and their interests, and then develop the learning process so that it can motivate students and activate their cognitive processes (organization of meanings, transfer of information, coding and decoding of messages). In this sense, the "formal behaviours" are included in general taxonomies by Bloom et al. (1972) –for the field of knowledge– and Krathwohl et al. (1973) – for the affective domain– and the specific one by Valette (apud Gonzalez, 1974: 14), which includes the cognitive and affective domains.

We assume, therefore, a consideration for student learning that exceeds the reception-retention scheme of knowledge transmitted by the teacher, audio-visual or computer resources ... and which requires a more active and autonomous, higher and complex cognitive

involvement. We share the constructivist approach to learning, which, from "Educational Psychology" is the epistemological position that corresponds to the mediational paradigm centered on the student, learning, of "General Teaching".

Consequently, our basic principle, in terms borrowed from Coll (2000: 14), is as follows: "school learning is conceived of as a process of constructing new knowledge on the basis of current knowledge [...]"; and teaching as "an intervention in an ongoing knowledge construction process [...]".

Within this learning theory, it is necessary to bear in mind, following Ausubel (2002: 96), error that amounts to approaching learning based upon reception (associated with the use of presentations and expository techniques by the teacher) as being necessarily rote learning (based, therefore, on memorisation), on the one hand, while regarding learning based on discovery (techniques based on problem solving, either individually or in groups ...) as necessarily significant, on the other hand.

Both types of teaching techniques can induce significant rote learning, depending on the conditions under which learning occurs, as has already been advanced. In both cases learning would be significant if the learning task can be linked in a non-arbitrary and non-literal way with what the student knows already.

As Ausubel adds, "if he adopts an attitude of learning relevant for putting it into practice" (Ibid.). In his analysis of this theory, Pozo (1989: 215) notes that this construction of meaningful learning, which is individual and idiosyncratic, "is not inconsistent with the Ausubelian idea that most meanings are received, not discovered".

The teaching-learning process ultimately seeks that students are able to develop their full capacities, although decisions related to instructional design aspects are defined by the type of institution (physical spaces available) with the design of teaching (teaching methodology, teaching strategies, teacher role, student role, materials and resources) and learning itself (motivation, specific training needs, computer equipment ...).

Basically, it would identify educational responsibilities and challenges to promote democratic progress in Education. Designing this model amounts to participating in a balanced set of decisions about the teaching model, the students-users and the possibilities of technology.

The strategies that we can use in the classroom are useful as long as they involve a teacher activity, student activity, work organization to develop, an organization of space and time, of materials, etc. Using strategies is as simple as ordering items regarding personal, interpersonal, or content issues and implement them. Thus, they can trigger an activity in the group of students and each one of them in particular.

In other words, an educational strategy is "a plan to achieve the learning objectives, and involves methods, means and techniques through which it ensures that students really achieve their objectives and that the chosen strategy somehow determines the set of objectives to be achieved and, in general, any educational practice " (Salinas, 2004: 472).

Methodology and scientific approach: Space in "moodle"

The new degrees in the European Higher Education Area considerably reduce the workload in the classroom and increase work required of the student outside it. This requires from teachers to be able to adapt to new learning environments that facilitate information to the student and content exposure.

Therefore, web sites of the "add" type (teaching digital ring) or "moodle" are used more frequently, especially from this academic year onwards. This almost- obligatory use of this type of media, for either uploading teaching materials, making publicly available information for students, or showing indications when performing a task or assignment, etc.,

promotes teacher training in a more effective way through the use of these websites in the classroom and outside it (non-contact modes).

The potential of these supports is endless, from creating forums that promote active and interactive participation of students, examinations, statement of qualifications, and access to materials.

At the University level it is quite common that each subject has its own space for the teacher to notify students' work deadlines, conditions thereof, activities to do and even for him to upload materials either in PowerPoint or in pdf formats, so that students only have to download it, print it and take it to the classroom.

Thus, while this makes work easier for the student, it also minimizes their role in the classroom, since they practically do not even have to take notes. Since using this space is almost a must, as students themselves request it, because in virtually all subjects they have a space, the teacher feels somewhat conditioned to use this type of resource.

"The school as an educational space" is a subject that is taught in the first year on the Degree in Teaching for Nursery and Primary Education. The class group has a large number of students attending class daily, and may thus participate in the continuous assessment option.

Several lecturers in the Department of Educational Sciences believe that while "moodle" is commonly used in any subject, it might be useful in this one as well, as long as we give an approach to it that would allow us to improve student learning. We start from the consideration that a proper assessment improves student learning.

Therefore, we created in "moodle" a section for students to develop a portfolio, by collecting the practical sections which they had performed throughout the semester as well as their personal contributions.

The purpose of introducing this experience in a Degree in a subject, whose delivery is already difficult due to the novelty of the introduction of the Bologna Plans, was doubly increased because we did not know for sure about the possible results of this experience.

A total of 83 students uploaded in "moodle" their e-portfolio, making it visible to the other fellows. Our goal was that the work that all students undertake preferably in an individual way could be seen by other colleagues. This increased the level of individual enforcement.

We also asked students, as work belonging to the practical credits of the subject, to rate in groups of 5 people and always justifiably, the work that other colleagues of the same class group had done.

To do this, we gave students a number of indications so that they first developed a grid of evaluation. Then, in groups, they filled the grid with which they would evaluate the work of their peers.

These dynamics implied that students developed their social skills so that they could work together. In addition, the objective pursued (developing a cooperative learning) favoured the positive interdependence of all members of the group, because that student who was not willing to actively participate and make contributions, was actually conditioning his other colleagues on the rating they would get.

Also, students were granted a fully active role in the evaluation process, so that they were encouraged to evaluate the work of their peers. The willingness of students in a group should be high so as not to influence the group-level qualification that they would receive from the teacher.

Once students evaluated the work of the e-portfolios of other colleagues, they had to explain to the whole class group the reasons for the rating that they had given, showing both their positive and negative considerations. This involved a high level of individual

enforcement for cooperative work to develop properly in each of the groups created by free appointment.

Results

The implementation of this experiment in the evaluation process within the European Higher Education Area has been highly satisfactory. The change from the type of teaching given so far has been considerable and has involved the adaptation to a new educational setting.

The structure of the subjects of the different degrees of the Bologna Process is different from the previous approach, and this causes changes in the organization of each of the subjects, as well as reducing class hours, distribution of credits between teachers from different areas of knowledge.

Currently, there is not a single teacher responsible for a subject (in general terms), but this involves several lecturers, who are teaching two, three, four credits per subject. While this new distribution amounts to a close teamwork with other colleagues, it also has implications for the planning and organization for each individual teacher.

The results that we have obtained after this experience allow us to state that the introduction into the classroom of new digital media makes work easier for students and gives them a more active role (not just interactive).

In "The school as an educational space" we have achieved that students become involved in the work to be done, not only conditioned (as is otherwise usual) by the interest of every student in the marks obtained for the course (there are always students who are more interested in obtaining a high rating, while others are concerned simply about passing the subject, regardless of those who show no interest whatsoever in passing the subject), but also because, as we propose, the rating of each person will condition the group score.

Therefore, the students were more motivated to work together with a level of participation of all group members. Access to "moodle" is simple. They have information about the theoretical block of the subject and they also access the practical program they have to develop. The only condition is that the work they had to do individually was evaluated, in addition to the teacher, by his own colleagues.

We believed that that this would encourage individual effort (Individual enforceability) and, consequently, when working in groups, it would encourage positive interdependence.

Due to continuous complaints from students regarding the lack of participation of some classmates when they were working in groups, we decided that by focusing on the work to be done differently, we could improve the degree of involvement of all members of the group.

The development of practical sessions, of an expository kind, was covered with the public presentation in "moodle" of the work that each student had undertaken.

Furthermore, the fact that, in groups, they had to justify the reasons for which they had given a rating to the work of a fellow amounted to their reading all the papers of all students in their class group, detailing in the evaluation grid specific issues (provided by us, on the content and skills), sharing their assessments with others and presenting their considerations to the class group.

The most relevant aspect in itself was not the development of the e-portfolio, which was a prerequisite to qualify for continuous assessment in the subject, but their participation in groups, thus developing learning strategies, and also their ability to work in groups.

Overall, our assessment is that this type of cooperative learning in a subject of the Degree in Teaching for Primary Education fosters relationships in the class group, promotes teamwork, motivation to work and enables a continuous and formative assessment.

In addition to the rating of the group, the teacher, when the students upload their e-portfolio in "moodle", evaluates, in each collected practical work, the individual work of each student.

The new blended learning environments need to be developed further. The supports facilitate the work of teachers, but they require a well-defined methodology for students to learn. Assessment proposed as final grade to students that have pursued a course or subject in a semester does not improve learning.

By contrast, continuous assessment does allow the student to learn. Moreover, the implementation of methodological principles that facilitate teaching of this type requires some teaching styles that cannot be regarded as a priori proposals that can work equally in any educational context.

Currently, teacher training is no longer regarded as the transmission of technological knowledge that can be applied in a standardized way, but is aimed at developing skills in teaching for a rigorous analysis of the educational context (regardless of the mode of teaching), specifically of the training needs of students, and heuristics that can be used to address such needs. The need to use digital media as new teaching and learning environments is real in this framework of the European Higher Education Area.

Conclusion

The scope of university education has traditionally provided an educational setting in which innovation models and methodologies have been ongoing and wide-ranging, perhaps because the weight of academia-type curricular demands has enabled professionals and researchers to understand the development of the teaching-learning process as a task which is essentially educational, motivating and fully adhered to the experience of students.

In the history of education a number of didactic models have been remarkable. In the U.S. context, the figure of John Dewey, a representative of pragmatism, stands out. This philosopher and educationalist promoted the so-called reflexive methods, noting that the work of teachers (applied to school) should be transmitting content, but never considered regardless of how they are worked upon, i.e., methods.

In this sense, the teaching style postulated by Dewey could be summarized in the following terms, for the field of Early Childhood Education: select problematic situations related to the lives of children, discuss the problem in groups, formulate hypotheses for its resolution, develop observations and experiments to collect data which may allow verification of the ideas or hypotheses and apply the results found as part of the learning process.

The teacher should interact with each student and with the groups formed to develop simple investigations rose, avoiding any competition. In his speech, the teacher should present the contents of the activities undertaken in a global way (Dewey, 1971, Joyce and Weil, 1986).

This style is applicable to the university. The teacher should not introduce content in isolation, particularly in this current distribution of credits between areas of knowledge. The content must be related, by presenting the student with a conflict situation (case analysis) in which he may need to gather information, formulate hypotheses, work in groups, share information...

This is a process in which, as Dewey states, the results are part of the learning process. These results, sometimes difficult to assess, must contribute to improving student learning. In the European Higher Education Area the teacher serves a useful role akin to that of researcher or at least to that of the guide to simple investigations or inquiries that students have to perform.

If learning acquired by the student is not real or meaningful, it will soon fall into oblivion, which will be detrimental to their future professional work.

The structure of the subjects involves the practice of cooperative learning, based on the principle of cognitive activity. Consequently, the teaching style is characterized by verbal interaction between teacher-student, playing the first one the role of a facilitator of learning.

"Moodle" facilitates student learning because it allows the teacher to be a true guide to student learning, making a continuous and formative assessment in which the student learns through the evaluation process.

The type of learning that the student takes also has to be significant learning applicable to the professional field in which he will work. Ausubel developed a theory of meaningful learning, demanding a teaching style aimed at favouring the hierarchical structure of concepts through the use of the so-called "advance organizers"; when the teacher has already identified the inclusive elements of each student in each area of learning, he must prepare the new information so that it is properly connected with the inclusive concepts.

All this implies that, before carrying out the curriculum design, the teacher should evaluate the student's cognitive structure to determine whether or not there are specifically inclusive elements; the organization of the curriculum will aim to significantly relate them with the student's cognitive structure (Ausubel, 1973; Ausubel, Novak and Hanesian, 1983; Torre, 1997).

The inclusive elements and prior knowledge that Ausubel (1973) posits can be identified in the student not only from the initial assessment, but all through continuous assessment based on the conception of the teaching-learning that each teacher has.

It is obvious that the cognitive approach, with the obvious differences between the representative authors, promotes consideration of education that includes learning theory of the learner-centred mediational paradigm.

The teaching style that is delimited in it conceives teachers in a non-directive way, in so far as they are basically the facilitators who are guiding student learning, focusing on their interests which become "problems" to be addressed and resolved in the learning process and, in turn, taking into account the intrinsic diversity of the class group that demands an individualized education.

Therefore, teaching, seen from this epistemological position, is usually interpreted as a technological process of problem-solving (Pérez Gómez, 1983); that is, the teacher makes use of didactic knowledge and technology that he has in order to lead the student to the resolution of problems (case studies, such as those used in "The school as an educational space", posted on "moodle"), proceeding in a fully contextualized way, i.e., with no preconceived universal teaching strategies, without recipe of any kind, because each problem, each teaching situation is inherently different.

Undoubtedly, the image of the teacher as reflective professional (Schön, 1991) is in full agreement with Dewey's proposals on reflective methods because reflection, as a heuristic tool, must be seen both in teaching and in learning. Or else, Dewey's approach on the resolution of problems or development of small research can be considered, without doubt, as the prelude to the cognitivist assumptions about learning.

Strictly speaking, the future of education in the university should be fully characterized by the principles of the process-product paradigm (Pérez Gomez, 1983); it has always been an academic education, with a rigid path of teaching styles in the life of the classroom.

In the framework of the European Higher Education Area, teaching tends to be much less academic and modalities based on both face and non-face modalities to give the student an inquiry into the knowledge and acquisition of it through the internalization of concepts, cooperative learning, practical presentations, etc.

The Bologna curricula are designed to foster in the classroom the beginning of the activity, i.e., the student should be the main protagonist of his own learning, which appeals to his intense cognitive activity, always facilitated by the logical gradation of the complexity of the proposed activities.

Thus, they get meaningful learning, where the student must be able to integrate their prior knowledge with that which is newly acquired, so that the latter will be meaningful, learning both by reception and within the constructivist paradigm. Only if this condition is met can we speak of functional learning and enable learning from evaluation.

The need to develop students' cooperative learning is unquestionable, where individualisation should be supported and compatible with cooperative learning (diversification of teaching-learning situations), since the latter improves both socialization processes and also student learning.

Resorting to the diversification of teaching resources (digital, on paper ...) it stimulates student learning and allows the teacher to reconcile the teaching-learning dichotomy in the context of the European Higher Education Area, in which Information and Communication Technologies (ICTs) are of great significance and functionality.

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CONJECTURES AROUND THE COMPARATIVE EDUCATION

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Abstract

The central premises and objectives that encourage this proposal to reflect around the conjectures of comparative education (CE) are specific, in first place, by the need applies even in the current record CHANGE and their implications for public policies on education, accelerate changes, with more emphasis in the first decade of the twenty-first century, where the prudence requires the constant prevalence of the Comparative Education by the decisions takers in every education systems recognizing that is required to ADAPT and not only to adopt the <<recommendations>> of the International organisms, in an era where the knowledge has been globalized. Every change needs in advance an analysis of CE.

In second place, the requirement to adapt in a harmonic form the changes in the precise context of the <<educational situations>> based in each and every one of the constitutive elements of every education system. Inasmuch as, the <<educational fact>> is the same in the whole world because there will always be a teacher, students and educational content, while the <<educational situation>> is the educational fact plus its economic, politic and social context that makes it unique and unrepeatable.

In third place, is necessary to recognize that today's CE first of all is a METHODOLOGICAL ALTERNATIVE to perform educational innovation, reform or revolution changes as well as the adaptations that actual social reality imposes. In this context there are many and varied conjectures that epistemological and methodologically involves the CE development.

Keywords: Education, comparison, methodological alternative, change, adaptation

Introduction

In a first approximation we make an historical regression about the development of the CE, in order to rescue its theoretical foundations. In a second step, we analyze the constant of change in this new era full of it, to which the CE, through comparative work, provides the how to adapt from the permanent, the perennial of education to the today's new dynamics. In a third step we analyze the six constitutive elements of any educational system in its social context, to conclude the fourth time with the relational analysis of the education system alive.

Fundamentos teóricos de la educación comparada

Before the French known as the CE, Marc-Antoine Jullien of Paris (1775-1848), <<who was interested in educational problems and perspectives in a rapidly changing world>>, the great appeal among ancient villages were the travelers, whom were expected back from their travels forward to be heard and to know the ways and varied practices among peoples, they were asked about what did they do and did they, which allowed comparison

between educational institutions. In the fifth century before our era, the Greek historian Thucydides described and compared the customs and ways of making education in Athens and Sparta, Plato also incorporated the ideal Republic Spartan education traits, Xenophon described in *Cyropaedia* what was practiced in Persia, which identifies it as warrior and moral education confronting it with Athens education which adjective as physical and aesthetic.

Later, in the Roman Empire, consisting of different peoples and cultures, corporations were generated naturally described by Cicero in differences regarding education in Greece and Rome, Julius Caesar described the Gauls, Tacitus was devoted to the description of the Germans and Jews.

We can not find something similar in the Europe of the Middle Ages. It is the comparative analysis specialist, M. Lê Thành Khôi, who quotes a Chinese traveler Yi-Tsing describing education in a Buddhist center in India. And an Arab Suleiman who was a merchant, used to describe what he saw in China.

With the contacts of Christian, Arab and Jewish culture, in the eleventh century, more systematic comparisons appeared as the Catalan Ramon Lull "Doctor Illuminatus" (1235-1315) and Tunisian Arabic or Khaldun Ibn Khaldun (1332-1406). Some specialized in CE authors claimed that was Catalan Lulio I who though the concept of educational comparativism while the Tunisian wrote in his *Chronicle Prolegomena Universal* a conception of cultural and educational comparativism in terms remarkably modern, even suggested socio-historical "laws" developing a theory of the emergence, splendor and fall of civilizations.

Most modern concerns about EC were comparisons between different educational forms in different civilizations and obviously with strong religious overtones. Already in the Renaissance, with the split of Christianity and the emergence of modern nationalism, originates comparisons were made between nations and states whose basic aspects generate comparisons or competitions.

Erasmus of Rotterdam (1467-1536), recognized as an expert traveler through England, France, Switzerland, Italy and his native Netherlands, was instrumental in the Protestant Reformation that arised and described it in his *Enchiridion* (or *Manual Caballero Cristiano*) in which he promoted a cultural ideal that, for more than a century, had much influence among the leaders of the teaching, according to Holmes, thereby designing a universal model that finds expression today in the work of some international organizations.

In the subsequent generation, the Spanish humanist Juan Vives (1492-1540) is who will provide a modern comprehensive approach to EC, where he confronted different forms and practices that had found in his travels, supported in his studies in Paris and in Leuven.

It is in the Baroque period and based on international comparisons the Czech, acknowledged didactic's father Jan Amos Komensky, known as Comenius (1592-1670) was invited to England to create a pansophic school, although unsuccessful, Comenius is recognized to propose a comparative approach for education and in order to develop postulated the creation of an international center.

It is the Jesuit Baltasar Gracian (1601-1658) who encourages the abandonment of Greco-Roman models to found an educational ideal based on "the Spanish concept of human perfection." It is in his novel *The Critic* where he shows how to exercise his disciple in the practice of critical comparative educational approach. So far the proposals were mainly normative, based on an ideal of society and culture they sought to evaluate comparative systems.

It is even after a century, when the comparative approach is generated, based on the observation of the reality and not with previously established conceptions, primarily from philosophical or religious cutting. And until the 18th century in its second half Europe lived a

true intellectual revolution, through the analysis of scientific knowledge based obviously on the comparison, and in 1817 Marc-Antoine Jullien of Paris contribute with his work **Sketches and preliminary views of a work on comparative education**, where it poses clearly the concept of a "Science of education". This is how the comparativism emerged as a heuristic basis for the establishment of the science of education. In this way is achieved to realize at this time, that the CE organize knowledge concerning education that can be based on the comparison and this is to find differences, similarities and perhaps relationships between two or more objects. This first approach to the concept of CE is reductionist and limited, having no answer to how to conceptualize education, likewise comparison, what is its material object and what is its formal object.

The historical regression that has been built so far is due to the need to recognize that the EC has existed since the beginning of civilizations and that today, in the second decade of the 21st century, is vital to its formation as a theoretical-methodological reference to permanent constant **change** as a fundamental characteristic of a new epoch, not full of changes but is characterized by the same switch.

Therefore, the CE is constituted in the education as an object of study of Pedagogy and the comparison on "make concrete" in where they review systems, forms, practices in which education takes place. Identifying the rules that govern as well as the ideas or principles that underlie these standards and practices. The substantive education and comparative adjective and its combination have been subjective for all scholars of this area of knowledge, since each one offers a very personal interpretation: you have own object, does not own object, is a science noetikos, is a science, it is a discipline, is one technique, among others. (VILLALOBOS, 2002).

Against these epistemological ruptures on the conception of CE the vital thing is to focus on what until now has been formed in nature as well as its principles which constitute it as such.

The aspiration of the CE is to reach scientific knowledge and not to sit in the first motivation of "curiosity" as it was designated to the principle in the case of the travellers of antiquity, or for the "simple pleasure of knowing" as it was the case of Jullien of Paris, or by simple "Scholarship" or "wisdom" as in the case of Rotterdam or live. CE since its inception has sought **practical purposes**, this is vital and important in the know and in the work of the professional in education, since that it is required today to the maelstrom of changes that live permanently, since that the CE is a source of ideas, solutions or educational innovations in order to adapt to the diversity of educational situations and not just adopt them. Since the CE itself stimulates the emergence of ideas, learning from the experience of the other, experimentation is not applicable, the benchmark for the other is required to come up with original solutions, educational interventions that are required. The CE helps, encourages and promotes international understanding, helping to know and understand other peoples.

Each country responds to different motivations to develop their educational practices, from the teaching of basic algorithms to the generation of public policies in education from recognizing a problem such as public, is at this juncture where identifies the axiological orientation, which are the aims that have inspired the objectives of the study as well as the motivation of the student to arrange the object or subject of the investigation its delimitation, its methodology, as well as the validity of its results.

Until today there is no consensus in which the EC is a science, with an object, direction, methodology and own techniques.

Until here two relevant aspects to highlight: firstly, it is necessary to recognize that not every home is creative, not every relationship is beneficial, not all process is orderly and not every result is productive, therefore it is imperative to keep building the CE; and secondly the CE becomes relevant in a context as the current so that from the comparative work we

form alternatives of improvement and upgrading of systems, forms and educational practices and interventions.

In 1981 M. Le Thanh Khoi defines the CE as part of the theory of education concerning the analysis and interpretations of different practices and policies in the field of education in different countries and different cultures.

Our proposal is that the CE is the study and analysis of practices and educational policies in terms of their differences and similarities, as well as its relationship with the social environment, in order to achieve the perfection thereof.

From the Aristotelian distinction between "material object" or the reality itself, and "formal object" aspect or dimension that we are interested in. The material object of the CE is the educational phenomenon and its object formal are relationships or links between such educational phenomena, - relationships that are expressed as differences and similarities - is the comparison of facts and educational phenomena and relations between them and their environment. The key is to understand the network of relationships that offers comparative work as the "relations between relations group", as well as interactions that establish and maintain in their social environment.

In essence and before reaching a level of specificity, the EC is an area of knowledge that allows the formation, which allows you to create awareness of where is, where it is going, knowing the reasons of the because it is where it is and choose informed the objective towards which it is thought that education should be directed.

The epistemological confusion of the comparative work requires specificity in terms of the objective, the aim, the purpose and the usefulness of the EC where the UNESCO's Thesaurus (1977) has contributed to the generation of correct meanings.

Both, the **finality** and the **objective** are aims to achieve, but are differentiated among themselves by the following: the finality is of a general nature and long-term. The objective is specific, concrete and immediate. The finality is done by the objectives. Order, a primarily aims to provide a set of general principles which help the reformers to predict the possible consequences of the measures proposed. CE is **not normative**, does not prescribe rules for the smooth running of the educational systems, try to only understand what I do and because it is made as well. CE as an alternative methodology, may not, at any time, make rules or laws to follow. If so, it wouldn't understand that each country, to each person, is unique and unrepeatable. Secondly, the CE aims to propose alternatives for change that are oriented to the improvement of the educational system that is interested in or study.

The EC **objective** is to collect and classify all quantitative descriptive information concerning to education systems, schools, administration and finance, teachers and students, programmes and teaching methods, legal provisions, among others. Based on that, is tried to explain the reason for the situations and education facts by analyzing collected data in the light of the historical evolution of the different systems (forms of organisation) or showing what has been the influence of social, economic, technological and philosophical phenomena, as well as the racial or national prejudice.

The **purpose** of the CE, since the beginning, is eminently practical: collect information of forms and practices of education in different places to satisfy intellectual curiosity. Over time, this initial purpose was modified since it was looking for in addition to know, establish connections between education and society. A second purpose was thus discovered: that each country will benefit from others experiences. This purpose is still valid since the CE is currently considered as a work prior to any reform or education planning. Among its specific **purposes** are the following:

- To promote the interest in knowing other educational systems
- Contribute to innovations, reforms, progress and planning of educational systems
- Promote the ongoing process of revision of the educational systems

- Promote a better understanding and cooperation of international educational processes

Each of the instances of all social reality: economic, political and social, play a determinant, dominant or decisive role according to the purpose that establishes the comparative work. The purpose of the CE is in essence, contribute to the knowledge and understanding of educational phenomena as well as enrich the processes of making decisions and their improvement.

The **usefulness** of the CE is to contribute in the study of systems and educational institutions and support the economic, political and social development of countries. Also study the recurrent problems in education and know the constituent elements of any educational system.

The background and the historical development of the CE are conforming the theoretical foundations of what is today understood as comparative work.

Comparative education: change and adaptation

Today's new era is characterized by changes in all social levels, and education plays a decisive role in them. Changes that allowed live historical moments of great significance as a witness of the split of the USSR; the fall of the Berlin wall in 1989; the emergence of the European Union, constituted with the Maastricht Treaty in 1992; the establishment of the 'euro' single currency in 2000 and, with it, the opening of borders; the Bologna Declaration that by means of the Tuning project is intended to achieve academic convergence, creating a culture of competence-based learning (this transcendent fact is given in the 27 countries of the European Union in 2010); the creation of supranational blocks such as the Pacific Rim, the free trade agreement, among others. The rise of emerging economies, as the countries that make up the BRICS (this acronym was created by the English economist Jim O'Neill), as well and above all the rapid advance of technologies of information and communication (technology ICT) have established radical changes in the digital age.

All these changes modify the social reality and necessarily imposed the development of adaptations; it is at this juncture that the CE has a decisive role in how to resolve the social relationship with the educational relationship.

In the first decade of the twenty-first century, Mexico had experienced constant and cluttered changes in the educational system, which since 1974 with signed agreements of Chetumal and educational reform, followed by the agreement of educational modernization of May 1992, had ran decades without changes, while in 2004 the preschool program (PEP) was developed, in 2006 the reform of the secondary education (RES), in 2009 the integral reform of the basic education (RIEB), and in 2008 the integral reform of the superior education (RIEMS). All those changes are specified in the RIEB-2011, "schizophrenic" document that summarizes all agreements made over the first decade and in August 2012 takes the form of the agreement 648 allusive to the whole process of evaluation and the involvement of its changes, which with the current Secretary of education are already being questioned – for the moment in three amending agreements that will need to confirm the Federal regulatory improvement Commission (COFEMER). If the certificate of elementary school, not evaluating young children and evaluate students from second and third grade-. These educational changes coupled with the social are the great challenge for the comparative work of education researchers.

Concrete analysis of the constitutive elements of all educational system

The economic, political, social, cultural, educational and ideological context in each country is the basis for understanding the six constituent elements of every educational system. Based on the above, the education professional needs to know the methodological alternatives offered by the CE, in order to advise decision makers in the certainty of all lead

changes, adapting them to the diversity of <<educational situations>>. Identifying that it is the educational fact in its context which is compared and not the educational situation, since this is only regarding the conditions in which develops the educational fact specific to each country.

The six constituent elements of every educational system are:

Purposes, goals and objectives

They are the real purposes which the State assigns to its educational system, these are related to cultural and historical conditions of each country, they are raised in the long term by adopting a permanent character. The explicit purposes are present in the Constitution, laws related to education, the agreements of the Ministry or the Secretary of education, approved by its corresponding instances, laws, regulations, mission, educational philosophy, all the regulations that govern the educational process. Ultimately the explicit purposes are laid down in the laws and documents, implied are those observed from the reality and covert, as the powers that be, who are not institutionalized but nonetheless have power. **Goals** involve a quantitative change and are present in the plans or Government programs. **CE objectives** in the programs-budget that are made in order to comply with the quantitative goals established, in different areas in how they are organized States in the education sector.

Administrative organization

It is integrated by three fundamental aspects: distinction between a centralized or decentralized system, differences between the Federal States and the CIS and the particularity of the public domain and the private sector.

Also understands the organizational chart of the Secretariat or government. The budgets and how as this is distributed to education financing, compares the strength of a number of schools, teachers and students, as well as infrastructure that the educational institutions have it. In this element, it is vital to recognize that UNESCO recommended giving 8% of GDP to education, since **without funding there is no educational development**.

Pedagogical structure

This includes three fundamental aspects: education division at the different degrees or levels of education from pre-school to higher education. The division of the education according to the training, which refers to the nature of education (general, technical and professional) by its duration and the population to which shall be addressed in the professional field. The articulation of the degrees and levels and training: conditions of entry, continuity and departure of a degree or level to another.

Educational content

Educational content are the product of the overall goals and the particular objectives of the educational system. There are theories that will be studying in practice. Educational content defines the study plans and programs.

Teaching strategies

They are methodological processes, techniques and training procedures that each educational system implements for the realization of interventions and teaching-learning processes and the teaching resources available for their implementation.

Teaching-learning process actors

The teachers and the students profiles of every level, considering their education, as well as accreditation and certification.

The CE **assessment** is conceived more as a **process** than as an act. This means that from the description of the constitutive elements of every educational system is carried out self-assessment of each one of them offering alternatives of improvement and perfection to each education system. The CE **assessment** has a typology: as the **object of the evaluation** can be micro or macroassessment; **depending on the nature of the assessment** can be quantitative or qualitative. **According to point of view**, it can be educational, economic, social or cultural. **According to the form** can be summative, formative. **According to the method** can be normative or criterion. **According to the agent** can be internal or external.

The relational analysis of the vivid educational program

Conjectures in CE are formed in the preparation of a trial, on the basis of a presumption established in odds. The conjectures around the CE, are presented in the **relations** network that establishes the comparativist from their analysis, their inferences and their constructions from the bonding of two or more constituents, through proposals, suggestions and recommendations that will have to be adapted by each education system in accordance with the context of their educational situation. The **comparative work conjectures** support decision-making educational authorities decision-making in order to improve and perfect the educational system.

The relational analysis is the basis for the construction of the conjectures in CE, for which it is necessary to consider the nature of education in their **structural dimension** that contains what is permanent: its essence and its values. The tasks and functions of each of its constituent elements, bodies or their members in a changing, cyclical context it is considered in its **functional dimension**. The proposal is to revitalize education from its **organic dimension** that articulates the structural and functional and that as any **living being** requires attention and care. It is necessary to work hard in the adaptation processes that offers comparative work to make the vision of education a proper place to its nature, live, which breathe, that will nurture, which is preserved, is a genuine generator of social good, required education to establish **order and operation** assuming its leading role in schooling and human formation processes in the improvement of the relations of all and each one of its elements which constitute it, in order to prevent the decomposition processes in which it is immersed.

The decomposition processes of education are currently manifested in the disorder and dysfunction on its organic, structural and conjuncture level. The so-called education reform does not correspond to international standards to be recognized as such, since it only refers to the professors actors (reform of the article 3) and to the evaluation (article 73 ° and agreement 648) and does not answer to quality learning, also does not offer alternatives to the inequity in opportunities. Education is a responsibility of the State, but requires the relationship with stakeholders in the teaching-learning process, since teachers are the key articulators of the current educational reform.

CE studies living relations and the education system from the theory of complexity (Morin, 1983). The task to the comparativist is to capture the living systems, make comparative work for appropriating the relationships that give life to the system, boost relations by means of the comparative work is what is required.

Conclusion

Today's requirement is to make a **<<silent transform>>** as proposed by the contemporary French philosopher François Jullien (2010) the key is to do it with **comparative perspective**.

CE offers, through its comparative work, to give life to the system, offering order to the disorder and functionality to the dysfunctional, through analysis of the elements which constitute it in strict logical and methodological order.

The comparative work is distinguished for being a methodological alternative to appropriate a reality and is just the comparative analysis in their differences and similarities what allows coincidentally located in the reality of time and place are accurate, in order to seek the improvement and development of education systems. The comparative work is a methodological alternative used to construct an image of reality, it is also universally recognised that it is a means to understand and capture the reality, as well as appropriating it, carry out comparative work is to learn to settle in the present at a time and place. But comparison is also a methodological alternative, not only to assess the past and glimpse a path that leads to an accurate future based on a prospective planning, assistance to be located in a specific reality.

The key to comparative work lies not only in the analysis of the differences and similarities but in studying **connections**, contrasting the pedagogical structure the purposes for example is relate and contrast the administrative organization with stakeholders, establishing differences and similarities in modes of operation, analyze how connected, are linked, relate, will dominate, is decided or determined. Therefore, it is not enough to make the comparative analysis of description and explanation is required the comparison based on the study of the relations; an educational systems are not only the constituent elements but the network of relationships and the task of comparative work is to build that relational structure to make it work.

Building a knowledge based on the CE is to wrap an object, wrap a reality through the study of their differences and similarities in the relationships. Knowing an educational system is to wrap the analysis of that system through analysis of its various dimensions. Knowing an educational system is to know the six elements which constitute it in their network of relationships. An action to know is the comparative work.

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DESIGN EDUCATION OPPORTUNITIES FOR PERSONAL DEVELOPMENT IN LIEPAJA UNIVERSITY (LATVIAN)

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Abstract

The 21st century raises a number of problems to be resolved in education. One of the problems is the contradictory nature of global and individual phenomena. Globalization without losing the sense of belonging to one's living space, through implementing one's potential according to the well-kept traditions, active participation in one's own society life and its growth is also an important role of Design Education. Designers are the ones that can have a significant impact and can model the human living space, artistically designing and constructing the spatial environment and its elements as well as items of everyday use. The changing nature is influenced by public taste, technological progress, and reflection of national trends in design. This marks the need to study the Design Education opportunities. Educational research nowadays engages pedagogues, psychologists, philosophers, sociologists, persons who are interested in development of higher education in Latvia as a whole. In order to implement the best Design Education, it is important to understand the nature of personality and its development characteristics. Studying the development of human personality scholars take into account the individual needs and interests, choices and motivation for actions, self-esteem. Design education of Liepaja University is in close conjunction with its Research Activity Strategy for 2010 - 2016 and Development Strategy for 2008 - 2018 laying out that scientific research and creative activity at Liepaja University is a fundamental prerequisite for sustainable development. As well, that Liepaja University is open to international cooperation which promotes science and research based learning, development of the knowledge society and implementation of research results in the economy.

Keywords: Design, design education, personality, youth

Introduction

Today, the world is undergoing a rapid change in the social, political and economic fields; this also influences changes in the education space. Education is considered to be the scope of the human race, which most directly affects people's quality of life and well-being (Valbis, 2003). The aim of a democratic society, as noted by the pedagogue A. Špona, is to recognize people as the highest value and to ensure implementation of human potential in everyone (Špona, 2001). This objective is also applicable to implementation of Design Education. Scientist A. Špona characterizes implementation of human potential as a person's ability, the degree of strength, opportunity that is displayed and developed in the action and doing (Špona, 2001). It can be noted that during the process of education the individual needs and self-implementation is certified, the growth of creative personality is encouraged and career growth is fostered. Designers are the ones that can have a significant impact and can model the human living space, artistically designing and constructing the spatial environment and its elements as well as items of everyday use. As pointed out by C. and P. Fiell, design is defined in its global sense as the conception and planning of all man-made products, design

can be seen fundamentally as an instrument for improving the quality of life (Fiell, 2009). Representative of visual communications B. Bergström notes that design is one of our most important cultural phenomena in terms of architecture, fashion, interior design and industrial design as well as crafts and visual communication (Bergström, 2009).

It is believed that W. Morri's effort to combine theory and practice still leaves a significant impact on the modern trends in design. The origins of Design Education are linked to establishment of the world's most impressive design schools - Bauhaus in 1919 following the initiative of architect W. Gropius. W. Gropius integrated design theory with practice through new industrial means of production that modern design truly came into being. Gradually forgotten principle of Design Education was again updated at the New Bauhaus in Chicago, which was founded by Lazlo Moholy-Nagy in 1937, and at the Hochschule fur Gestaltung, Ulm, which was founded in 1953. Both design education institutions contributed substantially to new thinking about the unification of design theory and practice in relation to industrial methods of production (Fiell, 2009, p. 6). Major components of product design creation are - concept development, planning, cooperation of different personalities such as marketing specialists, designers, specialists in materials, cooperation between engineers, manufacturer representatives. While educating young designers there is a need to raise the issue of working in a team. The design philosophy, created products, styles and theories have a changing and complex nature, which undoubtedly influences implementation of Design Education. The changing nature is influenced by public taste, technological progress, and reflection of national trends in design.

However, it should be noted that designers and design groups in their activities both historically and now are trying to build a bridge between art and industry, hand in hand with an understanding of the principles of design, ecology and sustainability of the created products and their changing nature taking into account technological possibilities because a purposeful use of technology skills implementing Design Education opens up new opportunities and is an important tool in creating original products.

Implementation of the design education is significantly affected by the rapid development of new technologies. Targeted acquisition of the technology use skills for implementation of design education opens up new opportunities and is an important tool in the creation of unique products. This marks the need to study the Design Education opportunities. Educational research nowadays engages pedagogues, psychologists, philosophers, sociologists, persons who are interested in development of higher education in Latvian as a whole.

Object of the research: implementation process of Design Education. *Subject of the research:* opportunities of implementing Design Education for personal growth with undergraduate studies. *Aim of the research* – to theoretically and practically study and evaluate the Design Education development opportunities and to make recommendations for its improvement.

Explanation of Personality Awareness

Design is not just a mechanical production, but it includes implementing personal hopes and ideas in the progress towards achievement and communication with the public. Activities of a designer as a personality combine interrelations of intellectual activity, practical ability, commercial opportunities and aesthetic awareness through the artistic endeavour and exploitation of new Technologies (Fiell, 2009). In order to implement the best Design Education, it is important to understand the nature of personality and its development characteristics. Scientist V. Batna indicates that we as individuals become personalities through relationships at the same time it should be noted that there is no single personality theory (Batna, 2001).

It is recognized that there is a problem in psychology of personality defining; in order to do that each person individually should be taken into account (Svence, 1999). Since this is not possible, scientists are trying to find correlations that make up the similarities and differences. Studying the development of human personality scholars also take into account the individual needs and interests, choices and motivation for actions, self-esteem. It is recognized that personal development is driven by the need for self-implementation and is influenced by heredity on the one hand and external culture on the other. Social psychologist S. Omarova indicates that an individual is both a biological and social being, which brings together native-born, genetically programmed, and the mastered while living in the community. The scientist believes that the personality is the aggregation of social features of the individual, formed while person is living in a particular society, acquiring and processing social experience in a peculiar way (Omarova, 1997). Psychologist G. Svence (1999) indicates that the personality is each individual's internal dynamic organization that includes motivation systems, habits, and personal characteristics that in the relevant environment determine the uniqueness of personality. It should be noted that scientists believe that personality concept includes both stable and inherent to every human being unique ways of thinking, emotional responses and behaviours, they are conditions that help the individual to adapt to the social environment and the specific life situations. It may be noted that there are no two identical personalities; therefore each person is individuality, personality, formed in a society, gaining further experience in contact with members of the society, engaging in social relations and cultural life as a whole. Culture is closely interrelated with everyone's internal culture.

The Design Education has the ability to influence spiritual development and education of the new generation which is reflected in young people's views, actions, attitude to life and life-events in their immediate neighbourhood, county, country and the world. In this context, while implementing Design Education it is significant to base on such structural components of the value education as: personal self-confidence, self-esteem awareness, self-reflection and the development of creativity. Thus, young people can make it easier for successful preparation for life, without being subject to influences, to be more open to the world, accompanied by the ability to distinguish the essential from the inessential, the important from the less important, highlighting the most important, freely developing thinking and building stable system of values. It is believed that this is an opportunity for a democratic dialogue, laying the foundation for future reconciliation and peace, to be tolerant towards other cultures.

Opportunities for Implementation of Personality Resources in the Psychological Well-being Perspective

The author of the psychological well-being is C. Ryff (1989), which indicates optimal functioning of psychological well-being from the point of view of personality implementation, putting forward six important aspects:

1. Self-acceptance. If it is high, the positive attitude towards oneself dominates, he adopts and accepts different aspects of own personality, recognizes both the good and the bad qualities.
2. Positive relationships with others. For the person whom this figure is high, relationships are trustful. This includes the ability to sympathize with others, to provide support to others.
3. Autonomy. It is the ability of self-determination to be independent, to evaluate oneself according to own standards and to take responsibility.
4. Implementation of the daily requirements. The ability to process information in order to implement their choices and feel good.

5. Determination. Personality, which has a sense of guidance, has faith and hope. Guidance suggests a sense of personal self-actualization.

6. Sense of personal growth. A person perceives oneself as being developed by extending own boundaries and is open to new experiences (Ryff, 1989).

This approach is also important in implementation of Design Education for it creates a structured and sound self-confidence in each student of oneself as individuality, develops self-confidence and understanding of oneself, evaluates own abilities, the acquired experience, the achievements and attitude towards the chosen profession.

While carrying out his activities the designer adds some fantasy, imagination and understanding of the financial capability of the client, ideas and preferences, stylistic needs, information about marketing and previously unimplemented projects. The designer as a personality must be able to clearly define activity objectives, understand what exactly will be achieved by that, and find time for critical reflection. Visualization of the idea and the skill to see the positive in the ideas of others are important aspects of personal career development (Pricken, 2007).

Art pedagogue J. Anspaks states that everyone has the opportunity to choose their own future and to implement their potential in accordance with the traditions and cultures, to capture opportunities for lifelong learning, to expand own circle of knowledge, improve skills and develop attitudes to adapt to a changing and dynamic world (Anspaks, 2004). Reasonably scientist A. Šmite indicates that in order to think about development of human resources, teachers need to know what our young people are, their ideals, values and life skills in the current activity (Šmite, 2004).

Characteristics of Young People in the Context of the Era

Scientist H. Gudjon has focused on current youth research aspects. The scientist believes that young people are the creative layer of culture, which is the distributor and promoter of latest trends in older generation, as well as in emerging cultural constellations. The author points out that compared to other individual development issues of youth, adaptation to work environment dominates in this development stage. This demands for solution of difficult issues, because life has reached the abstract and the inconceivable position, which is characterized by the need of a large amount of knowledge for professional qualifications. Major contradictions of youth development influence this process, because it reveals gradual fuse of generational boundaries and at the same time, an increase in the intensity of the conflicts between the young people and adults. University studies are one of the means for young people to get educated and to further be able to assert oneself in the work environment. There is an issue: whether the university is able to provide it? H. Gudjon has bitterly characterized the living space of young people nowadays as an intractable tangle of individual self-determination and material dependence (Gudjon, 2007, p. 157). Therefore, it is important to understand why young people want to study and how young people study. H. Gudjon stresses that the main criterion of values in the context of the era is operational efficiency in the sense of solidarity, humanity, communication, interest in fellow human beings, ecological lifestyles; of course, this does not exclude the opposite trends. Given youth as a complex personality development phase, the issue of learning in the process of exchange of competences, interaction, rather than single-ended operation, raises in the pedagogy of youth. Shaping young people's pedagogy, H. Gudjon stresses that the leading idea must be: development of the best possible human determined orientation, for which he is responsible. On the other hand, a teacher must be truthful, must respect young people's differences and accept their society (Gudjon, 2007, p. 157). Consequently, the main key dimensions of education emphasized by H. Gudjon can be attributed to young people's Design Education. One of them is the applied dimension that defines acquisition of certain education content,

thus significantly affecting their interests and motivations. The next one is the time dimension for Design Education today to get meaningful content. Social, communicative interaction in the study process, as well as education based on scientific research and self-perception are also important. This raises the need for continuous follow up to the era-raised trends, improving and expanding basic knowledge and basic skills of pedagogues and youth.

Experience of Implementation of Design Education of Liepaja University (Latvia)

Design education of Liepaja University is in close conjunction with its Research Activity Strategy for 2010 – 2016 (Zinātniskās darbības...,2010) and Development Strategy for 2008 – 2018 laying out that scientific research and creative activity at Liepaja University is a fundamental prerequisite for sustainable development. As well, that Liepaja University is open to international cooperation which promotes science and research based learning, development of the knowledge society and implementation of research results in the economy (Liepājas Universitātes...,2008). Analysis of the study programmes reveals in chronological order changes in Design Education in Liepaja University (the first and the second table). The study was conducted based on the curriculum for 1999 – 2014, studies of the licensing and accreditation materials, and annual self-evaluation reports of Liepaja University (Latvia).

Higher education (Bachelor) programmes in design at Liepaja University (1999 – 2014)

Table No 1

Title of the study programme	Year of designing	Year of accreditation or licensing	Year of transforming or closing	Length of studies	Awarded qualification and / or degree
Teacher of Applied Art, Designer	1999	2000	2007 (transformed)	4 years	Teacher of manual work, Designer
Visual communication art	1999	2003	2005 (closed)	4 years	Visual communication designer
Computer design	2002	2003	2011 (transformed)	4 years	Bachelor degree of Computer designer, computer designer
Product Design	2009	2009	2011 (transformed)	4 years	Bachelor degree of Art, Product designer
Design	2011	2011	Accredited on 29 June 2011 until 31 December 2017	4 years	Bachelor degree of Art, Computer designer / Product designer / Interior designer

Implementation process of higher education programme in Design Education in Liepaja University has started in 1999 with implementation of the study programme "Teacher of Applied Art, Designer" (Liepaja Pedagogical...,2004). As a result, it can be concluded that:

- Bachelor degree in Computer Design is being awarded since 2002;
- Alongside with the preparation of art teachers, professional study programme of non-pedagogical nature is being gradually introduced (Computer Design, 2002),

Given the current situation in Latvia and its economy, as well as due to financial and resource-saving reasons Design Education programs have been gradually improved combining them into a single bachelor study program called "Design" (2011) with the following directions - Computer design, Product design and Interior design. *The purpose* of the study program shall be to provide such conditions which allow for acquisition of qualitative and competitive education higher professional intersectoral education in design,

by preparing such specialists, who are able to realize such innovative ideas of the particular sphere of specialization, which are rooted in research and artistic creativity.

Study Content and Organization

The study program volume is 160 (240 ECTS) in the full time (4 years) and part time study (4.5 years) mode. Compatibility of the content of the study profile “Computer Design” to the Profession Standard of “Computer Designer” (Profesijas standarts, 2002), compatibility of the content of the study profile “Interior Design” to the Profession Standard of „Interior Designer” compatibility of the content of the study profile “Product Design” to the Profession Standard of “Product Designer” lies on the bottom of the study program elaboration (Profesiju standarti, 2010). The mandatory or Compulsory Part (Part A) of the study program stipulates acquisition of general education study courses, theoretical basic courses of the particular branch and information technology courses, providing 56 credits (84 ECTS), and such study courses shall be arranged in four blocks mutually supplementing each other. The Compulsory Part (Part B) of the study program provides acquisition of professional competences in the professional specialization courses of the particular branch, providing 60 credits (90 ECTS) in compliance with the specifics of each qualification. The Free Choice (Part C) study courses, providing 6 credits (9 ECTS), improve professional competence of the students in conformity with the chosen qualification. The practice, providing 26 credits (39 ECTS), provide, that the students are able to get themselves engaged in the sphere of professional sphere, based on acquired knowledge, skill and techniques. The Bachelor’s Thesis, providing 12 credits (18 ECTS), verifies the students’ skills to carry out research and to elaborate practical work. Under the condition, that the study program has been acquired successfully, the students shall be conferred the qualification: Computer Designer / Interior Designer / Product Designer – depending on the title of the acquired study program.

Higher education (Bachelor) program’s content in design at Liepaja University (2014)

Table No 2

Study courses				Practice	Bachelor’s Thesis
General education study courses	Theoretical basic courses of the particular branch and information technology courses	Professional specialization courses	Free Choice	26 CP (39 ECTS)	12 CP (18 ECTS)
20 CP (30 ECTS)	36 CP (54 ECTS)	60 CP (90 ECTS)	6 CP (9 ECTS)		
		Computer design – 60 CP (90 ECTS) Interior design - 60 CP (90 ECTS) Product design – 60 CP (90 ECTS)			
Part A – 56 CP (84 ECTS)		Part B– 60 CP (90 ECTS)	6 CP (9 ECTS)		
160 CP (240 ECTS)					

Research and creativity of the students reflect itself in the elaborated course works and Bachelor’s Thesis. Student research and creative activity has been purposefully envisaged in the study program and in the curricula of the particular study year. A few examples on the content of the Bachelor’s Thesis (2014): “Modern visual and technological

solutions in commercial e-mail” (M. Barbare), “Evolution of photomontage in fine art photography. Game and experiment” (A. Grinberga), “Corporate identity graphic standard and significance of its development process in corporate environment (R. Karklins), “Design in papercutting technique” (A. Kolevinska), “Latvian characters in wallpaper ornament” (L. Launaga), “Company “Art Design group” portfolio creating” (S. Mistre), “Visual and technological solution from sketch to an animation” (M. Pumpure), “Souvenir “Liepaja Jugendstil in linocut”(L. Striznova). Within the study process significant impact is left by engagement of lecturers and students into art and design related projects, conferences, seminars, discussions and other events, thus, providing support to the Professional growth of the students and manifestation of their interests into reality.

Implementation of the study program is promoted by the didactic concept which is based in problem directed education, which stipulates a purposeful and planned co-operation of the lecturers of the design related study courses of – discussions, qualitative evaluation of forms and methods, in order to improve the study process quality and to optimize the volume and quality of the independent work, which is carried out by the students, as well as, to promote engagement of students in the activities of the creativity, which is carried out by the lecturers, thus ensuring perfection of the professional skills of the students and upgrading of their theoretical inquest within the sphere of the chosen specialization. Quality of the study program and the study process is enriched by the possibility for each student to carry out his or her independent work in the workshop of the University of Liepaja.

Having studied Design Education’s conformity with the laws and regulations and recommendations of the European Higher Education Area, it can be concluded that it complies with the Regulations by the Cabinet of Ministers on State professional education standards (Project) in accordance with the 6th level (Bachelor) programmes of frameworks set out in the classification education in Latvia, the objective of the program "to provide for obtaining scientifically substantiated wide range of learning outcomes" is respected as well. Design Education curriculum has an appropriate volume (professional bachelor programmes – 160 CRP, 240 ECTS). Design Education programme has been designed in accordance with the Latvian and the European Education Area development requirements:

1. Study programme’s learning outcomes are agreed with the cycle descriptors of Latvian Qualifications Framework (EQF 6th level) (Compare Qualifications...,2005) incorporated in the Cabinet of Ministers Regulation No. 990 "Regulations on classification of education in Latvia" (Regulations on...,2008).
2. Study programme is designed according to the Latvian Sustainable Development Strategy (LSDS), which specifically emphasizes the concept of interdisciplinarity of studies and creativity education. Education in this strategy constitutes not only accumulation of specific competences and skills, but also critical thinking, creativity and collaboration skills in general - human talent, development of emotional and social intelligence (Sustainable Development...,2010).
3. Ideas of the programme development are linked with the Strategy of Liepaja City Culture Department’s Culture Policy Division (2009-2014). Evaluation of Liepaja culture and its sub-fields is contained in the strategy (conducted by collecting information on the sub-fields as well as during interviews and workshops with representatives of Liepaja culture, art and design industry).

In clarification of importance of design education were involved 87 prospective designers. Results which were obtained in research are illustrated in table No 3.

Significance of design education in personality development

Table No 3

Meaning of design education	Number of respondents	Answers (%)
Development of communicative skills	87	27
Development of cooperation skills	87	27
Intellectual development	87	25
Development of commercial opportunities	87	25
Development of visualisation skills	87	24
Development of personality	87	19
Sense of personal growth	87	19
Aesthetic development	87	18
Understanding of design variety	87	14
Self - esteem	87	8
Spending of free time	87	4

In result it was clarified that the most part of respondents – 27% of inquired ones consider that the aim of design education is development of communicative and cooperation skills of personality, whereas 25% of respondents see the importance of design education in development of person's inetelectual field and understanding of commercial opportunities. Aspect of visualisation skills is identified by 24%, but overall development of personality and sense of personal growth 19%, aesthetic devolpment is identified by 18%, understanding of design variety is identified by 14% of inquired people. Self - esteem options of personality are shown by 8% of participants. 4% point out to opportunity to get education for valuable spending of free time.

In the result we get conception on real situation in understanding of the aim of design education in contemporary context.

Recommendations: Development plan of study division Design in Liepaja University (Latvia):

- To become the design research centre of Liepaja City, Kurzeme region (Latvia) and European importance;
- To extend publishing of design research outcomes on international level (at international conferences and exhibitions, congresses, seminars, plenary sessions, symposiums);
- To elaborate development of design division in conformity with state determined priorities in artistic innovation and internationally important development directions in art and design;
- To initiate operation of Design Research Laboratory in implementing innovation in art and design in cooperation with entrepreneurs, activating development of national economy, promoting young generation's interest in design innovation, creating basis for a successful career: to carry out scientific research in design and to promote practical application of the research results; to develop the branch of design by training new designers and by engagement in the fulfillment of national or international projects and programs; to forecast development directions of design technologies, as well as, necessity for the resources; to provide that the students fulfill their practice tasks by carrying out their research and practical work as close as possible to the real labor conditions.
- To ensure creative freedom for a designers, promote development of discussions on topical issues in design.

Conclusion

Discussion of the focus group (2013, 2014) in the sphere of design verify the complicated situation of changes in the country, however, at the same time employers are convinced, that the graduates from the University of Liepāja acquire qualitative education, but were not able to define concrete number of such specialists who would be necessary either at present moment or in the future.

Particular attention in the focus group was paid to the development of the design profession and potentially closer co-operation between the higher school and professional institutions. After graduating from the University, the graduates are engaged in design activity related institutions. Within the study program content a solid development potential and co-operation possibilities for a regular dialogue on topicalities in the sphere of design may be discerned.

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SCIENCE, ART, AND AESTHETICS: AN INTERDISCIPLINARY APPROACH TO ABSTRACT REASONING

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Abstract

Scientists and artists share methodologies that are common to both practices. From a behavioral perspective, both scientists and artists utilize observation, contemplation, reflection, and serious play to interpret abstract environmental signals. Abstractions are interpreted through an aesthetic, an algorithm for problem solving, which is the basis for scientific and artistic modeling. Models vary in their presentation, comprising works of art, formulas, theories, or diagrams but all of them have one thing in common: they communicate abstract ideas. In an interdisciplinary approach to teaching undergraduate science, students mimic the behaviors of scientists and artists to engage in complex biological problems. As students observe, contemplate, reflect, and play they visualize and make sense of abstractions that represent cellular, molecular, and evolutionary biology. By reflecting on their own practice of model-building, students achieve an enhanced understanding of their personal aesthetic, the tool they use for problem solving, which is key to abstract reasoning and critical thinking.

Keywords: Abstraction, Aesthetics, Metacognition, Modeling, Visualization

Introduction

In this paper I discuss the role of aesthetics as a tool for scientific inquiry and abstract reasoning in the context of undergraduate education. Interpreting or “making sense” of external (environmental) abstract signals is a primary goal of learning at all stages of cognitive development. It is a challenge undergraduates face when trying to interpret seemingly abstract science concepts. Learning about *how* we make sense of things is metacognition, an advanced cognitive behavior that is key to critical thinking (Kuhn, 1999), which is the goal of higher education. In the arts as well as the sciences, the “finished product,” whether a painting, a piece of music, a formula, or a diagram represents a unique quantum of interpretation that makes sense of external abstract signals. The complex of decisions, activities, and processes that comprise an aesthetic can be considered as the bridge that links the abstract world we sense with the ordered world that we articulate. Instead of being discipline-specific we can consider this complex of behaviors as a critical methodology (see Yanchar et al., 2005), a problem solving framework that transcends disciplines. In this way, an aesthetic framework can be seen as truly interdisciplinary or transdisciplinary. Where a setting (social or physical) or a set (objects or concepts) is unfamiliar we use an aesthetic to come to grips with it. If we accept “problem-solving algorithm” as one definition of “aesthetic” we can say that scientists use an aesthetic to bring order to a disordered array (for example a group of specimens, an unidentified genetic sequence, or an undefined protein). Similarly artists use an aesthetic to transform paint in tubes into an image on canvas, a lump of clay into sculpture, or a set of notes into a sonata. The product of scientific or artistic work represents, at some level, a problem solved. It can be described as “elegant” or “aesthetically pleasing” because it communicates effectively (see Dirac, 1963). The product is further

interpreted through the aesthetic of “end-users.” As museum-goers, music listeners, or textbook readers, we utilize our own aesthetic to come to understand the problem that was solved by the artist, musician, or scientist. Problem solving for them and for us is achieved through observation, contemplation, reflection, and play, innate human behaviors that can be encouraged through training and experience (see Hart, 2004). If these behaviors can be strengthened then it follows that we can encourage them through activities in an academic environment. I have designed and implemented my S.T.E.A.M. laboratories (science classes that incorporate art and aesthetics) at Boston University to include these activities in order to enhance science education in an aesthetic framework.

Grappling with Abstraction

Students enter science classes bombarded by an array of terms, concepts, and models that seem to have little connection with real life. The seeming lack of connection to life is ironic because problems such as the composition of Earth’s atmosphere, the activities of a mitochondrion, and the structure of the phospholipid bilayer membrane are vitally important to life processes. Yet these problems seem irrelevant to undergraduates seeking a degree in non-science disciplines such as communications or finance. How can we address this disconnect? Part of the problem is that the abstract “forest” of terminologies, diagrams, and concepts seems remote from the articulated “tree” of biological function. Students appear to lack the tools by which to connect abstract facts to concrete functions, but that is only part of the story. Students are in fact well equipped to make sense of abstract scientific concepts because they make sense of abstract signals in every encounter with the world around them. They already possess an aesthetic, an algorithm for problem solving, that they use in all of their interactions with the external environment. But students behave differently, with a different set of motivations in the “real world” than they do in the science classroom. The abstract signals that they gather from lecture, textbooks, and laboratory are meaningless because they are perceived as something to be memorized, not interpreted. The result is that many students, usually well before they enter university, are disenchanted with, and disinterested in science.

Students have been taught to memorize and regurgitate science facts instead of interpreting them. Part of the problem lies in the so-called “scientific method,” the set of hypothetico-deductive behaviors that they think is the only accepted mode of scientific problem solving. Girod et al. (2010) refer to this as the “cognitive, rational” framework. As scientists we understand that the beauty of the natural world lies in interpretation. We have been trained or are psychologically disposed to constructing a framework for interpretation, something that we can term an “aesthetic.” Whether or not we employ hypothetico-deductive reasoning, we engage in the natural world through a suite of behaviors that comprise an aesthetic, including contemplative observation, reflection, and play.

Can we provide students with a similar framework? How can we invest them with tools for interpreting the abstractions of science? How can we help them build an aesthetic to complement the cognitive-rational demands of rigorous scientific inquiry? The philosopher and educator John Dewey (1934) discussed the role of aesthetics as a tool for understanding and provided a framework for an interdisciplinary approach. He described the aesthetic as “the clarified and intensified development of traits that belong to every normally complete experience.” He went further to describe the aesthetic sense as inherently connected with the experience of making. If aesthetic is connected to experience and to making things then we might be able to mimic the behaviors that comprise such experience. In student laboratories we are accustomed to reproducing, cookbook-style, the experimental steps that led to scientific discoveries. What if we reproduce the *behaviors* conducive to discovery instead?

Constructing a System of Observation

I teach a required four-credit course in the Origin and Evolution of life to non-major students during the fall semester each year. There are two lectures and one lab session each week. I teach four lab sections that cover the class of 80-100 students. I divide the weeks of course content roughly into three parts; Origins, Interpretations, and Functions. The labs I designed for the course follow a similar pattern based on integrated conceptual and cognitive growth during the semester; Observation, Reflection, and Play.

For the first series of laboratory experiences I designed exercises that allow students to make a gentle landing into the semester. My laboratory exercises are similar to the work students do in their rhetoric classes. In a sense, we are establishing a “rhetoric” of science in the first several weeks. Students choose and describe images, explaining which images appeal to them and why, repeating the exercise several times. They “take apart” complex phenomena, looking below the surface, considering and writing about issues such as “complexity” vs. “simplicity,” “surface” vs. “depth,” and “subjective” vs. “objective.” In these exercises students are challenged to think about how they reach their conclusions. They are asked to analyze what lies beneath their opinions. One week they are asked to design their own “twitter” logos and explain their relevance. Another week students find google images of floral parts and conduct a dissection with real flowers based on those idealized images. Another week they sketch and discuss primate skulls. In the first weeks of laboratory we grapple with ideas as far-flung as paleolithic tools, modern art, Renaissance literature, *horror vacui*, typology, beauty, and botany. Students work individually for most of these labs. All of the lab work is aimed to develop an aesthetic, a set of problem-solving behaviors that link art and science. All of the work in lab is performed to complement a set of lectures on the origin of life, in which we establish the factual basis for biogeochemistry, cell biology, and molecular evolution, topics that we will address during the rest of the semester. Significantly, the laboratories of the first several weeks are intended to increase students’ awareness of their modes of observation and to incorporate contemplative behaviors as they move toward more reflective practices.

Practicing Reflection

After establishing a framework for observation in lab I refine the focus to include reflection. My goal is to introduce tools for “close reading” of abstract signals in the external environment. At this point in the semester the lectures have begun to focus on molecular function and evolution. For example, we have studied the structure and properties of water and proteins from an analytical standpoint: polarity, hydrogen bonds, cohesion/adhesion, etc. Laboratory provides the opportunity to change the scale of inquiry. At this point in the semester, conventional cookbook laboratories might provide an appropriate fit. In past years for example, we focused labs on enzyme kinetics in an oxidation experiment. But I want my students to function outside of cognitive-rational constraints. At this point in the semester I want them to begin playing. I begin this laboratory unit with students observing their play at the same time as they observe the behaviors of water. For this lab they are provided with basic materials; water, salt, clay, string, and sponges. Students work individually or in pairs. They are asked to choose any of the materials in front of them and to manipulate water in any way they see fit. As they observe carefully the behavior of water they note these things down: How does the water change in relation to the material they are using? How does water respond to the material? What does the water do to the material? Students are asked to take detailed notes, photos, and videos on the behavior of water that they observe.

After students have “played” with the water, they are asked to list at least 10 sentences that “take apart” the observations they have made. They are asked to write a detailed description of how the water behaved in the “experiment” they set up. How did the

water move? How have their manipulations changed the behavior of the water? How is the water influencing its environment? How many and what kinds of water behavior are going on in the experiment? How many and what kinds of water behavior are occurring at each lab table?

As the final deliverable students are asked refer to lecture notes where we discussed the characteristics of water. Using the properties we discussed in lecture students write a short paragraph, which discusses how the water they observed behaved according to these known scientific characteristics. For example, did they observe surface tension? How? How did it manifest itself? Cohesion? Adhesion? Solvent properties? In this exercise they are taking their own observations and building a scientific narrative from them. They are operating at a different level than the strictly cognitive-rational but they are incorporating the cognitive-rational into their narrative. There is no predicted or “ideal” outcome to this lab experience. Students are using their aesthetic and deciphering the natural world from a personal perspective. The “model” they build is the narrative they produce, which is based on abstract reasoning. As students develop their skills in focused abstract reasoning they are also developing metacognitive skills that help them observe and analyze their own process of learning.

Playing and Modeling

During the third series of labs students play with zometool building materials to make outside molecules and molecular structures. The zometools resemble traditional molecular modeling sets, and can be arranged in millions of different combinations. This is the point of the semester where, in lecture, we discuss the evolution of biochemistry and metabolic systems from a functional and evolutionary (rather than definitional) perspective. Serious play for these exercises occurs as group work. Students are free to design their own molecules, modeling approximate molecular structures that are based on function and form rather than chemical formulas. One week students are asked to explore the concept of permeability from a non-cellular perspective, considering permeability as a function of color, sound, and texture. After students have read and responded to an exploratory text they then build models of phospholipid bilayer membranes based on their notes from lecture (the cognitive-rational part of the course), and from images they find on the internet. Not surprisingly, because the images they copied from lecture are one-dimensional, students start by making one-dimensional models, using the lab table as a blank surface. They interpret literally the phospholipids but arranging them into a roughly planar structure, the way scientists visualize them, is a conceptual leap. Another challenge comes with visualizing and embedding the proteins in the phospholipid bilayer. Because we have not yet studied proteins, and because they are generally depicted as linear figures (polypeptide chains), students generally do not depict them as objects with volume. Constructing a model of a working cell membrane takes hours of experimental play. It is a challenge for the students just as it was for decades of scientists who grappled with this problem. By building 3-dimensional structures students begin to visualize cellular components such as membranes, and through this work they are able to comprehend the functionality of biological membranes as semi-permeable structures with a wide variety of functions.

The following week students build gigantic models of enzymes and their target (substrate) molecules. There are three rules: 1) The structures have to be as large as a person, 2) The enzyme must be at least 10 times the size of the substrate, and 3) There must be an active site where “lock and key” functionality can occur. Students are asked in addition to consider questions of linearity, volume, folding, surface conformation, and electrostatic interactions when preparing their models. The proteins that students build, because they are so large, are actually flexible and can be modeled to mimic the behavior of enzymes by

attaching to and altering their substrate.

Conclusion

The abstract signals that we apprehend from the natural world are interpreted through an aesthetic, an algorithm for problem solving. Behaviors that engender aesthetics, for example contemplative observation, reflection, and serious play, can be encouraged in the classroom setting. Making the irrational (abstract) world into a coherent narrative is the goal. Conventional rational-cognitive science is a “mode of reason that is still incomplete” (see Caillois, 2003). But by complementing the rationalities of science with the interpretive power of aesthetics we can make natural phenomena accessible and understandable to non-scientists. Introducing an aesthetic approach to science learning met with enthusiasm among my second-year undergraduates, all of whom are non-science majors. Students reported the success of the experience through their reflections, for example, “it takes a lot of creativity to explore the world and discover” and “A lot of creativity and innovation goes into science.” For the first time in over 20 years of teaching I experienced 100% attendance throughout the semester, and engagement for the entire lab session, outcomes that were never possible in past years. Changing the nature of lab experiences was a risk (see Hammer, 2012) but one that rewarded both me and my students.

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THE VOICE AND THE SONG FROM A GLOBAL AND INTERDISCIPLINARY APPROACH IN PRIMARY EDUCATION

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Abstract

Through the voice and song we can find the right tools to work in an interdisciplinary, globalized and changing learning environment. This approach is about creating new strategies for working with different competencies required in the acquisition of knowledge, promoting active and collaborative methodologies and in consideration of diversity. During this process students involved Teacher Education and teachers from different knowledge areas of the Faculty of Education at the University of Zaragoza (Spain). The song will apply its power to stimulate emotions, develop sensitivity, memory and imagination. Our principal objective is to use the voice and the song as an interdisciplinary tool for students taking a Master Degree in Primary Education (6-12 years) in the acquisition of different competencies. The results take into consideration the potential lack of a musical background that students may have, an emphasis has been placed on the selection of the material used and the change in attitude of participants during the process, in assessing the experience positively.

Keywords: Voice, song, primary education, interdisciplinary

Introduction

The human voice is the natural medium par excellence through which we musically express and communicate with others (House, 2004 p.76). Different curricula attach particular importance and relevance to the correct and proper use of the voice as a means of expression. The voice and the song are used routinely in teaching-learning processes in different areas of knowledge in both Early Childhood Education and Elementary Education. We agree with Hemsy of Gainza (1985) that the perception of the sung word is totally different from the spoken word, generating melody as an emotional reaction, a stream of sympathy or rejection that produces a response. Thus it is difficult for the child or children to be indifferent to such a stimulus. Singing is one of the oldest forms of expression as stated by Barceló (1995). Also, singing is the most basic way of making music and entirely possible for everyone, irrespective of their ability; it is also a socially powerful activity linking individuals to their community as Welch states (2008).

It is possible for children to use songs spontaneously in their daily games. There are several studies that suggest that students enjoy the use of songs in school, as demonstrated by Mizener (1993). In following this line of work, we want to convey to undergraduate Elementary Education students the need to apply the use of singing and song in elementary schools with activities that encourage the development of speech and expression and are contemplated through different perspectives. With music and song in particular, we can work on different areas of knowledge, in line with what most educators agree education "in" and "through" music allows this. Furthermore, as indicated by Vila (2000 *apud* Carabetta 2011:15) music never reaches our ears with empty connotations. It is logical that Music be an

element chosen to define our cultural identity, as we classrooms contain a range of students from different backgrounds.

I

The main goal of this project is for the students in 3rd year taking *Fundamentos de la Educación Musical* to understand voice and songs as instruments in the teaching and learning process from a global and interdisciplinary approach.

The project will be developed in 3 steps:

In the first step, a questionnaire will be design to collect information about the 3rd year students musical knowledge. These students take a six-credit music course, *Fundamentos de la Educación Musical*, in their second semester of that year. In the next year students will have to make course choices to decide which will be their specialization.

For students studying teaching in Primary Education, these will the choices for their specializations:

- Speech and Language specialist
- Special Education
- Physical Education
- Musical Education
- English or French language Education

Through the data collected from the questionnaires, it was detected that the students had not enough musical knowledge. The questionnaires were applied in 44 students, being 83,33% of them women and 16,67% men. All the students taking part in this research were in between 20 and 25 year-old students.

It was proved that most of the students did not have any musical knowledge, as only 18,52% of them had have previous music education. Moreover, most of this education had not been taken in regulated centers.

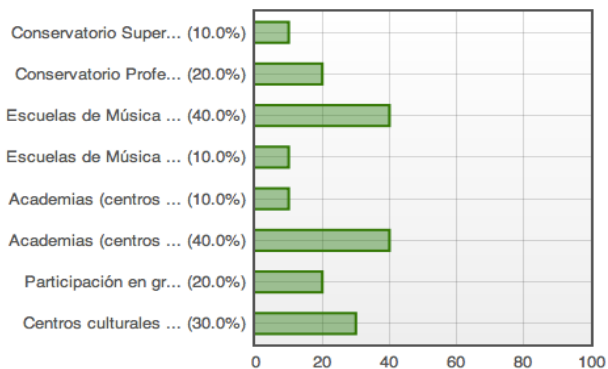


Figure 1. Conservatories and Schools of Music

The results obtained from the questionnaire also showed that, that only 4% of the students planned to choose the Musical Education specialization.

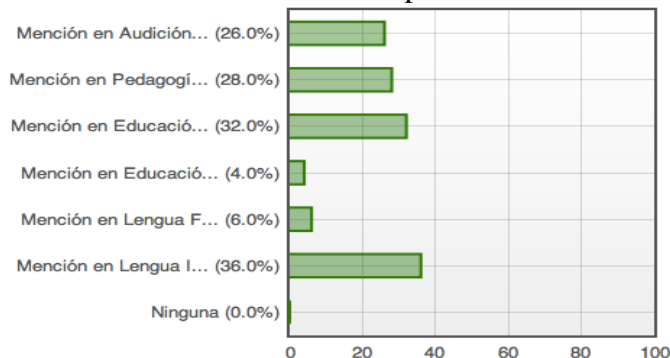


Figure 2. Specializations

In the second step of this Project, students will gather in small groups of four students, according to their future specialization preferences. An educational music project was designed understanding voice and songs as tools to acquire competences in different areas.

In the third step, students presented their project. The topics selected by the students are listed below:

Speech and Language:

- Language development in students with speech difficulties
- Traditional stories through Disney songs
- Work done through augmentative language helps work with children of special educational needs related to speech.

Special education:

- Feelings and emotion expression through songs

Physical Education:

- Trip a round the world through traditional songs from each country.

Musical education

- There is not an specific project in this area

English language

- Parts of the body, health and professions related with this area. To encourage comprehension and vocabulary development different songs are used: "The Hokey-Pokey", "Head, Shoulders, Knees and Toes" y "Dinosaur moves your body".
- Animals, using vocabulary selected to work with specific phonics. The purpose of this project was on improving students' pronunciation skills. The song used in this project were: "The Foggy Forest" y "The Bear hunt"
- The habitats, studying vocabulary related with this topic through Disney movie songs such as "In the sea", cartoons songs such as "Walking in the jungle" and popular songs as for example "Old Mcdonald had a farm"

We hope to develop the process carried out in one of these projects, in particular the proposal made by prospective students with a major in Physical Education. Students propose the project be focused on the work of motor actions used in an expressive or artistic nature as those situations that require motor responses are aesthetic and communicative in character and can involve individual and group activities. Thus, we value the use of space and qualities of movement, as well as the rhythmic components, the mobilization of imagination and creativity in the use of different registers of expression (body, oral, dancing, musical), as these are based on actions.

We propose related body expressions and different dances and songs that children can relate to in different parts of the world. The proposal is carried out through the story of Mr. "Don Luis" a cat that moves to different cities around the world.

The proposed methodology uses the story as a motivating element for students, the activity is based on the realization of an interdisciplinary exercise, in which aspects of different subjects of the curriculum are covered. Learning is significant, since previous experience of the topic is relevant towards improved learning. To allow for this, from the first session questions are raised in class, related to cases close to their personal environments (social, family, academic, etc.). They will establish a "fun routine" to encourage the children to participate in the search of the unknown, exploration of their imaginations and physical skills with dance, song and bodily maturation.

The songs and dances are proposed:

Project	Thematic Content	Song
	Presentation	Bailando por el mundo
	Paris	Moulin rouge
	Portugal	Ai seu ti pego
	China	OPA Gangnam style!
	Madagascar	I like to move it!
	Brazil	Bienvenidos al Sambódromo
	Senegal	¡Porque esto es África!
	Cuba	Mueve los pies sabrosón
	Milán	Gondoleros por el Duomo
	Test	We will practice
	Representation	Mira papá lo que se hacer

Conclusion

When starting the project, the students who had no musical knowledge, didn't feel they had enough ability to use their voices and songs as vehicular instrument to improve the teaching-learning process. However, by selecting the right materials and with the work done during the academic year 2013-2014 on vocal and physical disinhibition, as well as the study and analysis of musical elements involved in song, facilitated the self-confidence and security necessary for students to use the voice and the song in its various educational projects.

By the end of the project students highly appreciated the work done and realized the need to use song in the primary stage of education, for the acquisition and development of different educational skills.

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QUALITY ASPECTS OF LATVIAN HIGHER EDUCATION: COMPETENCE AND COOPERATION

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Abstract

This paper reviews current problems in Latvian higher education. It outlines the challenges that economic and social change presents to the pedagogical process of higher education by focusing on the topicality and significance of university teachers' pedagogical competence and professional responsibility in sustaining a meaningful and productive intellectual dialogue with students.

Findings from theoretical and empirical research inform the tensions of pedagogical interaction and cooperation that are identified in the study process and described in the present paper. Insights from relevant research are used to devise a system of characteristics and features of university teachers' pedagogical competence to sustain effective pedagogical interaction during the study process. Opportunities are inferred and pinpointed for improving pedagogical cooperation with a view to sustaining a more solid scientific, intellectual and professional dialogue in higher education, which is seen as amenable to infusions of insights from relevant research. Potential problematic issues are apprehended in the sphere of higher education pedagogy, which are pertinent to improving the effectiveness of pedagogical interaction and enabling universities to function more efficiently.

Keywords: Cooperation, pedagogical competence, professional responsibility, students

Introduction

The 21st century has brought an unprecedented information boom and rapid technological transformations that affect learning and processing of information. These changes warrant a fundamental re-examination of traditional conceptions of knowledge procurement along with expectations for pedagogical competence. During the decade before 2020, European higher education is poised to significantly contribute to the creation of an accomplished – creative and innovative – Europe (*Europe of Knowledge*). Nowadays, education is a key area of social development, because the majority of the public is either directly or indirectly involved in school or university studies, continuous vocational education or lifelong education.

The present study was undertaken with an aim to explore the topicality and significance of university teachers' pedagogical competence and professional responsibility in the context of improving the quality of studies, intellectual interaction and the shaping of prospective specialists' professional competence in Latvia.

“...nowadays, the world's greatest power is mutual understanding, ability to cooperate on the grounds of shared assumptions and universal values. These grounds are shaped by education, especially what we refer to as higher education” (Zaķis, 2007, 65).

Undoubtedly, the intellectual resources that are concentrated in higher education are the decisive force that drives development in Latvia. Enhancing the competitiveness of prospective and current professionals by focusing on learning outcomes and competences that

are prized in the labour market is one of the most complex pedagogical problems of higher education not only in Latvia but also in Europe and beyond.

The 1990s brought the constructivist paradigm to Latvian higher education. It was eagerly embraced both by academics and the general public. Social expectations boosted the potential value of higher education. The public now imagines that graduates from higher education institutions will enter the labour market and encounter a wealth of open doors. Increased demand for higher education has rapidly transformed the latter from an elite value that is attained through hard work and application into a generally-available and trending opportunity for the masses. "Higher education is no longer the privilege of the social elite but a mass commodity" (Kože, 2000, 155). Rapid expansion of the domain of higher education presents a number of tensions and challenges that affect the provision of the study process, compromise its quality and reshape students' attitudes to learning.

In her appraisal of higher education institutions, Professor Zanda Rubene outlines several pertinent problems: mass emergence of universities, crisis in academic education, tensions between traditionally academic and contemporary democratic conceptions of university, and demands for freedom and responsibility among university students and faculty (Rubene, 2006, 10).

Inta Brikše has researched public information about higher education reform. Qualitative analysis of relevant texts enabled her to conclude that the situation is fraught with danger, because many opinions and facts that are paramount to making an objectively evaluation of current challenges and changing tendencies fail to reach the public attention altogether. "Thus, agendas and limitations of the media and individuals in the higher education domain fail to challenge the society and evoke a public resonance in terms of active involvement in discussing relevant problems and proposing innovative solutions; instead, issues of the past continue to be ruminated, interpretative discourse about the present situation keeps growing, but no motivation is offered to join the discussion that seeks original solutions for the future" (Brikše, 2011, 226).

In times of crisis, changing economic and social processes fundamentally reshape public attitudes towards education as a social and intellectual value. Crisis of social values transforms the higher education paradigm and highlights the pressing need to restructure and improve the supply of existing study programmes, especially in terms of content, abandon old mechanisms of planning and organization in favor of a modules approach as well as tap into the developmental potential of interactive studies by upgrading higher education pedagogy with meaningful innovations for higher quality, greater efficiency and increased competitiveness.

Improving the quality of higher education is a challenge that presents itself to every single professional working in the field. At the same time, it is also their professional responsibility. The author of the present paper is positive that most productive initiators of all change are students and their critically evaluative demand for better quality studies. Transformations in higher education are effected by university administration and faculty, who create intellectual values and develop human capital.

Educator Tatjana Kože has analyzed the potential for boosting the productivity of higher education study programmes. She concludes that "the greatest asset of a knowledge society is individuals with their skills and competences" (Kože, 2005, 88). Crucially, the resources of higher education carry a unique capacity to open unlimited opportunities for human self-development and professional growth. The tensions that accompany higher education reform illuminate the central problem of the present paper: the importance of university teachers' pedagogical competence and professional responsibility to sustain an educational dialogue and interaction that shape students' professional identity during the course of their studies.

Thus, the focus of the study reported on in this paper is analysis of university teachers' pedagogical competence and academic cooperation in the context of increasing the competitiveness of prospective specialists and raising the quality of higher education studies.

The importance of university teachers' pedagogical competence and the efficiency of pedagogical interaction during the study process are explored through the following research questions:

- what features of actions that characterize university teachers' pedagogical competence attest to their professional performance which aligns with current tendencies of higher education reform;
- how can the quality of higher education be improved with focus on studies that are underpinned by science and research and acknowledgement of the importance of university teachers' pedagogical competence and academic cooperation during the study process.

Research methods

The author has performed a qualitative action research study that relied on theoretical research methods and comparative approach to analyzing relevant scientific literature and other sources on university teachers' pedagogical competence and professional responsibility in the field of higher education in Latvia and abroad. The paper was written by taking a qualitative approach to educational research, which determined the research question and informed the analysis of qualitative empirical data (Barlett & Burton, 2007; Merriam, 2009).

The interpretative phenomenological method of data analysis was used when examining relevant theoretical insights with a view to illuminating the quality aspects of university teachers' competence and the theoretical aspects of prospective teachers' (current university students') emerging pedagogical experience. Empirical data were drawn from the opinions of faculty at Liepaja University on university teachers' pedagogical competence in the context of professional challenges in higher education. Experiences of some faculty were analyzed in greater detail by using the approach of informal description, which enabled experts to express their subjective opinion. The inferred opinions were structured into systematic groups that describe the research participants' views on university teachers' pedagogical and professional competences to provide an effective higher education. Students' attitudes and opinions were appraised through survey and interview. The sample included 87 students of the programme "Teacher". The survey was focused on eliciting students' understanding and argumentation regarding opportunities for self-education during university studies in the context of their emerging pedagogical experience. Meanwhile, during the interview, students give qualitative evaluations of a set of statements, which allowed for eliciting qualitative self-evaluations of their emerging pedagogical competence.

Improvement of higher education

The international and technological domain of goods and services demands new skills. In the sphere of learning, these are *self-organization and self-responsibility*. At all stages of human development, learning is a source of emerging individualized experience in both formal and informal education. The individual quality of new experience is contingent on the learner's motivation, action, attitude, degree of personal involvement and application (Giese, 2010, 74). Consequently, human experience is the very foundation of learning as much as a pedagogical tool, a method and an outcome. In pedagogy, especially in adult learning, it is important to interpret the dialectics of experience as a structural correlation with one's own self or, in other words, to make sense of one's self-experience (Brigmane, 2012, 15).

Researcher Miķelis Grīviņš has analyzed texts such as OECD, relevant documents by the European Union and the World Bank, and recommendations of international organizations on ways to adapt national systems of higher education to demands of the global education market. He concludes that changes should be effected in areas such as academic staff, the study process and the supply of educational programmes: “Universities should educate and support researchers capable of developing quality education (perform as teachers), produce topical research (perform as researchers) and find a market for their research outcomes. ...Students’ involvement in the research process should be much more profound and extensive. It would give them access to practical knowledge and at the same time strengthen their ability to autonomously obtain relevant knowledge in the future”(Grīviņš, 2011, 173).

British professor Peter McCaffery has studied the management of higher education and compared the challenges and changes inherent in traditional and new higher education. He sums up the changes that ought to be effected, which include pedagogical growth of academic staff (Table 1).

Table 1, Traditional higher education and the new HE

<i>Traditional HE</i>	<i>New HE</i>
Competition: other universities	Competition: everywhere
Student as apprentice scholar	Learner as customer (and producer)
Delivery in the classroom	Delivery everywhere
Technology as an expense	Technology as market differentiation
Institutional-centric	Market-centric
18-25-year-old audience	Lifetime learner
Terminal degree	Lifelong learner
Mode 1 knowledge	Mode 2 knowledge
Take what is offered	Courses on demand
Academic calendar	Year-round campus
Course as 3-4 year revenue	Courses as business plan
Teacher as director of learning	Teacher as facilitator of learning
Academic as “jack of all trades”	Academic as specialist
Multicultural	Global
Diversity as problem	Diversity as strength
Process-compliant	Outcomes-driven
Public subsidy	Portfolio management
Peer review	Quality “kite marks”
Producer of knowledge	Agent of learning
Organized by subjects	Organized for solutions

Source: McCaffery, P. (2010). *The higher education manager’s handbook: Effective leadership & management in universities & colleges*. New York and London: Routledge, Taylor & Francis Group. p. 31

In Latvia, public discussion is unfolding about a number of issues: disproportion of academic staff and students, calculated by means of comparative framing; what differentiates Latvia from other countries with more successful systems of education; declining rates of state budget funding; inability of the Ministry of Education and Science and the Council of Higher Education to manage reform. Meanwhile, other pertinent issues are ignored, such as how exactly should Latvian higher education be improved (Brikše, 2011, 218-219).

Lately, the concept of creativity education has become a buzz word in Latvia. It denotes the skills and abilities that youth should possess and suggests that the system of education should develop learners’ ability to think autonomously, critically and creatively as well as cooperate and adapt. Creativity education should be focused on interdisciplinary cooperation, proficiency, individual growth, imagination, out-of-the-box thinking and nurturing of talent. It means a shift is required from teacher-driven studies that make use of

study plans, programmes and didactic methods to a student-oriented self-education process, which develops skills of self-directed and autonomous learning and research.

Aspects of pedagogical competence

The quality of the study process in university setting is contingent on different factors: content of studies, organization of studies, students' achievements and learning outcomes. Meanwhile, scientific and methodological literature and documents relevant to higher education put forward university teachers' professional pedagogical activity as a key indicator for assessing the quality of studies.

On the one hand, the task of higher education is to prepare young specialists (students) for life in a democratic society and develop their employability in the labour market. However, on the other hand, teachers' pedagogical preparedness and ability to adequately perform these tasks deserves special attention. University teachers' performance affects the development of all disciplines of higher education and, consequently, drives the training of specialists in all areas of national economy. For university teachers to be effective, it is not enough to be professionals in their scientific discipline. Interdisciplinary competences are also required. At the turn of the 21st century, pedagogical competence has become a primary asset, absolutely essential for anyone involved in teaching in university setting.

Training creative and competitive specialists is a serious challenge in a traditional, academically-oriented learning environment. It requires reorientation of a number of factors in the study process. The author's extensive pedagogical and administrative experience suggests that optimum pedagogical solutions are also warranted to help students set individual goals for professional growth as well as balance breadth of professional information and knowledge with depth of understanding, insight and capacity to apply the latter on the level of competences. On the level of organization of studies, in cases when small groups of students are merged into bigger formations, university teachers must keep reflecting on appropriate degrees of individualization. The latter is, regrettably, declining dramatically due to objective (internal) and institutional (external) factors.

An important quality aspect of university teachers' pedagogical work is their pedagogical reflection, self-evaluation and ongoing testing of their professionalism and performance with a view to appraising gains and losses, pinpointing problematic issues to be addressed, identifying challenges and recognizing opportunities.

Findings from an international project "Quality assurance in higher education" in *Phare* programme framework suggest that higher education can be evaluated according to four principles. Two of them are especially relevant to assessing university teachers' pedagogical competence:

- objectivity of evaluation, autonomy and responsibility;
- self-evaluation as a key component in a quality assurance system (European Training Foundation, 1998; Dzelme, 2002).

An essential aspect in evaluating the quality of university performance is the need for self-evaluation by all stakeholders. Since self-evaluation is practicable on different levels (such as student, university, study programme, study course, specialty, individual faculty member, academic subject), self-evaluation is a most effective tool for raising university teachers' pedagogical competence. It helps supervise ongoing improvement of professional performance and predict desired innovations (Samuseviča, 2002).

Table 2 sums up answers to questions from a survey administered to 55 teachers from Liepaja University. These findings confirm the respondents' pedagogical competence and awareness of "pressing problems" as well as their determination to grow professionally and assume greater responsibility for the organization of the study process in university setting.

The limited number of respondents, however, precludes the possibility of making generalizations and extrapolating the findings to all specialists employed in the academic environment. At best, the study allows for identifying emerging trends as regards university teachers' professional responsibility and development of their pedagogical competence.

Table 2, Pedagogical competences of efficient university teachers: Expert evaluation

Rank	Key competences of an efficient university teacher (N= 55 teachers)
1.	High professional competence in one's subject, wisdom, knowledge and experience in one's area of expertise
2.	Personality competence: motivation to teach, integrity and objectivity towards oneself and students, willingness to pursue study goals, being professionally engaging according to students
3.	Cooperative competence: orientation towards students and interaction, democratic style of teaching, openness to exchanging social and academic values, availability to students physically, emotionally and virtually, supportive and encouraging approach and methods
4.	Professional responsibility, ability to change and grow professionally
5.	Orientation towards science as a research process and pedagogical work as organization and management of the study process, creative thinking

Opportunities for quality improvement of the study process

Kārlis Dobelis, a lecturer from Liepaja University, proposes a list of quality parameters and their descriptive criteria for evaluating the study process. The first quality assurance factor is university teachers' quality with the following parametrical features:

- university teachers' scientific potential;
- outcomes of research and teaching;
- awareness and application of new teaching methods (Dobelis, 2000, 97).

Philosopher and pedagogue Ivans Vedins also affirms the influential capacity of university teachers by arguing that development of students' thinking greatly depends on the teacher's culture of thinking, his or her quality and creative drive. The teacher's way of thinking is believed to have an important educative influence. According to Vedins (2011, 73), a person's creative energy is their energy to act.

A university teacher's interaction with students is positive if the latter: discover themselves, identifying their "strong and weak" points; are self-critical in their self-evaluation; make autonomous decisions; are self-affirming; rejoice in their achievements. Meanwhile, university teachers maintain a favorable psychological climate in the group of students; give adequate assessment, enhance positive attitude, are respectful to students; furnish opportunities for each student to express opinions and develop skills while working in a team (Škoļņikova, 2000).

If the teacher establishes a dialogue with students, it helps the latter construct their knowledge and perceive the mind as a state of active existence. This way, new experience emerges. The process becomes just as important as the outcome. Critical constructivist pedagogy can endow students with capacity for conscious self-determination, which liberates individuals from external determinants and enables making autonomous decisions. In modern-day higher education, the paradigm of pedagogical interaction reaffirms the positions of action subjects, the importance of the process and outcome of the learning process and the value of high professional competence, while making demands for orienting the process of studies towards autonomous learning and self-education, where criticality, creativity and constructivism are both tools for developing the students' cognitive and emotional attitudes and outcomes in their own right – the very foundation of professional self-growth.

Formation of students' professional experience

Some of the richest sources for students' professional experience in university setting are purposeful studies and autonomous learning, supervised by the teacher in keeping with the normative demands of the study programme and the study course. Latest discussions

about the importance of autonomous learning in the process of training prospective professionals have been scarce, because practically all educators are unanimously aware of its pedagogical value and developmental potential. According to survey findings, the majority of students consider their own responsibility and motivation to be the primary guarantee of quality in autonomous studies. Experience plays a major role in the organization of autonomous studies. This experience is acquired from student-teacher cooperation while moving towards shared goals. For this reason, teaching and learning methods and a well-appointed learning environment are equally important in the shared process of intellectual inquiry. Somewhat less significant, according to the surveyed students, are such factors as pedagogical management and supply of learning materials. Giving feedback on evaluation of autonomous learning can be considered a problematic issue that warrants closer investigation, because only 7 out of 87 respondents call for systematic evaluation. These findings invite reflection about quality aspects of autonomous studies.

Table 3, Preconditions for high-quality autonomous studies: Students' perspective

Choice ranking	Preconditions	Number of choices
1	Students' personal responsibility and motivation	61
2	Usage of advanced teaching and learning methods	34
3	Appropriate learning environment	33
4	Pedagogical management	25
5	Learning materials	21

Each student's individual learning style determines the opportunities and sources of their emerging experience. For this reason, in one of the open questions of the survey respondents were invited to list three most important elements that characterize their culture of studies. Analysis of these elements allowed eliciting data about their process of learning and extracting the main sources of their individual emerging experience. The majority of answers corroborate the crucial role of *self-organization* and *self-responsibility* in the study process. Meanwhile, reported negative learning habits confirm students' awareness of the importance of autonomous learning in shaping professional knowledge and experience.

Other findings from the survey are summarized in Table 4. They suggest that students still consider elements of pedagogical management to be equally important factors when they mention cooperation, communication, mutual understanding and sympathy, respect and interaction. These elements corroborate the viability of using the model of social integration in pedagogical practice in university setting. This tendency is significant in the context of facilitating the emergence of a constructive pedagogical experience.

Table 4, Aids and barriers to the culture of studies: Students' perspective

Aids	Barriers
Active participation and involvement Personal initiative and responsibility Self-education skills Constant drive to inquire Making connections with teaching practice at school Inquisitiveness, willingness to replenish one's stock of knowledge Learning from university staff's experience Putting one's ideas into practice	Poor concentration Poor initiative and laziness Poor time management Failure to follow the standard of assessment Postponing completion of learning tasks Poor theoretical knowledge Last-gasp learning at the eleventh hour Failure to implement one's ideas
Cooperation with staff and peers Conversation, communication and sharing of insights Respecting one's own and other's work Respecting the teacher, mutual understanding Opportunities to express one's attitude	Reluctance to cooperate Poor interaction with peers when addressing learning tasks Lack of own opinion Timidity, fear of rejection and misinterpretation

Students were interviewed to ascertain what they believe to be conducive to development of professional identity in university setting. Analysis of the elicited criteria exposes the respondents' awareness of different sources of pedagogical experience, such as personal imitative, inquisitive attitude, university teachers' creativity, different forms of learning, cooperation with academic staff, development of research skills, pedagogical practice at school, assessment and analysis of challenges and achievements, facilitation of critical thinking, etc. Clearly, all the above-mentioned sources of learning or professional self-development involve individualized experience of the subject's action, which emerges from active inquiry and initiative and results in self-responsible performance, which, in its turn, necessarily includes self-reflection. Broadening students' capacity to evaluate their learning skills and reflect on their practical responsibilities in the context of emerging pedagogical experience enables students to constructively compare theoretical knowledge and practice, critically evaluate the formation of their self-experience and test essential knowledge in the teaching profession. For this reason, students' suggestions for improving the process of studies in teacher education setting (Table 3) ought to be appreciated and accepted.

Table 5, Students' suggestions for improving the process of studies in university setting

<ul style="list-style-type: none"> • <i>Higher demands for applicants to boost the prestige of the profession.</i> • <i>Longer practice placement and better theory-practice connection.</i> • <i>Students' involvement in shaping the contents of the study programme.</i> • <i>Professional workshops to share experience and perform demonstrations.</i> • <i>More concrete educational aims, strategies and perspectives, which are open to discussion.</i> • <i>Support to prospective professionals' willingness to become more fully and practically involved in their work.</i> • <i>Greater flexibility of study programmes.</i> • <i>More extensive usage of innovative methods and greater creativity during lectures.</i> • <i>Re-planning for more intensive studies – shorter in duration but with more emphasis on autonomous learning.</i> • <i>More profound presentation of topics and more discussions about them.</i> • <i>Better availability of learning materials throughout the entire duration of studies.</i> • <i>More guest lecturers.</i> • <i>Interdisciplinary seminars for students of different levels.</i> • <i>Analysis of pedagogical problems at school and seeking adequate solutions.</i> • <i>Cooperation with schoolchildren not only during practice placement but throughout the entire duration of studies.</i> • <i>More extensive cooperation and experience exchange with other higher education institutions.</i> • <i>Students' involvement in genuine research to expand their professional experience.</i> • <i>Monitoring the content and quality of study courses.</i>

University studies are a crucial time in the shaping of prospective specialists' learning culture and professional identity. Formation of prospective specialists' experience of autonomous learning is, to a great extent, contingent on the quality of pedagogical interaction and lessons learnt during the course of studies.

Opportunities for improving the quality of higher education and relevant intellectual resources are diverse: increasing university teachers' authority and maintaining a constructive pedagogical interaction; innovative transformations of elements of the study process by focusing on needs and demands of the labour market; optimum balancing of theory and practice; self-education and analysis of progress reports; evaluation of individual and group reflections; acknowledging such activities of individual growth that contribute new knowledge, drive and initiative for self-growth, shape a critically evaluative personal attitude, foster active participation and co-responsibility, and facilitate meaningful, conscious and creative learning at the dawn of prospective specialists' professional career.

Conclusion

A holistic perspective on and analysis of the problems of higher education confirms that university teachers' pedagogical competence and professional responsibility as well as the breadth and depth of their knowledge are vital preconditions for a sound pedagogical process, which is focused on seeking new action dimensions and informative insights into the quality of studies in higher education setting.

Improving pedagogical interaction between university teachers and students, nurturing intellectual capacities, providing a wealth of opportunities in terms of choosing appropriate methods, harmonizing individual learning and thinking styles of students and faculty, and joining inner forces of different individuals can motivate growth and help withstand challenges as well as sustain favorable conditions for professional maturation in higher education setting while fostering a labour market-oriented professional identity among students.

The above-mentioned professional challenges of higher education highlight the need for improving university teachers' and students' teaching and learning styles and for researching the latter with a view to contributing to quality assurance in higher education. Addressing the problems of higher education can be improved with focused research into pedagogical, cognitive and creativity psychology in higher education setting as well as with investigations into the viability of constructivist paradigm in relevant theoretical and practical dimensions of pedagogical work:

- How to develop and ensure personal responsibility of all students for their emerging professional identity?
- How to increase capacity for diversity of methods and pedagogical forms in a critically analytical study process?
- How to transform the power of university teachers' personal example into synergetic intellectual cooperation with students?

Organization of pedagogical process in university setting should make use of positive experiences discovered in relevant research in order to seek innovative solutions and establish a closer and more focused inter-university and interdisciplinary cooperation between faculty members, infusing the process of university studies with insights from relevant research.

The shaping of individualized learning experience during the course of university studies is a conscious, motivated and meaningful learning that is rooted in free will, autonomy and responsibility, critical evaluation of experience and ongoing reflection while moving towards the goal of professional growth.

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QUALITY METRICS FOR EVALUATION PROCESS IN M-LEARNING ENVIRONMENT

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Abstract

Mobile devices are used every day more and more and in the educational environment. The M-Learning term has become a term also known as e-learning. Also knowledge evaluation is done through mobile devices. But it is necessary to determine the quality of the evaluation process and the influence of some factors on the results obtained by students in the evaluation process through mobile applications. In this paper a quality metric is built. The metric will be used to determine the quality level of the evaluation process performed through mobile devices.

Keywords: Quality, mobile, evaluation, learning

M-Learning Environment

Mobile learning is the next stage of development of e-learning technology and help to increase the formal education. M-learning systems do not replace the use of computers to help process evaluation and learning, but completes with new interesting methods available to teachers. The main objective is to create flexible solutions evaluation, which will allow access to all kinds of information devices and flexible materials to produce a variety of situations.

The education system consists of four major resources presented in the following:

- R1 - learners represented by pupils, students or any other person willing to improve in a specific area;
- R2 - teachers or trainers represent the people who are providing educational materials to resource R1;
- R3 - educational materials, represented by papers and courses provided by the R2 to R1;
- R4 - results represented by the marks obtained by the R1 to assess knowledge acquired in consultation resources R3 provided by the R2.

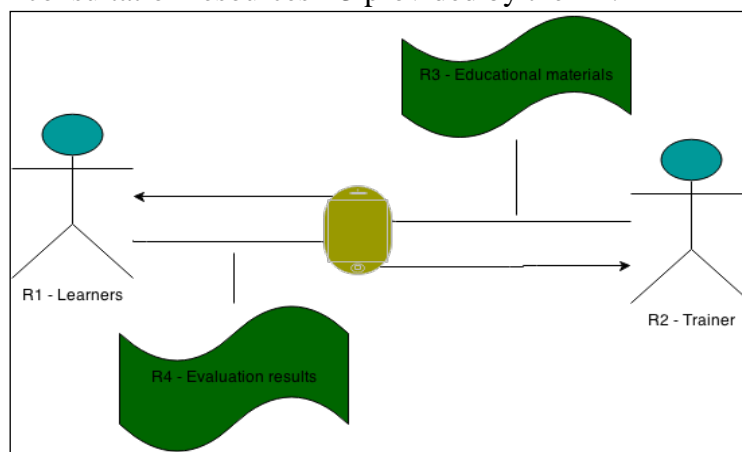


Figure 1. M-Learning resources

Ubiquitous character of mobile devices is implemented in the mobile applications used in educational environment through the following improvements:

- learners (R1) have access to educational resources regardless of time and space;
- transport of educational materials (R3) is done implicitly by the transport of mobile devices that are stored in electronic format;
- providing the new educational materials (R3) without the need of a teacher (R2) meeting face to face with people who need these materials (R1);
- knowledge assessment is done regardless of time and space; such user (R1) sustains the test when he wants when he feels ready and in the place where he feels inspired to support the test;
- the teacher (R2) automatically get the results (R4) and analyze them later easily support testing.

In this way the use of mobile devices for each resource adds the education system..

M-Evaluation of Students

Assessment of knowledge acquired by persons who acquire new knowledge consists in realizing the questions that are addressed to them. Evaluation is done by the following methods(Dumitrache, 2012):

- traditionally on paper;
- in the online environment through a web platform where the user logs in, respond to questions and then received the results;
- through a mobile application like web application in which user logs and respond to questions.

The difference between get the test via web application and via a mobile applications is that via the mobile application the test is available anywhere regardless of time and space. In this way users can take the test anywhere they want and at any time they want. In this way was developed the mobile application MCSAM (Hafizul and Khairuluanar, 2012, Pocatilu, 2012). Through MCSAM application users tests which contains questions with five possible answers (Boja and Zamfiroiu, 2013), figure 2.

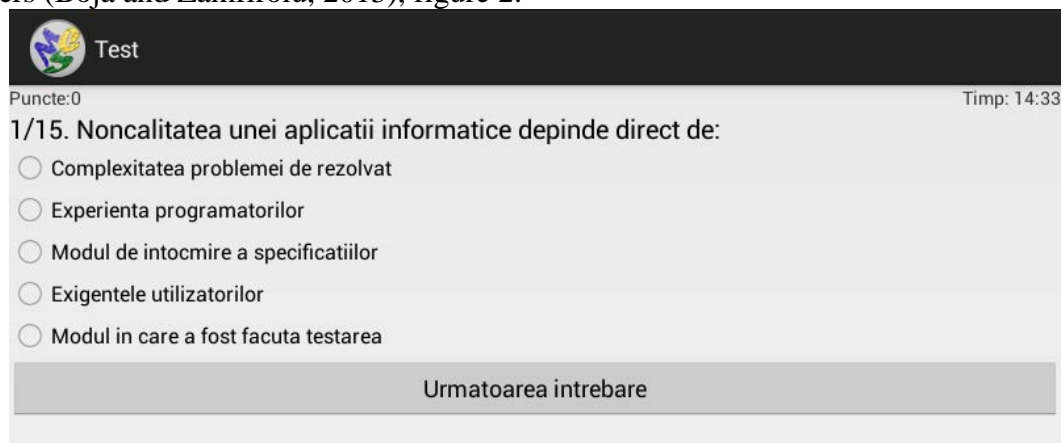


Figure 2. Question in MCSAM application (Zamfiroiu, 2014)

Questions for each test performed by each user are selected randomly from the set BQS.

$$BQS = \{Q_1, Q_2, \dots, Q_{ns}\}$$

where ns represents the number of the set of questions that are chosen for test.

From this set are chosen randomly nt questions forming the TQS set:

$$TQS = \{Q_1, Q_2, \dots, Q_{nt}\}$$

where nt represents the number of questions on the test to be sustained.

The BQS set of questions is stored in the database server and through a web service (Zamfiroiu, 2013) chosen questions for the test are sent to the mobile device.

The order in which they are placed in the test is also randomly chosen. The web method which order randomly the questions is presented below:

```
[WebMethod]
public string ordineIntrebari(int numar)
{
    string rezultat = "";
    int[] vector;
    vector = new int[numar];
    for (int i = 0; i < numar; i++)
    {
        vector[i] = i;
    }
    int l_v = numar;
    int[] ordine = new int[numar];
    while (l_v > 0)
    {
        Random r = new Random();
        int poz = r.Next(l_v);
        ordine[l_v - 1] = vector[poz];
        for (int j = poz; j < l_v-1; j++)
            vector[j] = vector[j + 1];
        l_v--;
    }
    for (int i = 0; i < numar; i++)
    {
        rezultat += (ordine[i] + 1).ToString() + " ";
    }
    return rezultat;
}
```

The answers to the questions provided by the user are saved in the database for further analysis. Are also saved and times when users claim they test and the time spent to solve test.

Quality Metrics for M-Evaluation

Quality assessment through mobile devices is tracked at:

- user; surveys are conducted for each individual user;
- the time spent by the user to solve the test;
- number of checking the existence of the test - user check if the test is available but not dare yet to sustain and support to postpone the moment when he feel ready to sustain it;
- number of checks of the result obtained - shows the user confidence in the result and check often fear that this will change.

To determine quality, two indicators are built on the basis of parameters saved in the database.

Indicator for checking the availability of the test for each user i , ICD_i , is constructed by formula:

$$ICD_i = 1 - \frac{NDC_i}{Re_i}, i = 1 : nu$$

where:

- NDC_i - number of checks for the existence of the test by user i ;
- Re_i - the result obtained by the user i ;
- nu - number of users who take the test.

Indicator of checking the result obtained for each user i , IVR_i is constructed by formula:

$$IVR_i = 1 - \frac{NRC_i}{Re_i}, i = \overline{1 : nu}$$

Where NRC_i represents the number of checks of the result.

Using the values of these two indicators metric for determining the quality evaluation performed through mobile devices is built. Thus the aggregate indicator AIQ_i is buildet by formula:

$$AIQ_i = \frac{ICD_i + IVR_i}{2}$$

This indicator will be applied to the saved data after testing students with application MCSAM, in this way the new built metric on the quality evaluation of students through mobile devices will be validated.

Conclusion

The proposed targets for the knowledge evaluation process is done through mobile applications if this process shows a high level of quality.

In this article we propose a model for building an aggregate indicator metrics for the assessment of knowledge performed through mobile devices.

The indicator will be verified based on real data then can be used to determine the M-evaluation process quality

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TEACHING MATHEMATICS WITH NEW TECHNOLOGIES, SOME PERCEPTIONS OF EFFECTIVENESS OF ICT US IN MOROCCO

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Abstract

Many countries are realizing the importance of equipping their educational institutions to the new technology of connection, information and communication. Connectivity provides many benefits, including access to an ever-growing volume of educational information, opportunities for collaboration and the use of online applications. In addition, it is important for students, as well as teachers, to learn information and communication technology (ICT) skills to enable them to participate in the evolving knowledge society. The Moroccan government is heavily investing in human and physical capital and has undertaken important regulatory reforms in order to introduce this tool in teaching. This paper highlights the efforts in this regard and describes some aspects of teaching mathematics using ICT, benefits and constraints and stakeholders who can promote the integration of this tool in the process of teaching and learning.

Keywords: Teaching mathematics, ICT, education, Morocco

Introduction

The development of the countries cannot be achieved without effective knowledge of science and mathematics. In recent years, new technology every day investing in the cultural and social aspects of our life: they are such a great vector of communication for business and a fundamental tool for research. It is for this reason that the education systems of countries that are concerned about their development put great importance on the study of mathematics. But the manner in which mathematics has been taught has caused many reticences among both students and teachers. The mathematics makes bad memory to the most of generations which studied with the rule, the compass and strenuous and repeated exercises. Actually, children require to see mathematics as tool of emergence and intelligence and not to reduce them under famous and classic words: true or false! The rapid development of information and communication technologies (ITC) requires their integration into the process of teaching and education (La Velle & Nichol, 2000; Lever-Duffy, McDonald, & Mizell, 2003). ICT has been found to be a very important step in education around the world. It can be used in the classrooms to make learning more fun and interesting and therefore more effective. There is potential with today's technologies to train teachers in high quality teaching skills even when they are in extreme rural conditions, unable to attend training sessions. Technologies can reach people that could not be reached before, and everyone in the education system benefits.

However, the effective integration of ICT into education and specially teaching mathematics resists against the integration of these new technologies (Askar & Usluel, 2002; Kilicman & al; 2010). The reasons for this resistance are many: lack of knowledge or

skills in the use of these new technologies, difficulty to accept news working methods and sometimes even asserting the ineffectiveness of these technologies.

In addition, The ICT in education is subject to a number of recommendations for use by Moroccan Ministry of Education, a large amount of notes and articles they are dedicated. But what about the reality of their integration into normal educational practices, the brakes, levers and the actual distance between these tools, the teacher and the students who use them? It is in this global perspective that will fit any changes in teaching practices, and this state is reflected in a general way by the fear of change.

ICT programs in Morocco

Despite its recent integration, ICT have had a significant impact on schools, on teaching and on learning. In point of fact, schools have similar needs to any small business and use the same kinds of computer software for such tasks as accounting, student absence control, communicating, document preparation and printing. Schools also use specialist software for tasks like timetabling, electronic reporting, behavior tracking and student profiling, monitoring attendance and library management. In a whole number of ways, then, ICT tools are proving indispensable in making school administration more efficient and responsive to community needs.

Facing the digital challenge, the Moroccan government is working to prepare a platform, leading a new policy with strategic goals for executing an intergovernmental network, support economy based on knowledge and innovation in Morocco, the development of human resources and infrastructure for use of Information and Communication Technology (United Nations, 2004).

This technological revolution in education certainly influences learning styles. This is one of the topics that formed the basis of the national strategy for the development of Information and Communication Technologies (ICT), in order to record improvements. In fact, in the recent years, the Ministry of National Education and Training, embarked on an ambitious program to the generalization of ICT into the education system. Which program is focused on three main objectives namely: infrastructure, training, and the development of content (GENIE Program MEN, 2006).

The first phase of the generalization of ICT (January, 2009) equipment has 1 878 establishments with 2 058 Multimedia rooms which are functional only in 1543. As for teacher training, this first phase has enabled 30 000 people to benefit. Also, following the evaluation of the first phase of deployment of GENIE strategy, a fourth axis linked to the development of practice he has been built to facilitate and accelerate the improvement of the quality of learning and teacher professional development, which will have some impact on the development of students' skills. The management of GENIE is placed on a steering committee chaired by the prime minister. A project team was created to follow the implementation of GENIE program. So, there are no major constraints facing Morocco, but the government is seeking innovative solutions and private-public partnerships to put in place the future pilot projects in the different priority themes. The government has to combine the efforts of all development shareholders to promote the active use of knowledge for development and to take advantage of ICTs to facilitate information sharing, communication, new applications of technology, and to foster democracy and moralization of public life using ICT as the major tool.

Place of computers in mathematics education

The computer system provides access to information and also analyzes this information, but the computer can facilitate access to knowledge as a part of a learning

process. The integration of this tool in the teaching - learning of mathematics transforms fundamentally mathematical activity.

Through a process of problem solving, modeling situations progressive learning demonstration, students can become aware there levance of mathematics activities, identify a problem and experimenting with examples, conjecture a result set form solution, monitor results and evaluate their applicability to the problem studied. The software tool thus proves an indispensable means to implement a real mathematical activity. It is important that the student knows distinguish between outcome within an experiment and a result established deductively in mathematics.

Indeed, it enables:

- Obtain a quick representation of a problem, a concept to make sense of it and to foster ownership by the student;
- To link different frameworks (algebraic, geometric ...) of the same concept or the same situation;
- To explore situations showing different configurations in dynamic manner;
- To speculate from interactive experimentation in studying a problem with open-ended questions or a certain complexity and conduct a verification;
- To work on solving problems from common situations,, if the calculations are long and complex;
- To expedite the verification of certain results.

Contribution of computers in teaching and learning

The computer provides access to different methods, techniques, numerical computation, graphics representations, acquisition and processing of experimental data and the set of methods for production of documents. It is a tool for documentary research (online and offline resources, encyclopedias, CD-ROMs and cultural services, etc.); Self-learning (with screening assessment, response analysis, control corresponding to a real training analysis) and self-assessment: production of documents, e-mail exchanges, production of websites. It allows classes in a profound transformation of the pedagogical relationship (educational contract) teacher-student. For example, the projection of a document for the whole class makes possible a collective effort through appropriate software (word processing, spreadsheet, etc...) and can mediate the dual teacher-student relationship.

On another, and according to the author (Abouhanifaand al. 2008), should not believe that the use of ICT is the radical solution to various problems related to the teaching and learning of mathematics in secondary, such as no motivation of students, school failure, scholar abandonment decrease level of proficiency in mathematics, etc.. However, these tools can be a catalyst leading to the teacher gradually innovates in methods and approaches while adapting to student activities.

With the prospect of a better visibility of this type of work, we must study the testimonies of class, in order to get the issues underlying the effective integration of computers in the classroom. Therefore, to give some answers to questions like: How mathematics teachers can they take to help students succeed and to acquire new knowledge, skills, attitudes and knowledge to act? How to reflect the interests and personality of each? How to set up learning, specific and unique to each learner?

The use of computers in the teaching of mathematics is therefore falls within the scope of innovative practices (multidisciplinary, team work, cross repositories and content ...). It is an educational approach that gives teachers the opportunity to invest in multidisciplinary teams, is a source of mutual enrichment.

Conclusion

A majority of teachers are convinced of the important role played by the use of computers in the teaching of mathematics in the classroom, as it offers some interesting exploration opportunities in a variety of situations for the teacher, and students by bringing to think about what he does (real work). However, a number of barriers hinder the effective integration of computers in the classroom. Mention may be made in this regard: the degree of control of computers, computer hardware maintenance, control of appropriate software and factors related to the management of time and content. The sources of these difficulties from the lack of teacher training in this area, the lack of computers for students or no number for teachers, lack of time (timetables charged, the risk of incomplete programs, ..), lack of interest and willingness on the part of teachers. Pedagogical and technical support, availability of resources and teacher training are the major difficulty.

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THE POSTULATION OF LEADERSHIP SKILLS AMONG HEADS OF BUSINESS EDUCATION IN OGUN STATE-OWNED UNIVERSITIES

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Abstract

The paper looks at how leadership skills can be improved among the heads of Business Education in the Ogun-state owned Universities. It was noted that Business Education in the study area is a sub-component unit of departments thereby discouraging intimate and direct relationship between the leader and subordinates in the Institutions. The paper identifies five possible leadership styles of Business Education heads and discusses how leaders can improve on their skills in the universities. It is recommended that the leader should make the subordinates feel important and gain their willingness to work. The paper concludes that a quality leader makes both the task and the experience better. Not only does everyone start somewhere, but no one ever stops learning and expanding in experience and knowledge. The paper also concludes that a good leader must be proactive.

Keywords: Leadership skills, Business Education, Vocational and Technical Education, Department, Unit, Motivation

Introduction

Leadership is defined by Stoner and Freeman (1995) as the process of directing and influencing the task-related activities of group members. From the definition, it would be noted that Leadership involves other people who are willing to accept directions from the leader in order to make the leadership process possible. Without people, leadership qualities of a manager would be irrelevant. Another point to be noted from the definition is the fact that leadership involves an unequal distribution of power between leaders and group members. In this case, the leader has more power than the group members. The third aspect that should be noted is the ability to use the different forms of power to influence followers' behaviours in a number of ways. The source of influence may be formal such as that provided by the possession of managerial rank in an organisation or informal, outside the organisational structure. Leaders have a special obligation to consider the ethics of their decisions. The importance of leadership in management is based on the fact that organisational success is largely based on the quality of leadership. Thus, the quality of an organisation's leadership determines the quality of the organisation itself.

Contemporary educational reform places a great premium on the effective leadership and management of schools. The logic of this position is that an orderly school environment that is efficiently and well managed provides the precondition to enhanced peace and tranquillity (Ijaduola, 2011). The leader works through a group or groups of people to achieve organizational goals, the leader adopts one leadership style or another. Whatever the leadership style will determine the sort of cooperation and relationship that exists between the

leader and his subordinates. As opined by Alabi (2009), Ayeni (2003) and Ijaduola (2009) skill in human resources management is very important in determining the effectiveness of leadership. This is because in all the resources that organization has, human resources are the most important. According to Sergiovammi (2010), Ijaduola and Odunaike (2012) human being make things happen efficiently.

Business Education is an aspect of vocational education which prepares individuals for gainful self employment through the acquisition of skills and knowledge that affect the business world. The mission of Business Education in Nigeria is to prepare all individuals to live and work as productive citizens in a changing global society by providing essential business experiences, education and training. The programme's objective as articulated in the curriculum at the tertiary levels of education were directed at equipping graduates with the right skills that will enable them to engage in a life of work in the office as well as self-employment.

Ulinfun (1996) defined Business education as consisting of the total activity that is planned, organized and developed in form of the preparation of youths for responsible economic participation in the community. It is a subset of the entire vocational and technical education often referred to as technology or technical education. National Policy on Education (1981) perceives technical education as that aspect of education that leads to the acquisition of practical and applied skills. The curriculum of business education offers knowledge and skills which enables one to seek career in business (Ndinechi, 2000). Business education is concerned with the teaching of skills, attitudes, and knowledge necessary for a successful business career (Anao, 1986). It is designed to develop special emphasis in marketable business skills and techniques in the field of accounting, secretarial, clerical, stereographic, sales or distributive the occupations.

There are two State-owned Universities in Ogun State which are OlabisiOnabanjo University and Tai Solarin University of Education. In the two Universities, Business Education does not stand as a department on its own. While Business Education at OlabisiOnabanjo is under the department of Educational Foundation and Management, Vocational and Technical Education accommodates Business Education at Tai Solarin University of Education.

This paper postulates on leadership skills among the heads of Business Education in the two Universities.

Structure of Business Education in the Study Area

OlabisiOnabanjo University is the first State University in Ogun State which was established in 1982 while Academic activities commenced in January 1983. Business Education in the University is in the Faculty of Education. The Faculty which is headed by the Dean has three Departments. Business Education is a unit in the Department of Educational Foundations which is one of the Departments in the Faculty of Education. The Head supervises the Lecturers in Educational Foundation, Business Education, Administrative staff attached to the Head of Department's office and finally the students in the two units.

The second University of study is the Tai Solarin University of Education. The University is a specialised University that trained Teachers. Business Education is housed in the College of Applied Education and Vocational Technology. The College has five departments out of which the Vocational and Technical Education is a Department in the College. The Department of Vocational and Technical Education has a head who is in charge of four units which are; Business Education, Technical Education, Secretarial Administration and Home and Hotel Management. In addition to the four units, the Head also controls the Administrative staff attached to the department and the students in the four units.

Leadership in Business Education as a unit

It would be noted that in the two Universities of study, the Heads do not deal only with the members of staff of Business Education but also other units attached to the Department. Business Education stands as a unit and not as a Department. This has hindered the smooth and direct relationship between the Heads of Department and the Business Education lecturers.

At OlabisiOnabanjo University, the head supervises the two units in the Department directly.

The same applies to Tai Solarin University of Education where Business Education is one of the four units being supervised by the Head of Department. It should also be noted that, Business Education has the largest number of students in the study area.

As a result of this, there is no intimate supervision for the Business Education Lecturers from the Head. This consequently have effect on the Business Education students because of the division of interest from the Head of Department. Decision making is not as easy as when the Business Education stays as a Department. A leader is supposed to be a strong facilitator that is providing support necessary for the team to achieve their goals. By listening to the members of staff, a leader can often learn about the barriers preventing a goal from being achieved and, through facilitation, find a way to an appropriate solution. This is a problem in the study area because of lack of direct supervision of subordinates.

A leader's biggest asset is information as the more information a leader possesses about how to achieve the vision or individual goals along the way, the more the leader learns about the direction needed to get there. Problems provide information and therefore good problem solving is a very powerful skill for the leader. This is lacking in the study area because of lack of first hand information of the problems in the department.

The current system of leadership in the area of study does not give room for adequate planning which invariably have negative effect on the achievement of the goals and objectives of the department.

It is necessary to look at how the leadership skills can be improved in the study area. In order to achieve this, it is important to first look at the various leadership styles that the leader can use.

Leadership styles

In order for a leader to effectively perform, he/she has to choose a style that is most appropriate for any given situation. In order to do this, the leader must understand the subordinates well and strive hard to fulfil their expectations for a stress free ambience at the university.

A leader is responsible for managing a group of subordinates, as a result of this, it is important for him/her to find an effective style so as to ensure maximum staff productivity as well as high academic performance. There are different ways to lead, and each style comes with its own set of pros and cons. In order to find the best leadership style to use, it is important to take into consideration the associated circumstances. Therefore, identifying which style is most appropriate in a task requires some deliberations.

Every leader has a unique style of handling the employees. The various ways of dealing with the members of staff in the university is the leadership style by the head. Find below few of the styles.

Different Leadership styles

Autocratic Style of Working

- In this case, the leaders do not take into consideration the ideas and suggestions of the subordinates.

- Decisions are solely taken by the head without carrying along the subordinates
- Subordinates are totally dependent on their heads and cannot take decisions on their own.
- Guidelines and policies are formulated by the heads which would be strictly adhered to by the members of staff.
- Whatever the leader says is the final.
- There is lack of motivation on the part of the members of staff.

Paternalistic Style of working

- The leader decides on the best situation for the staff and the department
- Policies are formulated to benefit both the members of staff and the department
- The feedback from subordinates are taken into consideration before decisions are taken.
- Members of staff have sense of belonging and therefore become loyal to the leader.
- Members of staff are motivated and therefore enjoy their work.

Democratic Style of working

- In this style, leader welcomes the feedback from students
- Members of staff are given the opportunity to give their own suggestions
- There is encouragement of effective and healthy communication between the leader and the subordinates.
- The leader listens to subordinates before taking final decision
- There is high academic exposure on the part of the subordinates

Laissez-Faire Style of working

- In this type of style, leaders do not have much contribution to the department
- Subordinates are allowed to take decisions and manage work on their own
- Hardworking and innovative workers are easily noticed.
- Subordinates do not depend on the leaders for directives.

Management by Walking Around Style of Working

- Leaders in this type of style are efficient listeners
- The leaders interact with subordinates more often to find out their problems and possible ways of solving them.
- The leader guides the workers and as a result, the subordinates look at him/her as their mentor.
- The leaders work around to find out what is happening around them.

Improving the Leadership skills

No matter the Leadership style used by the leader, the leadership qualities are very important for the achievement of Organisational goals. There are several ways by which leadership skills can be improved in the Business Education in particular and the University in general.

Establishment of Business Education Department

The first step in improving leadership skills in Business Education is to create a Business Education Department. Business Education usually has a large number of students. The Business Education is big enough to stand as a department and have a separate head. This is the first way to improve the leadership skills in the Area of study. This step would make the leader closer to the workers. It would enhance easy access to information which would make the leader solve the problems in the department.

Self Esteem

The head should make the members of staff feel important and gain their willingness to work. The self esteem can be improved by letting the workers find solution to a problem that you feel can motivate them, remember the name of the person you are dealing with, and use it often in your conversation as the most important thing to a person is the name. The leader should discuss subjects; but should not argue about them as arguing will infer that the other person is wrong which may invariably bring the person down and hurt his/her self esteem. The members of staff should be complimented occasionally, and the leader should be more willing to listen than talk and show respect the other party's knowledge.

Become a good listener

Most leaders are not good listeners, as a result, they do not remember about half of the information they are told. The head can become good listener when he/she is sincerely ready to listen, he/she should try as much as possible to avoid self distraction or distraction from workers. The head should also eliminate bias in his/her thoughts about a person so as to be able to comprehend what is being said. The leader should look for keywords in what the person is saying in order to make the conversation easier.

Planning

Adequate planning makes the head to achieve the expected goals and objectives through the laid down procedure. Planning ensures performance preparation for an action. In planning, the facts and data are gathered, objectives are reviewed when a planning process is implemented, change is accepted easily when the plans are known, planning also brings attention to dangers, decision making skills of the staff can be strengthened through proper planning.

Motivating

The leader should show to the subordinates that they are needed by motivating them. Motivation can be done when the subordinates are kept informed of necessary decisions, allowing the members of staff to grow by giving them necessary direction, make the workers feel proud in course they are doing, give praises where necessary, make mention of a worker's achievement and give credit to the staff where necessary. A leader should inspire and motivate as well as ensure team works, but if the leader has no strengths in keeping to a deadline, or being able to follow through and act on problems, then leadership quality fails on the inability to act and resolves issues.

Disciplining

This is the art of dealing with people when they fail to do their job or when they behave abnormally. With some people, you need to be firm, or even demanding, while for others you only need to advise and give suggestions for change. In doing this, you should try to have the workers see the seriousness of the situation, and why they should change their attitude or performance. The leader should try to get a commitment from them to do better in the future. The leader should also understand a few key unwritten rules that can make or break a good leader and evaluate himself and the environment in relation to them and what good leadership is to him.

Delegating

Delegating is a skill that requires disciplining the leader that will in turn allow him to supervise better. It is essential to get the job done, but delegation in a leadership context is a sign of trust and faith in the team members abilities. Delegation is sharing skills and

experience to be able to allow people to grow, but it must be done wisely. The leader should not fall into the pitfalls of being fearful of delegation as unwillingness to delegate may be a psychological problem involving fear.

Analysing your own strengths and weaknesses

The strengths, weakness, Opportunities and Threats is known as the SWOT analysis. This method is simply to write down what you feel are your strengths, weakness, opportunities and threats and then allow another person of integrity to do the same of their opinions of yourself. This allows a flow of ideas and allow you to see problems you may not be aware of.

Lead by Example

It is always best to lead by example. This could be done by ensuring that the leader is always available when necessary, assist where necessary and ensure that the work is clearly understood by the subordinates.

Be Organised

A leader that is disorganised would automatically make the workers to be irresponsible. A leader is expected to be organised and have self confidence.

Know your People

It is important for the leader to know about his team including their lives after work. This may not be easy when there are many units in a Department.

Take ownership and Responsibility

The leader should always be ready to take ownership and responsibility at all times. No matter the situation, the staff should be aware that you are always there for them in both good and bad times.

Conclusion

Leadership and management in a reductionists sense ultimately is about one thing; satisfactory completion of a task. Leadership can be used to make the task completed quicker, but that limits the quality of the experience as few people can learn anything from it. A quality leader makes both the task and the experience better. Not only does everyone start somewhere, but no one ever stops learning and expanding in experience and knowledge. It is a mark of a good leader to be proactive. This means that the leader should be aware and act against possible problems and also to make possible opportunities into real opportunities. A good leader needs to be able to make decisions, he should have a vision of where to be and make decisions to get closer to achieving the vision. It is also important for a good leader to have strong people skills since a leader needs to be able to communicate the vision and motivate the team to follow.

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EFFECTIVE TEACHING METHODS IN THE MASTER'S DEGREE: LEARNING STRATEGIES, TEACHING-LEARNING PROCESSES, TEACHER TRAINING

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Abstract

The Bologna Process has substantially modified the structure of the new curricula at European universities, especially in the Masters degrees. Social and labour demands increasingly require more specialized professionals. The Faculty of Education at the University of Zaragoza implemented in the academic year 2009/2010 the Masters in Teacher Training for High School Teachers aimed at training future teachers of different degrees in the acquisition of teaching techniques and methodologies to carry out their professional work as teachers. This paper proposes objectives, methods and activities for achieving learning outcomes in the Masters compulsory module entitled "Context of Teaching Task" (CTT). The research developed has been carried out analysing students' training needs with the main aim of improving the teaching-learning processes in the Master's Degree. It remains unquestioned the need to constantly updated the teacher training and provide them the necessary tools to be able to face new learning situations in their life-long learning process.

Keywords: Learning outcomes, Didactics, methodology, socio-educative needs

Introduction

The Faculty of Education of the University of Zaragoza introduced in the academic year 2009/2010 the Teacher Training Masters for High School Teachers. Students eligible to attend this Masters are qualified and trained graduates who have decided to engage in the pedagogical development of the teaching profession. In this sense, they are adults who already have a university degree. However, they lack a solid understanding of the teaching-learning process, as well as of methodological principles to undertake their work as teachers. The purpose of the Masters is to provide Teachers of High School, Secondary Education, Vocational Training and Teachers of Language Teaching, of Arts and of Sports with specific teacher training mandatory in our society for the exercise of the profession in accordance with the provisions of the Act 2/2006, of 3rd of May, of Education, Royal Decree 1393/2007, Royal Decree 1834/2008, and the Order ECI 3858/2007 of 27 December⁴.

The Masters is one year in duration and consists of generic and specific modules. In the generic modules students take general educational subjects, dealing with aspects such as school organisation, tutorial and guidance, mentoring processes and basic psychological principles throughout the first quarter, modules which may be given another name but whose contents refer to those mentioned. Once acquired these specific competences, students enrolled in the second semester study specific modules related to the degree with which they

⁴<http://titulaciones.unizar.es/Masters-secundaria/> (Last accessed: 04/03/2013).

have accessed the Masters. They also have a *Practicum* divided into three phases, so that they can observe the operation of a Secondary School. They should write a series of papers in the period of the *Practicum* from the analysis of institutional documents, such as the School Educational Project, the School Curriculum Project, the School Coexistence Plan, etc.

Proposal of learning outcomes for the CTT Module of the University Teacher Training Masters for High School Teachers, Secondary Education, Vocational Training and Teachers of Language Teaching, Arts and Sports

Students who complete a Diploma or Degree in areas not directly related to teaching lack the teacher training education needed to develop it. The work of the teacher in the stages of the education system of secondary education requires specific knowledge of the socio-educational reality in which he or she will act as a professional practitioner in the future. Therefore, students who wish to pursue teaching in the field of secondary education should know the functioning of schools in the micro-political and macro-political levels and acquire training on interpersonal relationships, the involvement of the various educational agents, the functions of counselling services and also concerning the relationships between family and school. The Module "Context of Teaching Activity" (CTT), compulsory in the University Teacher Training Masters for High School Teachers, Secondary Education, Vocational Training and Teachers of Language Teaching, of Arts and of Sports, provides specific training on the organisation and operation of schools, as well as relations with society. Given that educational institutions have an idiosyncratic culture, determined by the legislative action of the three types of educational administration (central, regional and local) future teachers must be trained in specific contents that allow them to develop their professional work.

Curricular requirements arise as a result of innovation processes that are introduced by lawmakers of education laws that competent legislative bodies approve. This makes it necessary to know the current educational guidelines to be followed in each of the stages of the education system. Similarly, the work of the future teacher requires the acquisition of skills needed to let him or her know, evaluate and analyse institutional documents that mark the performance of teachers as an educational community (Antunez, 1993). Consequently, the context in which this Masters takes place requires the development of specific learning outcomes in each of the modules that allow students to acquire the necessary skills. At least the following learning outcomes in the CTT module should be considered in line with the syllabus:

- 1) Demonstrate with concrete case analysis that the prospective teacher understands the micro-political plane relations of the education system.
- 2) Describe the process of socialisation and education with examples of reciprocal influences between society and education.
- 3) Assess formal and non-formal teaching detailing the educational and employment challenges and understand the relationship between the social and the educational systems.
- 4) Manage current educational legislation with a diachronic view showing knowledge of the prior education system regulations in our country.
- 5) Value the culture of educational institutions as a part of the school organization paradigms (macro-level aspect) through the critical analysis of institutional documents (the School Educational Project, social climate, the Stage Curriculum Project, Internal Regulations, Annual Plan, Annual Report).
- 6) Develop the Tutorial Action Plan showing understanding of basic skills, planning and management of the evaluation sessions, the intervention of the Educational Orientation Team and of psychologists and vertical and horizontal coordination, and *staff*.

The achievement of these learning outcomes requires the definition of generic and specific goals and objectives. Regarding the former, it should be noted that this Module of the University Teacher Training Masters for High School Teachers, Secondary Education, Vocational Training and Teachers of Language Teaching, of Arts and of Sports, mandatory for all students, is oriented for university graduates who wish to develop the teaching profession in Secondary Education. So the objective is to receive specific training under the current legislative and institutional framework from the study of the historical evolution of the Spanish education system. In this sense, the ultimate goal is for students to acquire specific training on the educational context in which they will develop their teaching.

Since this Masters is addressed for future teachers of both the stage of compulsory secondary education and also non-compulsory secondary education, students acquire knowledge of the functioning of the school, the teaching-learning processes and relationships that are generated in them (paradigms, relationships between the various educational agents, role of the family, training and functions of the management team, intervention of counsellors, etc). It becomes essential that students get to know and become familiar with the context in which they will develop their teaching and the relationships established in the different educational institutions (Apple, 1987). They will also acquire specific knowledge about the intervention, roles and relationships with the family depending on the educational stage in question. The completion of this module will allow the students to be acquainted with the relationship between the teaching profession, the school, the family and society through the study of specific competences and sub-competences, functions, levels of organisation, curriculum requirements, projects and activities. Furthermore, a set of specific objectives must be established in line with the educational program, such as the following:

- 1) Analyse legislative developments from the Act of Education (1970), [Ley de Educación, 1970] up to the current Act 2/2006, of 3rd of May, of Education.
- 2) Assess the changes produced in the educational system from the introduction of basic skills in the early stages of compulsory school of the educational system.
- 3) Understand the links between the social and educational systems by analysing the relationship between the family and the school.
- 4) Interpret the relationship between the school, the family and the community to develop the teaching profession from an integrated perspective.
- 5) Differentiate between the micro-level and the macro-level aspects in educational institutions.
- 6) Identify the social, economic and cultural schools through institutional documents and environmental resources.

The learning outcomes that students acquire at the end of this module are important because they help them learn the inner workings of the school as an educational institution. If the students have acquired specific contents related to training and guidance, technology and tourism, but do not know how a school works, they cannot adequately develop their teaching. The analysis of the paradigms of school organization will allow the students to know the micro- and macro-level aspects of educational institutions, thus providing them with training about decisions, the lobbies, the concept of school institution, how assessment processes are conceived, etc. Since the role of the family is important in the teaching-learning process, the students may interpret the necessary collaborative relationship to be established with the family, the socialisation of the students and the reciprocal influences in the socio-educational field.

Innovation processes that education is undergoing in the present twenty-first century introduce constant challenges in the education system (Hatch, 1997). Students will learn current trends in education and will consider the need for training in certain lines of action for education legislation through the culture emerging in educational institutions. Therefore, the

students will become competent in the knowledge of the structure of schools, their operation and organisational levels (Martin-Moreno, 1996). Students will acquire specific knowledge related to current legislation through the diachronic study of the evolution of the educational laws from 1970 to the present. This will allow them to assess the training needs identified by the sociological and technological development and introduce processes of improvement in their teaching performance.

Moreover, the guidelines of the Educational Administration make it necessary that students know the main priorities and lines of action in the school included in institutional documents. They will therefore be more competent in the knowledge and assessment of current trends in the educational system. The introduction of skills in the different teachings of the period of Secondary Education (compulsory and post-compulsory) requires specific teaching strategies and methodologies. The students will acquire these strategies and methodological principles after the analysis of specific cases (disruptive behaviour). After finishing this module, the students will be able to assess the importance of the relationship between the family and educational institutions as part of a comprehensive education, directed to insert occupationally the student into society.

Methodological principles designed to promote meaningful learning

Module 1 CTT of the Teacher Training Masters for High School Teachers seeks, as one of its aims, to provide students with teacher training needed to perform their professional practice. Therefore, it is necessary to start with the theoretical and practical knowledge of the main teaching paradigms (Ball, 1989; Bolívar, 2000; Fernández and Terrén, 2008) and offer students an overview of the organisational structure of the education system, where the reference document required in this regard is the current education legislation (Act 2/2006 of 3rd of May of Education). The acquisition of theoretical principles needed to develop adequate practice will make it possible to gradually introduce the methodological principles. Regarding the methodology, this module should promote the active participation of the students, who are the main protagonist of their own learning, a fact which appeals to their intense cognitive activity, always facilitated by the logic gradation of the complexity of planned activities. The adjustment of the educational process to the level of the students' cognitive competence is required, with particular attention to the area of potential development in terms of Vygotsky. With such an aim in mind, the meaningful learning of students will be developed, based on their level of prior knowledge and thereafter introducing the necessary fundamentals of psychology. The student must know how educational institutions work, and also the norms and standards set by the educational legislation in shaping the macro-and micro-political level. To acquire the psycho-educational foundation needed, the individualization of teaching-learning will be weighted from the implementation of Ausubelian theories. The acquisition of *learning to learn*, of lifelong learning and of meaningful learning will stem from the diversification of teaching-learning situations as a methodological principle that is, at the same time, an organisational criterion.

The management of activities will depart from lectures, accompanied by workshops where implementation in groups composed of free designation of school organization paradigms (positivist, interpretive and critical-symbolic) will prevail. Students will undertake practical work in groups which will subsequently be exposed to the rest of the class group. The practical part of the module will be supplemented by tutoring and individualized work through student participation in forums on the platform "Moodle". To proceed with the development of teaching in this module, the teacher will start with an expository method of specific contents that will form the psycho-pedagogic foundation to be acquired. This will be followed by a single case study where students actively participate in the formation of a theoretical framework together with a brief quantitative research. Due to pedagogical

limitations of the students of this Masters, it is not yet possible to introduce qualitative methods for data analysis.

The acquisition of the psycho-pedagogic fundamentals affecting this module will be based on problem-solving and practical exercises (both in group and individually). However, this training is supplemented by problem-based learning. Students must resolve cases the teacher puts forward (e.g. how to act in a Secondary School to psycho-pedagogically intervene in cases of disruptive behaviour of students) with a proper implementation of the theoretical contents of the module together with a proposal that includes psycho-educational intervention to develop methodological principles in the classroom. The student must encourage the development of a comprehensive and interdisciplinary approach.

Cooperative learning will be a key methodological principle that will enable students to acquire an active role in the development of teaching-learning situations and will also encourage their interaction with peers from very different degrees. The grouping of students is an important criterion when selecting the methodological principles. Depending on the objectives of the various activities, students can form homogeneous groups in terms of their level of cognitive competence for case studies. At other times, students will form heterogeneous groups where skill and / or experience of some students over others will prevail, always understood from the constructivist perspective. Finally, the grouping of students, given the evolutionary period of their development (Piaget, 1972) may also be freely undertaken.

Students may form flexible groups, small groups (3-6 students) to develop activities. Similarly, the role of the student in the teaching-learning process will be active on the individual level, thus encouraging activities aimed at the diversity of professional interests (Vocational Training students can solve cases particularly related to their Training cycles, students of degrees such as Engineering, Philology, Economics, etc. will participate in activities close to the socio-educational reality in which they will later intervene). For learning to be meaningful to the student, as well as to take into account their level of prior knowledge with an initial assessment, the implementation of teaching methods mentioned through learning experiences and activities based on the development of their first *Practicum* in this Masters will be included.

The principles of the learning experience of the students will take account of the introduction of grading activities close to their reality and heading toward more distant aspects, starting with what is known to them and heading for what is unknown for them, establishing affordable basics and tending towards the complex (paradigms of school organisation, for example). The role of the student in the principles assumed by both the methodological principle of cooperative learning and by constructivism is based on the approach to student learning on the basis of his level of development, thus ensuring the usefulness of learning. Therefore, the methodology that develops the psycho-pedagogical foundations of this Masters will also enhance students' interactivity in the learning process, where the teacher will guide the learning process.

Catalogue of learning activities to be included in the teaching guide for CTT

Teaching activities developed by the teacher will focus on the practice of learning outcomes. Throughout the first semester (1) the following teaching and learning activities will be undertaken, spreading over 10 weeks of teaching in the Module n. 1, with four attendance teaching hours per week.

Week 1: Learning Outcome 1: Demonstrate with concrete case analysis that the student understands the micro-political relations of the educational system.

Teacher education activity: First, he will proceed with an analysis of specific cases involving externalizing the concepts of the macro-political and the micro-political level. To do this, Teacher A will show a video on "The school organisation in educational institutions", downloaded from the website of the UNED. Then, the conceptual items referred to in that video will be discussed with real examples. The teacher will generate a *brainstorming* on the board with the interaction of students discussing the basic ideas of these two concepts.

Students' learning activity: This will consist of conducting a practical group activity where, in groups of fours, students must complete a painting. They will be provided with a DIN A-3 sheet containing a table with items on the front lines and the micro-political and macro-political planes in the following columns. Students will pay attention to the relationship and similarities of some items and should be able to differentiate the items proposed to them by using the materials that the teacher has previously uploaded in "moodle".

Weeks 2 and 3: Learning Outcome 2: Describe the process of socialisation and education with examples of reciprocal influences between society and education.

Teacher education activity: The teacher will show links to web pages that collect socialisation processes in students of Secondary Education (through the page of the Centre for Teachers and Resources [Centro de Profesores y Recursos], the CAREI, etc), indicating the importance of the students to socialise and develop their skills in this period of compulsory schooling. In this activity, two documents to be explained in the classroom by the teacher, developing the influences between society and education will be added as bibliographic reference.

Students' learning activity: Students will develop three activities that promote socialisation and show their necessity in today's society. To do this, they will work in pairs and must upload their final product to the "Moodle" platform so that the rest of the team members can read and add suggestions. The teacher will review and provide students with *feedback* so that they have enough information at the time of completing the activity. One classroom session will be devoted to discussing with all the class group the activities designed by the different groups, their viability in secondary classrooms and the necessary interaction between society and education.

WEEK 4: Learning Outcome 3: Evaluate both formal and non-formal ways of teaching, detailing educational and employment challenges and understanding the relationship between society and the educational system.

Teacher education activity: The teacher will project a *PowerPoint* presentation explaining the current educational challenges. To do so, he or she will refer to the current educational legislation (Act 2/2006, of 3rd of May of Education, LOE) and will relate the objectives of the Act with the facilitation of student employment. An interview with a student of 4th of ESO will be screened, in which his or her situation will be analyzed, comparing the choice of educational routes and assessing the interaction with the appropriate professionals (counsellors).

Students' learning activity: The student will participate in a weekly forum through a space provided for Module 1 "Context of Teaching Activity". The teacher will put forward a question that students must respond to by consulting the documents previously worked upon in lectures. The questions will refer to contents developed in the module and will involve the implementation of the content acquired by the student. For example, students must answer the question "How is the education system in the stage of secondary education organised?" To do so, the student will refer to the current educational legislation (Act 2/2006, of 3rd of May, of Education, in the relevant chapter). In this way, students will respond taking into

consideration Grice's maxims, and may consult the UNESCO documents to extend their contribution. The teacher will take into account the quality and quantity of participation of students through the evaluation of this activity with a rubric.

Week 5 and 6: Learning Outcome 4: Manage current educational legislation with a diachronic view showing prior knowledge of rules of the educational system in our country.

Teacher education activity: The teacher will project on the board a list of questions about conditions of schooling, educational community involvement, participation of parents of students in decision-making processes, years spent by a student, school board functions, features of the management team, and criteria for the organisation of the school. Then he or she will explain the developments in these areas in each of the education laws since the Education Act (1970) to the current Act 2/2006 of 3rd of May, of Education (LOE). He or she will also provide a diachronic view of education legislation that will allow students to deepen into the teaching of current legislation. To do this, he or she will show students a Word document which contains the new concepts that have entered the LOE. This will allow him or her to explain the most significant changes operated in those measures of attention to diversity and the educational and vocational guidance. He or she will insist upon the fact that professional education cannot just stay within the LOE and the Organic Regulations, because the law does not specify, there are areas that the law does not focus upon, and with technological scientific knowledge, the guidelines for action in schools, organisational models, solutions regarding spaces ... can be implemented, areas where the legislation does not require anything, or does not address them.

Students' learning activity: Students must answer a questionnaire with objective questions on education guidelines established by the current legislation. Once done, students will form groups of four and measures should be designed for diversity for a case that the teacher will propose. Groups where, for example, there is an immigrant student, must design a model of language immersion program showing knowledge on measures to such pupils with special educational needs (ACNEAE) established by current legislation. Each group of students will present on the board for the rest of the class the measures proposed to meet the individual educational needs of the individual student. Moreover, once the pattern of performance has been presented, students should prepare a brief section of foundation on legislation to develop the educational provisions of the Statutes for Secondary Education, what steps can be taken, which may have caseloads, etc. This will allow them to complete the training related to educational laws provided by the teacher and will contrast it with the understanding that their peers have reached.

Week 7 and 8: Learning Outcome 5: Assess the culture of educational institutions as a part of school organisation paradigms (macro-political level) through the critical analysis of institutional documents (school policy, social climate, Stage Curriculum Project, Internal Regulations, Annual Plan, Annual Report). Manage current educational legislation with a diachronic view showing prior knowledge of rules of the educational system in our country.

Teacher education activity: The teacher will explain what an educational project is, which information it collects and why it is important to know this institutional document. This will enable students to understand that the macro-political level affects all schools alike but it is the micro-political level that provides the differences. The next session will show three educational projects of secondary schools in the city of Zaragoza in which students will appreciate the exposure of values, trends and beliefs in Education that are manifested in these schools. The teacher will show a curricular project stage of an institute in which the organisation of teaching in each of the courses or academic years of the stage of secondary school is presented. Students will have the opportunity to read a real document. Similarly, the

teacher will show students internal regulations so they can see the type of sanctions that the school responsible for conducting research stipulates, and which will propose punishment for the final decision for the School Board. These documents allow the teacher to analyse the most representative differences from previous education legislation.

Students' learning activity: Students will freely form groups of five persons and will select one of the official documents presented by the teacher. They must then extract the relevant data and explain them to the group-class, proposing for this, if necessary (as in the Internal Regulations) corrective measures. They will also upload the relevant information in "moodle" to be part of the process of the development of the portfolio to be delivered the day of the exam.

Week 9 and 10: Learning Outcome 6: Develop a Tutorial Action Plan showing understanding of basic skills, planning and management of the evaluation sessions, intervention of the team of educational psychologists, vertical and horizontal coordination, and staff.

Teacher education activity: The teacher will show a Tutorial Action Plan and guide lines established by the education authority for its processing. With these instructions the teacher will project an educational intervention in an institute of secondary education which will analyse with students the importance of this document. Also, the teacher will develop and upload on "Moodle" some instructions on the sections that a Tutorial Action Plan must have, together with the sample document.

Students' learning activity: Students will develop one of the sections of the Tutorial Action Plan. The intention is that each group of students, as far as possible, selects a different section, so that when all students have completed the work, the final product is a genuine Tutorial Action Plan that will be uploaded to "moodle", so that it can be analysed by the whole class group. The development of these activities will require a series of educational materials. The videos, documentaries and reports will be obtained from the website of the Spanish Open University [UNED], in particular its educational channel. Thereference PowerPoint to the theoretical contents and the space in "google docs" should be accessible by loading the names of the students.

Since the European Higher Education Area promotes the use of platforms and virtual teaching and learning, in this module the student will enter a space in "moodle unizar"⁵ where they can actively participate in 10 forums raised throughout the all weeks of class. This type of virtual environment will allow students to post their own work to be seen by other students, and make suggestions to the work of their peers. On the "moodle" site students also have access to several pdf files and list of the skills worked upon on this module. Moreover, teaching resources must also contain the reading and internalization of a series of references, some mandatory and other optional.

Types and techniques of evaluation in CTT

The assessment from the educational perspective can be of three types depending on the area being evaluated, all three necessarily complementary, so that the evaluation process may contribute to the improvement of teaching and learning in which it is integrated: students' learning, the teacher's teaching practice and curriculum development processes followed in teaching and learning. Regarding the first, the assessment of students' learning, it must be based on the evaluation criteria established in the teaching program of Module 1 CTT of the University Teacher Training Masters for High School Teachers, Secondary Education, Vocational Training and Teachers of Language Teaching, of Arts and of Sports,

⁵<https://moodle.unizar.es/course/view.php?id=1615> (Last accessed: 09/03/2013).

which must comprise the skills and learning outcomes and develop the types of practice. Therefore, after this analysis of competences and learning outcomes, the evaluation process of learning involves the assumption of students' teaching-learning processes and also the methodological principles raised. Thus, we believe that the evaluation process should be based on an initial assessment to identify cognitive ability and prior knowledge of each student. The development of teaching and learning will continue with the ongoing assessment which should provide immediate feedback. For this reason, it is, in turn, a formative evaluation (and therefore continuous, as is done throughout the semester) that allows corrections in the teaching-learning process when the teacher considers them necessary, immediately changing the design that has been proposed in the curriculum development of a specific module. This improves the learning process and contributes to improved results.

Moreover, we believe that criteria evaluation must be made from the content and skills outlined in the program of Module 1 of the Teacher Training Masters for High School Teachers, always redirected and specified in a type of personal and individualized assessment. We are unable to proceed with a personalized assessment because, if it were real implementation of this work, we would find such a large number of students that would make it unviable. However, the criteria evaluation should be integrated into an overall assessment of the competences in the learning outcomes of this module. Conducting formative continuous assessment makes final evaluation necessary, especially when deciding whether a student has acquired the learning outcomes set out in the syllabus or not.

Another perspective to take in the development of the evaluation process is to include hetero-evaluation. This should be introduced gradually and always accompanied by co-evaluation as it offers students the opportunity to participate in assessing their own learning and forms and prepares them to subsequently introduce a kind of self-assessment, as a final objective of the evaluation process with adults. Also, as an innovation process we suggest the introduction in the evaluation process of the portfolio, understood not as a collection of works in the same module (ie, in our case, Module 1) but rather as a technique that shows the validity of the practice of this process by giving the student a greater responsibility for self-assessment of their learning.

Considering the three types of assessment put forward, it is necessary to indicate the use of assessment techniques that jointly develop these types of assessments. There should be a systematic observation of the degree of acquisition of knowledge and skills in college students. This work is highly complex with numerous groups and more viable in smaller groups. Considering all the modules that form the Teacher Training Masters for High School Teachers, specific ones have a much smaller number of students and it is therefore more effective and plausible to conduct this type of evaluation. Instead, in Module 1, stemming from personal experience, there is no such development of this type of evaluation or systematic observation, because we cannot ensure that teachers analyze reality and consider all variables when the number of students varies between 87 and 117. This observation should not be performed systematically as if it were timely observing the disruptive behavior of a child in primary school, but with a grid that allows the observation of class score in achievement with the objectives of the student. This would require solving activities individually by the students along the theoretical and practical sessions of the semester. Furthermore, we understand that there should be a systematic observation of the students' participation in the activities that are part of the teaching-learning process. This observation, again, can only be feasible in small groups. The completion of an examination by the student, at the university level, is still required even if the three types of assessment can be performed. It is true that the rating of the final marks should reflect the acquisition of content in the student – learning outcomes –, and this is largely evaluable through an examination. However,

as we have said, we do not have to quantify only through the written exam, but also through other evidence and tests that we have discussed.

We have referred to assessment of student learning as a type of assessment. On the other hand, we consider it very necessary to evaluate the teaching practice itself through criteria and procedures. In the context of this Masters' degree, for Module 1, this type of evaluation should be done on the basis of an individual teacher self-evaluation, since it is not appropriate to develop it as a hetero-evaluation or as a collaborative self-evaluation. However, this assessment technique would, in our view, be the most difficult and cost-effort to perform.

Finally, the third type of assessment is the evaluation of the teaching program based on criteria and procedures. The evaluation of curriculum modules of the Masters gives a rating conditioned by the learning outcomes that students should have acquired by the end of each of the modules. As a result, the activities that the student will perform to demonstrate their knowledge of learning outcomes, the internalization of skills and learning content will address:

Activity 1: In groups of up to four individuals, students will analyse an institutional document. To do this, the teacher will provide a list of several institutional documents, such as the School Educational Project, Internal Regulations, Coexistence Plan or Annual General Programming, and the group must select an institutional document and reflect critically on the information contained in it. This activity will examine the theoretical, pedagogical principles, criteria for school organization, the establishment of groups, relationships among teachers, the activities undertaken, the criteria for school organisation, the timetable distribution, etc. that are reflected in these documents. This activity will involve 10% of the final marks for the course. Throughout the semester all students must complete four evaluable activities that will contribute to the achievement of learning outcomes, developing and strengthening the competences of this module. Aspects that will be particularly valued involve the conceptual clarity when analysing what elements are involved in the organisation of the school, which agents make decisions about the organization, what is the influence of the micropolitical level in the organisation and development of the school, as well as the requirements determined and conditioned by the macro-political level. Similarly, the critical capacity of students in their arguments and the language used in writing will also be considered, penalizing spelling and argumentative inconsistency. A student who does not justify and give reasons for his or her answers, does not show a strong line of argument, and has misspellings will get a negative evaluation in this activity.

Activity 2: Students will analyse the Internal Regulations of a Secondary Education school and will develop three activities that show an intervention in behaviour problems. For this purpose, taking as a reference the content and skills set out in Section 3 of the program, they should observe the ways in which the school punishes the faults of students (the teacher will provide the Internal Regulations so that all students will work with it) and from there they will develop three activities to improve a student's disruptive behavior. This activity will involve 10% of the final marks for the course. The main aspects assessed concern the originality in the creation of the three activities, their adequacy to the level of student's cognitive development and a justification of it as a pattern of behavior modification in the student, expressing what they would bring to the student's secondary education, what are the improvements in the short and in the long term, and what agents and with what type of material should intervene (counsellor, psychologist, professor of Therapeutic Pedagogy, class teacher, support teacher). The main aspects penalized are the mismatching of the student's evolutionary characteristics, whether it is beneficial or not for the student, and the fact that it is not integrated into the content of the teaching program provided for subject.

Activity 3: Students will participate in 10 forums throughout the semester in which they must respond to questions posed by the teacher that will develop learning outcomes. The forums are presented as a weekly activity, so that the student will participate in two forums per week (a total of 20 forums in the semester). They will arise through the "moodle" platform in order to make visible the material for other students, thus fostering their motivation in responses. The fact that the other fellows can see the answers given by any other partner increases the level of individual enforceability while introducing new considerations on the same topic. Students will answer two questions and may also participate in the replies of other colleagues, showing their views, provided it is an argued and reasoned response. The completion of this activity will contribute 20% of the final grade. It will assess the precise response, spelling, typographical and grammatical checking, and will penalise incorrect spelling, typography and punctuation. Students not participating in all forums will have two weeks to finish the semester to participate in the forums that they have been unable to attend or complete the responses. The answers from the forums will also be delivered on paper the day of the exam.

Activity 4: Students will develop an e-portfolio as an innovative tool and facilitator of the evaluation process, designed with an approach different to the traditional one: this is a technique whose application involves the use of several integrated tools and which introduces students to the development of self-assessment of their own learning. The e-portfolio will be made individually by each student and will contain, in addition to the activities in the classroom, within the teaching-learning processes, critical reflections on them, showing theoretical and practical knowledge and skills acquisition. This assessment tool includes a section in which the student makes experiential work attending a school, an institute. In this activity, the e-portfolio, the students must contact and transcribe two interviews with two teachers in their specialty (which approximates them to the educational reality in which they will subsequently intervene) for information on the methodological principles and classroom organisation (materials and resources). Once the interview is transcribed, students must analyse the information obtained and compare it with the theoretical framework provided in class, always in an argumentative way, showing their standpoint and suggesting improvement proposals if they exist. Finally, the e-portfolio will also include, as one of its sections, the reasoned self-evaluation of learning that the students consider.

The portfolio will be digital because students should upload it on the "moodle" platform so that it can be read by other students, and receive comments. We believe that when students are asked to publish their work on digital platforms, it increases their level of motivation, improves their social relationships with the class group and contributes greater enforcement to their learning. These four activities that the students must complete throughout the semester amount to 50% on the final grade, with class attendance as another criterion to qualify for the option of continuous assessment, and active participation in them. Note that the three types of assessment referred to reliably allow the student the assessment of his learning and of learning outcomes.

This typology allows defining learning outcomes not only through the creation of traditional assessment grids but also with active student involvement in the teaching-learning process. The greatest difficulty in making a comprehensive assessment of student learning in this Masters resides in the few hours of lessons that can be devoted to an assessment of learning outcomes. The presentation of theoretical content is an instrument that allows a broad appreciation of the skills required of the students. However, when the groups are so numerous such a task becomes difficult because if you spend more hours to process theoretical exposure assessment, it is detrimental to the delivery of all content for the official program. The time limitation hinders the work of teachers who are trying, as far as possible, to stick to the program to be taught in the context of a specific university training.

The three types of assessment that are raised in this paper, with their corresponding evaluation techniques, allow assessing the results of student learning and achievement and internalization of the skills and competences of module 1. It is understood that the assessment should be carried out in practice to improve student learning, so that the evaluation must necessarily be continuous and formative. Each activity, as has been proposed, has certain levels of demand, qualities and weight in the final grade of the module associated to it.

Furthermore, the tutorial function has a crucial role in order to achieve the necessary empathy with students, address their difficulties in the acquisition of learning outcomes and help guide the process that we develop as teachers. For this purpose, mentoring serves on various levels, necessarily complementary. For one, there is mentoring of students in the class group in the classroom during the practice sessions. To this individual tutoring is added to complete specific content students may not completely understand. In CTT the following specific activities of mentoring are raised:

Activity 1: For guidance and facilitation of the proposed activity in week 1, it is considered necessary to undertake a tutorial in which the teacher explains to the students the elements to be analysed at the macro- and micro-political levels. Depending on the type, the elements will be different. Although the initial starting point is the same for all students, the items that the student group will choose will vary depending on the features that they want to analyse. As this activity is intended in an open manner, in the sense that students should examine all items in the table of DIN-A3 sheet, but at the same time add their considerations on the elements within each item that they want to look into deeper. In this activity, the mentoring process is essential, as it is difficult for the student to learn to differentiate the two planes and the characteristics and consequences of these in educational institutions. The influence of the micropolitical level determines the organisation of the school and introduces divisions within power groups. These reasons lead us to say that it is extremely important that students clearly differentiate between these two planes. Tutoring would allow the teacher to know the shortcomings of the students in the acquisition of this block of content and improve their knowledge.

Activity 2: To design the three activities that promote socialization and for which students had proposals for weeks 2-3 of the semester, it is advisable to perform a tutorial in which the teacher will observe the students' level of knowledge and can be oriented with specific readings to expand that spectrum, acquire a broader view and proceed with the proposal and design of the activities. It is a complex activity, because in order to design it students must know the stage of evolutionary development in which the student of compulsory secondary education is and, considering this level along with the report of the school, the characteristics of the group class and the social relations that are established, they can improve these processes of socialization. Thus, especially in this activity, the teacher should guide the student, by indicating the characteristics of evolutionary development of this period, showing him or her the needs a teenage student may initially have. The age at which they are working in secondary education is not easy. Therefore the postgraduate student must acquire in the Masters, not only in this module, but also in others, psycho-pedagogic knowledge that will help him or her understand the evolutionary developmental period in which the student is. Without this prior knowledge, he or she cannot proceed with the proposal of socialization activities.

The teacher, therefore, acts as a guide in the learning process, facilitating it and providing the student with the human and material resources that he or she needs. The fact that the students see that the implementation of the activities to be evaluated in this Module 1 has a following, a tutorial, also contributes to their motivation, improving learning outcomes. It really does matter that this process of guidance is provided to students, both in the search for sources of information, as in the understanding of the educational reality. However, it is

understood that mentoring is an activity that is offered to the student, neither imposing their assistance, nor counting the frequency of tutoring.

Activity 3: The tutoring activity will focus upon student learning activity designed for weeks 7 and 8. The demands of the activity require the development of a tutorial to strengthen students' knowledge and help achieve the corresponding learning outcome. Although understanding and differentiation of macro-and micro-political level in week 7 of the semester has already been acquired, it is considered necessary to develop a tutorial to help in the acquisition of this content by the student. The selection of the institutional document to which the activity relates and which students have to do is not complex; however, the proposed corrective actions to be performed are indeed so. Therefore, in this case, the teacher mentoring can show an example of several PEC remedies, including, of course, the PCC, and indicate those cases in which the proposal is inadequate, compared to those in which it is suitable. Thus, when students have to perform the proposal of corrective measures, they will have already noticed other models, and they will be able to contrast the pedagogical lines established with greater precision.

Conclusion

Mentoring activities are an essential element of the teaching-learning process, especially in the University studies of Masters, in which the level of demand is higher, the number of class-attendance hours declining, and learning outcomes very condensed. Moreover, the skills that students should acquire during this Masters Module 1 require the development of certain tutorials; otherwise, it is not feasible to meet the needs and learning difficulties of students. Mentoring in the university plays an important role in that it not only helps to improve student learning and consequently achieve the learning outcomes, but it is also a necessary process guide in acquiring specific contents.

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PROSPECTIVE SCIENCE TEACHERS' REFLECTIONS ON THE USE OF LEARNING STRANDS IN DEVELOPING LESSON DESIGN

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Abstract

Learning strands as a framework seem to give an alternative to the fixed way of planning and provide the needed space to the students for constructing knowledge in a classroom. In order to facilitate process of teaching-learning of science in a more flexible paradigm, prospective teachers need to be convinced that developing lesson design is an open-ended activity and there should always be space for redesigning learning experiences by observing reactions and responses of students. This will help in catering to the learning needs of diverse human potentials in classroom. In the present study, an attempt has been made to study reflections of the prospective teachers on the use of learning strands in developing lesson design in a more flexible paradigm. It is concluded that use of learning strands in developing lesson design can substitute specific objectives used in traditional form of lesson plan where rigid adherence of the processes of teaching learning with pre-conceived notions is emphasized. Teacher educators might look at the lesson planning framework in the light of using learning strands in the development of lesson design.

Keywords: Lesson Design, Learning Strands, Science Education, School Experience Program

Introduction

One of the key features of prospective teacher education is School Experience Program. The reason being, this program gives the real contextual opportunities to analyze and reflect on whatever else the pre-service teacher learns during such a program. There is no doubt to the notion that the whole school experience program weaves around the experience of teaching in the classroom, based upon certain planning known as lesson planning in common language. While there are so many different ways, in which one plans a lesson, some of the key features of traditional frameworks of planning science lessons are the following.

In the traditional frameworks, knowledge is supposed to be objective and learning testable. The testable forms of learning have underlying principle that considers reality as single layered, and unidirectional. This reality, by assumption, is same for all learners irrespective of their socio-economic, emotional, physical, aesthetic, spiritual, mental, intellectual, ethnic, and other identifiable and non-identifiable diversities. Teacher is a resource of knowledge and transmits it to learners who are passive recipient of it. Thus, the lesson plans are often deterministic in nature with the set objectives catering to the needs of surety of the outcomes. The resolution that learning is testable and it is in intangible forms is the basis of formulation of these objectives. These objectives of learning are breakable in small bits, pieces, and chunks. The instructions are therefore, arranged in a series of

perceived outcomes. In other words, learning is programmable. In order to test learners' knowledge, paper-and-pencil tests are ideal forms of assessment. It is possible to standardize this ideal form of assessment, as there is an inherent assumption of underlying uniformity in the human beings in such a classroom. The 'one size fits all' model of learning is thus the key to planning. Cognitive activity in such forms of lesson planning becomes a series of mental processes in which flexibility leads to wrong outcomes. This notion of learning and the learners give rise to the assumption that learners are like learning machines.

The vision document of education in India, National Curriculum Framework, (NCERT, 2005) observes, "Our educational practice is still based on limited 'lesson plans' aimed at achieving measurable 'behaviors'; according to this view, the child is akin to a creature that can be trained, or a computer that can be programmed. Hence, there is too much focus on 'outcomes', and presenting knowledge divided into bits of information to be memorized directly from the text or through activities after 'motivating' children, and finally on evaluating to see if children remember what they have learnt. Instead, we need to view the child as 'constructing knowledge' all the time". This emphasizes upon the need of actively engaging students in the process of construction of their knowledge through observation and inquiry. A central goal for elementary science teacher preparation is supporting prospective teachers to organize inquiry science instruction in ways that engage students in science practices, build conceptual understanding, and leverage students' resources for learning (Davis, Petish, & Smithey, 2006; Mikeska, Anderson, & Schwarz, C. V.a, 2009; Russ, Scherr, Hammer, & Mikeska, 2007; Windschitl, Thompson, & Braaten, 2009).

Teaching-learning of science should go beyond presenting the facts and principles and result of investigations. It should also show the process of achieving them and how do we arrive at understanding. Although knowledge is something personal and individual, the learners construct their knowledge through their interactions. These interactions involve interaction with the physical world, collaboratively in socio-cultural settings and linguistic environments (NCERT, 2013).

Allowing the learners to ask questions that require them to relate their understanding with day-to-day life experiences and encouraging them to answer questions in their own words and from their own experiences helps them in construction of their knowledge. The structuring and restructuring of ideas are essential features as they progress in learning. Prospective science teachers need to appreciate that learning science is a continuous process of constructing explanations of natural phenomena and one of the important roles of the teachers is to facilitate the learners to construct questions and inquire to address those questions. Therefore, it is important to realize that developing lesson design is an open-ended activity and there should always be space for redesigning learning experiences by observing reactions and responses of students in order to cater to their learning needs. Prospective teachers must draw on their own experiences and knowledge base that they have acquired during their school experience programme. Their own perceptions and disposition about teaching- learning process greatly influence their subsequent understanding about it.

In this backdrop, re-examination of the pre-determined set of objectives with pre-determined outcomes for developing lesson plan, considering rigid structure of learning environment becomes imperative.

Learning strands as given by Philip Bell (Bell, Lewenstein, Shouse, & Feder, 2009) seem to give an alternative to the fixed way of planning and provide the needed space to the students for constructing knowledge. These strands of scientific proficiency representing learning objectives can be of great help to the prospective teachers for developing lesson design in science in the perspective that is not so fixed. The learning strands can empower them to take multidimensional approach in teaching-learning process and provide enough

space for flexibility considering learning needs of the learners. In the light of the above discussion, there is a need to study the views, experiences and most importantly the reflections of the prospective science teachers on the use of learning strands in developing the lesson design.

Learning Strands Framework

(Bell et al., 2009) propose 'strands of science learning' framework that articulates science specific capabilities supported by informal environment. It builds on the 'four strands' framework in the formal set-up developed for K-8 science learning in 'Taking science to school' (NRC, 2007) with the addition of two more strands. The four strands provide a framework for thinking about the elements of scientific knowledge and practice. They can be useful to educators in their efforts to plan and assess students learning in classrooms and school systems. They can also be helpful tool for identifying the science that is emphasized in a given curriculum guide, textbook, or assessment (NRC, 2007). Bell holds the opinion that there is overlapping of learning in the formal and informal set-ups. These six learning strands are closely intertwined with each other. Working on one learning strand of science strengthens the other strands. Similarly, weakness of one strand affects all other strands. The six learning strands together provide shape to science education goals.

As given below, learning strands are practices to develop proficiency in science that students should be involved with.

“Strand 1: Experience excitement, interest, and motivation to learn about phenomena in the natural and physical world.

Strand 2: Come to generate, understand, remember, and use concepts, explanations, arguments, models, and facts related to science.

Strand 3: Manipulate, test, explore, predict, question, observe, and make sense of the natural and physical world.

Strand 4: Reflect on science as a way of knowing; on processes, concepts, and institutions of science; and on their own process of learning about phenomena.

Strand 5: Participate in scientific activities and learning practices with others, using scientific language and tools.

Strand 6: Think about themselves as science learners and develop an identity as someone who knows about, uses, and sometimes contributes to science”(Bell et al., 2009).

In order to facilitate teaching-learning process in the constructivist paradigm, prospective teachers need to be convinced with the theoretical base and rationale of using the six learning strands of science as a substitute to writing traditional specific objectives in the lesson design. Unless prospective teachers develop a feel of constructivist approach of teaching-learning and multiple learning contexts in a science classroom, they would not be in a position to carry it forward. Based on this understanding, the school experience program of prospective teachers of a College of Education in Delhi was conducted with learning strands as a key to lesson design at upper primary stage (class 6-8). In an earlier study, analysis of a questionnaire administered to 723 students showed that transaction of science lessons applying learning strands provoked interest and generated curiosity among the learners to know something more beyond the textbook and class interactions and they were found more reflecting, participating, and engaged as a way of knowing and thinking. There are evidences suggesting that the inherent flexibility of the learning strands provides ample scope to address learning needs of a diverse group of learners in a science class (Prabha, Jha, & Kumar, 2012). Using the six learning strands to plan their science lessons, prospective teachers could allow more choice and control over what learners wanted to know and engage them in inquiry to learn various concepts of science (Prabha, Kumar, & Jha, 2013). In this paper the reflections of the prospective teachers on the use of learning strands is analysed.

Research Design

Research questions

1. Can learning strands be used as a substitute to traditional ways of writing specific objectives in the planning phase of teacher education program?
2. Does the use of learning strands at the planning phase of school experience program help the prospective teachers of science to transact the lesson in constructivism paradigm?
3. Are the prospective teachers able to pay attention to individual learning needs of learners if lesson is designed from the perspective of the learning strands?

Objective of study

1. To help the prospective teachers in using the six learning strands of science in the planning phase of lesson design for transacting it in constructivism paradigm.
2. To inquire whether prospective teachers are able to pay individual attention to learning needs of the learners when transacting the lesson from the six learning strands perspectives.
3. To analyze the reflections of the prospective teachers on the use of learning strands of science in developing lesson design.

Method, Sample, Tools and Techniques

We chose twenty prospective teachers studying in a College of Education placed in Delhi for the study. In the first phase of the study, prospective teachers were acquainted with the use of six learning strands at the planning phase of designing teaching-learning experiences of science for the learners at upper primary stage.

The researchers discussed with them about intertwined nature of the learning strands, how these strands could help them to facilitate construction of knowledge of learners considering learning needs of the students, and development of lesson design on various concepts of science using learning strands.

Each prospective teacher transacted at least 20 lessons in different schools over a period of six weeks. In all more than 400 lessons were transacted incorporating learning strands in their lesson design.

Reflective journal, unstructured interview, and classroom observations were the tools used in the study. Prospective teachers were suggested to maintain a reflective journal to write down their reflections on the use of six learning strands in the lesson design. An unstructured interview with them revealed their ideas about use of the six learning strands in the teaching - learning process of science in class 6-8. The researchers observed a number of lessons over a period of six weeks.

During their school experience program, the prospective teachers experienced teaching in two subjects. Therefore, in addition to science, these teachers were having one more teaching subjects such as Mathematics or English. In the other teaching subject, the prospective teachers were planning their lessons according to traditional approach based on the Bloom's Taxonomy. This helped them to make anticipated comparison between the two approaches of developing the lesson.

Data collection

Twenty prospective teachers were suggested to write their reflections on the use of learning strands in the lesson design. Nineteen of them participated in the study. Following themes emerged from the analysis of their responses. For the analysis, pseudo names have been used for the prospective teachers to maintain their identity. As English was their second language, their responses are moderately edited to keep up the flavor.

Theme 1: Thinking beyond the textbook and classroom boundary and connecting the concepts with daily life

Suresh – I understand that students are now able to think beyond their textbooks. They are connecting themselves with other students and environment.

Nidhi- Through learning strands I am able to connect the topic with their day- to- day life.....through these strands they are more able to explore the physical and natural world.

Anju- Learning strands give us a chance to go beyond the textbooks and student-teachers; and students experience more things.

Asha - Because it provides broad area of learning without limits, we can use anything to make it (the lesson) live.

Salma - By using learning strands, students can easily explore themselves in different dimensions according to their daily life experiences.

Suman - Learning strands are effective because it covers broader aspects of learning areas whereas in traditional way of writing specific objectives there is no scope of comprehensive learning beyond classroom teaching.

Soma - There is much scope of learning beyond the classroom learning by using learning strands.

Shreeja - Learning strands provide us a broad spectrum and cover all areas of learning with activities. We can think more on the topic and can relate with daily life.

Jalil - Learning strands enable the students to observe their own experiences related to the activities and class.

Rajkumari- Learning strands give us broader idea about the topic.

Nidhi - Learning strands help students to collect knowledge/information from their natural world i.e. surroundings.

Discussions

It has been an undisputed contention of educators around the world that education cannot be confined to the boundaries of the classroom. How to plan science lessons from this continuum has been a challenge. The perception of prospective teachers supports the idea that learning strands framework helps in planning lessons beyond the boundaries of classroom and textbooks. They perceive learning strands to be flexible as against making lesson plan using specific objectives based on the Bloom's taxonomy. Moreover, they view learning strands as holistic in giving them opportunities to plan for the learners' explorations of physical and natural world. The perception that learning strands framework allows for planning beyond the textbook in classroom has emerged from the responses of 57.89% prospective teachers. Using learning strands as a way to lesson design helped them to reflect that relating learners' classroom experiences with outside the classroom experiences through various activities was important to enhance the learning process. This finding is in consonance of one of the guiding principles of the National Curriculum Framework-2005 (NCERT, 2005) that is, connecting knowledge to life outside the school.

Theme-2 Conducive to peer learning and more participation in the class

Suresh - Learning strands motivate students to participate in activities as much as possible.

Asha - Students can develop their own view out of the textbook.

Jatin - Students can make arguments with others if they learn the topic well. From the learning strands, students can explore themselves and predict questions. Both students and teachers can participate in the activities.

Salma - Learning strands are more effective as students are more involved in the classroom. These strands give proper independence to students to think and explore

themselves and help students to make conclusion of the concept freely by their own thinking.

Richa - Students are not bound to the teacher’s instructions. They can perform the activities and understand the topic in their own view and by their own perspective. They are free to learn in their own way.

Soma - Students learn more and reflect on the topic after doing activities according to their age group.

Shreya - Students think more and reflect more.

Jalil - Sharing of experiences is a good effect of this approach.

Discussions

In the perceptions of about 47.36% prospective teachers, it emerged that learning strands allowed students to design opportunities for independent (self) learning, share their experiences, generate arguments and conclude from observations. In this context, interview with the student teachers revealed that students started to discuss the concepts learnt in the classroom with their peers and friends.

Theme 3- Develops interest and scientific attitude

Suresh - By using learning strands students are more interested and excited to know more about what is happening.

Nidhi - This helps in creating excitement among the learners.

Anju - Students get chance to develop their interest in knowing about different facts related to science.

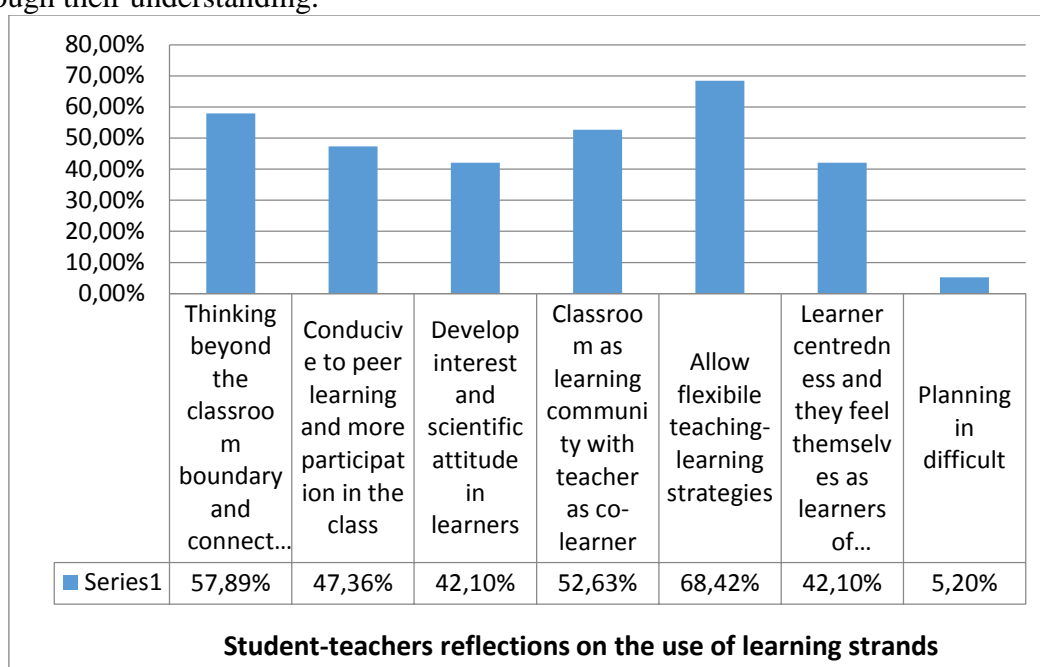
Asha - Students develop their own views and interest out of the textbook.

Anubhuti - Students take interest in knowing various facts related to concepts.

Salma - Students are more interested.

Soma - Learning strands help us to make their learning more interesting.

Jalil - By using learning strands students are able to analyze the topic critically. The strands help them to take interest in the classroom activities and observe their own experiences related to activity and the class. The most significant part of this approach is that it creates scientific attitude. Students are able to use scientific language and tools and express it through their understanding.



Discussions

Developing the culture of science in a science classroom is a challenge in front of every science educator. In the perceptions of more than 42.10%, prospective teachers it emerged that planning in learning strands framework helped them in developing this culture. Prospective teachers provided feedback that many students started visiting websites relevant to the concepts. They also tried to perform same or similar activities performed in the class to validate their knowledge, like checking whether a magnet can attract an aluminum box or a door handle. Learners tried to verify observations themselves and justify their statements in the light of their observations. It shows that students developed interest in learning science and their thinking about the concepts continued even after the classroom process was over.

Theme 4-Classroom as learning community with teacher as co- learner

Suresh - Learning strands is helpful for students and for us to know more and more ...

Leela - Learning strands help to explore thinking of the student and to know more about learners.

Anubhuti - These strands help to understand what a learner wants.

Jatin - Students participate in the activities and learn from each other. Students can explore themselves to predict and ask questions.

Salma - Learning strands give proper independence to students to think. They can easily explore themselves in different dimensions according to their daily life experiences. Overall, learning strands help both student- teachers and students to understand the concepts and make conclusion of the concepts freely by their own thinking.

Suman - There is scope of new thinking to check the changing concepts of learners, which is not present in traditional specific objectives.

Shrija - We can think how to know students more and which type of theory we can use so that students will learn more.

Jalil - This approach thinks about students.

Neha - Use of learning strands helps us to know more about the students.

Nidhi - In this, we can share our experiences with them.

Discussions

In the perception of 52.63% of the prospective teachers, it emerged that learning strands framework helped in developing a learning community of the teacher and the learners where teacher gets more opportunities to understand the learners' thinking and process of their conceptual development with their changing performance in the classroom. The learners participate in the learning community actively. The prospective teachers felt themselves as co-learners. They could generate multiple learning contexts to facilitate learning. Prospective teachers were self-motivated to carry on the activities in the process of transaction of various concepts of science in the classroom as they found their students to be interactive. This emerged as a positive outcome of the study. Generally, activity based teaching- learning is not taken with enthusiasm by the practising teachers due to stress of covering the syllabus. In this respect, science teacher preparation program, emphasizing on constructivist approach from learning strand framework can enrich science education in India.

Theme 5- Allows flexible teaching- learning strategies

Nidhi - Learning strands help to create excitement among students.

Anju - Learning strands do not bound us to use a particular and pre-determined strategy.

Leela - These strands help us to explore the thinking of students.

Sanju - I just feel there is more degree of freedom to teachers. Scope of learning is more.

Rishika - Scope of activities and learning are more. Learning strands help us to explore thinking of students. These are more flexible.

Asha - Because it covers broad area of learning, we can use anything to make it livelier. Learning strands cover almost all areas of learning.

Richa - Students can perform activities and understand the topic from their own view and by their own perspectives. They are not strictly bound by teacher's instructions. They are free to learn in their own way.

Suman - There is flexibility for student-teachers in learning strands. Creative elements and freedom for student-teacher and students both make better learning and effective teaching. There is scope of new thinking.

Soma - Learning strands are more flexible than Bloom's taxonomy.

Shreeja - These are more flexible than Bloom's taxonomy. Using the learning strands gives more opportunities of activities to students.

Neha - Learning strands are more flexible and we can use whatever strands we want to use.

Rajkumari - We can think about different aspects of the topic, whereas in the specific objective framework, there is no scope of flexibility and we have to work in an imposed direction.

Nidhi - Learning strands provide flexibility in teaching-learning. We can use any strand in different ways.

Discussions

68.42% of the prospective teachers expressed in one way or the other that learning strands framework provided them the necessary flexibility as against Bloom's taxonomy framework. Although, the study was not aimed at any comparison, the prospective teachers made a comparison; as in the other teaching subject, they were developing their lesson plan using Bloom's taxonomy. They perceived that learning through learning strands framework did not bind them to a particular strategy of teaching-learning. They could change and adapt strategies as per learning needs and context of their learners. They could design various learning experiences/opportunities for learners in different areas catering to the needs of creativity, interests, motivation, and excitement. Moreover, the prospective teachers found scope for creativity in developing their lesson designs.

Theme 6- Learner -centeredness and learners feel themselves as learners of science

Rishika - Focusing is on concepts.

Anubhuti - Learning strands help me to understand what a learner wants. Using these strands, I can set my objectives by taking learners at the center. I can set different activities for them. Therefore, I try my best to give them some other related concepts and activities to them.

Salma - Learning strands help students to generate facts and concepts related to that topic. I feel them as independent learner and as a science student. Student- teachers can use their experiences in their understanding about the concepts.

Richa - By using learning strands students have their own thinking and they are free to learn by their own way.

Jalil - Learning strands approach gives them opportunity to think, understand and create the various schemas in their mind. This approach thinks about students.

Neha - Learning strands are very good for learners. They help us to know more about learners and their own views about their daily learning.

Swati - We try to think the topic from the point of view of students, as well as their level of understanding.

Nidhi- Learning strands help us to set objectives in accordance to the learners. These are totally learner- centered and help us to know more about the students learning process, their view of learning and how students learn through different methods and how they want to learn and take/collect knowledge/information from their natural world/surroundings.

Discussions

In the perceptions shared by about 42.10% of the prospective teachers, it emerged that use of the learning strands helped them to maintain a learner- centered classroom. The prospective teachers felt that with learning strands framework, they could plan activities and processes related to learners' concept formation as per their needs, views, and preferred ways of learning. They could realize that learning objectives could not be conceived as fixed and final. These emerged out of ongoing interactive teaching-learning experiences and evolved around the learners' experiences and curiosity.

Theme7- Planning is difficult

Suresh - I think, sometimes it becomes difficult to develop lesson design using learning strands and write rationale for using them. However, it happens occasionally.

Discussions

Developing lesson design in learning strands framework demanded more creativity and understanding of learners' existing ideas. One prospective teacher found developing lesson design in learning strands framework difficult. He used the word 'irritating... Occasionally'. This indicates that he might not be inclined to take up this challenge head-on.

From an unstructured interview, it came out that the prospective teachers started to consult a number of reference books of science in addition to the science textbook, as students were asking many questions beyond the textbook. It helped them to enrich their content knowledge.

Classroom observation done by the observers showed that students were very actively participating in the teaching -learning process. They were not sitting quietly on their seats as in the traditional classroom. The learning environment created by the prospective teachers encouraged them to raise questions whatever coming to their mind. Some of those questions were, 'how does an electron look like?' 'Do the elephants have bigger cells in their body?' 'Do animals have cells like human body?'

Prospective teachers were using students' existing knowledge as a resource to teach. They were found to encourage students to ask questions. Students were able to relate the concept with their everyday experiences.

Conclusion

The current study shows that the prospective science teachers were found to be receptive of the use of learning strands in the teaching-learning process of science. Use of the six learning strands of science in developing lesson design facilitated them to engage the learners in teaching-learning process in view of constructivist paradigm. Analysis of their responses indicates that learning strands framework of lesson design can help in bridging the gap between theory and practice. Learning strands offer scope to the teachers to go back to the planning stage and modify the learning strands as per the individual learning needs

facilitating teaching-learning activities. Use of learning strands empowered the prospective teachers to design and generate multiple learning contexts. It can be concluded that use of learning strands in developing lesson design can substitute specific objective used in traditional form of lesson plan where rigid adherence of the pre-planned processes of teaching learning is emphasized. Teacher educators need to look at the lesson planning framework in the light of using learning strands in the development of lesson design. Learning strands can facilitate a modern, forward-looking prospective teacher education program in constructivist paradigm where every learner is valued.

However, this study is only a preliminary attempt and need further work on a larger and varied sample. (Lederman & Lederman, 2014) observe that ‘studies of science teacher education have a focus on some aspects of teacher preparation or professional development. Only having implications for science teacher education is not enough. There must be significant attention to one or more of various mechanism that promote change in teachers, knowledge, beliefs and /or practices. We are not saying that studies must be “experiments”. Connections between various forms of teacher education and teachers’ knowledge, beliefs, and/or practices can be made in studies adopting virtually any design and/or paradigm’. Various studies on the beliefs and practices of prospective science teachers can be taken.

A follow up study may be undertaken to study how these teachers carry forward learning strands framework in their future classrooms to get information about the efficacy of teacher preparation programme on their teaching practices. A comparative study of the effect of the use of learning strands in developing lesson design and use of Bloom’s Taxonomy in making lesson plan in teaching- learning practices can shed some more light on the effectiveness of the learning strand framework of lesson design.

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WHY CHINESE ARE THINKING DIFFERENTLY? (CULTURAL AND NEUROLOGICAL CASE-STUDY)

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Abstract

Are Chinese students using different “mental program”? Have their performances natural causes or educational causes? The goal of the present article was to investigate the neural correlates of Chinese mind-brain and how it works and notice the importance of all these for education. We were focused in some relation between language, mathematic and music as activities and try to find scientific explanations at the brain’s functional level. We were particularly interested in awareness of educationist about the role of cultural background to improve semantic memory in their teaching. We try to show some recent outcomes of neurosciences studies about functional locations and brain’s areas that are mostly activated during accomplishing different tasks. Educationists already empirically knew that children like music and also teachers insist on semantic memory in their teaching, but they lack the scientific explanation of the process and how important could be the results of neurosciences researches for their activities [10].

Keywords: Brain’s function, cognitive neurosciences, education, memory, mathematic, music

Introduction

Pragmatic explanation leads us to focus on local area using tacit values and assumptions. In such a case accepting cultural and anthropologic guides it maybe the better way to understand what’s going on in a different cultural process of learning. Neurosciences showed us that if we study different cultures with their mental programs, we can find different functional structures of the brain. There are some possible questions we can put and try to find out more about how other cultures can work well. So, by example, are Chinese students using different “mental program” and are their brain really working differently? Are their performances (or failures) due to native structure or could have educational causes? In order to clarify we need to mixt anthropologic method of observation with recent modern technology used for study brain’s function.

We started this study guided by the philosophical framework of Chinese culture, more precisely the *holistic presupposition* in which “everything is connected with everything else”. First of all, let have a look in their beliefs and models of learning. It is quite obviously that Chinese students are good in mathematic. The explanation regarding this fact must be more that they have a very diligent behavior and they have the habit to study very hard. If we try to check their ancestral believes we will learn from their anecdotic stories that people act and think about themselves as being connected to everything and their activities are also related each other’s. Chinese people believe that human beings must be conceived as a total entity and never look only a part of it. All activities they are doing (some of them very different) seems to improve each other’s. The

tasks like doing music, writing, or playing swords all can improve their rational acts like counting, planning, doing business.

After we observed and find that they are deeply embedded in their cultural environment we take into consideration also some lectures from cognitive neurosciences and recent results of modern technology. Recent studies claim that even brain is such complex organ it is possible, using modern investigation like fMRI (*functional Magnetic Resonance Imaging*) to identify brain's areas that are activated when people are accomplishing different tasks [21]. Some questions arose when we try to understand Chinese style of learning. How is possible to solve tasks which request cognitive logic/mathematical skills by the agents with Asian cultural background? That kind of background embedded contextual language, non-monotonic logics, and holistic philosophy of daily life. Are there may be some scientific proves at neural/functional level which can explain Chinese style of learning? However we are not actually producing here a medical rigorous study, but using their results we can make new connections between medical researches and education.

After we had some observation for a while on Chinese culture and languages (during our stay in China, when we were working with students, learning Chinese, practicing T'ai chi quan) and corroborate them with recent cognitive neuroscience, we emphasize the following hypothesis: *The itinerary (and localization) of the neural - information is shorter in Chinese's brain than in Westerner's brain.* This is possible because since the beginning the Chinese characters are embedded by meaning as everybody knows well. The habit, that Chinese have to practice instrumental music at a very early age, develop intuition and increase speed of understanding something new, like new theories or new subjects. Both language and music require more semantic memory. We call "itinerary", the chemical and electronic processes during activities that can be detected by modern methods (fMRI, PET).

Recent researches in cognitive neurosciences show that musical education can improves the semantic memory, and reduces visual memory [5], [20], [3]. That must be a confirmation for the hypothesis which claims: The same anatomical brain can function differently in a different culture and create different patterns as "learning program".

If we wonder why Chinese can perform so well mathematics (and many other activities) we can find out that their education as cultural background (natural language) an, as well as, the official present curriculum in nowadays, are interested in improving the semantic memory.

At the beginning we have kept in our mind the presumption that there is a *functional equivalence* between mental and al brain's function (mind-brain) [7] and we have selected some outcomes from science and neurosciences regarding the architectural neuronal function and mental organization as cognitive patterns.

So, if we have a look in the history of science we can find that like in others sciences, by example in medicine or psychiatry, in psychology researchers were focused mostly in anomalous or dysfunctions of human behavior, but meanwhile it becomes relevant also for normal people. This was indeed the case for explanation of *dyslexia*, disability in reading. (Malfunctions need explanation and good practice to help people. Another reason why scientific research had target human dysfunctions is that professional ethics not allow us to use in experiments normal persons.)

Following this topic of neuroscience confirmation for educational area, we found sources which can show some clues for learning process, knowledge as activation of different parts of brain, neuro-cognitive patterns.

Some relevant researches about language

In 1929, Orton (1929) [15] emphasizes that *dyslexia* is due to a kind of neuronal organization in patient's brain.

Briefly, he just pointed out that all difficulties in reading, we are talking about, are blocked paths of *visual neuronal information* from **right hemisphere** to the **left hemisphere**, where images and sounds should be decoded and, become meaningful. He asserted that the left hemisphere can't take control on this process. Also, he explains the case of *ambidextrous* whose can use successfully both hands, as a process due to the fact that none hemisphere is taking control in order to become dominant.

According to Orton, the path (itinerary) of information in human brain use for process of reading is this:

1. Visual representation of the letter;
2. Representation of the sound associate with the letter;
3. Representation of this combination as a meaning decode.

This point of view was taken by some researchers, from Georgetown University in Washington, D. C. whose have designed new experiments, using modern methods like fMRI (*functional Magnetic Resonance Imaging*). <http://www.humanities.uchicago.edu>

Nowadays, in neurosciences is frequently used fMRI, or PET (*Emission of Positrons Tomography*). With fMRI, we can measure cerebral process in a high resolution allows us to see the metabolic changes, like regional consume of oxygen or glucose during motors or cognitive activities.

So, to measure the sanguine flow in brain during activities, scientists have selected a group of 41 youngsters, between 6 and 22 old ages. That group was relatively homogenous as level of intelligence and has the ability to read capitals, simple words and group of letters without meaning. Researchers have been focused on patients who can't read properly and try to observe the itinerary of sanguine flow between cerebral hemispheres. They could observe an increase of the quantity sanguine flow in a **left hemisphere** during *visualization of letters*. This fact shown, in their opinion, that patients have a dysfunction as an interrupted sanguine flow and that is possible the cause of *dyslexia*. Also, they had noted that, even there are some variations from languages (French, English and Italian) the area of brain, where *dyslexia* is located, is in the same part of brain, **left lobe behind parietal**.

Another experiment designed by Paulesu and al., (2000) [16] showed that this disability is bigger for Italian patients than for English ones. That could happen because Italian is more phonetic language than English. Italian language presents more identity between letter and sound than other European languages. However the location is settled as being in the **left lobe behind parietal zone**. It seems that it is already known and nothing could be done forward [6].

But, surprisingly, this point of view has been not confirmed by a new experiment designed by **Li Tai Han** (<http://www.sciencenews.org>). **Li Tai Han** and his colleagues emphasize that disability to read has *different* location for people who spoke a language which is not phonetic at all! At first, in his experiment **Li Tai Han**, has used as patients a group contain 16 students from a primary school in Beijing, and later he enlarged that group at 65 students. During experiment, designed in the same way that others have been before, they had discovered that the part of brain (of Chinese dyslectic children) a *small activation and less sanguine irrigation* in the **left hemisphere**, [6] but in **vertical sub-frontal area**, not **behind parietal**! It seemed be very surprising knowing that zone is for decoding meanings [8]. In the brains of all these patients, the meaning is *built not unifying the letter with a sound like in European languages, but directly in vertical sub-frontal area*! [2]

However, that apparently was not such a big deal, because obviously, the Chinese character-word dissociation view has over-emphasized the visual-orthographic property of

Chinese characters but ignored other dimensions. Tan, (2000), [24] Written Chinese is a morphemic system that is based on the association of meanings with graphic forms. Moreover, all Chinese characters are pronounceable units. Cognitive research on Chinese reading has well documented that, during identification of a Chinese character, both its visual-orthographic component and its phonological and semantic attributes are activated quite rapidly. [17], [18], [19], [24]. Tan designed some experiments and dissociate single character (with precise meaning) and composed words (two characters with vagueness meaning) in order to establish if they have different locations and activation in the brain map, respectively right hemisphere and left hemisphere. The results were astonishing. After they use fMRI they concluded that the left frontal regions are relevant to the semantic activation of both Chinese single characters and two-character words. Peak activations were localized within the **left prefrontal** region (BA 9) for single-character as well as two-character words, implicating that common regions are recruited to maintain access to semantic information in reading Chinese. The results of researches do not support that the Chinese character word dissociation hypothesis that assumes **right lateralization** in recognizing single characters and **left lateralization** in recognizing two-character words. There was no dissociation between the regions responsible for isolated characters and the regions responsible for two-character words. Tan (2000), [24]

So, even it is about character with precisely meaning (single character) it is also decoded by Chinese brain in the left hemisphere, [4] not in the right, in occipital (responsible for visual representation of letter like our phonemes). Why this really is happening, might be explained by studying carefully the structure of language as a mind organizer. In Chinese languages the mostly characters (which are not “letter”, phoneme) has at the very beginning, more or less, a definite meaning. Furthermore, we can see that *the path of neuronal information* could be shorter and it is attending directly the area responsible for decoding meaning, precisely **left hemisphere, left prefrontal vertical sub-frontal** zone.

Our comment here could be this one: If things are happening in this way, all this researches lead as to the idea that their mind works differently and they use a specific *neuronal network as functional correspondent for knowledge patterns*. Accepting the cultural anthropologic explanation we must use the native language as an important clue for pragmatic explanation and understand that Chinese brain’s function is really different than ours.

When Western children learn and understand mathematic concepts and operation, neural information use in their brain the itinerary shown before. All mathematical signs should be „translated” and transferred as neuronal information from **right to left; from right hemisphere, occipital** (area responsible for representation of letter or digit), to **temporal**, (for sounds), to the **leftinvertical behindparietal**, and finally, to **verticalsub-frontal**. Chinese children/people use to understand quickly because neuronal path of information shouldn’t pass all these zones through the area called **vertical behind parietal** as Westerners are doing, the path is directly to **vertical sub-frontal** zone, that one responsible for meaning.

We can see that experiments were designed before with the presumption: *path of neuronal information in reading (letter, digit) process is visual itinerary and that pattern must be considerate as universal*. Precisely, learning math is grounded in *visual/linguistic intelligence*. [9] And it is, apparently, the neuronal pattern for European style of learning process, but not for other people from other cultures.

Nevertheless, we can emphasize that Eastern, Chinese children has a different itinerary (may be Asian has kinesthetic intelligence) in order to lead to a meaningful sign. And this should be a biological and cultural advantage. For learning mathematic, is important to give a contextual meaning for every sign we are using in exercises. Anytime when we solve mathematic exercises, signs are connected to a *context*, by example, digit 1, 2, 3...must

be substantial quantities, or orders, or elements, aspects of real, concrete world. Also, it is assumed that notation in geometry (A, B) could be read as a sentence like „let’s take a line A, B between...” If for us, Westerners to learn math symbol is like a re-re-contextual signification and long itinerary, for Chinese and for any Asian who speak a non-phonetic language is easier to decode directly in frontal, because they are used to do so in their native language! More than, we can assume that any neuronal process used in learning math are similar to learning language, but depend on language. Not all language can help and find quickly the meaning. As cognitivists emphasized before, single signs (letter, digit) are not producing automatic semantic topics. Syntax alone cannot produce automatically a semantic, as Searle (1991), [22] emphasized before.

Again, we can pointed out that a contextual language become a cultural advantage and can constructs *neuronal and mental patterns* that can be easier activated during tasks in classroom. Corroborations of observed facts with modern technology must go further and accept the framework of pragmatic explanation that stipulate the role of local culture as “mind-brain sculpture”. It enable researchers to take in consideration *cultural background* which can explain better the process of leaning mathematic or other possible subject which require *semantic decoder, because of natural language*.

Musical cognition

Neurosciences researchers found also that musical cognition can improve the *semantic memory* Creutzfeldt(1989), [5]; Rauscher, (1993/1995), [20]; Burbaud, (2003), [2].

For Chinese, all these happen because language is not only contextual one, but also tonal language. Discussions about the role of music and musical cognition are larger then we can quote here. We can point out only some of them like experiment called *Mozart Effect* which settled that music can improve some ability to solve problems tasks Cuevas, Bridgett, (2000), [1]. Some researchers go forward and claim also, using modern methods that the surface of the activated areas is quite larger for musicians than for non-musicians. If *Mozart Effect* experiment wasn’t very clear (may be not properly designed) other laboratory experiments showed that is very important for mind organization to practice instrumental music, not only to listen music. (<http://www.sciencenews.org>)

Zones, apparently not connected with musical center in the brain, like motor center, emotional center could be improved by playing violin or piano. Researchers found that during this kind of practice, spatial orientation, speed and intuition could be developed, too. [20] The good function of all this brain’s areas seems to be also very important in increasing the ability to operate with mathematical concepts. Bridgett, Cuevas, (2000) [1]; Schmithorst, Holland, (2004) [23] New experiments and researches designed with *aphonic* people by Gomez, Peretz, Danuser (2007), [11] emphasis that disability to make distinctions between sounds is located in **interior frontal gyros**, but not in **right cortex** comparing with normal musical persons. More than, they settled that emotions activation, strong related with music, are located in **prefrontal cortex, ventral-medial in amygdaloidal zone**. (www.BRAMS.org) In other words, doing music, practice of it, could be, according neuroscientists, an excellent way to improve all systems, groups of neurons, and patterns for cognition. Music seems to be a real **meta-program** to re-set sub-programs or increase their functions.

Music and semantic memory

Schmithorst and Holland [23] wrote in 2004 a very interesting article „The effect of musical training on the neural correlates of math processing: a functional magnetic resonance imaging study in humans”. Their approach has as a main topic the possible relation between music and the success in solving mathematical tasks. Using fMRI method, for two adult groups, musicians and non-musicians, they observe that during practicing instrumental music,

semantic memory is increasing and visual memory is decreasing. It makes possible the ability to operate easier calculus and to have much intuition speed of correct equality. Summarizing their approaches about the role of instrumental music and long practice of music, it looks like this:

1. The *increase* of cerebral activity in **gyros, left hemisphere** and **prefrontal cortex**;
2. The *decrease* of visual associations, **primary cortex** and **left inferior parietal zone**;
3. Development of semantic memory and ability for abstract, intuitive representation of numerical quantities during practice of instrumental music.

In short, we can accept that all differences observed by using fMRI shown us that, there is an architectural organization and function of brain and it is connected to the cultural context. It is relevant if we practice instrument music from early childhood or not, in family or not, daily or occasionally. China everybody use to play an instrument, especially in family, practice a kind of traditional sports, and kept all them in classroom, in official curriculum. However, we understand why Chinese children and people are practicing music gladly in classrooms but we can also get the importance of it. So far, many authors have studied how music is made in different countries taking as example Korea, Japan or China Gregersen et al. (2000), [12] During listening and during practicing instrumental music many areas of brain are suddenly activated and enlarged: **auditory temporal cortex, visual primary cortex, motor cortex, frontal gyros.** Music is an excellent way to improve all system. It is like brain knows how to re-start himself and correct his activities, if it is necessary. Music is more than a *meta-program* which processes like a driver in computer; even brain is not at all a computer. May be there are many other meta-programs as life-philosophy, therapeutic sessions which could have similar roles.

Educational considerations

What kind of implication could rise from all these for our education?

If Chinese characters have meaning and it is always decoded from the left hemisphere directly to frontal zone that means the semantic memory is much more used than visual memory. Practice of instrumental music is activating many other zones of the brain. Music, tonal language, and semantic memory at least these kinds of activities can lead us to a better understanding of Chinese mind as different learning program and different neural architecture. Educationist must be opened to such kind of topics, accept and enhance their teaching with totally awareness of similarities or diversities of brain's function. Some authors believe that there could be many others, not only for semantic memory and intuition, but also for cognitive metaphoric knowledge, emotional equilibrium which can improve brain's function. [Ja'ncke, Shah, Peters (2000), [13]; Khalfa et al. (2000), [14]; Gomez, Peretz, Danuser (2007), [11] Regarding music we can ask as teachers: What kind of music should we use in the classroom? Can music make our students better, or more, treat mental diseases? Can we borrow from other culture good practices if they are?

Summarizing, we can explain better Chinese accomplishments in mathematic learning, not only due to their diligent behavior, but also due to their culture and school culture which facilitate semantic memory, using different neural and mental programs. (We can talk also about traditional sports, cut/paper or other activities they are mixing, but it wasn't, in fact, the topic of this article, and need another possible approach.) All this explain how cultural background could produce a different functional architecture of brain and mind (program) and we can call this perspective of knowledge neuroconstructivism. This new perspective needs, of course, a new method. If neuroscience researches are related to cultural anthropologic observation, we can assume that this kind of explanation is not pure biologic explanation. They must be correlated with social explanation. It might be fruitful to ask

ourselves more about what subject, what method, what kind of tasks are appropriate to children in primary and secondary schools in order to make them better.

We conclude that researchers about Chinese brain' function found that is apparently different. It was only a case-study in one possible different culture that are using a non-phonetic language and music. May be we can find also differences for other possible languages and cultures. So far, we hope that more trans-cultural researches will be developed in future. Neuro-constructivist approaches [25] must be designed into interdisciplinary perspective in order to become fruitful.

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MATHEMATICS TEXTBOOK ANALYSIS: A STUDY ON RECOMMENDED MATHEMATICS TEXTBOOKS IN SCHOOL USE IN SOUTHWESTERN STATES OF NIGERIA

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Abstract

Textbook has been emphasized to be the most important tool in the teaching-learning process of Mathematics. It has been identified as one of the factors affecting students' learning outcomes. Few researches available on textbook rarely consider textbook analysis. Many of such have often reported paucity of research on textbooks and further research is thus recommended. This study is one of those on content analysis of Mathematics textbook. The study has provided empirical evidence on the relevance, suitability and adequacy of some recommended Mathematics textbooks in Southwestern Nigeria. Eleven features in the textbooks were analysed directly by the users (teachers). Mathematics teachers were purposively selected from two randomly selected public secondary schools in each of the senatorial districts of all the six states in southwestern geopolitical zone. The study comprised 117 Mathematics teachers as the total respondents from the 36 public secondary schools that were selected for the study. The comparison of the features was in line with the expectations of the Senior Secondary School National Mathematics Curriculum. The features were well provided for in the textbooks. The books were relevant, suitable and adequate in their provisions and capable of bringing forth desirable learning outcomes. The textbooks however, need further provision of Students' Workbook, Teachers' Guide, progressive hierarchy of tasks, multiple and attractive colours. The establishment of Textbook Standard Content Review Panel (TSCRCP) was recommended to approve textbooks for school use after proper screening by this body. Years for reprint, re-editing were to be recommended by the committee or panel.

Keywords: Textbook analysis, Content evaluation, Mathematics textbook, Southwestern Nigeria, Textbook features, Relevant textbook, Suitable textbook, Adequate content

Introduction

Textbook as an instructional tool is unique among all other instructional media due to possession of certain characteristics. It is durable, permanent (not transient), portable and independent of electricity or electronic device when in use. It appears to be the oldest of instructional media. Due to its age-long existence and availability, it is common among teachers and learners more than any other medium. In his emphasis on textbook, Aggarwal (2001) alluded to the comment of UNESCO (1970) publication in *Preparing Textbook Manuscripts: A Guide for Authors in Developing Countries* by reporting that classroom teaching activities depend heavily on the textbook especially in the institutions where the teachers are not well qualified. On the same issue, he reported Altbach (1983) by saying that textbooks are central to schooling and has never been replaced in educational processes.

In spite of its usefulness to learning, Okwilagwe (1999) reported the general book availability (in a tangible form) at all levels of education to be on average of about 10%. This refers to the ratio of books that are available to the users. This is an indication of low

accessibility of textbooks to the users. There is no doubt that the paucity of books is negatively affecting the standard of education in Nigeria (Okwilagwe, 2001). Adesina (1990) in Okwilagwe (2001), described the characteristics of the book situation in Nigeria as an anomalous one.

On the aspect of concept presentation, Badru (2008) cited Fajemidagba (2000) by saying that the majority of available textbooks present Mathematics concepts, principles, theorems, proofs and models in a highly verbal and illogical manner without regard to the interface between the discipline of Mathematics and other subjects like Physics, Chemistry and Music. He also reported Kalejaiye (2005) on language of presentation that the results of most researchers showed that there are more English words to be learnt in Mathematics textbooks than in English textbooks. He noted that Mathematics terms, notations and symbols are also some new things to be learnt which are introduced in Mathematics textbooks.

Aggarwal (2001) suggested guidelines upon which the relevance and adequacy of textbook features could be evaluated. These are:

- (1) Selection of content
- (2) Organization of content
- (3) Presentation of content
- (4) Verbal communication (language)
- (5) Visual Communication (illustration).

To each of the items above, he identified some specific features, thus:

1. Selection of content: this consisted of eight parameters: (a) the content must be relevant (b) there must be adequate coverage of the content (c) there must be adequate content of each topic (d) there should be authentic content (e) there should be up-to-date content (f) there must be integrated content (g) there should be content linked with life.
2. Organisation of content. On this, he identified 3 parameters: (a) division into suitable unit, (b) division into suitable sections and (c) psychological approach to the content.
3. Presentation of content. (a) Attractive and appropriate title, (b) motivating presentation, (c) creative and interesting content.
4. Verbal communication (language). He pinpointed four parameters thus (a) appropriate vocabulary (b) short and simple sentences (c) correct spelling and (d) correct punctuation.
5. Visual illustration: Illustrations should be: (a) suitable for the mental level of students (b) easily portable and up to date (c) motivate learners (d) relevant and purposeful (e) accurate (f) simple and cheap and (g) large enough for sight.

Kochhar (1985) opined that in the selection or choice of a good textbook,

The textbook must be well-graded i.e. suitable for the capability of the children for which it is intended. The facts must be simple, clear and logically set out, fit into child-centred education. (p.101).

For the general presentation format, he gave the following conditions; the textbook should be interesting, i.e. makes the learner interested in learning it, well written and beautifully compiled so that it might win and retain users' goodwill by virtue of more solid qualities. (2) It should be well-illustrated with attractive colour, inspiring drawings and photographs. It should be attractive, inviting, pleasant to look at and read, with well-chosen illustrations that are well connected and sequential. (3) The textbook should be up-to-date in content, frequently revised and reprinted when necessary. (4) The textbook must be complete with its table of contents, illustrations, charts or other references. And for higher classes' textbooks, he suggested inclusion of references at the end of each chapter for supplementary reading so as to inculcate in the learners the skill of comparison. It should also include the index. This is to give room for supplementary textbooks.

Several authors maintain that writing sustains the development of reasoning, communication and connections (Connolly and Vilaridi, 1989; Countryman, 1981; Maimon, Nodine and O'Connor, 1983). Writing has also been found to be inherently related to the development of metacognitive behaviours (Dominowsky, 1998; Kenyon, 1989; Pugalee,

1997; Tobias (1989) in Pugalee (2001)). However, not much research has been done on textual material as it affects learning outcomes in Mathematics. Hence, Pugalee (2001) reported “*Despite the seeming consensus of the important role of writing in learning, there is inadequate research on writing in Mathematics*”

Morgan (1998) also corroborated the fact by saying that “*although there have been considerable descriptions of the use of writing in Mathematics, there has been relatively little analysis of the texts themselves*”. (p.236). Pugalee (2001) in his conclusion emphasized the need to address the paucity of research in this area. These reports are in the context of America and some other parts of the world. Johansson (2003) researched on textbook analysis on Mathematics education in Sweden also concluded that ‘*research on Mathematics textbook is still a rather unexplored field*’ (p.1).

As a result of the importance of textbook to school teaching-learning process, the paucity of research on Mathematics textual materials and rare analysis of these textbooks themselves, this research work has considered the analysis of some common Mathematics textbooks in Nigerian secondary schools. The textual material factors such as statement of objectives, content of the subject matter, learners’ activities, evaluation exercises, presentation, language, hierarchy of exercise, worked examples, solution and key to exercises, teachers’ manual/guide, students workbook were assessed and analysed with respect to the availability, relevance, suitability and adequacy of these features in the textbooks based on the view of the users i.e. teachers.

Textbooks play an important role in Mathematics education because of their close relationship to classroom instruction (Johansson, 2003). Moreover, textbooks have a prominent position in curriculum reform and are considered the most important tool for the implementation of a new curriculum in many countries (Valverde, Bianchi, Wolfe, Schmidt and Houang, 2002). Internationally, it has been reported by research findings that there are limited studies on textbook especially along the line of textbook analysis (Morgan, 1998; Pugalee, 2001; Johansson, 2003).

Existing studies on Mathematics textbooks could be in three fold. These according to Johansson could be:

- (1) The study of the structure and content of the textbook;
- (2) Content analysis of the Mathematics textbooks;
- (3) Studies on use of Mathematics textbook. This seems to be most common type of study available

1) The structure of most common Mathematics textbooks according to Johansson (2003) is ‘exposition –examples – exercises’ model (which this study called 3es), In the exposition part the author supports and clarifies concept formation by the student. It makes a sequential guide to discovery. This is followed by examples. Lastly, the exercises stage, these exercises are graded and they progress from the easier to the more difficult (Love and Pimm, 1996) just as the examples are in hierarchy of grades,. However, in an old study of German textbook, there was about twice as much text as task reported by Sträßer (1978).

In some other parts of the world like France, the organization and structure of Mathematics textbook is ‘Activities-Cours-Exercise’ model (ACE). The ‘activities’ is to introduce the notion to the students through small investigations. The ‘Cours’ describes what needs to be taught in words and in worked examples (Peppin and Haggarty, 2001).

Johansson (2003) commented on the unique, thorough and comprehensive review of relevant literature on Mathematics textbook made by Peppin and Haggarty (2001). They came out to say that existing studies on content and structure of textbooks could be divided into four main areas:

- (i) The mathematical intentions of the textbooks – the Mathematics represented in textbooks, beliefs about the nature of the Mathematics in textbooks and presentation of mathematical knowledge;
- (ii) The pedagogical intentions of the textbook –ways in which the learner is helped (or not) through the content, method and rhetorical voice of the text;
- (iii) The sociological contexts of textbooks
- (iv) The cultural traditions represented in textbooks. This present study concerns more on (i) and (ii).

2) Content analysis of Mathematics textbook

Three types of Mathematics textbook content analysis have been identified by Johansson (2003). Her own version which was different from already existing ones is the fourth. These are:

- i) Distinguishing textbooks according to countries (such as the works of Peppin and Haggarty (2001), Valverde, Bianchi, Wolfe, Schmidt and Houang, (2002)). Third International Mathematics and Science Studies- TIMSS (1994/ 95)
- ii) Restricted Areas of Mathematics concepts e.g. works of Harries and Sutherland (1999), Li (2000), Project 2061 (2000).
- iii) How adherent the textbooks are towards the official goals and objectives of Mathematics education (e.g. works of Chandler and Brosnan (1995).

In their work, Chandler and Brosnan (1995) investigated the correspondence existing between the frequently used Mathematics textbooks series in sixteen school districts of Ohio with the *Ohio 9th Proficiency Test*. They compared percentages of Mathematics textbook content with percentages of Mathematics content on the test. They found out that the content in the Mathematics textbook was disproportionate to the content of the proficiency test. They identified areas of concepts with disproportionate. Chandler Brosnan (1995) then recommended in line with National *Council of Teachers of Mathematics (NCTM) Standard* that: curriculum and assessment content should be aligned; the goals, objectives and instructional approaches should be aligned with the assessment task.

This study is in line with the work of Chandler and Brosnan (1995) in its focus in that it investigated how adherence the textbooks are towards official goals and objectives of the Senior Secondary School (SSS) Mathematics curriculum in terms of the availability, relevance, suitability and adequacy of certain characteristic features in the textbooks. Such features include objectives, contents, learners' activities, evaluation, language, presentation format etc. On the other hand, this study is also in line with Project 2061 (2000) and partly with Johansson (2003) in that these features for assessment were partly considered by these researchers too.

iv). Content analysis of a series of Mathematics textbook over a trend of time (e.g. Johansson, (2003). Based on three different curriculum reforms over 27 years (1969, 1980 and 1994) in Sweden, a series of Mathematics textbook was also reformed. She then compared how the curriculum reforms have caused variations in the series of the textbooks, by using ten characterizing features (ten blocks) among those already mentioned above. She found out that; the books progressively increased in pages and not much in variation in number of exercises and in word problems. The books were comparable and old ones could still be used.

3) Other areas of studies on Mathematics textbooks are on the area of use of Mathematics textbooks. These include the works of Røj-Lindberg (1999), Barr (1988), Fan and Zhu (2002), Freeman and Porter (1989) and Foxman (1999).

In the studies mentioned so far, the approach of the researchers were either that they personally evaluated the textbooks based on their set of existing standards e.g. Johansson (2003) or use expert analysts e.g. American Association of Advancement of Science (2002).

However, this study adopts different approach by making the Mathematics teachers who are the direct users to carry out the Mathematics textbook evaluation with respect to availability, relevance, suitability and adequacy of selected eleven features for desirable learning outcomes of the learners. Moreover, Johansson (2003) concluded by saying that '*generally speaking, which method to use for the analysis depends on the questions to be answered*' (P.24).

Project 2061(2000) was a team of expert Mathematics researchers, Mathematics teachers and Mathematics educators. They selected twelve middle grade Mathematics textbooks. They compared the contents of these books using six benchmarks (concepts). These benchmarks are: number concepts, number skills, geometry, skills, Algebra graph concepts, and Algebra equation concepts. Seven categories of instructional criteria upon which the books were analysed are: to what extent does the book identify a sense of purpose; building on students ideas about Mathematics; engaging students in Mathematics, developing Mathematics ideas, promoting student thinking about Mathematics, assessing student' progress in Mathematics, enhancing the Mathematics learning environment. Their research sought for the opinion of the analysts on many aspects such as the objectives, contents, evaluation, language, presentation, edition and manuals/guide, workbook etc, as pattern for book analysis. This research work also used similar and related features to analyse recommended Mathematics textbooks in our schools in terms of availability, relevance, suitability and adequacy of these features, since their presence or otherwise can affect learning outcomes.

The World Bank Study on Book Situation in Nigeria as reported by Okwilagwe (2001) said that the book availability ratio is far below expectation (about 10% nation-wide) while Adesina (1990) in Okwilagwe (2001) said that there is lack of relevance of the available ones even at high cost.

Adedayo (2000) selected two hundred senior secondary school students from twenty schools in Lagos state for her study on availability of basic teaching-learning materials in Mathematics. She reported the availability ratio of Mathematics textbooks to be 55%. She attributed the figure thus high as a result of book transfer. Uzoechi (2007) cited Obioma (2006) by saying that the existing textbooks are deficient for the new Science, Technology and Mathematics (STM) curriculum and that the existing STM textbooks will also be unable to meet the demand of the proposed restructuring at the post basic education level. He called for the review/assessment of the relevance and adequacy of the existing textbooks in compliance with the new curriculum specification of STM. He also called for the development of new textual materials for Science, Technology and Mathematics Education (STME).

The research report and recommendations of Pugalee (2001), Morgan (1998) from America and Johansson (2003) from Sweden corporately agreed that there has been very limited research on Mathematics textbook analysis internationally. They, with Li (2000) thus recommended the need for further research in this area.

Statement of the Problem

Mathematics and science textbooks used in schools in most part of the country have been criticized by stakeholders in education to be irrelevant. This is not because they have made analysis or criteria evaluation of these textbooks; it is rather because of the learning outcomes of the students at the end of the programme. Most statements of the critiques were not based on empirical evidence. Yet, most of the critiques have not been able to come up with a better option. Incidentally, it is not only textbook that determines learning outcomes. There is, therefore, a research need for the analysis of the appropriateness of recommended

(and used) Mathematics textbooks in schools in southwestern Nigeria so as to establish a basis for a true critique to enhance improvement.

The Study

The study made a survey of textbooks recommended and used in public schools of the sample under consideration. Three major textbooks found in the survey are *New General Mathematics (NGM) for West Africa*; *Mathematical Association of Nigeria (MAN) Mathematics*; *Science Teachers' Association of Nigeria (STAN) Mathematics* and very few others which are perhaps numerically negligible. NGM is the most commonly used by many teachers and schools (Table 1). The number of items for availability, relevance, suitability and adequacy of each of the eleven features are summarized in table 2. The study considered the degree of availability, relevance, suitability and adequacy of certain features in the textbooks (Table 3). The standard for evaluation is in comparison with the expectations of the National Mathematics Curriculum, and also on the capability of the books to enhance desirable learning outcomes. The evaluation was based on the opinion of the Mathematics teachers who are direct users of the textbooks.

Table 1: Summary of Textbook Distribution in the Study

NGM	MAN	STAN	OTHERS
90	17	4	6
76.9%	14.5%	3.4%	5.2%

Table 2: Summary of Number of Items Under Each Textbook Features

S/N	Textbook Features	Number of Items			
		Availability	Relevance	Suitability	Adequacy
1	Objectives	2	2	1	1
2	Content	3	3	4	8
3	Learners' Activities	4	4	3	3
4	Evaluation	1	2	3	4
5	Presentation Format	5	3	4	4
6	Language	3	2	2	2
7	Progressive hierarchy of tasks- examples & exercises	1	1	1	1
8	Worked Examples	1	1	1	1
9	Solutions/keys to Exercises	1	1	1	1
10	Teachers' Guide	1	1	1	1
11	Students' Workbook	1	1	1	1
	Total Number of Items	23	21	22	27

Population and sample

The study covered all the six states in the southwestern geo-political zone of Nigeria. Two schools were randomly selected from each of the three senatorial districts of each state. Teachers were purposively selected to be all Mathematics teachers who were teaching Senior Secondary School (SSS) level or who have taught these set of students at SSS level in time past with the same textbook series in the selected schools. Thus, excluding other Mathematics teachers who have not taught SSS with the series of the textbooks in their schools. A purposive selection is desirable (Clifford, 1997) for it has enabled the researcher to choose sample based on known characteristics. A total of 117 Mathematics teachers from the 36 schools formed the respondents. These were able to supply information on the textbooks because of their long years of experience in using the textbooks, as the study revealed that more than 80% of the teachers have been using the textbooks for more than 4 years.

Instrumentation

The instrument *Recommended Mathematics Textbooks Rating Scale (REMTERS)* was used for data collection. REMTERS had 7 sections. Sections A, B and C were bio-data on Teachers, Textbooks and Schools respectively. Sections D, E, F and G in a tabular form solicited information on availability, relevance, suitability and adequacy respectively of 11 features selected for consideration in the textbooks. The same 11 features run through all sections D – G but with different number of items (table 2). Placement of items under any feature was based on how appropriate the items could measure the feature. However, each feature 7-11 stands alone as a single item as well as a single feature. Table 2 serves as the table of specification or blue-print.

The eleven textbook features were placed on a table with a dichotomous scale to measure availability. There were 23 items (responses) for availability of features scored as ‘0’ and ‘1’. The sections on relevance, suitability and adequacy of textbook features had 21 items, 22 items and 27 items respectively (Table 2) and on a 3-point rating scale, rated as 0,1, and 2.

The instrument was validated and trial tested by using 11 Mathematics teachers from 4 senior secondary schools which were both private and public schools. These teachers and their schools were not included in the sample for the study. The instrument on availability had reliability index of 0.79 by using KR-20 formula because this section is on a 2-point scale while sections on relevance, suitability and adequacy had a reliability index of 0.76 using Cronbach alpha formula because each of them was on a 3-point scale.

Data Analysis

The data were analysed with descriptive statistics- mean and percentages. The items under each feature were scored accordingly. Thereafter, their corresponding percentages were also found. Then, the mean score for each feature was found. Variations (as seen in table 3) in the percentages between availability and 3 other measures existed because the highest mean rating for each feature under availability is 1 (scale rated as 1, 0) while the highest mean rating obtainable for each feature under relevance, suitability and adequacy is 2 (scale rated as 2, 1, 0). Thus, for a meaningful comparison and better interpretation, it was necessary to calculate the percentage of each mean (table 3). All the responses under each feature were scored and aggregated and then reported in a single value as the mean for that feature.

Findings: The summary of findings in the study is presented in table 3 below.

Table 3: Summary of Measures of Availability, Relevance, Suitability and Adequacy of the Textbook Features.

No	Textbook features	Availability	Relevance	Suitability	Adequacy
		\bar{x} (%)	\bar{x} (%)	\bar{x} (%)	\bar{x} (%)
1.	Objectives	.88 (88.0)	1.46 (73.0)	1.53 (76.5)	1.35 (67.5)
2.	Content	.83 (83.0)	1.26 (63.0)	1.47 (73.5)	1.37 (68.5)
3.	Learners' Activities	.69 (69.0)	1.15 (57.4)	1.26 (63.0)	1.21 (60.5)
4.	Evaluation	.83 (83.0)	1.53 (76.5)	1.26 (63.0)	1.42 (71.0)
5.	Presentation Format	.68 (68.0)	1.18 (59.0)	1.28 (64.0)	1.19 (59.5)
6.	Language	.91 (91.0)	1.50 (75.0)	1.50 (75.0)	1.40 (70.0)
7.	Progressive hierarchy of of tasks-examples/exercises	.67 (67.0)	0.94 (47.0)	1.33 (66.5)	1.32 (66.0)
8.	Worked Examples	.90 (90.0)	1.41 (70.5)	1.43 (71.5)	1.33 (66.5)
9.	Solutions/keys to exercise	.81 (81.0)	1.38 (69.0)	1.39 (69.5)	1.31 (65.5)
10.	Teachers' Guide	.44 (44.0)	1.03 (51.5)	1.10 (55.0)	0.87 (43.5)
11.	Students' workbook	.31 (31.0)	0.77 (38.5)	0.85 (42.5)	0.74 (37.0)

\bar{x} indicates the mean measure

Discussion

The textbook features are considered available if they are expressed in the textbook. Otherwise, they are not available. Relevance as a textbook feature refers to the degree of close correspondence to the expectations of the SSS Mathematics curriculum, and if it deals specifically with the requirements of the curriculum. If otherwise, it is not. Suitability as a textbook feature: the textbook is suitable if its features meet the standard of SSS curriculum, not above or below it. That is, if it is appropriate with the target audience, otherwise, it is not. Adequacy as a textbook feature refers to the extent of coverage in totally of all aspects enumerated by the SSS Mathematics curriculum and it also consists in the ability of the book to bring about a desirable learning outcome.

The statement of topical and sub topical objectives are made available (88%) in most of the textbooks. The objectives are relevant (73%) to the expectations of the curriculum, up to standard i.e. suitable (76.5%) and adequate as well (67.5%). It is an indication that making a fore statement of objectives is not a new or strange phenomenon to the authors and publishers of textbooks. Thus, they made adequate representation of these to the extent indicated.

The content of the textbooks includes prerequisite idea or prior knowledge needed before a task, answers to exercises and sequence of content. These were rated as available up to a point (83%). They are equally relevant to the national Mathematics curriculum. The content of students' workbooks measure 0.97 which is 48.5% on this scale. Another item of a low rate under the relevance of content is that of the teachers' guide (mean 1.11 or 55%). All these items are under the relevance of the content. These brought the relevance of the content to a measure of 63%. The standard of the content, which is measured by its suitability, is 73.5%. This value was obtained by finding the average rating for all the 4 items (table 2) under suitability of content. The assessment of adequacy of the content includes relationship between worked examples and exercises, answers to exercises, coverage of final examination syllabus and that of senior secondary school Mathematics curriculum, arrangement of topics and sub-topics in appropriate hierarchy of knowledge. These 8 items altogether give a measure of 68.5% adequacy. This shows that the content coverage is fairly adequate.

Learners' activities: The availability of learners' activities, learner-centred activities and avenue created for students' learning activities in the course of the lesson (4 items altogether) have a measure of 69.0% availability for the books. The relevance of learners' activities provided by the textbook is mean=1.15 or 57.4%. There is an indication that the activities provided by the books bear low relevance with the expectation of curriculum of SSS Mathematics. The learners' activities also made adequate coverage (60.5%) of the curriculum and are capable of enhancing a desirable learning outcome.

The textbook made provision for evaluation with remediation and accurate answers to exercises. The evaluation exercises are relevant (76.5%), suitable (63.0%) and as well adequate (71.0%). The exercises are properly linked with the given examples. They bear a progressive hierarchy. Exercises provided for both weak (57.0%) and brilliant (59.5%) students are moderately suitable. The evaluation exercises provided are also adequate (71.0%). This is in terms of number, varieties, and coverage of SSCE, order and depth of knowledge.

The presentation format spells out the outlook of the book as to appeal to interest, emotion, attraction and positive feelings of the users. This is measured in terms of its colours, photographs, pictures, diagrams, format pattern/outlook, illustration in relation to local environment, font type and size, paper quality and its gender representation. The availability of this feature is 68.0%. Its relevance is 59.0%, suitability is 64.0% and its adequacy is 59.5%. These findings are contrary to the view of Fajemidagba (2000) in Badru (2008) who said that many contents of our Mathematics textbooks are presented in verbal and illogical

manner. These findings on presentation outlay are not too poor as to say that the books present concepts in highly verbal and illogical manner. However, there is much gap left to be improved upon. Moreover, no text can be perfect as to be termed ideal, except in a relative term. This depends on the parameter of assessment.

The aspects of simplicity of language of subject matter and language of instruction, correct punctuations and spellings which were assessed have availability of features to the tune of 91.0%. The relevance of the language is 75.0%, suitability is 75.0% while adequacy of familiarity and simplicity of the language is 70.0%. By and large, it could be said that the language use of the textbooks are appropriate.

Progressive hierarchy of tasks i.e. of examples and exercises has availability of 67.0%, relevance 47.0%, suitability 66.5% and adequacy 66.0%. It does appear that progressive hierarchy of task bears little relevance. This may likely be that the curriculum did not make provision for such hierarchy of relevance with which comparison could be made.

Worked examples were available (90.0%), relevant (70.5%), suitable (71.5%) and adequate (66.5%). Adequacy and relevance of suitable worked examples will reinforce understanding of the learners. All the textbooks have solutions and keys to exercises. These are relevant, suitable and adequate as well. This will serve as source of feedback for the learners to look back after making efforts to solve a problem. Most of the users could not get Teachers' Guide for their textbooks. The availability is 44.0%, relevance 51.5%, suitability is 55.0% and adequacy is 43.5%. Students' Workbook has availability of 31.0%, relevance 38.5%, suitability 42.5% while its adequacy is 39.0%. Both the Teachers' Guide and Students' Workbook are very low in availability. The students' workbook are not possessing relevant content as expected. Both are not adequate. The authors and publishers have not paid enough attention to these two parts of the textbooks.

The study revealed that the textbooks possess relevant features, suitable and adequate enough to yield a desirable learning outcome. It is also in accordance with the expectations of SSS Mathematics curriculum. Some aspects still to be looked into in the textbooks are content of Students' Workbook and learners' activities as well as Teachers' Guide.

It will not be an overemphasis to say that the best analyst is the users (teachers). With their qualifications, 72.6% possessed a minimum of first degree and 86.3% of the total sample specialized in mathematics. Also, 80% have been using the books for more than 4years. Comments of such reviewer could be counted reliable. They can competently make remarks on the hierarchy of exercises, make an inquiry as to which questions could be of appropriate standard or which ones have wrong keys/solutions and which one can be ambiguous or become knotty. It is in the process of working with the books among the students day-by-day that these can be discovered. Even though the questions and exercises may appear outwardly good it is in solving the questions that one gets the right judgment on the suitability of the questions in the textbooks. The works of other assessors/analysts may not reflect much on how valid the items and exercises are more than those of the teachers.

The claim on high degree of relevance, suitability and adequacy (appropriateness) of the textbooks by the teachers may not be acceptable in an absolute term. This is due to the following reasons; the textbook to a knowledgeable teacher, is a teaching guide whereas to the students, it is a learning guide. This implies that giving opportunity to the students to make an assessment might tend to reduce the level of the books' appropriateness. Also the exposure of teachers to other textbooks written in pattern to programmed instructions which is interactive in presentation, may make them reconsider a downward review of the appropriateness of their textbooks. In addition to this, one ought to know that the strength of the assessment depends on the strength of the curriculum which is the basis or yardstick of comparison. The series of the mathematics textbooks are many. Each series has contributed to the measure. If the modal textbook (*NGM*, table 1) is very appropriate, this may tend to

affect many other textbook series involved in the analysis. This may subdue the true picture of assessment of the textbooks, except if the analysis of each text series is separately reported.

Conclusion

The analysis of the textbooks was from the direct users who had full knowledge of the demand of the curriculum and that of the contents of the textbooks. It was most appropriate for these users to make the content analysis of the textbooks as a result of their experience. It was found (in a summary form for table 3) that the textbooks possessed the expected features (i.e. availability) to the tune of 74.2%. These features are also 62.9% relevant, 66.3% suitable and 64.4% adequate in conformity with the SSS National Mathematics Curriculum of Nigeria and in their ability to bring about a desirable learning outcome. Further investigations also showed that the textbook could not impact positively on the learners' attitude.

The Teachers' Guide, the Students' Workbook, Hierarchy of examples and exercises in the textbook reduced the appropriateness of the textbooks in that they are deficient in these areas.

The result of the analysis of the textbooks is at variance with the comments and opinions of some policy makers and scholars such as Badru (2008), Fajemidagba (2000) and Kalejaiye (2005) probably because their opinions were borne out of students' learning outcomes which have been continually poor. In such a case so many probable problems that may be responsible for poor performance are often cited. Not just because they have taken time to analyse the textbooks. Other factors which determine learning outcomes include student-variables, teacher-variables, environment-variables, the curriculum, the policies etc. Except each factor is partial out and thoroughly researched into (as in this study) one may not discover to which direction the causative factors are loaded.

The appropriateness of these books cannot be said to be in an absolute term, it is limited to users' (teachers) judgment. The efficacy of their assessment is also a function of their skill, exposure and other personal factors. If experts (non-users and students) are employed and various other ways could be used, provided that they come out with a similar result then one can claim absolute appropriateness of the textbooks.

Recommendations

The textbooks' authors and publishers should be trained to follow a given standard. The government should set up the standard and the pattern that every textbook authors and publishers should follow. The years of reprint and re-editing should be recommended if such books should continue to gain recommendation by the government.

Workbooks and teachers' guide should be written to accompany all recommended Mathematics textbook. The presentation format, font, colours and diagrams should be made attractive. More importantly, there is a need for further research on Mathematics textbook that can impact positively on students' attitude. There should be standard recommendation body to oversee matters. Mathematics textbook should have practical oriented tasks as much as possible. This could be written in interactive form to appeal to the emotion of the learners (affective learning). Practical activities should be suggested/recommended in the textbooks to enhance psychomotor learning. Other areas where practical and activities could be used, such as in 3-D objects and other areas should be recommended and not left to the discretion of the teachers.

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‘NURTURING CREATIVITY THROUGH ART APPRECIATION

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Abstract

Problem statement: Art Education has been given place in the curriculum yet there is a general misconception that the subject Art is of lesser importance and treated as a mere entertaining fringe. The present study looks into this matter. The basic key question, therefore, is-Does process of ‘art appreciation’, a significant component of art education, promote creative aspects of students and facilitate in attaining the educational objectives. It is with reference to Teacher education course. **Approach:** For the study, a workshop on art appreciation was organized and 200 B.Ed. students (pre-service teachers) were taken. Most of these students had studied art only till 8th standard while few of them had no experience of any art class in school. They were hesitant to paint and had lot of misconceptions about art. The workshop included slide show on works of art, discussion and interpretation; viewing and communing with the work in silence with instrumental music in the background; writing the interpretations/ reflections on the displayed paintings of one’s choice in the workshop; and feedback on overall experience. Data was analyzed qualitatively. **Results:** It was concluded that art appreciation promotes, unique, independent, and honest perception; inculcates courage and confidence to express; helps to explore inner self and make symbolic association; integrate ideas; develop feelings, non-verbal expression, joy, peace and appreciation of nature; and involves sharpening of senses. Therefore, art appreciation promotes creative aspects and facilitates in attaining educational objectives.

Keywords: Paintings, joy, meditation, education objectives, communion with self

Introduction

Education starts with acquisition of knowledge and ends with its application. In other words it is a process of expression of all potentials of which a human being is full of. It is believed that human beings are endowed with unique powers which are to be brought out or expressed. Wickiser ,(1957, pp.29) believes that “In fact expression is the culmination of learning, of experiencing; it is completion of the process.” The whole process, in fact, has been cognized as process of creativity. Education enhances this creativity. Art is one of the most important factors of this process of education to promote this creative aspect of human beings. As it is stated that the Sanskrit literature considers a human being incomplete if he is not educated in art and literature. In one of the Sanskrit verses it is said that without art, music and literature a human being is an animal without tail and horns. Mago (2000, pp.4) states, “According to SukaraNiti Saar, art was a more complete discipline (to develop a person’s mind) than learning through reading and writing.” Art not only induces positivity in the person who does or the artist but also in the person who see it or is able to commune with it. In reference to this Ray Niharranjan states “..... the principal aim of art is to induce unique state of being which is one of pure, impersonal delight by securing first for the artist himself and then for the reader or beholder, a spell of complete detachment from work-a-day life and forgetfulness of selfish interest.”

According to traditional Indian notion not only making of an art work but its proper appreciation was also considered to be the active process. True art work is something which has to be earned by striving for it, by purifying and sharpening one's senses and sensibilities. It is in this sense that if the beholder or viewer is of the same heart as that of the artist than he (viewer) is called 'vidagdha' or 'rasika' in Sanskrit. One great difference between the artist and the viewer is that the latter cannot make the situation which the artist can. Yet there is similarity too, between the two as both have gone through realisation of an identical feeling as a value. Both have gone through the higher state of being and have felt otherworldliness, forgetfulness of selfish interest, and purity etc. In reference to this *Abhinavgupta* states in Sanskrit "nayakasyakavyehsrotuhsamanonubhavah." To him there is not much difference between creation and appreciation of an object, in so far as the experience of the identical feeling at any rate is concerned. *Ray Niharranjan (1984)* has gone to an extent of regarding even the appreciator or the rasika as a creator. The art experience or the rasa experience in west has been called as aesthetic experience. This art experience has been described variously in treatises on Sanskrit poetics as an earthly, shining joy, intense delight, supreme detachment so on and so forth. Therefore, from this standpoint appreciator is also the creator. So not only creation of work of art is important but art appreciation is also equally important.

Though art education has been given place in the curriculum yet there is a general misconception that the subject Art is of lesser importance in comparison to the other regular subjects, such as Mathematics, Science. But it is realised that art should become an important component of learning and not be treated as a mere entertaining fringe. According to National Curriculum Framework 2005 (2006, pp.54-55, 8) it should be made compulsory subject up to class-X. It further states: "Since this is an activity based, experiential subject, it gives scope for observation, imagination and visualisation in the process of creativity. Every individual child has all types of emotions, which need to come out of the child's inner-self; art education helps them in this process."

The present study looks into this matter. The basic key question, therefore, is – Does process of 'art appreciation', the important component of art education, promote creative aspects and facilitates in attaining the educational objectives in students? It is with reference to Teacher education course.

For the study, workshop on art was organised and 200 B.Ed students (pre-service teachers) of different batches. Most of these students had studied art only till 8th standard while few of them had no experience of any art class in school and were hesitant to paint and go through art appreciation task.

Objectives

The objectives of the workshop were-

1. To make the subjects observe, perceive, concentrate, symbolically associate, integrate ideas and meditate.
2. To spur the imagination and create an environment for new ideas and feelings to emerge.
3. To motivate and encourage subjects to express 'felt ideas' or experiences freely, confidently and feel relaxed.

Method

To achieve the above mentioned objectives, workshop was divided into following four phases, keeping in mind their existing level of understanding:

Phase I : Discussion on Art

Phase II : Slide Show

Phase III : Viewing the displayed paintings and writing the interpretations/reflections on paintings and feedback on the workshop

Phase IV :Analysis of the interpretations/reflections on paintings and feedback on the workshop

Phase I: Discussion on Art

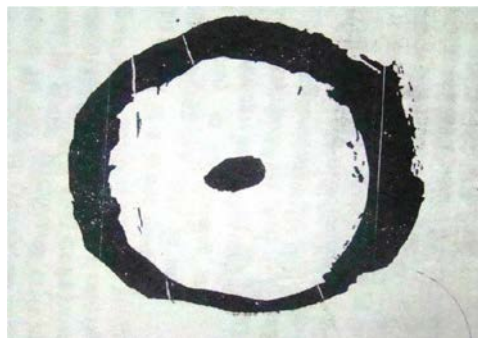
An introduction about Art was given, which mainly focused on the meaning of Art; briefly the ‘principles and the elements of art’ and also focused on the key questions such as, why it is important to view works of art and what relevance it has in our life. Clarifications to general misconceptions and questions were given such as:

- Art is all about just making the things in a realistic way.
- I cannot draw a single straight line so I am not creative.
- Not everybody has the creative power.
- How to view/understand works of art?

Phase II: Slide Show



by Susmita Lakhyani, oil on canvas,
(communion of spirits)
Figure 1



by 2 1/2 years child,
(me in my house)
Figure 2

After some discussion and clarification of misconceptions the subjects were shown the works of different artists (including child art) in the form of slides. During the slide show, the subjects were asked to share their interpretations or ideas or what they felt about a particular work of art on screen. Simultaneously (in few slides) the artist’s idea behind the creation was discussed. The subjects interpreted the slides in their own way and shared it confidently. For example **Figure 1** titled ‘communion of spirits’ by the artist (based on the idea: an angel is urging the spirits saying “In the silence of night I offer you my wings to come across the sea.” An angel wants the sleeping souls to get awakened to the ultimate truth.) was interpreted by the subjects in different ways as:

- “The basic thing I noticed in the picture is the use of colour such that a three dimensional effect is originating through the shades of the waves. It seems as if these waves are going to come out of it. The moon shown in the picture is shining brightly. The painting gives me the feeling as all of us will have to go to heaven in the end and we will have to go and give the reply to each question asked by the God and explain our deeds in the words.”
- “This painting appealed to me as this is showing a calm death. This really shows me or evokes in me the kind of imagination as if I am dead and lying calmly. It shows that an angel has come to take my soul and that soul has merged into the angel. This painting is showing me what I want to be after my death. The presence of a crescent moon is also showering a cool effect.”
- “In the background are misty hills, perhaps the sand dunes of a desert on a night illuminated by the shining rays of a moon. In the foreground is a man, asleep. Out of him emerges the dream of an angel. The scene is very soothing.”
- “To me this painting signifies a dream. The white lying down figure is sleeping whose consciousness escapes into that realm of fantasy where even though things look familiar, they

are not. The green hills have an unreal quality to them, as does the carved crescent moon. The colours flow into each other in the creation of the background, the moon and the earth. In many ways this painting reflects freedom. The freedom one acquires in the most intense dreams. The freedom to explore, be and fly.”

- “I found nice colour combinations. And the meaning it convey really appeals to me, that whatever height you may achieve in your life and career, that too high you might have been flying, but still your shadow will lie on the ground. No one should forget one's groundings.”

The child who painted **Figure 2** expressed it as ‘me in my house’ stated *Jeswani (1966, pp.15)*. It was interpreted in the workshop as a ‘hole’, ‘cycle tyre’, ‘face’, ‘a patch on moon’, ‘cross section of tree trunk’, ‘target point’ and so on.

**Phase III: (a) Viewing the displayed paintings, writing the interpretation of paintings
(b) Feedback on attending the workshop**

(a) Viewing the displayed paintings, writing the interpretation of paintings

After the viewing of the slides, 23 prints of the paintings were displayed with the instrumental music in the background and the subjects were asked to write about the painting they liked the with the most. The following are the extracts from the subjects’ written observation of paintings they (subjects) liked the most.

The subjects after viewing. **Fig. 3** interpreted it as :

- “The picture portrays a happy situation where there is no helplessness. Everything seems to be pleasing enough. The sloppy terraced fields are soothing enough.”
- “It is the painting of a sun set without the sun in the picture. There is darkness around the big trees. The golden rays of the setting sun falls on the field, making it red in colour. It also depicts the rainy season. A bit of sky, which is visible, is filled with dark clouds.”
- In this painting a jungle scene is shown; there are lot of dense trees, and also there is dry grass and green grass depicted. Far off mountains are also shown. Through this painting one can understand nature, that how nice a dense green area looks and how sad nature looks without that dense greenery. In this painting on one side happiness is shown through greenery and sadness through dry grass. I really liked the colour selection, it seems to be so natural the way they are used. The way it has been composed is also appreciable.”

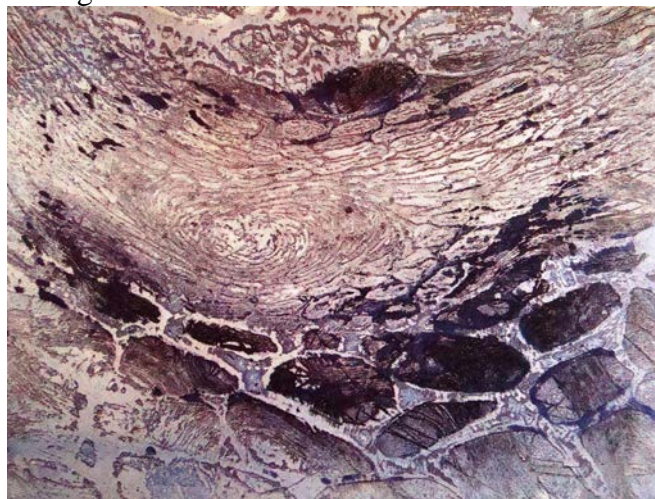


by Paramjit Singh Fig. 3

- “It seems as it is a night time and an isolated place. It’s a scary place somewhere in Punjab. I can feel that fear after seeing it, but some how I like this painting.”

Fig. 4 brought-out the following interpretations:

- “This painting seems as if it shows the skin of a dinosaur.”
- “There seems to be concentration of river in between. It is catching my attention as the surrounding is rough. I think life is similar to this. Here the river is like hope and the stones are like obstacles.”
- “Represents anatomy of some tissue with smaller cells inside and large big cells outside.”
- “It seems as if the land, after volcanic eruptions, is shown. But, some how, I like this painting because of its forms used and it seems to me that it talks about after effects of something which right now is not there.”



by Krishen Reddy Fig. 4

- “I am mystified by the meaning that the artist wants to express. Each time you see it, you find a different meaning. This keeps challenging the imagination
After writing the interpretations/reflections on the paintings subjects wrote about their experience of going through the paintings, the overall feedback of attending the workshop.

(b) Feedback on attending the workshop

After writing the reflections on displayed paintings, subjects were asked to share their experience of attending the workshop. Some of the extracts are as under:

- “I have had, for the first time, this kind of experience in my whole life. Earlier, I felt no connectivity with art and it was alien to me but, now, I’ve realized that really ‘art is a part of life’ and there is a need to recognize it. It doesn’t mean photocopying something as it is, but it means to interpret one’s feeling with colours in very simple and lucid way. I experienced inner peace during the workshop.”
- “It gave me a chance to meet myself and somehow I came to know that what I want, some day, may be that because inner peace has no face, type, choice. It can meet you anywhere, no where or everywhere. Another thing I came to know that inner desires can be fulfilled through a different medium called a ‘blank canvas’ on which you can express yourself without any limitation or hesitation, without any boundaries or restrictions.”
- “After seeing those slides of paintings and participating in the discussion I’ve started appreciating art.....It has been a source of pleasure and content. I am feeling inspired to draw my thoughts and feelings on the paper, I am really feeling relieved and relaxed.”

- “While attending the workshop nothing was there in my mind: no assignment, no house hold things. Truly this was an overwhelming opportunity.”
- “I enjoyed viewing the paintings you showed, I was able to guess who the painter could be, and it turned out to be right, that was wonderful. I never thought I would be able to recognize painters from paintings.”
- “Something was bothering me, I got a chance to move away from those, thanks for this meditative experience. I am now more at peace within myself....”
- “.....forgot the world outside and was led to a different place where I was alone with my thoughts and thus was able to reflect my experience and expression in the form of writing reflections on painting.”
- “Through this my imagination got some pause and I also thought something unique. I am so happy.”
- It was a moment for me where I can evaluate my artistic expression on my own.”
- “All my hidden feelings, thoughts and expression got a creative outlet.”
- “It was a moment to relax and just let go of your emotions. I really enjoyed myself.”
- “I enjoyed while seeing the paintings more then I expected.”
- “Wonderful stress bursting experience... More of these workshops should be there to release weeklong bottled up frustrations.”
- “This was a new, but great experience for me. I found a new sense of art in me.”
- “It seemed to me that I would get bored in this workshop. I didn’t want to come, but, still, I came to this workshop. But, as soon as I entered, the environment and paintings seemed to be very enchanting and spured my imagination.”
- “This has been an unforgettable experience for me to sit, forget the world ... express... It was an out of the body experience.”
- “After seeing the slides and discussions etc. a lot of ideas started flowing in my mind. I started feeling to draw although I had never painted and don’t know how to draw..... From now on, I would like to do paintings...”
- “It was an awesome, amazing experience, especially for a science student like me who has never been exposed to such a workshop. Helped in sensitizing me towards art and artists and feel the creativity inside me.”
- “It was a very different experience, Visuals just start flowing through your mind... Very Relaxing.”

Phase IV: .Analysis of the interpretations/reflections on paintings and the feedback on workkshop

The interpretations were analysed on following aspects :

- Integration of Idea
- Originality
- Perception
- Way of Seeing
- Expression
- Uniqueness
- Symbolic Association

It can be observed that the subjects felt: relaxed; satisfied; fresh; feeling of other worldliness; contented; inner peace; joy; happy; self realization; inspired, motivated and confident to create; sense of freedom; no limitations, no boundaries and no hesitations; emergence of new ideas and imagination; and awareness of inner potentials. The subjects felt the environment inspiring and motivating which lead many ideas and imagination flow in them.

It was observed that the subjects verbally expressed their ‘felt ideas’ and ‘honest interpretations’, while the slides were being discussed. Discussion on the meaning of art and misconceptions brought confidence in them to share their interpretations on the works of art viewed.

In the beginning of the workshop, during the discussion, the subjects shared that they were not able to understand work of art; didn’t know how to view it; couldn’t think beyond the conventional forms of mountains; huts; sceneries with a boat and sun; and conventional geometrical or floral designs in the context of art. But, it was analyzed from their interpretations of the works of art (which they did after discussions and silently viewing of slides) that they were able to think beyond the conventional ideas and they expressed what they really felt and experienced. It was observed that the same painting was interpreted in a very different way by different subjects. Almost all the interpretations were different. The extracts reflected that the experience of viewing work of art and discussion on art made the subjects go through.

- Observation.
- Interpretation.
- Development of original idea.
- Appreciation of art in terms of colour, texture, composition, balance etc.
- Sensitivity.
- Integration of idea.
- Symbolic association.
- Development of feeling.
- Understanding of non-verbal expression.
- A unique way of seeing.
- Independence/self reliance.
- Truthful and honest expression.
- Exploration of self.

Conclusion

Art experience/art appreciation leads the subjects to think in an independent, unique and honest way. It involved inculcation of courage and confidence to express what truly came to their mind. It helped them to explore their inner-self, make symbolic association; integrate ideas and develop feelings, non – verbal expression and appreciation of nature. It involved the sharpening of senses. Overall, it can be concluded that art experience/appreciation promotes creative aspects in the subjects, while, at the same time, facilitates the attainment of educational objectives.

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A REVIEW ON EFFECTIVE TEACHING AND LEARNING IN HIGHER EDUCATION

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Abstract

This paper provides a review of some approaches for developing teaching and learning in Higher Education institutions. The purpose of these approaches is to explore new techniques for integration and exploitation in order to preserve the good quality of our teaching and to enhance the quality of our students' learning experience.

Keywords: Quality Teaching, Effective Learning, Design and Evaluation, Assessment and feedback

Introduction

New challenges are facing *teaching* and *learning* in Higher Education (HE) nowadays and a new framework is established for the success of the student's learning experience.

With time passing, different theories have evolved like behaviourism, cognitivism, constructivism, and humanism. Behaviourist theories state "that language is a set of habits that can be acquired by means of conditioning". Cognitive theories consider "learning as an internal mental process" and the educator "structures content of learning activities to focus on building intelligence". The purpose of Constructivist theories in education is "to become creative and innovative through analysis and synthesis of prior experience to create new knowledge". The educator's role is "to mentor the learner". Humanist theories are "a paradigm that emerged in the 1960s which focus on the human freedom, dignity, and potential".

This paper aims to provide a review of new approaches that benefit the quality of our teaching and of our students' learning. Three major parts are developed. The first part covers mainly *teaching* and *supporting learning* in HE, the second part is about *design* and *evaluation* for teaching and learning in HE while the third part takes into consideration the *assessment* and *feedback strategy*.

Teaching and supporting Learning in Higher Education

The teacher's Action Learning

The action learning notion, first introduced by Reg Revans in the late 1940s, represents a key stone of the teaching/learning process. In 1998, Johnson defined the action learning set as a "learning laboratory". The teachers must adapt their instruction to changing situations in the classroom (O'Donnell and O'Kelly, 1994). They need to include new methods like peer learning, group work ... They need to make students active and part of the teaching and learning process. This is how students will be prepared to be active citizens (Biggs and Tang, 2011) and this is how their personal development is supported.

Group work

Students appear to learn more effectively if they debate their learning with their peers (persons of the same age and concerns). This is how students gain awareness of self and

others. They are more inclined to listening and communicating (Johnson, 1998). However, group work is not the best issue for a better learning (Blumenfeld et al., 1996). Some may rely on the rest of the group and not contribute while others might dominate hence the importance of the teacher's role to make group work successful.

Unmissable lectures

The “one-way transmission” lectures make students passive and they will fail to engage with the subject. Keys to make a lecture “unmissable” (Revell and Wainwright, 2009) are:

1. A good organization of the lesson reflected on outcomes-based planning which gives a deeper approach to learning.
2. Teacher's charisma and enthusiasm.
3. Virtual learning environments for the digital-native students of today.
4. Effective and timely feedback: it's the teacher's responsibility to give effective and timely feedback to his students.
5. Establishment of credentials by the institution; this will certainly enhance teachers' personal practice.

Inclusive teaching

Recognizing and meeting the learning needs of all students, particularly the ones with special needs is inclusive teaching. Everyone will have equal opportunities to learn in HE institutions. However, structural, organisational, behavioural, and attitudinal barriers exist. For example, access to fieldwork may be impossible in the case of handicapped students and one needs to “understand fully the boundaries and nature of its impairment” (Farrar, 2006).

Designing and Evaluating for Teaching and Learning in Higher Education

The theory of design

In HE, good design must accommodate the complexity of both HE purpose and the complexity of individual learners. The key issue is to ensure “constructive alignment”, that is, “identifying clear learning outcomes”, “designing appropriate assessment tasks”, and “designing appropriate learning opportunities for the students” (Biggs, 1999). The design must first meet personal requirements of the teacher's experience and interest, second, departmental and institutional requirements like the university learning and teaching philosophy, and finally, external requirements like market needs. An intrinsic motivation must push the student to get an ownership of his [her] learning. This active process teaches him [her] to learn the skills of inquiry and become a *lifelong learner*.

Learning Outcomes

Learning Outcomes (LOs) are defined as follows: “A learning outcome sets out what a learner is expected to know, understand and be able to do as the result of a process of learning”. According to Moon (2009), LOs need to be written clearly in a language that is comprehensible to students at that level in HE and by the need to “align learning outcomes with assessment and assessment criteria” (Gibbs and Simpson, 2004). However, the lecturer's role is to ensure that the “LOs do not stifle creativity and become too prescriptive” (Ecclestone, 1999). Flexibility is also essential for encouraging discussion and creating a flourishing environment for students. In Race's Ripple Model, some interesting factors are underpinning successful learning like “learning by doing, learning from feedback, wanting to learn, needing to learn, and making sense” (Race, 2010). Moreover, appropriate learning opportunities are designed for the students “to get them to successfully undertake the assessment tasks” (Biggs, 1999).

Evaluation techniques

Chelimsky (1997) identified many evaluation techniques for accountability, development, and knowledge. Each technique is specific for a certain purpose. One can clearly understand the importance of implementing evaluation techniques in order to carve our professional practice.

Moreover, in HE, evaluation methods offer the chance to feedback, “allowing teachers to refine their practice” (Huxham et al., 2008). These methods may range from institutional evaluation, through programme or module evaluation down to an individual session.

In the following part, I will appraise two evaluation techniques: the End of Module Questionnaire (EMQ) and the Peer Review of Teaching.

Regarding the EMQ, an online questionnaire is implemented and is filled in by each student at the end of each module. Students indicate their level of agreement or disagreement to a topic concerning the whole module, the method of teaching, the assessment exercises and individual tutors. Research showed that EMQ is sensitive to outliers since some students answer randomly the questions, without any effort of positive reflection. Furthermore, there might be a correlation between student evaluations of teaching and expected grades; this is how students reward professors with high evaluations in exchange of high grades. Moreover, in EMQ, no space is allocated for students’ personal comments which can be their chance to express their opinion. This possible space can also help students think of themselves as “stakeholders” in their learning (Macdonald, 2006). However, it is worth noting here some pertinent reflection that one can ask himself: “Are students qualified to rate their instructors and the instruction?” (Mc Cullough and Radson, 2011). This is why, student end of module questionnaire is not used alone but along with a peer review of teaching.

Regarding the Peer Review of Teaching, a checklist is used by the peer while evaluating a faculty member’s teaching. This method is a little delicate since not every teacher accepts the idea of peer review positively. However, it is very clearly stated that the purpose of this evaluation method is for teaching development not judgment or criticism. This opposition to peer review may also be the “reluctance to be involved or to engage with the process” (Lomas and Nicholls, 2005). For a successful peer review process, the faculty must implement a clear and objective procedure:

1. Advance meeting: the reviewer discusses the purpose of the peer review with the reviewee.
2. Collect the evidence: the reviewer may search to what is recognized as good practice in the field.
3. The reflective dialogue: at the end of the meeting, both parties will exchange “gains” as areas for development and will produce an action plan.
4. Implications for your practice: peer’s own development fostered through the ideas obtained from watching a colleague.

It is worth noting here that a proper training for the observers and a certain number of visits per semester, not only one observation, are required (Arreola, 2003). This is however time and potential consuming.

Assessment and feedback strategy

Assessment

According to the Merriam-Webster online dictionary the word *assessment* comes from the root word *assess* which can be defined as follows: to determine the rate or amount of or to determine the importance, size, or value of. Assessment in education is generally used to gauge student progress. In 1997, Brown, Bull, and Pendlebury described assessment as “any procedure used to estimate student learning for whatever purpose”. The Educational

and Student Policy of the University of Cambridge emphasizes key concepts in the assessment practices and expectations. “The key criterion for using a particular form of assessment should be its effectiveness in properly assessing the intended learning outcomes of the course”. Moreover, assessment procedures and policies should be communicated clearly to students, their advisors, and examiners. A great deal of importance is given to assessment because research has showed that “what influenced students most was not the teaching but the assessment” (Gibbs and Simpson, 2004). Assessment is all what really matters to the student, it represents the “heart of his [her] experience” (Brown and Knight, 1994).

In the appropriate literature, we can find many types of assessment methods and strategies; open book or closed book examinations, multiple choice questions (MCQs), experimental lab work, oral exams, projects, reports etc. These methods can be divided into initial, formative, and summative, objective or subjective, informal or formal. Initial assessments are conducted prior to instruction to establish a baseline from which individual student growth can be measured. Formative assessment is used to aid learning. For example, a teacher giving personalized feedback to the student, not necessarily for grading purposes. Also, these “frequent opportunities to perform and receive suggestions” will help them improve (Gibbs and Simpson, 2004). This type of assessment is an informal method to help students enhance their knowledge of the subject. Summative assessments are generally carried out at the end of a course or project and are used to assign a course grade to students. They correspond to a formal method of assessment. Assessments have also been divided into objective and subjective. This is the time when the teacher and the student can ask himself/herself “what he [she] learned”, “how well he [she] learned” and seek answers to these interrogations (Retrieved from <http://www.aahe.org/Assessment/Assessmentplan.htm>). However, it has been shown that “students are capable of taking different approaches to their learning” (Rust, 2002). A surface or a deep approach to learning can lead to short-term or lifelong learning respectively. If the schedule of the assessments is very tight, this may lead to a surface approach to learning as opposed to a deep approach.

Feedback strategy

In his keynote paper, Nicol (2007) gave the Ten Principles of Good Assessment and Feedback Practice. Some include: “help clarify what good performance is, encourage time and effort on challenging tasks, give high quality feedback information that helps learners self-correct, encourage positive motivational beliefs, encourage interaction and dialogue around learning...”. “Students need appropriate feedback on performance to benefit from courses” (Nicol, 2007). But on the other hand, it was found from research that “students receive little useful feedback when the volume of written feedback is very high”. In fact, feedback “must be timely and must be received by students while it still matters” (Gibbs and Simpson, 2004) so they can re-construct their own understanding, in order “to close the gap between current and desired performance” (Nicol and Macfarlane-Dick, 2006). This is how students have to engage with the feedback and with their learning, in order to set up good habits for a life-long learning process. It is however worth noting that some “students may ignore the written feedback and concentrate on grades” (Mutch, 2003).

All the above contribute to the term “constructive alignment” (Biggs, 1999) that we have already developed in “The theory of design”. The clear learning outcomes and appropriate assessment tasks will assess whether each of the learning outcomes has been met and the learning opportunities will help students successfully undertake these assessment tasks.

Conclusion

Today, *teaching* aims to improve the way information is transmitted from the teacher to the student. One must be conscious of his *role* in the larger world we want to build. We need to develop skills, attitudes, and values to enable people *work together* towards a more just and sustainable world ...

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USING ACADEMAGOGY TO MEET THE NEEDS OF MILLENNIAL LEARNERS: A COMPARATIVE CASE STUDY

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Abstract

Higher education institutions across the world are experiencing a new generation of students, known as millennial learners. They are more technologically literate and digitally connected than previous generations of learners. To meet the teaching and learning needs of these learners, we must offer more deliberate and meaningful learning experiences and opportunities, where students can see the connections between new material and their own experiences and real world applications – an academagogic approach. This study compares the implementation of academagogy for two different groups of millennial learners – one a traditional face-to-face undergraduate Engineering unit, and the other a mixed-mode (online and face-to-face) undergraduate Design unit. The units are discussed in terms of their student evaluation results, both qualitative and quantitative, and in terms of their academic outcomes for students. Conclusions are drawn about the applicability of academagogy as a heuristic for improving teaching and learning across disciplines, as well as its strengths and limitations in terms of student results.

Keywords: Academagogy, millennials, undergraduate, teaching

Introduction

In order to understand why it is necessary to rethink current teaching pedagogical practices, it is important to understand the context of the HEI landscape in terms of our current teaching generation, as well as our contemporary learning cohorts.

It cannot be disputed that in the higher education sector the generation gap has widened between those who teach, and those who learn. In many higher education institutions (HEI) across the world, the average age of teaching staff is approximately 50 years old, whereas a student graduating from an undergraduate degree is around early to mid-twenties (Mangold, 2007). This means that many educators in HEI's are from the "baby boomer" generation (born between 1946 and 1964), and the significant majority of students are the "millennial" generation, born between approximately 1981 and 1999 (Lancaster and Stillman, 2002). Although over-generalising should be avoided, certain characteristics are shared by a common group of people such as life experiences or experienced events in society at approximately the same point in development, such as wars or the 9/11 tragedy. In sharing life experiences, a common link to values, beliefs, attitudes, behaviours and perceptions of the world is evident (Lancaster and Stillman, 2002; Collins and Tilson, 2001), and, as such, shared life experiences unique to each generational cohort also influence the learning preferences for each generation (Billings, 2004).

There are significant differences in learning environments in HEI's between those of baby boomers and millennials. Baby boomers were "educated in a time when learners were dependent on educators to give them information and this usually occurred in the lecture format. They sought a caring environment and responded well to positive feedback"

(Mangold, 2007, p.21); furthermore, they perceive technology to be something that is ‘good to have’, rather than a necessity. Generally, “this group wants to know the “what” and “how” before learning the “why” in a new situation...they are more process oriented than outcome oriented” (Mangold, 2007, p.21). Zemke, Raines and Filipczak (2000) assert that this group of learners do not appreciate learning environments where any form of discomfort is present and appreciate a personal touch from their educators.

On the other hand, millennials are very technologically literate and see technology as a necessity, as they have always been digitally connected. Computers are not perceived to be ‘technology’, but rather as tools and devices that are imperative for functioning in everyday life. This generation values the ‘doing’ rather than the ‘knowing’: the ability to search and manipulate information in the *generation* of knowledge is perceived to be far more important than the *attainment* of knowledge (Zemke, Raines and Filipczak, 1999).

Millennials are the most diverse generation in terms of teaching experiences, and therefore the approaches to teaching must be diverse. “Millennials expect to be engaged in their learning, they do not do well being passive learners. If you (as a teacher/university) do not have technology that will be part of their learning, they will go somewhere else where they can be engaged with, and interactive with, technology. Millennials perceive a sharp contrast between their comfort level of technology and the technology comfort level of their teachers” (Starlink, 2004).

The ‘trial and error’ approach that is inherent to the millennial generation is borne out of a video game culture “where persistence pays off and reading the manual is not very helpful” (Mangold, 2007, p.22). Frand et al. (2000) argue that millennials are adept at multitasking and it is common for them to surf the Internet, listen to music, and text at the same time. This creates intolerance for slow connections and delays. These factors lead to specific preferences in learning styles: millennials expect, prefer and appreciate technology used in learning and “excitedly anticipate what will come next” (Mangold, 2007, p.22). The pace at which this savvy generation can absorb technology exceeds the ability of many teaching staff in HEI’s to constantly maintain and integrate technologically enhanced education (Collins and Tilson, 2001).

Millennials are adaptive, open to interdisciplinarity, are team workers and are “natives” of this new, digital, consumer driven, flat, networked, instant satisfaction world. While some in the older generations may adapt quickly, they will always be “digital immigrants” and will never be as competent, resourceful or “natural” as the Millennial “natives” born into this new culture (Sweeney, 2006). Additionally, where lecture theatres and other traditional classroom and laboratory environments may be comfortable from an educator’s point of view, the millennial generation are more engaged and motivated to learn in connected ways, ‘authentic learning experiences’, or ‘real world’ contexts rather than sitting listening to the educator ‘lecturing’ the facts to them.

The complexities of the millennials’ learning needs require us to ‘repurpose’ teaching practices, and many educators have approached the classroom with new and inventive ways to impart learning. To address these new approaches, the authors of this paper discuss a teaching approach which challenges the baby boomer approach to teaching and offers deliberate and meaningful learning experiences and opportunities for millennial students.

Certain pedagogical paradigms such as experiential learning (Schank, 2007) and the application of Bloom’s taxonomy (Forehand, 2005) are commonplace in university curriculum, but notwithstanding these and other valuable initiatives and programs implemented in various institutions, the disconnect and ever-increasing gap between the current generation of learners and teaching and learning methodologies have become even more apparent.

Academagogy

The many theories in the teaching and learning context “are constantly being reviewed and discussed in professional education, especially in terms of the university educational environment. Teaching and learning theories in this context are not static and appear to be in a constant developmental process” (McAuliffe, Hargreaves, Winter and Chadwick, 2008, p.1). Education, in particular in the university sector, is in a constant state of flux and those in teaching and learning constantly seek ways toward improvement particularly in undergraduate education. However, some approaches that are proposed typically follow the ‘one size fits all’ that tends to observe rigid ‘rules’ and procedures. This is especially true in the HEI context of decreasing resources, an increasing risk-adverse environment and university demand for quality assurance involves greater transparency and learning outcomes linked directly to course aims and objectives (McAuliffe, 2013).

Academagogy (Winter et al., 2009) is a ‘meshed’ model of pedagogy, andragogy and heutagogy and allows for flexibility in teaching by using a variety of methods. It may be used across diverse cultural, generational and disciplinary backgrounds, as it considers students’ prior knowledge in the context of social constructivism. In teaching undergraduate students (including millennials whose complex learning styles prompted its development) using the academagogical model, it is understood that academics do not simply deliver knowledge and content to a ‘tabula rasa’; students are taught the content, and as such, a variety of student characteristics affect the way that learning occurs.

Discussions around academagogy to date are summarised in McAuliffe and Winter (2014); it has progressed from development as a heuristic organising construct through to implementation in face-to-face engineering education and then to the online space in design education. One of the primary aims of academagogy is to “open up teaching concepts, and allow the informed academic to apply what works for them in their own context. This means that the facilitator, or, in the university context, the lecturer, could select certain concepts from the ‘buffet’ of educational concepts – take what is required for the appropriate learning outcomes, because they have permission to look at the whole spread and evaluate it for their own purposes” (Winter, McAuliffe, Chadwick & Hargreaves, 2009, p. 993).

In our previous work on academagogy, we have focused on the traditional classroom face-to-face (f2f) student and teacher interaction space, then its progression to an online learning environment. The first case study was in engineering education (Winter, McAuliffe, Chadwick and Hargreaves, 2009) where the application of academagogy to a third year face-to-face (f2f) subject resulted in both better outcomes for all students and a statistically significant improvement in the subject evaluation at the end of the semester. The second case study was the implementation of academagogy in two new ways – firstly, in a design subject (rather than an engineering one), and secondly in a unit offered in a largely online (rather than f2f) format (McAuliffe and Winter, 2013). The outcomes of these two case studies are the focus of discussion below.

The Philosophical Position of Academagogy

In discussing academagogy it is important to state our position of social constructivism as the underlying perspective. This standpoint defines that learning is shaped by context, conversation, and collaboration (Brown, Collins & Duguid, 1989; Dewey, 1963; Vygotsky, 1978). As a summary of the importance of using the social constructivist stance in terms of learning practices, Swan (2005) suggests that “learning is essentially a social activity, [and] that meaning is constructed through communication, collaborative activity, and interactions with others. It highlights the role of social interactions in meaning making... [and] knowledge construction” (Swan, 2005, p.5). This is the underlying principle that guides the academagogical approach.

Murthy, Furness and Wardle (2012) argue that the academagogical framework hinges on social constructivism in that it addresses the major skill gap of team work for professionals new to industry, it provides increased interaction between learners and facilitators allowing more active communication, and finally, it permits millennials social connectivity.

When the social constructivist stance is employed as a theoretical framework and applied in an online course, the online discussions and e-tutorials are critical as they connect individuals to each other in an online learning environment and motivate them to take an active role in knowledge construction and meaning-making processes (Fung, 2004; Henning, 2004; Stacey, 1999). Moreover, Hill, Song and West (2009) suggest that online environments should support threaded discussions, through which individuals “interact and observe the results of their interactions while responding to and engaging with others” (Hill, Song & West, 2009, p.89).

According to Partlow and Gibbs’ (2003) study, courses designed from constructivist principles should be relevant, interactive, project-based, and collaborative, whilst also providing learners with some choice or control over their learning.

Academagogy and Interdisciplinarity

Interdisciplinary approaches in higher education are not a new concept, and increasingly the HEI is meeting the needs for the millennial generation in adopting interdisciplinary approaches to educational programs. These programs provide students with a broad based education and prepare them to function in collaborative work teams which are increasingly prevalent in today’s workplace. When students work with students from different disciplines, development of high level communication skills requisite to effective teamwork is accelerated. El-Zubeir, Rizk, and Al-Khalil (2006) suggest that this model of learning provides a greater degree of intended, structured and planned interaction among students from different programs. Interdisciplinary structured programs also create opportunities for joint learning, planning, and understanding as well as decreasing tensions among stakeholders who traditionally have worked alone or in strict discipline groups.

Interdisciplinary learning and teaching provides opportunities for both students and facilitators to work in diverse projects, provides understanding and appreciation of the roles of others, and sharing successes and areas for improvement. Further, this style of curriculum supports the team oriented millennial student.

In applying the academagogical approach to a non-specific, curriculum development and interdisciplinary level, Murthy, Furness and Wardle (2012) suggest that the “suitable learning methodologies [are required] in to assure achievement of stated learning outcomes and...an academagogical framework...is suitable to leverage technology and build a learning ecology that suits millennial learning styles” (Murthy, Furness and Wardle, 2012, p. 305). The authors present a conceptual map of the academagogical framework which suggests the application at a faculty level encompassing learning and teaching consultants as well as teaching staff (Figure 1).

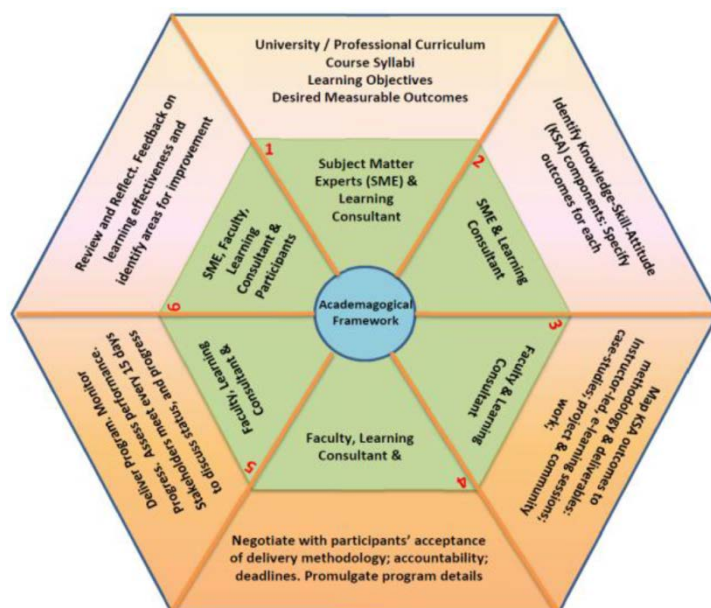


Figure 1: Conceptual map of academagogical framework (Murthy, Furness and Wardle, 2012, p. 307)

Rather than implementing academagogy at a subject level (as was originally proposed by Winter et al., 2009), Murthy (2011) suggests building an academagogical framework based on learning principles, where the “delivery of curriculum is jointly negotiated between the learners and facilitators, much akin to a client-supplier relationship in industry. The scope of learning delivery should include professional competencies and behavioral skills that address industry needs” (Murthy, 2011, p 1). This approach is “an effort to bridge the competency-gaps while keeping aligned to technology, environmental and societal changes (Murthy, 2011, p. 2). The application of the academagogical framework at the curriculum development level “promotes joint ownership of outcome based academic curriculum between the learners and facilitators; encourages communication and teamwork; leverages on the millennial need for social connectivity on a 24x7 basis [but] more significantly, the framework supports [a] holistic transformation from using of information to application of wisdom; converting knowledge into action through experiential learning and simulated role plays; [and] nurturing positive attitudes impacting behavioral transformation” (Murthy, Furness and Wardle, 2012, p. 307).

Taking the academagogical framework proposed by Murthy (2011) and Murthy, Furness and Wardle (2012) above, this interdisciplinary approach benefits more than students and Maier (2012) confirms the value of faculty interaction and collaboration. Evidence suggests there is value in faculty collaborating with other faculty (Cox, 2004) and in sharing pedagogical practices and effective uses of eLearning tools and instruction “collaboration is often the basis for improving teaching effectiveness and building community online” (Maier, 2012, p. 885).

Developing curriculum and teaching practices and approaches with a connected interdisciplinary approach helps prepare future professionals to work with more complex systems; requiring our graduates to have integrated knowledge and competencies capitalising on the challenges and opportunities in building community-based collaborations is necessary in “building trust among team members, selecting an effective leader with strong facilitation skills, respecting different areas of expertise, learning to deal with conflicting opinions in constructive ways, recognizing the difficulties and stresses inherent in team membership, and supporting team decisions once they are made are all suggestions for avoiding internal team problems” (The Higher Education Mental Health Alliance Project (n.d., p. 31).

Case Studies in Academagogy

The first case study (Winter et al., 2009; Winter, McAuliffe, Hargreaves and Chadwick, 2009) was an Engineering context where third year (in a four year degree) undergraduate students were learning the theoretical and practical principles for stress analysis. Almost 100 students were enrolled in the unit, and lectures and tutorials were all held f2f over the thirteen week semester. Prior to implementing academagogy, the history of the unit indicated mediocre results: student feedback and the results of the final exam showed limited retention of knowledge. Students were passing the unit based on quizzes and assignments, with 40% failing the final exam. Student evaluations of the unit consistently showed that the teaching was too fast and covered too much content. Following the implementation of the academagogical approach, the outcomes revealed a remarkable difference in the reduction of failure rate in the final exam (20.54%). Student evaluations of the unit also showed a statistically significant improvement in ratings.

Taking the principles of academagogy, the second case study (McAuliffe and Winter, 2013; McAuliffe and Martin, 2013) was a Design context where second year (in a four year degree) undergraduate students were learning the theoretical and practical principles for colour theory, light and lighting. More than 120 students were enrolled in the unit, and approximately 90% of the subject matter was delivered online over a thirteen week semester. Prior to this iteration all material was delivered f2f, and the history of the unit indicated poor student feedback, as well as low pass rates for the assignments.

The primary differences between the two case studies are that the Engineering unit was only taught f2f, and the Design unit was taught primarily online. The discussion below examines student satisfaction rate and academic outcomes, but does not concern the discussion of delivery mode.

Student satisfaction

In the 2009 Engineering unit, the end-of-teaching evaluation of the unit resulted in a final score from 15% of the class of 3.7 (on a five-point Likert scale) to the question: *I have been satisfied with the overall quality of this unit*. In the 2013 Design unit, the end-of-teaching evaluation of the unit resulted in a final score from 27% of the class of 4.0 (on a five-point Likert scale) to the question: *Overall, I am satisfied with this unit*.

In the Engineering unit, students were asked two open-ended questions. The first was, *What were the best aspects of the unit and why?* Their responses covered three main areas: the skills of the teaching staff, the software taught, and the academagogic teaching approach. For example:

- The layout of the unit was really good, as were the presentation of the lectures. Asking for student feedback on how the lectures should be run is also a great idea.
- It is the way the lecturers presents the lecture, they provide a cool amount of the examples and explanations
- The notes that were sent out before each lecture for the last few lectures were a great help. They were much easier to read than the text and showed us exactly what we needed to know for the unit.

Students in the Engineering unit were also asked to respond to a second open-ended question, *What aspects of this unit are most in need of improvement and why?* Their comments in response to that question were mainly about the textbook being a less-than-useful resource for the unit:

- The textbook is fairly bad, hard to understand and in fairly badly set out.
- The textbook needs improvement, the contents aren't easy and not really straightforward

- The content is very difficult to get at first. Textbook is no help. Sending out notes was a good idea - do that next year, rather than posting them on blackboard.

The final comment indicates an appreciation for the academagogic approach taken by the lecturer – sending out notes ahead of each class so that students could focus on the complexity of practical exercises rather than theory during valuable class time with the lecturer.

Students in the Design unit were also asked to respond to an open-ended question in their end-of-teaching evaluation, *Please provide any further feedback you may have about this unit*. Their responses were generally about the teaching approach of the unit – being mostly online with occasional face-to-face meetings:

- Even though the unit was online, the lecturers were very helpful and understanding which helped make students feel comfortable and kept us on the right track. the lecturers made this unit very enjoyable with their constant support and communication
- not particularly a fan of the online learning ... I would rather more face to face feedback ... however the learning strategies implemented worked well ... alot of effort shown by the tutors and lecturers
- although I was not very happy that this unit was conducted online, the coordinators made a huge effort to make sure everyone was okay and got all the help they needed
- Being an online unit was quite difficult as there are no formal lectures and tutees, however the one on one Skype sessions have been fantastic!
- The overall unit was good. I felt it made it difficult being online just with meeting up with tutors and trying to get out information. However, I loved the research assignments and very interesting to the field of interior design. Tutors amazing and helpful as always.
- The online lectures of this class were a fantastic resource to learn at my own pace and have the ability to revise the content whenever needed. Having pdf copies of the content was also very useful. All of my questions were promptly answered and the teaching staff were always happy to help. Having a few on campus classes was also very beneficial to be able to receive some feedback from peers and tutors. In the future I think the technology will be better integrated and the unit will run more smoothly. I was really impressed with all of the work produced by my peers in this subject.

Academic outcomes

In terms of student outcomes, both units have strong results. The Engineering unit reduced the failure rate from 40.54% in 2008 to 20.00% in 2009. The Design unit improved from two grades of 7 (on a 7-point scale, where 7 is the highest grade available, a High Distinction) in 2012 to 16 grades of 7 in 2013, when both an academagogic approach and the first online offering of the unit were implemented. The failure rate for the Design unit has remained low, between 1% and 4%, each year that the author has been the coordinator (2009-2013). One exception to that low failure rate occurred in 2011, when a different staff member was in charge of curriculum.

As shown in Figure 2 below, the spread of results is different between the ordinary approach to teaching and learning and the academagogic approaches, in both the Engineering and Design units.

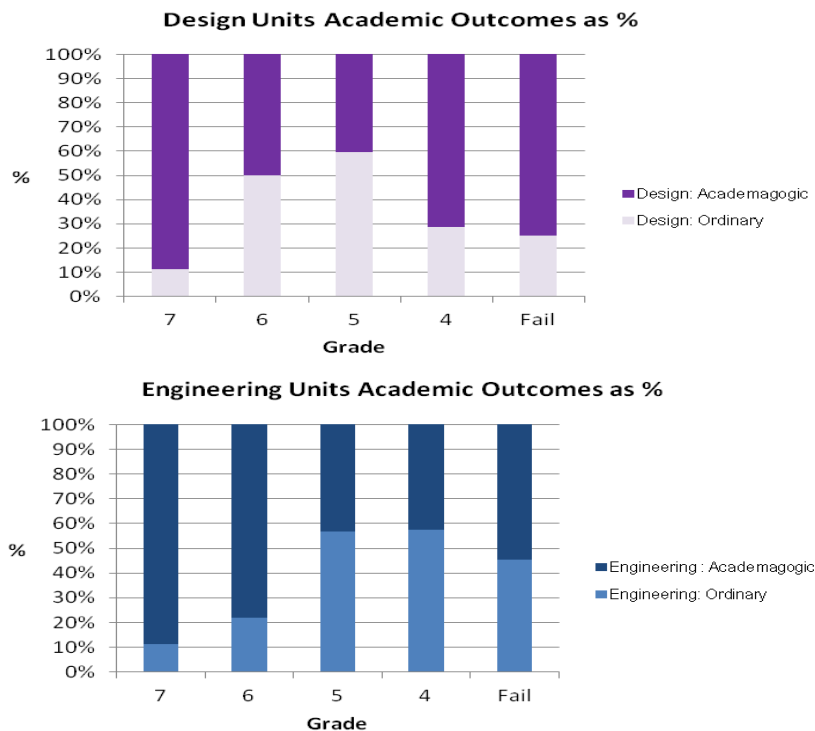


Figure 2: Spread of results of Ordinary and Academagagic approaches to teaching and learning

Outcomes

The student evaluation and results data for these two units show that students appreciate the academagagic approach when it is offered to them, even if other circumstances (the content, the textbook, the mode of delivery) are challenging for them. Comments surrounding the Engineering unit about asking for student feedback, and the Design unit about the learning strategies show that students both recognise the work that has gone into designing and implementing the unit in an academagagic way, and value the interest that the teacher is showing in their learning by taking the time to use academagogy in an effort to make their learning more personalised.

The data also reveals that applying an academagagic approach to teaching and learning in higher education does not mean a lowering of the standards – both units maintained similar failure rates; it was the spread of results that shifted, with more students achieving higher grades.

Early results appear to be positive when the approach proposed in the Engineering context is applied to the Design unit, which suggests that the framework proposed by Murthy (2011) and Murthy, Furness and Wardle (2012) benefits learning outcomes as well as creating cross-disciplinary faculty interactions, collaboration and research in learning and teaching. This also aligns with Maier's (2012) concept of sharing pedagogical practices, thus improving teaching effectiveness and building interdisciplinary learning and teaching communities.

Conclusion

Implementing academagogy is not a 'one size fits all' approach, and as such, is very time consuming for the lecturer because of the need to tailor the delivery to the students' requirements (which will most likely change from semester to semester). Extra support and planning time is one of the major requirements for academagogy. Delivering material online also requires the lecturer to play more of a facilitator role, rather than a more directive or authoritative one, which conflicts with traditional teaching methods and requires the teacher

to somewhat 'trust the learning process', to step back and allow learning to happen without 'hands-on' direction and guidance.

When taught using academagogical principles, students' comments show that they develop the knowledge and confidence as independent thinkers and this leads to new thought processes. This approach has challenged the students to 'step up to the plate' in terms of their own learning, and they have responded to this challenge, exhibiting that they are empowered by having input into what and how they learn. This has enabled them to broaden their knowledge, being able to think holistically about the interdependence and interrelationships of complex issues that do not have 'hard and fast' rules, but rather are complex, multi-faceted and abstract, such as the case in colour theory.

The academagogical approach requires more than taking elements of other 'gogies'; it is rather an ongoing process applied to tailor the teaching and curricula to suit the students' needs. It requires flexibility with each cohort of students, their generation, and their own learning and life experiences. Distance education has moved on from the time where the lecturer could simply upload teaching materials online and then expect students to undertake their own learning without ongoing support from the teaching staff. Taking this into account, the academagogical approach has the potential to greatly assist with distance education, particularly in a time where the needs of Millennials have dramatically changed the face of teaching and learning across the globe.

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ASSUMPTIONS FOR OPTIMIZATION OF ANDRAGOGIC INTERACTION: METHODOLOGICAL AND PRACTICAL GROUNDING

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Abstract

The article analyses links between personal (individual) independence (autonomy), interpersonal dependence and andragogic interaction, also optimization of these links by grounding their methodological and practical assumptions. The methodological basis rests on stimulus-response theory, assisting in spotlighting of assumptions for transformation of personal (individual) independence into interpersonal dependence, significance of interpersonal dependence and reliance on optimization of andragogic interaction. Comparative analysis of results in 2001 and 2011 research, revealing positive and negative experience of learners in teamwork and project activity was invoked. Theoretical and empiric insights of the article can be helpful for andragogues/lecturers and administrators of adult education institutions, for all those working with adults and striving for qualitative changes in andragogic interaction.

Keywords: Interpersonal dependence, personal (individual) independence, reliance, andragogic interaction, optimization

Introduction

In modern communicative society it is important to constructively avoid interdependence, to strive both for personal and collective goals, develop more transparent reality of interdependence, based on reliance upon others. According to S. R. Covey (2007), a low level of reliance leads to friction of interpersonal relations, beginning of “double” wickets and conflicts, appearance of unnecessary rivalry. People start employing “I win and others loose” categories. Consequently, interpersonal relations, labour efficiency and results suffer from that.

According to S. R. Covey (2009), the level of reliance nowadays is very low and is treated as the lowest in the history. It refers to all spheres of social life: governments, economy, business, culture, politics, etc. The situation in human relations is even worse. Results of D. Helpert's research (Covey, 2009) show that only 34 % of Americans are inclined to rely on other persons. In Great Britain it makes only 29 %. However, there are still existing societies, where that level is rather high – in Denmark, Sweden and Norway it amounts to 68 %, in the Netherlands – to 60 %. Distrust of others, friction, rivalry and prejudice induce to avoid any responsibility, fearing for defeats. On the other hand, defeats lead to dependence of losers on winners, lack of self-confidence, inability to take responsibility for one's own actions and their consequences. Choice of each independent and self-confident person is important for constructive interpersonal dependence and high level of its reliance on each other.

After evaluation of insights of national and foreign researchers (Seilius et al., 2008; Nagineviciene, 2009; Kvedaravicius, 2006; Adomaitiene et al., 2010, 2013; Zubrickiene et.

al., 2011; Jarvis, 2001; Mezirow, 1978, 1997; Avolio et al., 2002; Covey, 2006, 2007, 2009; Neale et al., 2008 and et. al.) analysis is made of interpersonal dependence as a basic assumption for positive alteration of andragogic interaction.

Methodological and practical grounding was invoked for above analysis. Firstly, it is personal (individual) independence as the major assumption for interpersonal dependence, since it grants high level of self-confidence and confidence in each other (stimulus – response theory). Secondly, self-reception of interacting individuals was invoked (from the viewpoint of comparative analysis), which enabled them to take an external look at themselves and their relations to others, measuring interpersonal dependence, stimulating and suppressive factors.

Scientific problem: what are assumptions for optimization of andragogic interactions?

Aim of the research is to make analysis of methodological assumptions for optimization of andragogic interaction, grounding them with results of 2001 and 2011 comparative analysis.

Objectives:

1. to make analysis of methodological assumptions for optimization of andragogic interaction from the viewpoint of stimulus-response theory;

2. to make analysis of important assumptions and obstacles for optimization of andragogic interaction, appreciating the approach of higher school learners, their positive and negative experience of participation in teamwork;

3. to compare results of 2001 and 2011 research, aimed at disclosure of assumptions that are important for optimization of andragogic interaction.

Research methods: analysis of scientific literature, inquiry, comparative analysis.

Reliance – a significant condition for development of efficiency in andragogic interaction

People live in social environment and they are closely interrelated. There is a continuous interaction between andragogues and learners in the process of learning. The interaction is realized as “a reciprocal influence of objects that effect each other, i. e. influence each other by combined actions“ (Jovaisa, 2007, p. 254). According to L. Jovaisa (ibid), this effect is double: informative (objects send each other verbal and non-verbal signals) – psychological interaction; practical (objects direct their activity towards each other – they teach each other, assist each other, cooperate in combining their actions) – in andragogy it is treated as andragogic interaction.

Andragogic interaction takes place in social context, where dominant are social relations of andragogues, learners and other learners by sharing information, experience, ideas and sensations. It leads to transformation of knowledge and those participating in the interaction when qualitative personal (individual) changes take place on the basis of new knowledge, abilities and skills.

Efficiency of andragogic interaction and its development are related to other participants of andragogic interaction (learners and their interrelations, based on reliance). According to S. M. R. Covey (2009), reliance is the base of interrelations. Absence of reliance leads to the breakdown of relations. Reliance on others is very important, however, if self-confidence is missing, it will also be missing in relations with others.

What is reliance? To rely on someone means to believe that he/she is not going to disappoint you and you can rely on him/her (IDV, 2001). But how can you rely on others, if you lack self-confidence?

S. M. R. Covey (ibid) notes that the world of business employs a simple formula, which shows that reliance in specific activity is highly appreciated. According to the author, above formula could also fit for any other sphere of activity, particular. It could also fit for evaluation of activity efficiency (formula 1):

$$\uparrow \text{RELIANCE} = \uparrow \text{SPEED} \cdot \downarrow \text{INPUT} \quad (\text{formula 1})$$

Formula 1 shows that the level of reliance is low, the activity rate is minimal, whereas the input is huge. To the contrary, when the level of reliance is growing, the activity rate is increasing and the input is decreasing. Most people always used to and still treasure reliance, however only some of them understand its true value. Therefore, reliance appears to be a factor, making impact on activity rate and input, i. e. on activity efficiency. When the level of reliance is high, dividends are obtained and results of all activity spheres improve. For example, when learners perform practical assignments in groups or take part in project activity, when the atmosphere of reliance is dominant, their sincere, meaningful and inspiring communication and collaboration is encouraged, partners inventively strive for joint goals, demonstrate their initiative, searching for and introducing innovations, focusing on their work and improvement on activity efficiency. On the other hand, the factor of reliance in any activity enables to experience more joy, brings friends, community, team and group members closer, relations become absolutely transparent and very efficient.

According to S. M. R. Covey (2009), most people “look through” reliance and fail to understand how this factor affects different relations. By invoking a traditional formula, widely employed in the world of labour (formula 2), we can clearly see that due to lack of reliance even employment of a good strategy and its proper implementation does not guarantee good results. To the contrary, high rate of reliance is a multiplier of activity performance. It will be directly proportional to results and their value.

$$\mathbf{R} = \mathbf{S} \cdot \mathbf{A} (\mathbf{P}) \quad (\text{formula 2}),$$

In which **R** – activity (project activit) result; **S** – chosen strategy (aim, method); **A** – activity performance (realization); **P** – reliance.

The final result (formula 2) is affected by the level of reliance. The final result can be poor, if the level of reliance is low and it is better, if that level is high. Therefore, nowadays it is particularly important to know how to develop and uphold relations, based on reliance, relations that are essential in development of interpersonal dependence and optimization of interaction. Table 1 introduces characterization of andragogic interaction with its very low, high and very high level of reliance.

Table 1. Relation between efficiency of andragogic interaction and reliance

Andragogic interaction, based on a very low and low level of reliance	Andragogic interaction, based on a high and very high level of reliance
Each interacting individual firstly takes care of himself and his own good image	Friendly relations and mutual assistance
Continuous rumours, scandal, distribution into different groups, friends and foes	Positive atmosphere, pro-activeness and inventiveness are dominant
Unwillingness to communicate and cooperate, probable manifestation of fears, dismay or indifference	Meaningful, inspiring and positive communication
Intrigues, conflicts, rivalry	Mutual understanding, friendship, joy
Tense and non-joyful relations	Absolutely transparent relations
Attention is focused on mistakes and failings of those participating in the interaction, taking no notice of positive things	Participants look for positive properties of each other and try to strengthen them; Mistakes are treated as lessons and are soon forgotten
Inefficient activity, work	Entire attention is focused on activity; Very efficient activity and work
Wastage of time, defence of positions, decision taking is painful	Very efficient collaboration; Participants inventively strive for joint goals and objectives

Source: (Structured by Covey, 2009)

Strong inner values and ability to efficiently motivate each other for proper behaviour, and meaningful goals rather than personal (individual) interests are distinguished features of

those participating in andragogic interaction, based on a high and very high level of reliance (table 1). They observe very high standards of moral and ethic behaviour, which strengthens the team spirit. Dominant in these relations are creativity, constructive thinking and pro-activeness of participants, their active participation in self-dependent gaining of knowledge, mastering of necessary skills and abilities, exploring and independently „discovering“ scientific and true-life verities, searching for new ideas in solution of emerging problems. On the other hand, activity that is based on a high level of reliance makes impact on learners' independence (autonomy), their free thinking, inventiveness, self-confidence, positive self-evaluation, pro-activeness, communication culture, development and improvement of skills and abilities, i. e. development of a personality.

According to J. Kvedaravicius (2006), developed personal properties, skills and abilities, personal autonomy and self-confidence helps individuals to choose a meaningful trend of activity and value-based position, when striving for a positive communication and cooperation. These properties are also important for intellectual activity, for constructive thinking, i. e. ability to foresee and design a mental “picture” of desired result, to proceed towards one's own essence and development of personality. Development and growth are two different things: growth is not necessarily followed by development. Development is typical only to socio-cultural systems, society, its separate members, institutions, etc. Therefore, a human could be equated to an open socio-cultural system with its own specific developmental philosophy and theses that characterize it: it is impossible to insist on development – assistance in development is the only possible way; development itself is a cyclic (step by step) process; the more developed is the system, the less dependent it is from external factors. It is able to more efficiently employ inner resources (potential); the more challenging are goals, the bigger are possibilities; willingness to become more competent is natural (innate); development is both an increase of one's own individual goals, opportunities and those of others; the beginning of and opportunities for development lie in humans themselves – they have to make up their mind for that; the first step is to “create contact” with one's own self and start creating other plans only after that; a human, seeking for the highest level of development has to spare himself and direct one's own potential towards intellectual, research and vocational activity; development is a change in an ordinary situation and it is always related to unexpected risks, as development is an outbreak into a new state; a developing human must be egoistic, develop his potential alone and strive for maximal level in his vocational activity; people have to “plunge” into development, to stand it as a challenge, retreating from it with an improved potential and maturity (Kvedaravicius, J., 2006, p. 48,49).

Activity philosophy of each person is being shaped in the length of time. He faces continuous challenges, requiring specific endeavours and competence, ambitions, faith and self-confidence.

A learning participant of andragogic interaction is developing as a personality, improving one's own competences, self-confidence and reliance on others. In that way a base for building of reliance culture in andragogic interaction is created. Andragogic interaction, among participants of which dominant is the culture of high level reliance, provides them with conditions for disclosure of their very best features, take a closer look at individual demands of other interacting participants, to know and understand them better, offer support and assistance for negotiation of personal challenges. Dominant in this andragogic interaction are friendly, mutual assistance based relations, meaningful, inspiring and positive communication and efficient collaboration for the sake of joint goals and results. This andragogic interaction is distinguished for its high collective identity, its participants are inclined to refuse their own personal interests for the sake of the group or the team welfare, to realize and acknowledge interpersonal dependence. It means that continuously developing

participant of andragogic interaction is transforming and influencing alteration of above interaction itself. Each time it becomes more and more efficient, achieving a higher qualitative level.

Importance of personal independence and reliance for optimization of andragogic interaction from the viewpoint of stimulus-response theory

Essentially life achievements of each individual are predetermined by his ability to choose freely rather than his innate properties (genes). However, there is one important thing that predetermines any individual free choice to guide over one's own life and that is his independence (autonomy). Autonomy (Gr. *autonomia* – independence, self-government, independence, self-sufficiency, right to choose (IDW, 2001). Autonomous means self-governing, self-dependent, independent (IDW, 2001). Independence (autonomy) is not to be understood as sensations and feelings, mood or even thoughts and ideas. It is an ability to realize one's own essence, properties and role, one's own relation with the world, perception and awareness of oneself as a personality, one's own behaviour, actions, thoughts and sensations, wishes and interests. Self-perception is a factor, related to the choice of behaviour and actions (Jovaisa, 2007), an ability to take a look at oneself, to analyse the paradigm of self-perception, which predetermines the efficiency of individual actions (Covey, 2007). It builds human position, behaviour and attitude towards others. It means that a human is free to act in accordance with his self-perception and resist the outside influence. However, it cannot be denied that the process of learning is accompanied by a large number of different stimuli, encouraging or suppressing human behaviour and actions. Knowledge is important for implementation of activity, as it helps to realize what and why to do, whereas skills prompt how to do. A demand, accompanied by human reliance, can be treated as an activity motive. Continuous human development is a spiral process of perfection, gained knowledge influence human transformation – the more we learn the bigger is demand for it and the more rapid is development and perfection.

Activity (actions) starts with a stimulus. A response to it is a natural human reaction. Everything that we see, hear and sense could be treated as a stimulus. Everyone needs a different stimulus and reaction to it remains to be very individual. On the other hand, there is a space between a stimulus and a response. This space contains individual power and an independent (autonomous) individual's liberty to choose the ways and methods of response to that stimulus, to choose and follow principles and value-based position for realization of the chosen activity and actions (Figure. 1).

According to S. R. Covey (2007), people themselves are choosing their own values and behave in compliance with them, discover themselves, predetermine their future and influence other people and entire society, but only if they are independent (autonomous).

A human needs assistance of other people, if he wants to create something. According to S. R. Covey (2006), he strives for specific goals only supported by others and blames others after failures.

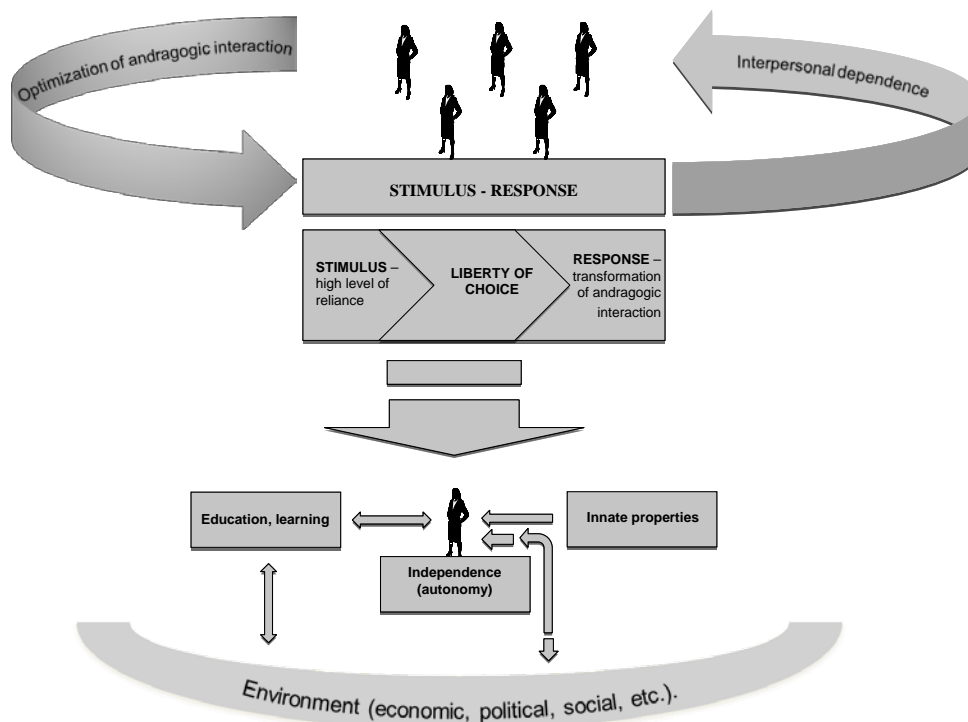


Figure 1. Links between personal (individual) independence, interpersonal dependence and andragogic interaction from the viewpoint of stimulus-response theory
Source: (drafted by J. Adomaitiene and I. Zubrickiene)

A reliant human mostly depends on social environment and feels good, if surrounded by a joyful and elated atmosphere, however, his mood and behaviour changes together with changing situation. It means that behaviour, actions and activity of dependent people depend on behaviour and vices of other people, dominant emotional atmosphere and emerging instantaneous sensations. They focus their attention on vices, mistakes and problems of other people, noticing no positive moments in them. It results in accusations and rephension of other people, tense and cloudy relations. These people are affected by external physical, social and psychological stimuli, so they choose a response in compliance with their feelings and sensations, avoid any responsibility.

Only an independent human can freely choose how to behave in a specific situation and what value-based position to follow. Choosing freely and employing all his potential (knowledge, abilities and skills) he can enrich his life with a higher qualitative level. An independent, autonomous and continuously developing personality fears no competition (rivalry), prefers relations that are based on personal responsibility for joint goals, on mutual assistance and support, on "I win, you win" principle. Entire attention is focused on activities, whereas in interpersonal relations dominant are self-confidence and reliance on others. On the other hand, interpersonal relations, based on high level of reliance, contain positive energy, creativeness, inspiring and meaningful collaboration. Partners accept each other the way they are and search for positive features of each other, making every attempt to strengthen them. Mistakes are not given any prominence and treated as lessons for everyone.

An independent person can think and develop positively and analytically, rise from one level of abstract thinking to another (higher). He is also emotionally independent from others, so he can listen to his own inner voice, follow his own value-based position, expectations and demands. Self-esteem and self-confidence of such a person does not depend on attitude of others, on approach to him and on different factors of social environment. His actions are based on general human values, he adequately perceives the reality and knows what he wants. He is indifferent to circumstances, but is inclined to change himself and

change these circumstances. He acknowledges his mistakes, corrects them and learns from them, striving for efficient activity. In other words, an independent person is distinguished by his inner independence and is able to govern over himself, adequately react to a stimulus and freely choose a response, echoing the chosen value-based position rather than instantaneous feelings and sensations.

It is not enough to be independent when holding the position of interpersonal dependence, as independent individuals are not always mature enough and able to think and act collectively. It is possible to build a base for interpersonal dependence only after learning how to communicate and cooperate, after acquired and developed self-confidence and reliance on others. Self-confidence and reliance on others inspire for a positive and meaningful communication and collaboration. Attention is focused on joint activity, joint striving for goals and objectives, mutual relations are based on interpersonal dependence, mutual understanding, friendly relations and support become dominant, which results in building of a laborious and joyful atmosphere, creation of necessary conditions for optimization of andragogic interaction.

Comparative analysis of 2001 and 2011 research results on positive and negative experience in teamwork of higher school students

Methodology and organization of 2001 and 2011 research

Above research aimed at analysis of positive and negative teamwork experience in project activity Klaipeda State College and Klaipeda University students. Attempts were made to evaluate important assumptions and obstacles for optimization of andragogic interaction. Similar research were accomplished also in 2001 and 2011.

In the 2001 research 176 learners of higher schools were questioned, in 2011 the number of respondents amounted to 179. “The Sun” method was employed. Its essence: respondents were asked to complete five times the sentence in the middle of “The Sun”, doing it differently each time and writing their endings in “rays”. The respondents were offered two propositions: “I like working in a team, because ...”, “When working in a team I am concerned about ...”. They could choose between both variants of a corresponding sentence (proposition). Following goals were raised in the chosen assignment:

- blank “rays” cause respondents a motivating concern and they discover more opportunities than without it. That corresponds to the law of *gestalt Psychology* about incomplete *gestalts* (figures, entirety), causing in the organism willingness to complete them. Very persuasive were contemplations of N. M. Grenstad (1996, p.121). When forming incomplete sentences the respondents found it easier to find answers rather than reply to given questions;
- the respondents were “made to” clear for themselves what one proposition or another means to them, which one of them is more significant;
- usually such assignments evoke both ideas and sensations (feelings). It is related to experience after going deeper into what a specific proposition means in different contexts and situations.

The propositions are included into the context of activity and it concerns the learners themselves. It is a kind of the process stimulating information, evoking specific situations for the respondents. When completing the sentences (propositions), they seem to be landing in a specific situation and experience sensations that emerge in it. In that case replies of the respondents correspond to their feelings and sensations, they are exhaustive and sincere.

Comparative analysis of 2001 and 2011 research results

To find out the attitude of learners towards their positive teamwork experience in project activity the sentence “I like working in a team, as ...” was placed in the centre of “the

Sun". Respondents were asked to complete it in rays, pointing to five different factors, positively influencing the teamwork in projects. A comparative analysis of 2001 and 2011 research results was performed.

The research results (Figure 2) showed that respondents point to three basic factors, stimulating the teamwork: *opportunity for discussions, consultations, sharing ideas and experience* (32 % – in 2011) and (21 % – in 2001), *safety, self-confidence and reliance on others* (28 % – in 2011), *communication (sense of belonging), sincere and friendly relations, mutual support and assistance* (25 % – in 2001, 21 % – in 2011). On the basis of above research results similarities could be easily traced and an assumption could be made that learners, taking part in projects, are inclined to believe they are tied with communication links and realize themselves as team members rather than group members, understanding the importance of mutual dependence. They treasure this kind of communication, opportunity to discuss, possibility to learn tolerance in the process of communication, self-regulation, tolerance, criticism, an argued presentation of one's own position. According to R. Zelvys (1995), manifestation of empathy is typical to this kind of communication when we are able to empathize with the unseen of others, share their emotions and sight of environment and one's own self. It is related to understanding, respect of other person and willingness to help him. It is assumable that such relations are based on "let's win together" principle, any kind of rivalry and competition is rejected, whereas communication tends to graduate into efficient collaboration, satisfying demands of all participants. Thinking on the basis of "let's win together" philosophy is a kind of communication rather than competition and fighting. This philosophy maintains that success of one single person does not deprive others of opportunities and there is the third alternative existing – *a joint way of autonomous, independent, authentic and highly self-confident individuals* (Adomaitiene J. et al., 2013).

Very noticeable is difference between 2001 (7%) and 2011 (28%) research results, when speaking about respondents' exceptional factor – *safety, self-confidence and reliance on others* (Figure 2). It is possible to maintain that learners nowadays are more inclined to notice the significance of *reliance* and its importance in teamwork. Probably, the respondents link it to sincere, meaningful and inspiring communication and cooperation of those participating in andragogic interaction, to dominant friendly relations and mutual assistance. According to J. Adomaitiene et al., (2010, 2013), participants of andragogic interaction, based on a high level of reliance, are distinguished by a strong inner value-based position and ability to efficiently motivate each other, their behaviour is focused on meaningful goals rather than personal interests. They observe very high standards of moral and ethic behaviour, which strengthens the team spirit and such andragogic interaction results in mature collective identity, when its participants are inclined to refuse their personal interests for the sake of team welfare, to realize and acknowledge *interpersonal dependence*.

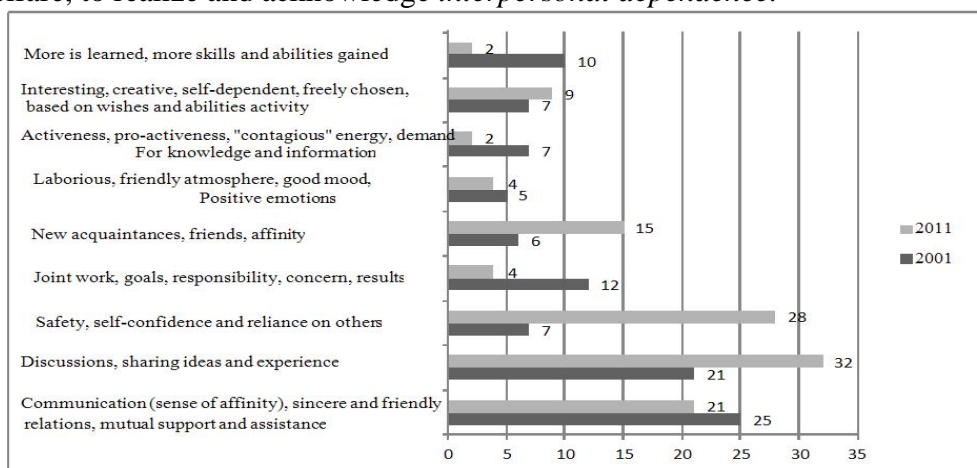


Figure 2. Factors that make positive influence on teamwork in projects (%)

According to learners (2011 research), other important factors in teamwork (Figure 2) are: *possibility for starting new acquaintances, find new friends* (15% in 2011, 6% in 2001); *interesting, creative, freely chosen activity, based on wishes and abilities* (9% in 2011, 7% in 2001). Willingness to find new friends and experience affinity points to demand for changes, “protection” from monotony, for new experience, sensations, etc. On the other hand, active participation in interaction and chosen activity “infects” with energy, initiative can “inspire” other (more passive) participants, whereas interesting, inventive and freely chosen activity and sincere, friendly relations can create a favourable seedbed for positive emotions, possibly influencing personal satisfaction, sense of affinity, stimulation of self-confidence and reliance on others. According to A. Savaneviciene et al. (2005), the more greater satisfaction is experienced by interacting participants, the concentrated and coordinated this interaction is, which will undoubtedly influence further transition from interaction of separate members to andragogic interaction, where the membership is based on the philosophy of interpersonal dependence.

When comparing yearly research results (Figure 2) it is evident that half of learners (6%) in 2001 have chosen *opportunity to start new contacts, find new friends* as a factor, making significant impact on positive teamwork experience and improvement of interpersonal dependence. 15% (2011) of respondents acknowledged significance of this factor. Above results show that nowadays friendship, links and relations are highly treasured, demand for changes, new experience and new sensations is increasing.

A minor part of respondents (4 % in 2011 and 5 % in 2001) noted that psychological climate is an important factor, stimulating positive teamwork (pic. 2). K. Lewin (Savaneviciene et al., 2005) characterizes general state and mood of interacting participants. He thinks that they experience satisfaction and enthusiastically strive for joint goals, if atmosphere around the team is favourable. If psychological climate is unfavourable, participants of the interaction will stay together only under compulsion, unwillingly belonging to the team, continuously experiencing tension and stress. According to J. Kasiulis et al., (2004), positive interrelations, benevolent mutual position and attention, respectful approach to each other, mutual understanding, group cohesion, a sense of affinity, dependence and safety, emotional welfare, etc. appear to be among most important factors of a favourable psychological climate. Therefore, approach of learners to the issue (psychological climate) did not change in the last decade (2001 and 2011 research results). A small group of respondents acknowledge the significance of psychological climate and attach it to factors that stimulate team activity.

To find out the approach of the higher school learners to negative teamwork experience in project activity and factors that suppress it, the centre of “The Sun” was supplemented with “When working in a team I am concerned about ...” sentence. Learners were asked to complete it in rays, pointing to five different factors, making negative impact on the teamwork in projects. A comparative analysis, comparing 2001 and 2011 research results, was performed.

The research results show that competition (rivalry), dominating intolerance, distrust of others as well as their benevolence (23 % in 2001 and only 5 % in 2011), supervision and control of others (23 % in 2001 and 3% in 2011), restriction of initiative and creative liberty (15 % in 2002 and 1% in 2012) and fear of a public speaking (15 % in 2001 and 1 % in 2011) were treated by learners as making the most negative impact on the teamwork in projects (Figure 3). These results are justified by Covey’s (2006) propositions that competition (rivalry) in andragogic interaction is inexpedient, as it raises only several winners, leaving others in a losing position, initiative and leadership are given to others, leaving no chance for cooperation. Competition (rivalry) is based on risks and fear, so interrelations start experiencing tension and mistrust. Competition leads to avoidance of any responsibility and

fear of defeat. Therefore, it negatively affects mutual relations, as their success depends on taken responsibility for one's own self and others. On the other hand, it stimulates dependence of losers on winners. A dependent human is not able to take care of his own demands and he cannot take responsibility for his own actions and their consequences, probability of his activeness decreases significantly and he starts avoiding any initiative and risks.

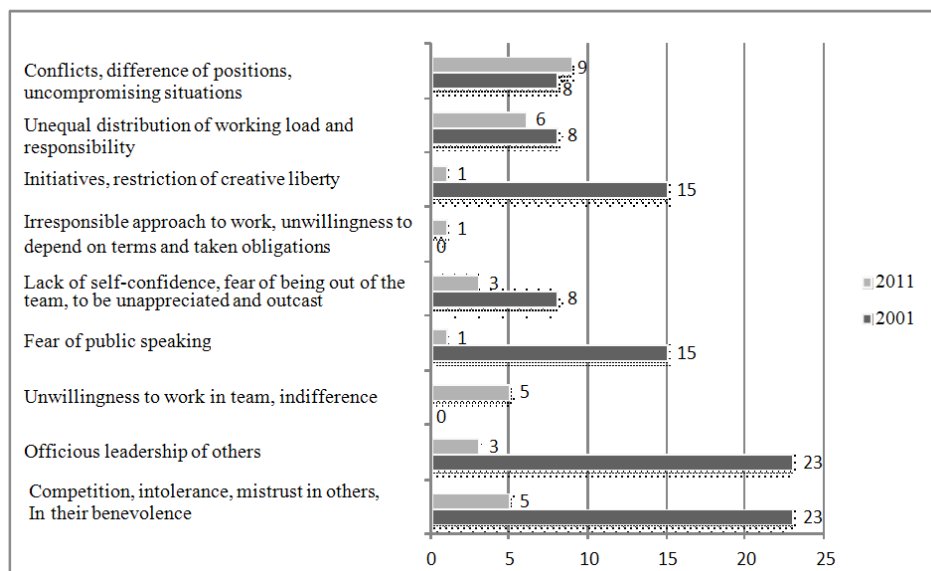


Figure 3. Factors that make negative influence on teamwork in projects (%)

Lack of reliance in teamwork causes different troubles: anger, disputes, disagreement with opinion of others, standing in different positions, choosing different friends and foes, attention is focused not on work, but on mistakes and failings of other team members, taking no notice of positive things, wasting time, defending one's own position, tense and mean relations become dominant. In that case work becomes a minor thing and team members are not inclined to communicate and cooperate.

The 2001 and 2011 research results (Figure 3) show that those presently participating in project activity are facing less rivalry, are more self-confident and rely more on others, concentrate their energy and attention on joint activity and goals. Consequently, it is possible to assume that in the last decade learners managed to build and develop their independence, to ground their activity on self-confidence and reliance on others, on value-based position and feelings.

Comparison of 2001 and 2011 research results (Figure 3) show that respondents' opinion distributed similarly and they were had been telling about their dislike of teamwork: emerging conflicts, difference in approach, unwillingness to seek for compromises (8 % in 2001 and 9 % in 2011); disagreements regarding different workload and distribution of responsibility (8 % in 2001 and 6 % in 2011). Therefore, only a small part of respondents attached conflicts and different misunderstandings to team work obstacles, i. e. factors, negatively influencing mutual relations. It means that ten years of participation in project activity, i. e. communication and collaboration of learners does not result in prominence of disagreements and conflicts. Instead, attempts are made to build friendly relations, based on mutual assistance and support. According to respondents, different disagreements can seriously threaten their mutual relations. Those not seeking for a compromise usually ground their relations on anger, continuous fighting, manipulations, which leads to dissociation from others, passiveness, lack of initiative, avoidance of responsibility, wastage of time on gossips when defending one's own position. Such andragogic interaction is characterized by tense relations, inefficient activity and poor labour results. On the other hand, it is to be noted that

interpersonal dependence is not typical to mutual relations, where dominant are conflicts and unwillingness to seek for a compromise, though interpersonal dependence is the essential assumption for optimization of andragogic interaction. Presumably, after evaluation of damage of different disagreements to the teamwork respondents (a decade ago and nowadays) are inclined to avoid conflict situations, to seek for compromises and ground mutual relations on mutual assistance and understanding.

In 2001 learners, project participators were maintaining that lack of self-confidence, low self-esteem, fear of becoming an odd man in the team, unappreciated and outcast were obstacles in the teamwork (8 %), whereas in 2011 this factor, influencing the repression of interpersonal dependence was mentioned only by 3 % of respondents. On the basis of research it is possible to maintain that presently only a minor part of learners are inclined to link a lack of self-confidence and reliance on others to the negative experience in the teamwork. Presumably, respondents nowadays are more self-confident and relying on others than it was a decade ago and try to avoid any disagreements and conflict situations in mutual relations. Relations became more transparent, based on partnership, mutual understanding and assistance, which means that more and more participants of andragogic interaction prefer interpersonal dependence in communication and cooperation, as interpersonal dependence remains to be the major assumption in optimization of andragogic interaction.

In summary, each independent individual is free to choose how to react and respond to a stimulus, situations and different circumstances. An independent, highly self-confident individual is a self-perceiving personality, strong enough to decide how to react to different events, how to choose a response in accordance with one's own value-based position, which helps to define good and evil. He can act freely and resist an outside influence. To the contrary, a dependent individual is more affected by external physical, social and psychological stimuli, accordingly, his mood, emotions and behaviour are changing, he is not able to adequately react to a stimulus and freely choose a response, since he is following instantaneous sensations rather than a strong value-based position.

Personal independence is characterized by his inner freedom, whereas interpersonal dependence – by his choice, which could be made only by an independent individual. Thus, efficient communication and cooperation depends on independence of interacting participants and their pro-activeness, on choice of correct principles, corresponding to the value-based position, on trust in one's own abilities in planning and realization. Only then he is able to choose an interpersonal dependence, strive for meaningful, stable and productive relations with others. Personal independence provides with opportunities for starting new and meaningful relations, productive work, service to other people, learning and perfection.

Mutual relations, based on a joint choice and reliance of independent interacting participants would respond to their trust in each other, when each participant resolves to step over his own vices and to be open and willing to listen, consult, share ideas and experience, jointly search for a mutually acceptable decision for the sake of positive results in joint activity. Thus, a high level of reliance on each other, when initially consequences are unclear, but there is a strong belief that joint attempts will give good results, that positive and meaningful communication and cooperation will be very efficient in striving for joint goals and objectives. This characterization of interrelations in a teamwork is typical for andragogic interaction, based on high level of reliance, interpersonal dependence of its independent participants. This interpersonal dependence is the major assumption for optimization of andragogic interaction.

Conclusion

Personal (individual) independence is not to be understood as sensations and feelings, mood or even thoughts and ideas. It is an ability to realize one's own essence, properties and

role, one's own relation with the world. Personal (individual) independence is an important factor in choosing one's own activity, behaviour and actions, an opportunity to freely act in accordance with his self-perception and resist the outside influence.

Personal (individual) independence is characterized by the inner freedom of an individual, whereas interpersonal dependence – by his choice, which could be made only by an independent individual. Therefore, efficiency of andragogic interaction depends on personal independence of its participants, on their self-confidence and reliance on others, also on relations that are based on interpersonal dependence.

Each person requires a specific stimulus and the response to that stimulus is very individual, as there is a space between a stimulus and a response. This space hides liberty and power in choice of that response. The scope of that space is directly proportional to the level of personal independence. It can change, providing individuals with a freedom in choosing the response.

An independent, self-confident human is a self-perceiving personality, knowing how to react to events, freely choose the response, following one's own value-based position and resisting the outside influence. To the contrary, a dependent individual is more affected by external physical, social and psychological stimuli, accordingly, his mood, emotions and behaviour are changing, he is not able to adequately react to a stimulus and freely choose a response, since he is following instantaneous sensations rather than a strong value-based position.

Rational social measures, employed in development of efficiency in andragogic interaction vary often fail to offer good results, as they are based on forthright “stimulus – response” links. These links reject the essential law of human self-education and transformation: an externally improved and perfected personality assimilates this influence initially (subject to already formed internal powers), only after that it starts changing, also changing the character of andragogic interaction and the level of its quality.

Independent participants of andragogic interaction, based on a high and very high level of reliance are characterized by firm internal value-based position and ability to efficiently motivate each other for achievement of meaningful goals rather than personal interests. Very high standards of moral and ethic behaviour are observed, which undoubtedly strengthens the team spirit. Dominant in these relations is interpersonal dependence, which remains to be the major assumption for optimization of andragogic interaction.

On the basis of comparative analysis of performed research it was found that:

- presently respondents face less competition (rivalry) and are more self-confident and relying on others, their energy and attention are focused on joint activity and goals. It could mean that in the last decade learners improved and developed their personal (individual) independence and ground their activity on self-confidence and reliance on others, following their value-based position rather than feelings and sensations;

- after evaluation of damage, done to teamwork (both previously and nowadays) respondents are inclined to avoid conflict situations, search for compromises, ground their relations on mutual assistance and understanding;

- both earlier and nowadays following factors, stimulating positive teamwork are distinguished by respondents: opportunity for discussions, consultations, sharing ideas and experience, communication (sense of affinity), sincere friendly relations, mutual support and assistance. On the basis of that it is possible to maintain that learners prefer being related by communication links, perceiving themselves as a team members rather than a group members, understanding the importance of interpersonal dependence, treasuring partnership and communication. These relations are based on “let's win together” principle and philosophy, which maintains that success of one single person does not deprive others of their

opportunities and possibilities, that there is also the third alternative – a collective way of autonomous, independent and self-confident people;

- comparison of 2001 and 2011 research results (related to safety, self-confidence and reliance on others) shows that differences are very big. Almost one third of present learners (less than 10 % in 2001) are more inclined to notice importance and significance of these factors in teamwork, which they relate to sincere, meaningful and inspiring communication and cooperation, to mutual assistance of those participating in andragogic interaction;

- presently only the very minor part of learners, participating in project activity, experienced a lack of self-confidence and reliance on others. It could be explained by the fact that nowadays respondents are more self-confident and relying on others than those in previous decade. Relations became more transparent, based on partnership, mutual understanding and assistance, which means that in modern communication and collaboration priority belongs to interpersonal dependence. It is the major assumption for optimization of andragogic interaction.

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HISTORICAL BACKGROUND AND IMPACT OF WOMEN'S INVOLVEMENT IN FORMAL EDUCATION IN NIGERIA

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Abstract

Girl's educational opportunities tend to be circumscribed by patriarchal attitude. Lack of education has been a strong visible barrier to female participation in the formal sector. The social pressures on females such as early marriage and other extraneous factors as well as consideration of female education as secondary to that of boys and certain inhibitive religious practices are the major causes of the high illiteracy rate amongst women. As the impact of teenage pregnancy and early marriage make abundantly clear, girls are at a double disadvantage in educational access especially in the Northern part of the country where these practice are mostly widespread. Parents attach greater importance to the education of boys than girls. This is always the likelihood when the parents lack resources to enrol all children in school. In some families, investing in girl's education is regarded as investing for the benefit of the family she will eventually marry into. This argument holds in particular for higher education, which involves greater expenditure and is seen to be less necessary for female. This paper through the use of secondary sources attempt the historical background of women's education in Nigeria, which later led to their involvement in formal education sector bringing to an end female inferiority complex established from childhood through social interactions in the home.

Keywords: Extraneous factors, Teenage pregnancy, Social interactions

Introduction

Education is first and foremost a social tool that is imperative for the continued survival and growth of the human society. Against this background, it is worthy of note to mention that education whether formal or informal, assumes a heavy social context since education generally concerns itself with the imparting of knowledge in people.

As observed by Okafor (1971) & Ali (1988) Education ideally trains manpower for the economy, it also helps to fully develop the potentials of individuals and equally help such individuals consummate employment opportunities. Thus, since education is a critical variable in modern work situations, formal education enhances labour force participation of women.

Shaheed (1995) argued that women's involvement in formal education broadens their experience and also gives them access to new resources and skills. To a very large extent, it is to be understood that education is the main tool for imparting skills and attitudes relevant to the contribution of the individual concerned to natural development. Traditionally, Nigerian Society does not see much importance in women's education, but rather in the domestic tasks. In view of this the woman's role has come to be limited to sexual and commercial labour, satisfying the sexual needs of men, working in the fields, carrying loads, tending babies and preparing food (Hammond & Jablav1992). Turning an historical lens on women's

involvement in formal education helps demonstrate that discrimination against them sometimes overt and other times quite unawares has led to limited expectations for where, how and why women should participate in education. The belief that they would not be able to use advanced schooling led to concerns that their movement into certain fields was inappropriate or unfair to men. Invariably, this goes against what Schaeffer (2005) argued that education depicts individuals involvement informal training for the purpose of acquiring basic knowledge, skills and expertise necessary for living a meaningful and impactful life, generally aims at the development of human beliefs.

Interestingly, the high illiteracy rate among Nigerian women is the consequence of the interplay of several factors, including sex stereotyping and forced early marriages. In his argument Adamu (1987) identified culture among the Hausa Fulani ethnic group of Northern Nigeria as one of the greatest problem confronting women's education. As at the period when universal free primary education between 1975 and 1984 was in operation statistics provided by the Federal Ministry of Education (1985) indicate gender discrimination in access to basic education in the extreme north when compared to the Southern states. This trend could be attributed to early marriage of females, which remains a common phenomenon by the Hausa Fulani ethnic groups.

It is the contention of this paper in view of the above statements to argue that the number of women who have acquired formal education at the earlier stage is disproportionate to the number involved in the labour sector at that period. It observes unequal access to educational opportunities as the bedrock of ignorance and powerlessness associated with women's social disempowerment in Nigeria.

Women and Formal Education in Nigeria

Historically, it is of significant to mention that earlier education in sub-Saharan Africa and Asia inclusive was available mainly for men. Against this backdrop, women were from the onset disadvantaged in acquisition of formal education talk less of having opportunities in the formal employment sector.

Education acquired by the women initially was to meet the expectation of domestic needs. Avalos (2003) pointed out that this situation was not peculiar to Nigeria alone but even in Latin America where women education was to enable them perform domestic tasks and in raising children.

Be that as it may, formal education introduced by the colonial masters brought little or no changes as Okoro (1993) noted that Christian missionaries founded the first formal school in Nigeria. Further afield, as soon as the Wesley Methodist mission led by Reverend Thomas Birch Freeman established the first school, Roman Catholic Mission Anglican Missionary and host of other followed suit. Lagos Anglican Grammar School was founded in 1859 by the Church Missionary Society (CMS) and this was the first secondary school to be established in Nigeria. In 1878 the Roman Catholic Mission founded St. Gregory's College and Methodist Boys High School was established by the Wesleyan Methodist Mission.

Indeed, to a considerable extent one would have expected that colonial education introduced in Nigeria would change and amend the existing distribution of power between men and women educationally as Nmadu (2000) observed but reverse was the case. The colonial conception of gender conspicuously marginalized the women folk, while it privileged men. Mama (1997) asserts that colonial exclusion of women from most sectors of the formal labour market for domestic works engagement which were largely unrewarded has been observed as one of the most formidable factors responsible for women's marginal significance in contemporary African societies. Undoubtedly, the missionary venture in education was borne out of the desire to use the school and its curriculum to reinforce church doctrine as opined by Anugwom (2009). Not basically to have women educated, but the

colonial masters were in dire needs of teachers as well clerks in order to support manpower to run the colony.

Interestingly, education at this time was neither the product of the social exigencies of the country nor rooted in the socio-cultural reality of Nigeria. Surprisingly, the overriding need to retain those already in the fold relegated secular education to the background. Along the same line, the educational system put in place was largely divorced from the life of the people especially women and emphasized aspects of education with little or no contribution to natural development.

According to Omolewa (2002) the colonial system of education was primarily geared toward meeting the manpower need of the colonial government that obviously alienated women from educational and economic opportunities. As Ojo (2002) equally noted, women in Nigeria are harder-hit than men by poverty due to the non-challant emphasis placed on female education including the prevalence of early marriage which further tend to impoverish women folk generally subjecting them to statutory discrimination. With the passage of time, women's participation in formal education improved tremendously as this will relief them from the grip of traditional practices and to promote their emancipation demystifying retrogressive customs and transforming attitude towards them.

It is worthy of note to mention that women's participation in education would reduce or minimize the rate at which they are being forced into marriages when they should be in schools. Par adventure, in the absence of guaranteed free education, parent are forced to choose which of the children to send to school and most of them will gladly choose sons. Albeit the,educational history of girls and women is one of continually trying to move from the margins to the mainstream.

Impact/Expectation of Women's Educational Participation

Although bias has existed from the traditional Nigerian society against women's involvement in formal education perhaps there is need for women to be liberated of this ugly spell in order for them to contribute to national development.

Acker (1994) argued that one dominant theoretical perspective on women education and economic development or empowerment is the women in development (WID) approach which was made popular by the World Bank and other UN agencies. This approach was based on the assumption that education leads to economic development and therefore policies and actions for greater access to education must be based on gender equity.

Judging from this WID approach which advocates for women's inclusion in economic and educational policies, this perhaps would be a panacea for empowerment of women and more crucially improvement in families and national development as impact of women's participation in education leads to economic development of a nation. It is of essence to note that women in contemporary times should still not be made to live in a male dominated world that gives more preference to the man than the woman.

Significantly, as more women acquire formal education, the percentage of the manpower resources of the nation increases, thus more women would be seen acquiring the mental skill and capability necessary for work life. Closely related to this, women's involvement in formal education leads to their involvement in labour force which invariably aids societal development. Against this backdrop, suffice to mention that education is directly related to development, the more educated nations citizenry are, the more likely developed such nation. In view of this, involvement of women in formal education in Nigeria brings about rapid development. Women should still not be seen as mainly to play reserve role players whose domain of influence is strictly acting the domestic front. It is to be added that the non-active participation of women in the formal education as well as the economy cannot be anything but counterproductive.

Undoubtedly, involvement of educated women in employment goes a long way in family and societal improvement on the other hand; women who possess good educational qualifications and end up only in some domestic front or kitchen make little use of the investment that their education constitutes. Basically education is a form of investment in human capital. Hence the rate of development of a nation is related to its investment in human capital. It is to be understood that education can only perform this task whenever those who possess this education made use of their skills and knowledge be the males or females to develop the economy. However, a situation where a substantial number of educated women stay away from contributing or participation in the economy because they are women will not only create distortions but as well as inequality in the development process.

Conclusion

It is of paramount importance to state that eradication of ignorance, social instability and poverty in Nigeria demands that women and men be given equal educational opportunities and socio-economic spheres in order to make the society more habitable entity for both sexes to co-exist progressively. It is equally to be noted always that in empowering educational approach, women's incorporation as invaluable partners for development socially should be pursued.

Similarly, educational unevenness that has been constraining women in Nigeria from active socio-economic including political participation should be discarded. If the Eurocentric contextualization of male-gender privilege, impact of tenets of Christianity (and Islam) as well as the colonial "ideology of domesticity" all combined together to lay the foundation for women's educational disempowerment are tackled critically, Nigerian women would have a special place of pride in the country. This is because the nature of political leadership evolved from the colonial orientation has been largely unhelpful to the course of women's educational empowerment but now women empowerment should be viewed as a key component of democratic governance putting into consideration that the level of educational attainment by women determines generally the extent of their socio-economic participation.

For women especially, the educational system should be made to be anchored on the society's social rubric, culture or functional needs. Because the more educated the women becomes, the more alienated or distanced from their roots and culture they often becomes. More and more women should be educated to narrow the gap between them and men.

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A STUDY ON IMPACT OF HUMAN RESOURCE ACCOUNTING IN EDUCATIONAL INSTITUTIONS – WITHSPECIAL REFERENCE TO BANGALORE CITY COLLEGES

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Abstract

From a decade most of the corporate have started accounting the value of the employees using varies approaches. The reason being, the value and importance of Human Resource which is considered as the most successful resource of an organization is recognized and identified. Human resources accounting is the process of identifying and reporting the investment made in the human resources of an organization to the interested parties. The main concept behind Human Resources Accounting is the investment made on each employee and the value generated by them. In this context, it is immense difficult to account the resources of institutions in which profits and productivity heavily depends on intangible assets. This attempt becomes much difficult in the case of knowledge carriers and intellectuals. Intellectual capital has become an accounting component since a decade. Here is an attempt to quantify the investment made in intellectual and knowledge resources and obtain their future value. This paper aims at studying the concept behind quantifying and accounting for Human Assets in academic institution that help in the development of the institution and society. For this study, four colleges namely St. Josephs College of commerce, JyotiNivas College, Krupanidhi College and Vijaya College have been studied. A questionnaire was used to obtain the opinion of the employees and management in this concept. On the analysis of the data it was discovered that most of the employees and management feel that Human Resource Accounting in academics should be introduced. Here Chi square test, a statistical tool, is used to prove hypothesis. The test proves that HRA will create a positive impact on the teaching faculties. There will be a significant impact on the productivity of the teachers and goodwill of the institution. In other words, introduction of Human Resource Accounting will increase the efficiency of the teachers and goodwill of the institution.

Keywords: Human resources accounting, educational institutions, investment, intellectual resources

Introduction

Education plays the most vital role in a nation's social and economic development. Education creates highly talented personnel and nurtures them as better citizens of a country. This service involves huge investment and technical experts but reaps its benefit after a long period. For any knowledge based company or institution, the key factor for success lies in the intellectual workforce and highly skilled employees. Here the basic raw material and finish product is man. (MadhuArora)In this context, it is immense difficult to account the resources of institutions in which profits and productivity heavily depends on intangible assets. This

attempt becomes much difficult in the case of knowledge carriers and intellectuals. Just like any other administrations, educational institutions need skilled and talented personnel to achieve their goals and objectives. It is equally essential to recognize and quantify the productivity of the teaching faculty as done by the corporate for their employees. (Dr.M.L.Vasitha and Mr.B.S.Chauhan) The teaching faculties are the real asset for an educational institution. These Human Assets are more important than any other physical assets. (Dr. Anubha Gupta and Vidya Mahesh) Their work need to be recognized and appreciated. It is vital essential to quantify and account for Human Assets to obtain the real worth of an institution. These value producing assets help in the development of the institution and society. Here is an attempt to find out the concept behind quantifying and accounting for human assets in academic institutions who are more important than any other asset. This may have an effect on the productivity of the teaching faculties and Goodwill of the institution. This paper provides a platform for Human Resource Accounting in educational institutions which may help in exploring the hidden talents of the teachers and better service to the institution and society. This study is based on primary and secondary data collected from questionnaire and various other sources. Chi square test, a statistical tool is used to prove the hypothesis and arrive at a conclusion.

Objective of the study

This paper mainly focuses on the following major objectives:

1. To find out the concept behind quantifying and accounting for human assets in academic institutions.
2. To ascertain the impact on the productivity of the teaching faculty.
3. To ascertain the effect on the goodwill of the institution.
4. To obtain the viewpoints of employees and management in this concept.

Materials and Methods

Tools for data collection

The study mainly focuses on primary data collected with help of questionnaire given to the employees and management of four colleges in Bangalore namely St. Josephs college of commerce, JyotiNivas College, Krupanidhi College and Vijaya College. The Secondary data is collected from sources such as internet, research papers, books, articles and journals.

This is an exploratory study which determines the priorities for future research explaining the basic concepts. Further research may involve development of a new system for accounting Human Assets in academics.

Limitations

1. Time constrain due to which study was conducted only on four colleges in Bangalore.
2. Low response from the management.
3. This is a futuristic concept where no specific system to quantify and account for Human Assets in educational institution is currently developed.

Observation by other researchers

1. The results of HRA is useful for the management and Indian law does not provide provision for mandatory disclosure of human resource values in their final reports. (Rakholiyanisharasikbhai and Dr.prashantmakwana2012)
2. The models devised so far for Human Resource Accounting are developed keeping in mind the US environment. These models need to be reviewed for India which is has a different environment. HRA is still not been used by many companies in India.

- Research on HRA must be enhanced further before it is used by operating managers(**Mamtaratti2012**)
3. Employees must be prepared to take up roles and responsibilities. Competency development must also be taken apart from technology up gradation.. Providing a platform to exhibit creativity and innovations is important(**Dr.Ankitachaturvedi2011**)
 4. Strong growth of IFRS may pave way for future financial reports that include the value of human resource using HRA methods. GAAP provides a sophisticated approach for measuring tangible and intangible assts. This will enhance HRA for future external use(**Maria L. Bullen and Kel-Ann Eyler**)
 5. Very few companies in India follow HRA practices and most of the companies disclose a few attributes of HRA .High importance is given to the cost aspect of employees and less attention is given to the true value of employees(**Nirnay**)
 6. Limitations and benefits should be considered before implementing human resource accounting(**ChekartinaBT. Idrus 1992**)
 7. In order to estimate and project the true worth of human capital, it is essential to quantify qualities such as motivation, knowledge, skill and other process such as recruitment, selection, training and development(**Dr Suresh Dhaka and dradarshpreetMehta 2013**)
 8. Intellectual asset of a company would generate a value three to four times more than the tangible assets. HRA has certain deterrents such as lack of industry standards and low acceptance and awareness. Research must be conducted in the same field(**Punitajasrotia**)
 9. In India very few companies have identified its value and have implemented it. HR is always regarded as an neglected element and must be considered for betterment(**Dr. R.Srinivasan 2009**)
 10. The societies in which we live have high expectations from these educational institutions and these expectations cannot be met without the development of those working for it (**Madhuarora**)
 11. Every institution must identify the need of having human relations which ensures efficient and effective administration. Motivation and recognition of individual's worth is also necessary(**Dr.M.L.Vasitha and Mr.B.S.Chauhan**)
 12. Placements, course design and faculty proficiency are valued high and are more important when compared to physical assets such as infrastructure and support facilities (**Anubha Gupta and Vidya Mahesh**)

Discussions and results

A study to determine Accounting for human resource in educational institutions is vital in a developing society. This is because academic institutions are those who act as a strong foundation to mould and shape tomorrow's citizen. Their esteemed work need to be recognized and appreciated. Thus through this paper the impact of introducing human resource accounting may be obtained.

In this paper the author has analyzed the opinion from employees and management of four colleges namely ST. Joseph's College, JoytiNivas College, Krupanidhi College and Vijaya College with the help of a questionnaire. A five point Likert scale is also used in the questionnaire to arrive at a conclusion where five being highest and one being the lowest.

Table -4.1: Representing the important items required for academic institutions based on rating.

RATINGS	5 (highest)	4	3	2	1 (lowest)
INFRESTRUCTURE	10	30	15	13	5
FACULTY PROFICIENCY	54	11	2	1	5
COURSE & FEE STRUCTURE	14	13	25	10	11
ADMINISTRATIVE SUPPORT	6	10	24	18	15
REPUTATION EARNED	6	15	13	20	19

SOURCE: Primary data

Analysis

The table shows the important items required for academics. Here for infrastructure most of the respondents have rated four (4), for faculty proficiency most of the respondents have rated five (5), for course & fee structure three (3), for administrative support three (3) and reputation earned two (2) and one (1) which are less important. This shows that the highest rating five (5) is fallen for faculty proficiency where 54 respondents have accepted that it is the most important item required for academics.

Table – 4.2 Representing reasons to quantify Human Assets based on rating.

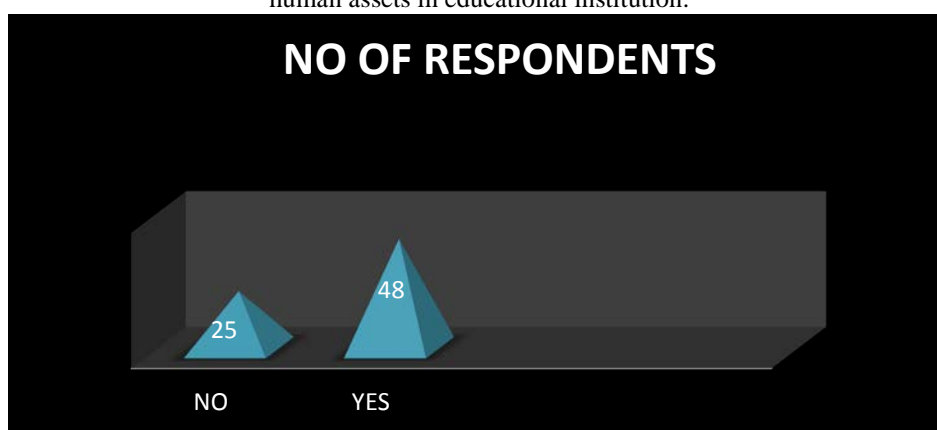
RATING	5 (highest)	4	3	2	1 (lowest)
It is a value producing asset.	27	13	17	7	9
An asset which contributes to the development of the society.	28	23	9	12	1
An asset which does not depreciate.	14	8	16	13	22
An asset which helps the quality of earning revenue.	6	14	19	16	18
An asset to extract the real value of a institution.	17	30	9	11	6

SOURCE: Primary data

Analysis

The above table show varies reasons why Human Assets should be quantified and accounted. Here for value producing asset and development of the society most of the respondents have given the rating five (5), for do not depreciate one (1), for quality of earning revenue three (3) and 1(one), for real value of an institution four (4). This shows that the highest rating five (5) is fallen for value producing asset and development of the society followed by the next highest four (4) for real value of an institution.

Figure – 4.3, Graph representing the opinion of the respondents with regard to quantifying and accounting for human assets in educational institution:



Inference

The above graph represents the opinion of respondents to quantify and account for human assets in educational institutions. Most of the respondents (employees and the management) have said that it is necessary to quantify and account whereas few feel it is not.

Table – 4.4 Representing the reasons given by the respondents who feel it is not necessary to quantify and account for Human Assets in academics:

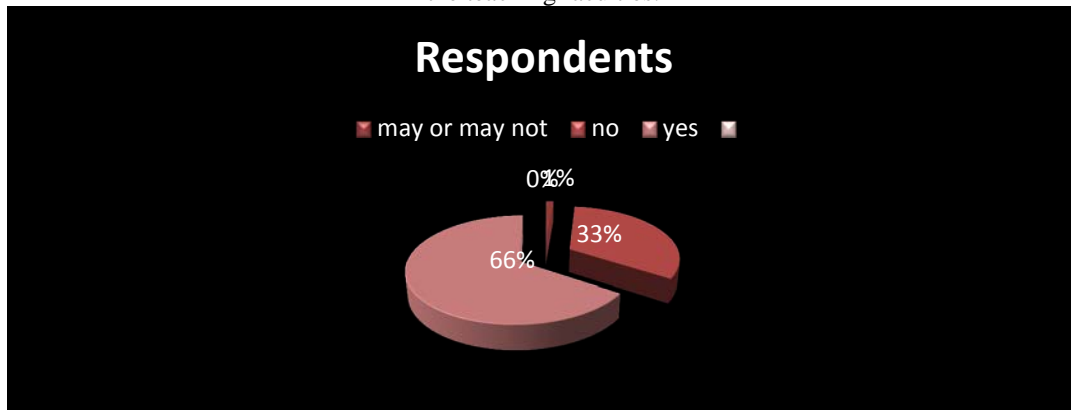
PARTICULARS	NO OF RESPONDENTS
Additional expense	1
Additional expense and waste of time	2
Concentrate on own development than institution. Just to increase the institutions value, they may over rate their teaching faculty & manipulate it	1
Difficult to quantify	1
Manipulation of data is possible.	1
It is a service oriented institution	1
Not necessary for a educational Institution.	2
Not the right way as it is service oriented. Quantification may be a biased one.	1

SOURCE: Primary data

Analysis

The above table represents the reasons given by the respondents who feel it is not necessary to quantify and account for Human Assets in academics. Different opinions and reasons have been raised by various respondents in this regard.

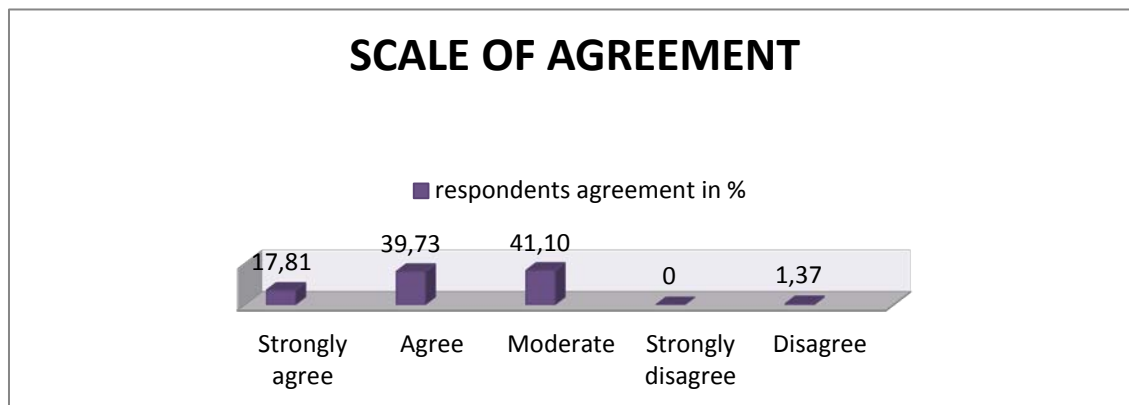
Figure – 4.5 Graph representing the respondent’s opinion who agrees that HRA will create a positive impact on the teaching faculties:



Inference

The above graph represents the respondent’s opinion who agrees that HRA will create a positive impact on the teaching faculties (Positive impact being increase in efficiency, behavior patterns and better service to the society). This shows that most of the respondents (including employees and management) agree on this concept and few are not.

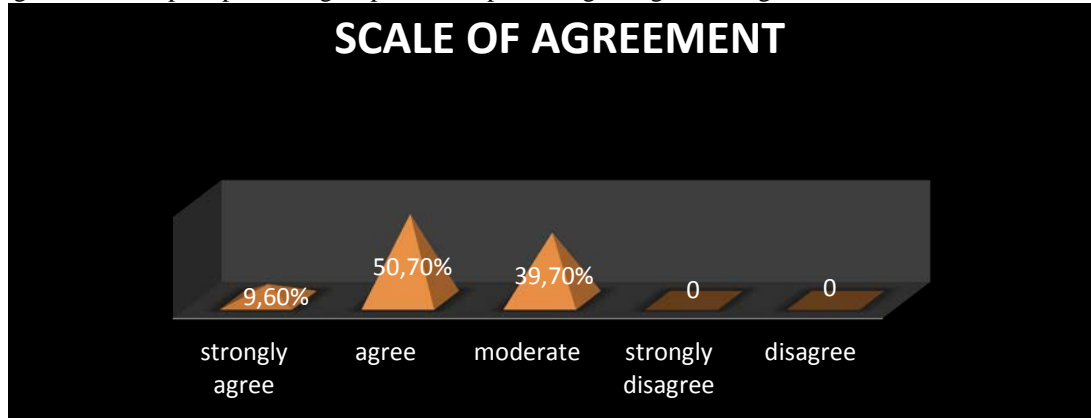
Figure – 4.6 Graph representing the respondent’s opinion regarding increase in goodwill (reputation) of the institution by introducing HRA:



Inference

This graph shows the respondent’s opinion regarding increase in goodwill (reputation) of the institution by introducing HRA. Here 41.10 % of the respondents are moderate and 39.73 % agree, 17.81% strongly agree on this whereas 1.37% disagrees and 0% strongly disagrees on this concept.

Figure – 4.7 Graph representing respondents opinion regarding obtaining the real worth of an institution:



Inference

The above graph shows the number of respondents who have agreed that Human Resources Accounting will help to know the real worth of an institution apart from other factors.(other factors being infrastructure, reputation, placements ,course offered etc). Here 50.70% have agreed to this, 39.70% are moderate, 9.60% strongly agree. There is 0 % opinion for strongly disagree and disagree.

Table – 4.8 Representing increase in efficiency of the teachers and goodwill of the institution by introducing HRA:

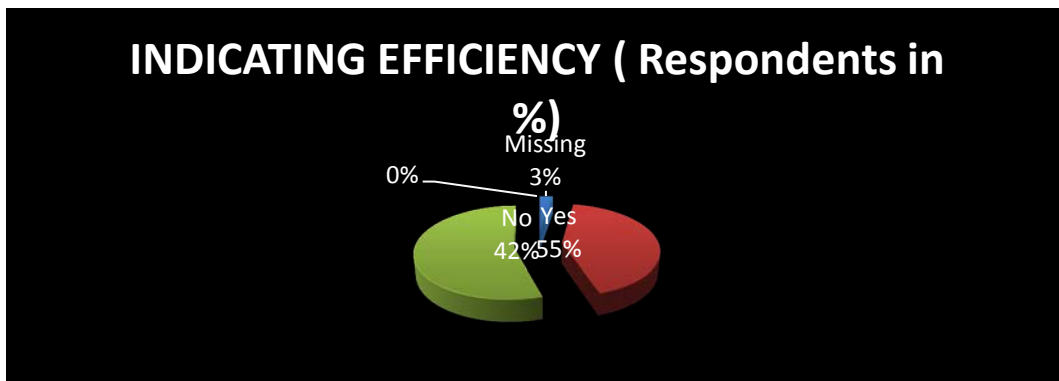
PARTICULARS	INDICATING EFFICIENCY (no of respondents)	INDICATING GOODWILL (no of respondents)
Missing	2	7
No	31	28
Yes	40	38
Total	73	73

SOURCE: Primary data

Analysis

The above table represents the increase in the efficiency of the teachers and goodwill of the institution by introducing HRA. Majority of the respondents have said yes to both the concept and few have said no. The missing frequency represents the number of people who have not attempted this question.

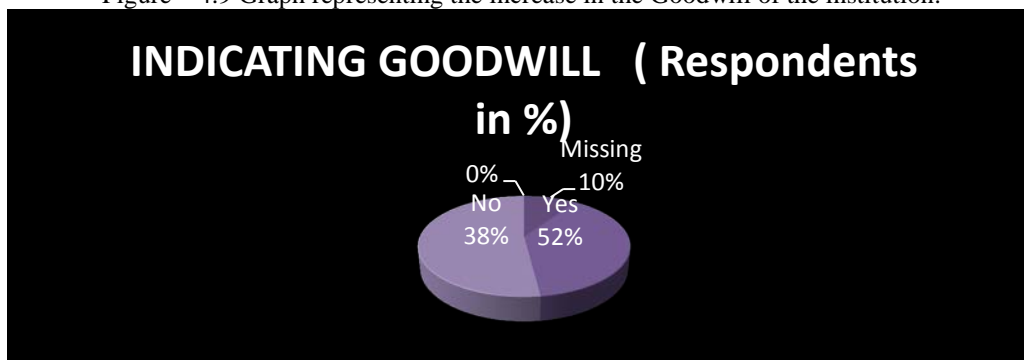
Figure – 4.8 Graph representing the increase in the efficiency of the teachers.



Inference

The above graph indicates the increase in the efficiency of the teachers. Here 55% of the respondents have agreed that introduction of HRA will increase the efficiency of the teachers. 42% of the respondents have disagreed on it and 3% missing which states that these respondents have not answered this particular question.

Figure – 4.9 Graph representing the increase in the Goodwill of the institution:



Inference

The above graph represents the increase in the Goodwill of the institution. Here 52% of the respondents have agreed that introduction of HRA will increase the Goodwill of the institution. 38% of the respondents have disagreed and 10% missing which states that these respondents have not answered this particular question.

Table 4.9 Common reasons given by the respondents regarding increase in the efficiency of the teaching faculties:

YES	NO
Greater accountability, emphasis on skills, up gradation. Competition enhances quality of work.	Teachers should be passionate to teach if not no impact.
Understand themselves better. It's about inner engineering, focus on real strength, hidden talents	Accountability may involve comparison which may not be liked by all.
Work full extent as their performance is evaluated	More of a biased concept
Because of continuous assessment & increased competition among them.	Depends on the intake & cooperation of the student
It will help the teacher understand in which area they need to improve	Educational institution will be the same
Some measure to evaluate teachers will make them update their skill	Students keep changing every year. So efficiency can't be accounted
Greater team work & effective output in terms of exploring new ways of learning & teaching.	Difficult to quantify as it is service oriented
A motivation source. Connect to other colleges for activities such as academics	Teachers should work for organization & student. HRA will shift focus from institution to self
When teachers work is equated with investment on them, this leads to comparison & thereby leads to competition among them.	Different student every year. May not balance its obligation to serve the society. Facilitate market need over society
It enhances the efficiency of teaching through improved means & accountability	Efficiency of teachers do not depend on particular subject
Accountability increases efficiency	HRA may treat teachers as machine who counts their mistakes and capabilities
Quality of teachers will improve; they will be accountable for all. Others may appreciate. Broader scope.	Comparison of teachers is possible & may not lead to healthy competition
Teachers can avoid their negative points through HRA	Teachers may become self-centered & concentrate on their own development rather than on institution & student
Increases the net value of the institution & morality of teachers. It helps a lot to students community	
Easy identification of SWOT	

HRA is useful to value the teachers & provide high position according to their performance	
It will increase as we value students life more become more efficient human & apt for the time	
Understand & mould the students in a better manner to face the trails of life. Improves on skills of teaching, methodology, work schedule	

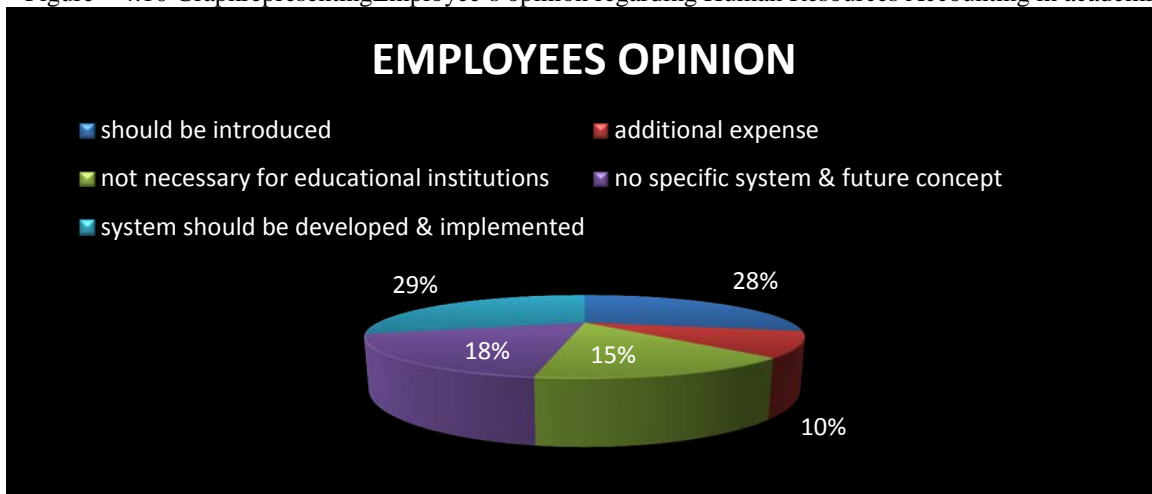
SOURCE: Primary data

Table – 4.10 Common reasons given by respondents regarding increase in goodwill of the institution:

YES	NO
HRA-more accountability-focus on quality work-enhances image.	5-10% only, depends on the impact on a teacher
Win win situation for resource & organization. Organization will understand resources better & formulate strategies.	When no positive impact on the teachers GW may not increase.
HRA result in increased & efficient performance of HR. This increases reputation.	Depends upon the teachers
Good & efficient faculty will improve quality of education, this will produce good result.	No specific system developed for this.
When accounted ,people will be eager to work with institution as there is a value being placed on faculty.	The new concept must be tried & tested or else no benefit
Staffs, students, public & parents will have a participative role in the functioning & growth of institution.	Institutions are about status. Social factor of caste, class play important role. HRA would substitute this.
When considered as asset, from their proficiency automatically through word of mouth GW will increase	Reputation depends upon teaching the subjects
Medium established for a proper functioning can be a doorway for management & staff for betterment.	GW will not increase by a single factor HRA
Evaluation of performance of teachers will help retain best teachers and replace non-performers.	HRA must be tested before implementation. GW may or may not increase.
Increase in efficiency in teaching due to HRA automatically brings goodwill	Not really. There might be some effect because of the standard
Best faculty brings goodwill. it's an added advantage and a golden feather to their cap	Manipulation of data is possible by the institution
The system should cater to all aspect of teachers contribution, then a better outlook to education providers will bring GW.	Depends upon the institution
when an institution considers teachers as an asset, GW will increase	When teachers do not have a positive attitude about HRA no impact will be on the GW
When efficiency increases quality of a product also increases. Quality product increases GW	HRA may be negative or positive for the institution
It's an added advantage and a golden feather to their cap. since students & teachers relationship are directly proportional, it certainly inc GW	
HA will be shown in balance sheet, will help to achieve experienced & productive staff	
New concept implementation may get fame to the institution. A new concept & its standards will have an impact on the institution.	
Positive thought inside the institution which is a mean to promote the college	
GW increases by appointing good teachers who provides better knowledge to the students.	
Better teaching & better molding will help in overall development of the students & increasesGW.	
Since students & teachers relationship are directly proportional, it certainly increases GW.	

SOURCE: Primary data

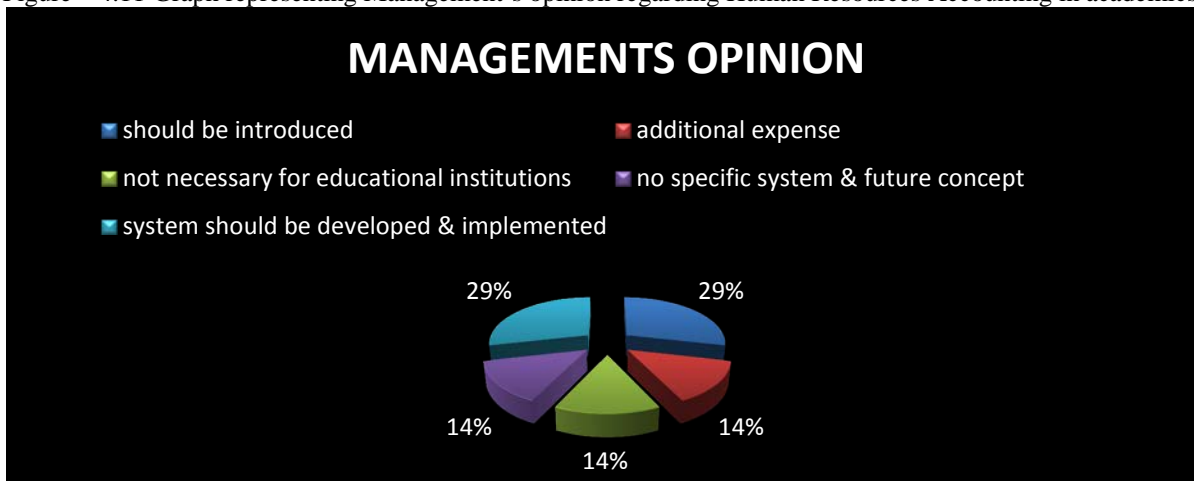
Figure – 4.10 Graph representing Employee’s opinion regarding Human Resources Accounting in academics:



Inference

The above graph represents the employee’s opinion regarding Human Resources Accounting in academics. Here most of the employees feel that system should be developed introduced and implemented in academics.

Figure – 4.11 Graph representing Management’s opinion regarding Human Resources Accounting in academics:



Inference

The above graph represents the Managements opinion regarding HRA in academics. Here some management feels that system should be developed, introduced and implemented in academics. Whereas some of the management feels that it is an additional expense, not necessary for academics and a future concept.

Test for hypothesis

Chi square was the tool that has been used to test the hypothesis of the study. The variables that were tested are:

- 1) Human Resource Accounting.
 - 2) Positive impact.
 - 3) Efficiency of the teaching faculties
 - 4) Goodwill of the institution.
- A) H_0 : HRA will not have a positive impact on the teaching faculties.
 H_1 : HRA will have a positive impact on the teaching faculties.

Table – 4.12 Indicating positive impact on the teaching faculties by introducing HRA:

Particulars	Observed N	Expected N	Residual (O-E)
YES	48	24.3	23.7
NO	24	24.3	-.3
MAY OR MAY NOT	1	24.3	-23.3
Total	73		

SOURCE: Primary data

The above table represents the respondent's opinion regarding HRA creating a positive impact on the teaching faculties. Here 48 respondents have agreed to this and 24 respondents do not agree on this concept. Whereas one respondent is neutral on this.

Test Statistics

Particulars	POSITIVITY IMPACT
Chi-Square(a)	45.397
Degrees of freedom	2
Asymp. Sig.	.000

The above table shows the Chi square value of 45.397 (df=2 , N=73), $p < 0.5$ is significant at 2 degree of freedom, showing that there is significant difference in expected and observed frequencies. As such we reject Null hypothesis and accept alternative hypothesis 1, that is, there will be positive impact on the teaching faculties.

There accept H_1

B) H_0 : There is no significant impact on the productivity of the teachers.

H_1 : There is significant impact on the productivity of the teachers.

Table – 4.13 Indicating efficiency increase by introducing HRA:

Particulars	Observed N	Expected N	Residual (O-E)
MISSING	2	24.3	-22.3
NO	31	24.3	6.7
YES	40	24.3	15.7
TOTAL	73		

SOURCE: Primary data

The above table represents increase in the efficiency of the teachers due to HRA. 40 respondents have agreed whereas 31 disagree with this concept. Missing shows that 2 respondents have not answered this.

Test Statistics

Particulars	INDICATING EFFICIENCY
Chi-Square(a)	32.411
Df	2
Asymp. Sig. (p)	.000

The table above shows that Chi square value of 32.411 (df=2,N= 73), $p < 0.05$ is significant at 2 degree of freedom, showing that there is significant difference in expected and observed frequencies. As such we reject Null hypothesis and accept alternative hypothesis 2, that is, there is significant impact on the productivity of the teachers.

Therefore accept H_1

C) H_0 : There is no significant effect on the Goodwill of the institution.

H_1 : There is significant effect on the Goodwill of the institution.

Table – 4.14 Indicating increase in goodwill of the institution by introducing HRA:

Particulars	Observed N	Expected N	Residual(O-E)
Missing	7	24.3	-17.3
No	28	24.3	3.7
Yes	38	24.3	13.7
Total	73		

SOURCE: Primary data

The above table represents the increase in the goodwill of the institution due to HRA. Here 38 respondents have agreed to this and 28 respondents disagree. Missing value shows that 7 respondents have not answered this.

Test Statistics

Particulars	INDICATING GOODWILL
Chi-Square(a)	20.575
Df	2
Asymp. Sig. (p)	.000

The table above shows that Chi square value of 20.575 (df=2,N= 73), $p < 0.05$ is significant at 2 degree of freedom, showing that there is significant difference in expected and observed frequencies. As such we reject Null hypothesis and accept alternative hypothesis 3, that is, there is significant effect on the goodwill of the institution.

Therefore accept H_1

Findings:

- Most of the employees including management have agreed that faculty proficiency is the most important factor in an academic institution.
- Most of the employees have rated infrastructure as the second highest apart from faculty proficiency. This means that infrastructure is also very important.
- The employees and the management feel that Human Resource are the value producing assets who help in the development of the society and help to obtain the real value of an institution for which they need to be quantified and accounted.
- Some of the respondents feel that quantifying and accounting is not necessary for educational institution as it is service oriented and would be an additional expense for the institution.
- Some of them also feel that institutions may over rate and manipulate the value of teachers just to increase the value of the institution.
- 68.5% of the respondents have agreed that introduction of Human Resource Accounting will create a positive impact on the teachers.
- Most the respondents are moderate about the increase in goodwill of the institution by introducing HRA.
- 50.70% of the respondents have agreed that Human Resource Accounting will help to obtain the real worth of an institution. This shows that most of them agree to this concept.
- The alternative hypothesis $H_1(A)$ is been accepted with the help of Chi Square test which states that introduction of HRA will have a positive impact on the teachers. Positive impact being increase in efficiency, behavior patterns and better service to the society.

- Here alternative hypothesis H1(B) has been accepted with the help of Chi Square test which states that there will be significant impact on the productivity of the teachers. That is, the test proves that the efficiency of the teachers will increase by introducing HRA.
- The alternative hypothesis H1(C) is also been accepted with the help of Chi Square test which states that there will be significant effect on the goodwill of the institution. This means, introduction of HRA will increase the Goodwill of the institution.
- 42% of the respondents feel that efficiency will not increase by introducing HRA as it is more biased and difficult to quantify and account for a academic institution.
- Some of them argue that teachers should be passionate about teaching. HRA may lead to competition which may be unhealthy. Moreover teachers should work for organization and student, HRA will shift focus from institution to self.
- Few feel that different student every year. It may not balance its obligation to serve the society. Facilitate market need over society. Efficiency of the teachers does not depend on teaching a particular subject.
- On the other hand 55% of the respondents feel that efficiency will increase as individual is accountable for their work. It will tell them the area of their weakness, understand themselves better. It's about inner engineering, focus on real strength, hidden talents, new ways of learning and teaching, identification of SWOT and a motivation source.
- Just as efficiency, there are arguments against increase in Goodwill of the institution. Few feel that it depends on the institution and teachers. Few also feel that HRA alone is not a single factor to increase Goodwill.
- Some feel that a proper system need to be developed, tried tested and then implemented as it is a new concept.
- Same way most of the respondents are for it. They feel that through HRA people will be more accountable, focus on quality work and this enhances image. Some says that staffs, students, public & parents will have a participative role in the functioning and growth of the institution.
- Most of the respondents feel that institution will be able to get best faculty and their efficiency will increase goodwill, medium established for a proper functioning can be a doorway for management & staff for betterment, considering teachers as an asset will increase goodwill.
- Few respondents also say that the new concept itself brings fame.
- Most of the employees and management feel that a system should be developed, introduced and implemented for quantifying and accounting for Human Assets in educational institution.
- Some of the employees feel no specific system developed and it is a futuristic concept.
- Some of the employees say that HRA is not required for academics and very few stresses on HRA being an additional expense for the institution.
- Few management opinions have given equal weight age to additional expense, future concept and feels that it is not necessary for academics.
- On the whole, most of the respondents (including management) feel that a new system should be developed and it is of vital need to quantify and account for teaching faculties in academic institution.

Conclusion

In today's competitive world, knowledge and intangible assets are the most vital factors for the success of any organization. Knowledge assets are always considered as the

most negligible asset. This important asset is very crucial to quantify and account. When academic institutions are heavily dependent on human assets than physical assets, who are considered as knowledge assets, they need to be quantified and accounted. Their worth and hard work need to be given a recognition. This study mainly aims at Human Resource Accounting in Educational Institution which is a new concept in this era. This is a futuristic concept where a new system to account the employees, especially teachers need to be developed. This new development in educational institution will give a platform for the teachers for exploring new ways of learning and teaching, help them in inner engineering which in turn has a great impact on the student's life that shape tomorrows India.

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ACHIEVEMENTS AND CHALLENGES IN THE EDUCATIONAL REALM IN SAUDI ARABIA

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Abstract

Often the greatest symbol of national education is a university. While the first University in Saudi Arabia was King Saud University in Riyadh est. 1957, Saudi Aramco has served as a “defacto university” setting for thousands of Saudi’s from all over the Kingdom. While for years there were just a handful of government universities catering to a minority of high school graduates, the number of private universities is helping to take up the slack such as Prince Mohammad Bin Fahd University in the Eastern Province which opened its doors in 2006 and was the first to enroll both male and female students in separate facilities. Those modern higher education institutions are being surrounded by a conservative Muslim society that holds many challenges one of which is the waste of the female potential for the societal development. With a reported unemployment rate for women of 21.7% and of men 7.6%, there is a large discrepancy in gender differentiated unemployment. It is often pointed to three conditions that must be met before women can be fully integrated into the wage labor force: need, opportunity and ability. While in the educational realm women are gaining grounds, Saudi Arabia remains a very traditional, conservative society where school to work transition remains a major challenge. However, in order to fully implement the concept of Saudization these traditional gender roles need to be renegotiated.

Keywords: Saudi Arabia, university, female students, role of women

Introduction

The Saudi Arabia of 2012 is vastly different from the Saudi Arabia of a century ago that lay dormant with nomadic tribes criss-crossing the land. This country is like a sleeping giant that is just awakening and beginning to exert its influence in a rapidly changing political, economical, and social world. Its growing economic wealth is helping to transform all aspects of living and is particularly evident in the area of education. This transformation has been described in international reports “Saudi Arabia is experiencing an aggressive investment in the key pillar of the knowledge-based economy, namely, education and learning, innovation, and information technology” (Ministry of Higher Education, 2009).

Often the greatest symbol of national education is a university, one where ideas and ideals intermingle and are debated, where students solve the worlds’ problems and at the same time investigate their own emerging world views. Think about it, in the U.S.; Harvard , Stanford and MIT, come to mind, in the UK; Cambridge, and Oxford, and in the EU; the Sorbonne in France, Bologna in Italy and Maastricht in the Netherlands, all of them carry a universal weight far greater than their collective national impact. Students from all over the world know these great institutions and which scholars and great scientists have emerged from their traditions.

While the first University in Saudi Arabia was King Saud University in Riyadh est. 1957, Saudi Aramco (previously known as ARAMCO) has served as a “defacto university” setting for thousands of Saudi’s from all over the Kingdom; from the southern heights of

Najran to the northern plains of Hail and all parts in between since 1963. This multinational entity has made itself a force to be reckoned with in the Kingdom for the last three generations. Together with the University of Medina, founded in 1961, the University of Riyadh, founded in 1957 and the 'Abd al-'Aziz University in Jiddah, founded in 1967 these institutions initiated the educational crusade. Under the leadership of the Custodian of the Two Holy Mosques, King Abdullah bin Saud, education opportunities which for so many years was directed to the education of males is increasingly looking towards the untapped resources of educated women. Within the past few years the changes in opportunities for higher education have expanded in leaps and bounds. More than 12% of the fiscal budget has been allocated to education. The government has encouraged the expansion of private enterprise in the opening of new institutions of higher learning. Higher Education in Saudi Arabia is moving forward in leaps and bounds. In 1957 when the first university opened in Riyadh there were 22 students with 7 faculty. Today it is expected that over a quarter of a million students will be attending an ever increasing number of private and government funded universities in the Kingdom. The Ministry is convinced that educational reforms helped to transform "Saudi universities into 'functional developmental institutes' via a careful balance of international academic standards, national needs, local cultural identity, and careful management of knowledge production, management, dissemination, access, and control (Ministry of Higher Education, 2009). Without doubt: The giant has awakened and his movements are impacting all segments of society. This country has a bright future ahead as it stands on its own two feet and faces the challenges ahead with hope and determination.

"The implementation of the reform plans of Saudi Ministry of Higher Education (MOHE) through launching several higher education initiatives in technical readiness and infrastructures, Saudi Arabia is starting to take a prominent place in the scientific and technical domains, both regionally and internationally" (Ministry of Higher Education, 2009). This statement reflects the Ministries' interpretation of the actual educational reforms. However, in societies where thought and ideals are centrally mandated by either religion or government or both the entire concept of university takes on a new twist. What pictures come to your mind when you think about education in general in Saudi Arabia? Madrassas? High technology institutions? The separation of church and state as an outstanding feature of Western societies is not a valid concept for Islamic societies: In Saudi Arabia for instance education "remained under the Department of Religious Guidance until 2002, [...]. This was to ensure that women's education did not deviate from the original purpose of female education, which was to make women good wives and mothers, and to prepare them for 'acceptable' jobs such as teaching and nursing that were believed to suit their nature" (Hamdan, 2005, p. 44). The umbrella of the Ministry of the Department of Religious Guidance both ensured that the interpretation of freedom would be in line with Wahaibi Islam, "a revivalist movement that has for two centuries dominated Najd, the home of the ruling dynasty, and has shaped government social policies in all the rest of the [Arabian] peninsula that came under Saudi rule in the twentieth century" (Doumato, 2000, p. 28). The religious or clerical police arm of the Ministry, referred to in general as the Muttawah, is used to implement these interpretations by providing regular on site supervision of curriculum, staff and administration.

What becomes clear from the above is that the shift towards a knowledge-based economy yet economically driven presents a challenge to this sleeping giant: The country faces a series of developments in the educational realm, in which the voice and the role of women can make the difference, while providing at the same time successful models for human development within an Islamic context in our global era. Has the new dawn in education broken on? Has the Kingdom of Saudi Arabia stepped into the "modern" world by

taking its existing structures and overlaying them upon what those in the west consider institutions of free thought?

Socio-Economic Framework: A Fast-Forward Historic Perspective

For centuries the Saudi Arabia laid dormant with nomadic tribes criss-crossing the area. However, with the discovery of vast reserves of oil and the sudden increase in oil prices in the 70s, there has been a dramatic change taking place in the Kingdom of Saudi Arabia. It is thought that the vast oil revenues helped in creating what Sharabi (1988) terms the postcolonial system of neopatriarchs in which the political control is exerted through existing tribal based networks in which loyalty is paramount. Key to this patriarchal system is a system of male domination in which the male is given legal power and prestige which is withheld from females. Because Saudi Arabia holds a central and leading role in the Gulf region, events occurring there have drawn secular and religious attention. Saudi culture in particular is male dominated based on the construct that males are superior to females (Becker, 1991). In the early 70ies there was a broadening of women's roles within the public sector in which there was a rise in women's organizations, TV broadcasting of unveiled females, and increased education of women. However, events outside of Saudi Arabia such as the Iranian revolution in 1979 became a turning point in which strict restrictions begun to be re-imposed on the dress and movement of women. The situation was exacerbated with the demonstrations against the Al Saud family and the violent takeover of the Grand Mosque by Islamic radicals. In an effort to make women less visible severe restrictions were imposed by the religious police resulting in a rapid decline of the liberalization of women in society (Willoughby, 2008).

With increasing financial resources available, the monarchies decided to invest in developing the infrastructure of their countries by concentrating on setting up the three pillars essential to the development of a modern state. The three pillars consisted of the establishment of: a) a socio-economic system forming the foundation of a public bureaucracy; b) the growth and development of the agricultural and industrial sectors; and lastly, c) the further development of social services covering health care and an establishment of a strong education system incorporating both Western and traditional, religious values (Bahgat, 1999). "The 2009 World Economic Forum recognized Saudi Arabia among the top 30 most competitive economies in its annual GCI Report putting it in 28 position out of 133 countries studies. In the innovation capacity section, Saudi Arabia has surpassed advanced economies such as Portugal, Spain, France and Russia as well as knowledge-intensive economies such as India and Brazil" (Ministry of Higher Education, 2009).

Keeping in mind the context in which all this occurred within a framework of thirty or forty years, there are bound to be aberrations in the manner in which this has occurred when compared with the progress of like institutions in developing countries where these were developed over centuries. As a result of all this, the mismatch between the vast wealth available and the progress made in relation to some areas is sometimes difficult for Westerners to grasp. Indigenous traditions and customs which have been in place for centuries have not had a chance to keep abreast with the rapid growth which would appear to be possible based on Western standards. Indeed, in Western societies these developments brought along a separation of church and state and a productive society built on the principles of secularism. However, this is not the case for Saudi Arabia, where religion and culture permeate every facet of life including economic, governmental and educational arenas.

Western influence on education has been and will continue to be a major force in driving the changes taking place. So many of the education leaders were themselves educated in the west. But one must never take for granted that western education or western culture will become the status quo. Because of the tremendous socio-religious pressures constantly

playing out, education in Saudi Arabia must be and will be distinctly Saudi, distinctly Arab. Why would one not expect it to be this way because when one looks back at the history of modern civilization, so much of what is studied today and practiced had its roots deeply entrenched in the Arab world with Saudi Arabia playing no small part.

Mushrooming Higher Ed Institutions

While for years there were just a handful of government universities catering to a minority of high school graduates, the number of private universities is helping to take up the slack such as Prince Mohammad Bin Fahd University in the Eastern Province which opened its doors in 2006 and was the first to enroll both male and female students in separate facilities. Many of the smaller colleges that were attached to large universities are now breaking away to form new universities, all promoted and funded by the government.

Saudi Arabia under King Abdullah is determined to use its wealth in the development of a “Knowledge Society”. To this end institutions such as King Abdullah University for Science and Technology (KAUST) have been developed as a state-of-the-art graduate research institution and located near Jeddah. In the same vein, Prince Naif Center for Health Science Research has been developed by King Saud University in Riyadh focusing on the education of its own people. Along with this development has been a strong impetus to the education of women. The newest university nearing completion on the northern outskirts of Riyadh covering more than 8 million square meters is Princess Noura University (PNU). It is estimated to cost more than \$11.5 billion and is planned to house 15 colleges and is expected to enroll up to 50,000 women thus becoming the largest women’s university in the world. It is hoped that this will boost the number of women researchers from the present 17% of Saudi researchers which is remarkable in itself. In addition, the Knowledge Economic City (KEC) scheduled to open in 2020 in Madinah will focus on linking education and knowledge-based industries and focus on training in the medical fields. It is anticipated that when complete KEC will provide jobs for more than 20,000 individuals (Reisberg, 2011). This is just a sampling of the tremendous changes now taking place in the promotion of education. These changes and the scientific outputs that come along with it don’t remain unobserved by the international scientific community: A study published in June 2010 by London-based royal society puts Saudi Arabia on the top of all Gulf countries and the second position in the Arab world with reference to scientific productivity, namely, publication of research in established journals.

The Ninth Five-Year Development Plan (2010 – 2014) claims that 50.6 percent of the budget go to human resource development including education and training. This was an important step to further realize the Kingdom’s goal of creating a knowledge-based society. According to the Ministry of Higher Education (2009) “a number of new facilities will be built, including 25 technology colleges, 28 technical institutes, and 50 industrial training institutes. The government will also expand and diversify the post-graduate programs offered within the Kingdom and seek to increase the amount of post-graduate students to 5 percent of all university students. The plan also encourages innovation in science and technology by providing US \$ 240 million in grants for research projects each year. Other initiatives include the establishment of 10 research centers, 15 university technological innovation centers in association with King Abdullah City for Science and Technology (KACST), and at least eight technology incubators at KACST and other universities. The government will also continue to promote university collaboration with international companies”. This is not to forget the investment in the thousands of students sent abroad and paid for by the government for graduate studies and for study in specialized areas that are needed for the growth and development of the resources of this country.

These efforts gained formal international appreciation as “Saudi Arabia was ranked 31 globally with reference to the efficiency of higher education system” (Ministry of Higher Education, 2009). This investment may end up being miniscule in comparison with the ultimate benefits of developing its latent industrial, commercial, business and economic resources. Government and private institutions alike have made an effort to join the international league table of the world’s top universities. As for June 2010 Webometrics of World Universities 3 Saudi universities ranked among the top 200 world universities, another 6 universities were included in the top 10 universities in the Arab Gulf states, Arab world and Islamic states. “In 2009, King Saud University was also admitted to the academic ranking of World universities, known as Shanghai ranking, within the top 500 international universities and the sole Arabic University” (Ministry of Higher Education, 2009). Although the weak points of international ranking systems are evident and in the case of the Gulf states often discussed in relation to their business relations with top universities in Europe and the US and the resulting exchange of faculty, Saudi Arabia’s ambitious efforts for higher education reform bear fruits.

However, the development towards a knowledge based society is a long term venture. The country has taken many of the right steps to invest in its innovative capacity. The Kingdom is investing a lot of money into the educational realm but this is not necessarily reflected in the quality of the education system. While pedagogically root learning is still the paramount it is not surprising that the weakest output pillar for Saudi Arabia is the dimension of “creative outputs”. Having thought at an educational institutions I have personally lived the challenges that are inherent in mushrooming modern educational institutions being forced to grow in line with religious restrictions and conservative mores. Those modern higher education institutions are being surrounded by a conservative Muslim society that holds many challenges one of which is the waste of the female potential for the societal development. Moreover, the questions need to be addressed: What happens when Princess Noura University’s 50,000 women begin to graduate and find themselves in a country where women do not have the independence necessary to pursue a professional career? Will all of the university’s graduates be content with limited opportunities (Reisberg, 2011)?

Females’ Roles

Let me try to answer the question whether the Kingdom of Saudi Arabia has stepped into the “modern” world by taking its existing structures and overlaying them upon what those in the west consider institutions of free thought. King Abdullah and the ruling family of Al-Saud, has been seen to actively encourage women’s entrance into any and all fields that may interest them (Wall Street Journal, 2007); The Ministry states that 17 % of all Saudi researchers are female. This figure seems to be higher than that in Germany (12%), Japan (12%) and Korea (11%), and the same as in Luxembourg, according to a recent UNESCO report entitled “women in science: under-represented and under-measured”. Also Saudi women outnumber western women in worldwide university enrolments and graduation rates, according to 2009 Global Education Digest of UNESCO (Ministry of Higher Education, 2009).

However, the gap between what the Ministry officially has decreed and Shari’a courts uphold and the dynamics of local traditional power structures can be two different things. One example of oftentimes antagonistic debates lies within the educational realm. The King has made available large amounts of international study scholarships for women (Reisberg, 2011). However, due to: Mahram⁶ requirements, and the need for “a male relatives agreement

⁶Islamic requisite of Muslim women to travel accompanied by a male relative or sponsor as outlined in the Qur’an, where for a woman it is unacceptable to travel the walking distance of three days without Mahram (Al Hashimi, 1996)

before seeking work, education or travel” (Vidyasagar & Rea, 2004, p. 266), those funds often go unused by the general public because families are unable to afford sending two members overseas with a requirement to provide funding for one of them. This reflects Shehada’s (2009, p. 24) proposition that “aspects concerning the wider sociopolitical context are crucial, notably the preeminence of the notion of family honor (sharaf), the mutually constitutive relation between the shari‘a court and the community, and the specificities of court cases. As an ideological construct, the law does not necessarily correspond to a social milieu full of inconsistencies, oppositions, contradictions, and tensions. However, in her work, primarily focused on Gaza, “the practice of law has always been characterized by pluralism, flexibility, and a degree of ambiguity, whereas the text remains characterized by rigidity, restriction, stability, and in some aspects, superficial clarity” (Shehada 2009, p. 24). Yet in Saudi, the period after nationalization has seen a concentration on Wahhabi Islam, “a gender ideology that was emphasized during the first half of the twentieth century along with [...] the conquest of Ibn Saud” (Doumato 2000, p. 42). The Al Saud family in conjunction with the Wahhabi clerics united the disparate regions of the upper Arabian Peninsula into what is now known as the Kingdom of Saudi Arabia. This unification engendered a huge expansion in the bureaucratic engines which support the country’s infrastructure and its implementation of both Royal and Shariac edicts.

The west has often considered the Al Saud family to be extremely open and liberal in its interpretation of Islam in a modern context; however, it’s important not to forget that the country as a whole is composed of many different factions that are primarily bound through the joint association and agreements maintained between the Al Saud’s and the Wahhabi clerics’. “[King Abdullah] does not have unlimited power. He has to take into account the sentiments of the sprawling ruling family as well as that of the powerful religious establishment. [...] On [February the 14th he] dismissed the chief of the religious police and a cleric who condoned killing the owners of TV networks that broadcast “immoral” content, signaling an effort to weaken the country’s hard-line Sunni establishment. The shake-up—King Abdullah’s first since coming to power in August 2005—including the appointment of a female deputy minister, the highest government position a Saudi woman has attained” (The Associated Press, 2009, para. 3-4). The changes made on Valentine’s Day limit the power of the religious police and that of the shari‘a courts and place a woman in an important position: Nura el Fajes is the first woman in the cabinet nominated as deputy Secretary of Education. This is the first time that a woman has been placed in a high position of responsibility within the Saudi government. This is a breakthrough for women in the Kingdom.

In 2005 a new labor law was implemented aimed at increasing employment of women, and locals in general; official figures claim that 49% (6.2m) of the labor force are non-Saudis and 14.7% are Saudi women with the remainder 36.3% being Saudi males. With a reported unemployment rate for women of 21.7% and of men 7.6%, there is a large discrepancy in gender differentiated unemployment (EIU Views Wire Middle East, 2005). Although these figures are inequitable, the question remains, does this data really represent the reality of the current economic situation. Internationally released data from the Kingdom has historically been closely monitored and internally collected thus there are few ways to confirm or disprove these numbers other than through first hand reports. Those indicate a much larger discrepancy between male and female employment due in part to available female sphere positions and in part to the lack of commercial opportunities and the ferocious competition among ambitious university graduates for the few administrative or professional track positions available. In her book “Women Power: the Arab Debate on Women at Work” Hijab 1998 lists three conditions that must be met before women can be fully integrated into the wage labor force: need, opportunity and ability; however, where, when and how are extremely varied in countries as closely aligned as Saudi Arabia and Oman. The new labor

law in Saudi proclaims that “women are entitled to work in all fields that are appropriate to their nature” (Middle East Monitor, 2005). The ambiguity this statement leaves behind is reflected in Pharaon’s (2004, p. 358) remarks: “the women’s role is the key to maintaining the family [...] it is the mother who transmits the cultural and religious traditions that reinforce solidarity and loyalty to the family [...] underlying all the argument is the very real fear that, if women allow their key role in the family to be overtaken by other roles, then the whole social system will fall apart”.

As Western style schooling historically was seen to facilitate the spreading of the doctrine of capitalism, centralized government, meritocratic society and the belief in progress (Leach, 1994) the rapid expansion of American/British/European affiliated universities with their heavily expatriate and Eurocentric faculty has challenged recent generations to find a way to balance the Western frameworks being imposed throughout their higher education and the traditional tribal frameworks within which the rest of their lives function. Unlike the contexts within which western Education currently produces high functioning professionals of both genders for any and all careers for which they are suited, not all academic subjects in the Kingdom are currently open for women. According to a report published in the Wall Street Journal (2007), in 2006 females were admitted to law school for the first time in the Kingdom; however, there is no assurance that they will be allowed to actually practice law within their own Kingdom, although they could do so in the neighbouring Kingdom of Bahrain.

The current state of educational settings and opportunities for women, while being based upon an American or European framework are being delivered in an idealized “women’s only setting”, which does not acclimate this generation to burgeoning work place realities that may include men.



Hallmark of gender segregation: ID control of those entering or exiting the premises-taking pictures of women is off-limits
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Moreover, the tools and oftentimes the career paths they will need to function effectively in a diversifying capitalist setting with a huge pool of potential employees, both male and female, are not part of their collegiate experience. “Consumers are controlled by capitalism with its objective of increasing profit” (Assad, 2006, p. 12) that has leached into the educational arena and has manifested in the rise of privatized Western brand educational corporations. With the rise of easily accessible technology in the Gulf States unscrupulous corporations using higher education as a bare front for cashing in on the higher education windfall were fleecing students by the thousands in the early 2000’s. However, in Saudi the Ministry of Higher Education has now made it known that it will accept only degrees from internally recognized and internationally accredited distance learning programs and online universities. Online bookstores like amazon.com and various torrent sites which specialize in educational textbooks are supporting the continued growth of such markets that help to make higher education accessible to home bound women (cf. Vidyasagar & Rea, 2004).

Educational Culture: The Clash of Divergent Concepts

As already described above, the harsh policy enforcing gender segregation based on a neopatriarchal society fostered by the tribal system is a key cultural component of Saudi society. Added to this is the national religion of Islam which permeates every aspect of life and at times cannot be separated from – what we would call – the secular aspects of life. Tied in with all this are the concepts of *wasta* and the importance of the *mutawwa'in*. The concept of *wasta* permeates all aspects of society and involves both the act and the person who mediates or intercedes towards finding middle ground. During the late 1970s and into the 80s because of social upheaval the *mutawwa'in* or religious police gained considerable power and authority which they still exert to different degrees right to the present. While Middle Eastern culture tends to have many common elements throughout the Middle East, Saudi Arabia presents a much stronger or “purer” interpretation of religious-cultural elements.

Education while having a global function also fulfills a national function which goes across nations. Western education by most Arabs is perceived as being liberal. Therefore, is regarded with suspicion by many Islamists. “[...] many Muslims are Islamist and almost no very pious Muslims are liberals, most Muslims remain conservative, traditional believers. This group includes the majority of clerics and ordinary people” (Rubin, 2006, p. 101). Religious or clerical police, referred to as *mutawwa'in*, is especially influential in the Kingdom of Saudi Arabia where the conservative form of Wahhabi Islam is practiced. Religious affiliation within Islam is a determinant factor in securing jobs and for admission into educational institutions although officially not endorsed by any criteria applied. Examples of how this is influential in the educational arena are: hiring of personnel and student admissions with reference to their family names and tribal affiliations. On paper there is no discrimination based on Islamic religious affiliation; however, in practice this is a very important factor which is never openly discussed or admitted.

An example of the segregation of the sexes in educational institutions is handled differently according to national and religious legislation. First of all, educational institutions in Saudi Arabia are established primarily for males; however, there are a few institutions established primarily for females which offer traditional, “female-specific majors” such as Medicine, Interior Design. Places like KFUPM have separate colleges within the university established for women. In a private university such as PMU which was established as a co-educational institution functions very differently from what Westerners would expect. In an interview the Academic Dean told of an incident that happened on the very first day that PMU – a sample case that will be described in the following chapter – started classes in September 2006: “The male and female faculty and students were in the same building and though classes were set up on opposite sides of the building for male and female students, faculty and administrative personnel were allowed to intermingle in a central area. However, within hours of opening this was seen by the *Muttawa* who came to monitor what was happening on campus and a report was passed on to the Governor, saying that this was not permissible. I was in the Rector’s office when a phone call was received from the Governor’s office to desist this immediately and within 45 minutes all the women were cleared out of that section and within days a wall was set up to prevent intermingling. This was a turning point, it showed how influential the *Muttawas* are and the Rector was really scared. I still think he could have stood up to them and told them that this is a private institution and we apply Western standard. But the longer I stay here the more I think we have to start at the point where the people are at and feel comfortable within the bounds of their social and religious mores” (Richard, Hoogewerf[pseud.], interview by author, Saudi Arabia, 12 May 2011).

The concept of *wasta* permeates all aspects of society and involves both the act and the person who mediates or intercedes towards finding middle ground. In the Western culture *wasta* is frond upon by university professors who feel that when giving grades students are

evaluated on the basis of the actual grades earned. This individualistic approach stands in opposition to the collectivistic make-up of the social groups that hold the power in the area. Expatriate teachers and university professors who impose this Western mindset in their treatment and evaluation of students are regarded as “inflexible, hard-headed, arrogant, and stupid” (Cunningham & Sarayrah, 1993, p. 127). Cunningham and Sarayrah (1993, p. 120) explicate the meaning of *wasta* in the educational realm. “After being admitted, students socialized in an environment heavily dependent on *wasta* sometimes assume that *wasta* will influence the university professor. They attend class irregularly, do not study for midterm tests, and then appear before the teacher asking to be passed [...]. Often the father or an important relative visits the professor. The probability of success in this *wasta* attempt depends on the fortitude of the teacher, the hump over which the student wishes to climb, and the strength of the particular *wasta* on the particular faculty member. Occasionally, this plea meets with success; more often, the student faces the rude shock of failure at the end of the semester. That failure is incomprehensible to students socialized to family loyalty as the primary value”. The author, who has taught as a visiting professor for several terms in the Gulf, also in Saudi Arabia, has living experience of the implementation of this concept.

“If *wasta* in the grading process is fought against by most faculty, the same is not true in the faculty selection process. Hiring faculty, like hiring employees for the government, involves *wasta*” (Cunningham & Sarayrah, 1993, p. 132). A senior Western administrator working in a private university in Saudi Arabia explains: “Once faculty with Arab background is hired they used all sorts of private conversation, did favors and so on to persuade me to hire their family member. Yousef paid several visits to my office and talked about his brother as well as Mohammed, who tried to show, first of all, how wonderful I was and then tried to get his brother hired. In both cases they tend to exaggerate the academic qualifications of their family members” (Richard, Hoogewerf [pseud.], interview by authors, Saudi Arabia, 12 May 2008).

A Sample Case: The Transnational Framework of PMU

The concept of Prince Mohammad University in the Eastern Province of Saudi Arabia (short PMU) was promoted by a banding together of fifty-two Saudi business men under the auspices of HRH Prince Mohammad Bin Fahad, governor of the Eastern Province who donated the land for this project. with a view to providing education for both male and female students. They not only wanted to meet the needs of a growing economy but also wanted to have an institution where their female students could reside at home and still receive a Western style education. This Western style education was designed by a group of 22 Texas universities comprising the Texas International Education Consortium (TIEC).



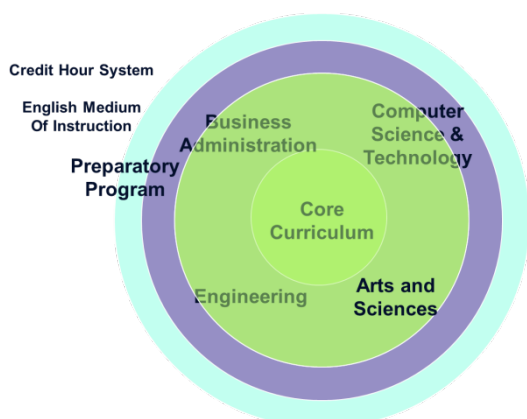
PMU-campus under construction, early 2007
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PMU inauguration-symbolizing its rise out of the sand
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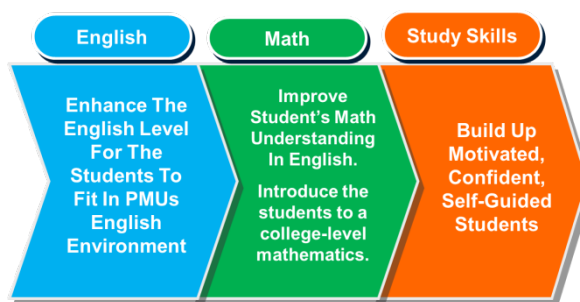
Prince Mohammad University was the first private institution in the Eastern Province of Saudi Arabia for both male and female students. However, the concept of co-education institutions in the West is quite different from that practiced in Saudi Arabia. Here the genders are kept segregated on separate campuses. With each college the dean is usually male and holds the top position and the female is always an associate who answers to the dean. Independent decisions by the associate dean are usually not accepted. For example, at the beginning of the 2nd year a new chair had to be selected; however, he had less experience than the current female associate chair (both Westerners). Under western circumstances the female would possibly have been made chair of the department with the male acting as associate chair. However, in Saudi Arabia this was not acceptable and the less experienced person had to be placed as chair on the basis of gender.

The diagram below shows the structure of the academic program at the university. The Preparatory Program is a bridge program between high school and college which emphasizes the instruction of English primarily along with Math and Study Skills. There are three colleges focusing on: Engineering; Business; Information Technology. The Engineering College is primarily for males and females are not catered for this area within this culture. To compensate for this under the umbrella of Engineering is the Department of Interior Design which is only for women. PMU has been going for six years and is on a steep growth curve in the employment of new personnel as well as in the intake of new students.



PMU - Academic Program

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PMU - Preparatory Program

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Accurate statistical information was difficult to get until the appropriate management programs were in place. For example, Banner, a management system for universities, was only just started during the latter half of the first year and is yet to be fully implemented. Therefore, accurate records of faculty, students, financial issues, etc. difficult to procure. Faculty for this new university have been recruited through a variety of means including TAEC, employment agencies, conferences, personal contacts and even incentives were given to current faculty for suggesting names of people and if they were hired the faculty member received 500 Saudi Rials equivalent to 130 US Dollars. The percentage of termination of faculty for the first two years of this start-up university indicates that the number of terminations could in fact be reduced if: a) proper screening were done prior to their arrival; and b) appropriate measures taken to assist with adjustment.

Many studies have proved that personality characteristics predict to a great degree whether expatriates will succeed in their educational assignment (e.g. Arthur & Bennett 1995; Ones & Viswesvaran 1997). Arthur and Bennett (1995) focused on the factors expatriates themselves perceive as being crucial for success. Five factors were highlighted: a) family situation; b) job Knowledge; c) relational skills; d) flexibility/adaptability; and e) extra-

cultural openness. Other researchers have gaged the success of international assignments on three other factors: a) adjustment; b) performance; and c) premature departure decisions. These factors, while theoretically well documented are treated in a superfluous manner in pre-employment screening in educational institutions in the Gulf. In an interview one Director of PMU stated: “Part of the screening process involves finding out from prospective employees as to the reasons why they would want to come in Saudi Arabia. Several reasons have been postulated as to why expats chose to work in any particular location: some come from money, others just want an overseas experience, some to be involved in the opening of a new university, others because they can’t get a teaching job back home, some to be exposed to a different culture and others to escape from ordinary life to a place with the aura of mystery” (Soliman, Watson [pseud.], interview by author, Saudi Arabia, 18 June 2011). The director “Saudi always seemed to be the big mysterious thing. Everybody that I knew that had spent any time in the Middle East, had been to Saudi. It’s almost like you had to get your ticket punched to come to Saudi Arabia. I do know that this doesn’t sound right or good but I do mean this in the best sense” (Soliman, Watson [pseud.], interview by author, Saudi Arabia, 18 June 2011). Another reason often cited is the desire to visit and explore new lands, financial packages (Feldman & Thomas, 1991).

In an interview the associate department chair who has worked at PMU from the very start, an American woman holding a Master’s degree, stated that the biggest adjustment that she has had to face along with the other women that she knew, was: “loss of identity”. She explains this by stating: “I have to wear an abaya, I am covered from head to foot whenever I want to go out. Then, I can’t drive of course. Decisions made at the university are made by men, it doesn’t matter what the women say. When the women need something done, they always have to go through a man, we can talk to the women at HR but this is useless because they themselves have to go through the men at HR. Women experience a loss of identity, a loss of power”(Maya, Watson [pseud.], interview by author, Saudi Arabia, 21 October 2011). Becker (1991, p. 88) commented on this very point when she said: “At a time when equality for women is a major issue in American culture, women who support and who have enjoyed equal rights naturally react negatively to the subordinate role of women in the Saudi culture”. She also found that women in professional roles of authority were received with respect and were listened to in their jobs. However, while this was written almost two decades ago things have changed and women no longer occupy public positions of responsibility and especially in education the male voice is the one that is heard and respected. One of our teachers reported of complaints directed towards a decision that she had made. The students were very adamant that she acquiesce to their request. Because of her many years of experience working in the Gulf region and also having been at PMU from the very start she knew how to adjust to this situation by telling the students: “I cannot do anything about this but if you want it changed you will have to talk to the registrar” ”(Maya, Watson [pseud.], interview by author, Saudi Arabia, 21 October 2011). At this point the students stopped their badgering. She had accepted the loss of power and adjusted her thinking and response accordingly pointed to the male authority.

Tétreault (2003) confirms my point when she claims that Islamic patriarchal politics has been increasing because of the feminization of higher education. According to our observation there is growing controversy over the role of women as practiced in the Islamic patriarchal system which clashes with the growing standing of women in higher education.

Another department chair stated: “A lot of our teachers have had considerable experience and authority in other locations. On coming to PMU they find themselves having to follow very explicit rules and regulations and do not have a chance to utilize the expertise that they have brought with them” ”(Anne, Gibson [pseud.], interview by author, Saudi Arabia, 15 November 2011). This is contrary to findings by Feldman and Thomas (1991, p.

38) in which they stated “the reason most frequently given by our participants for accepting their assignments in Saudi Arabia was autonomy. They wanted to be in charge, to run their own operations with minimal interference from head-quarters”. The “loss of professional identity and power” is further explained by one of the directors: “I was one of six people who were told to start and lead out and my job was to get the academic program started. I thought that decision that I made would be carried out and would not be challenged or changed by my superiors. This happened for a while until a new layer of Saudi management was put in place; thus, taking away any power or authority previously held” (Paul, Gregson [pseud.], interview by author, Saudi Arabia, 02 May 2011).

It is hard for most of us to imagine the challenges that lie within educational institutions with virtually nobudgetary restrictions hampering their development. “King Abdullah is building a knowledge society—increasing access to a university education, exposing young Saudis to education and cultures abroad and aggressively recruiting international talent to come to the Kingdom to teach and conduct research” (Reisberg 2011, para. 5). However, we must address the question where all this leads in Saudi Arabia. Education cannot be separated from the larger sociopolitical context in which it takes place: The political and social problems of the whole system need to be taken into account.

Homemade Social Problems

The growing demands of globalization have resulted in a need for expanding the educational opportunities for the local population. In order for this rapid growth to have taken place has required tremendous efforts from both government and private enterprises. Because the training of the indigenous population required time, private enterprise was encouraged in this area and in fact took over as the primary source for the development and growth of these countries. In order to rapidly hire the adequate personnel an importation took place of large groups of white-collar and blue-collar workers commonly referred to as expatriates. In the late 1970s Saudi Arabia began recruiting large numbers of Filipinos for construction work. This was followed in the 80s with the recruitment of large groups of female Filipinos to staff their hospitals and other service sector jobs (Nagy, 2008). The term expatriate generally refers to individuals working for large international corporations being transferred to work in a subsidiary in the host country. PricewaterhouseCoopers (1999: iV) defines this as “employees assigned to live and work in a foreign country for a period of time (not permanently)”.

Currently the population of the GCC countries number around 35 million of whom 37% are expatriates (Bowman, 2007). The latter half of the 20th century saw a tremendous increase in population in the Arabian Peninsula with a corresponding increase in the expatriate population. The most notable change in demographics was seen in the United Arab Emirates where the expatriates made up 76 percent of the total population, in contrast to Oman where the expats comprised only 28 percent of the population (Leonard, 2005). There are estimated to be approximately 40% expatriates in Bahrain, 60% in Kuwait, 80% in Qatar and the UAE, in Saudi Arabia 33% and 25% in Oman (Human Rights Watch, 2012). The use of expatriates in the labor force tends to be dependent on the GDP of individual countries. Those with lower GDP tend to rely more on their indigenous work force whereas those states with a high GDP such as Kuwait, Qatar, and the UAE tend to rely more heavily on expatriate labor (Willoughby, 2008).

In each of the states of the Gulf Cooperation Council (GCC), non-citizens outnumber citizens in the workforce (Nagy, 2008). This shows the tremendous reliance of these countries on expatriates for their development in different sectors ranging from manufacturing, construction to executive positions. There is a bifurcation of the labor force into what Saunders (2002) calls the “global citizens” who are usually the higher paid expats

versus the “global foreigners” who tend to receive minimal wages. Another peculiarity in the rich Saudi Arabia is the discrepancy between public and private sector workers. The public sector wages are generally much higher than wages paid in the private sector.

This overdependence on expatriate labor is now being seen as becoming detrimental to the indigenous population as these people are being educated they are having greater difficulty in finding jobs which have already been taken over by expatriates. The public sector generally hires nationals and is generally overstaffed with problems of absenteeism (Saunders, 2002). The establishment of the “welfare state” in the 70s ensured that the government was the chief employer of its citizens. With the wealth available they were paid substantially better than those in the private sector (Bahgat, 1999, p. 132). “This system of make-work government jobs has ensured the loyalty of citizens to their governments, and helped introduce a sedentary working culture among what were once largely tribal populations” (Gogia, 2007, para. 3). This is a growing concern in terms of productivity and the expansion of services and industry. Moreover, unemployment is a growing problem due to the rapidly increasing population resulting from traditionally encouraged large families along with improved health and living conditions. For example, “the unemployment among Saudis currently stands at 11%, while in Bahrain it is just below 4% with around 20,000 of its citizens jobless”. In the UAE 32.6% of Emirati men and 47.7% of Emirati women were unemployed (Bowman, 2007). “A restive population of young Saudis for whom there is little work, little wealth and no political participation is pressing relentlessly for change” (Rubin, 2006, p. 76).

“Gulf citizens are now facing double-digit unemployment rates. Citizens therefore have to be encouraged to enter their countries’ private sectors” (Gogia, 2007, para. 3). Employers in Saudi Arabia will be faced with new challenges and problems when transitioning to the private sector: firstly, the wages may not be the same or in fact may be lower based on market demands; secondly, the level of health care may differ from public sector standards; thirdly, linguistic and technical demands may require skills that need to be developed; fourthly, working hours may be extended with fewer annual holidays (Gogia, 2007, para. 3). Moreover, governments must take into consideration that “a process of nationalization of the work force at too rapid a pace would most likely result in falling productivity, output, and national income” (Bahgat, 1999, p. 132). The employment of nationals in white-collar jobs is likely to increase whereas blue-collar jobs will still be predominantly filled by foreign nationals from South-East Asia (Willoughby, 2008).

Therefore, the governments are now initiating policies and seeking ways of restricting the numbers of the foreign workforce by “setting minimum quotas for hiring nationals, and raising the cost of employment of non-nationals” (Sassanpour, 1996, p. 27). This will allow for indigenous workers to participate more thoroughly in the labor market and eventually to take on positions of leadership. These processes are already successfully being applied in all GCC states and are referred to as: “Kuwaitization”, “Omanization”, “Saudization”, etc.

Saudiization is taking on greater prominence as pressure is building on the government to deal with the growing number of graduates from high school and the increase in unemployed Saudis. While a net has been thrown out to help these individuals financially, incentives are being given them to get training through government funded Work Force programs. In addition, institutions that hire more than the minimum percentage of Saudis are given more privileges as opposed to those institutions that rely too heavily on expatriate labor. This new classification of institutions and organizations will have a positive impact on the reduction of the unemployed but will cripple those bodies that rely heavily on expatriate labor. For example, already over a decade ago all businesses in the Kingdom were given notice that all senior positions were to be filled by Saudi nationals within a five year period. Less than 10% of the private sector work force are Saudi nationals while 14 job categories

were set aside for Saudi citizens. However, there are problems associated with the nationalization of the work force where nationals will expect the higher wages currently being supported by the government; however, this is not likely to occur; thus leading to a gradual melt down of the neopatriarchal system because of demands for support from the ruling class likely resulting in political destabilization (Willoughby, 2008).

Conclusion

In times of saving measures for educational institutions in Europe and the US, it is hard for most of us to imagine the possibilities that open up when there are virtually no budgetary restrictions hampering the development of higher education. The educational realm in Saudi Arabia has without doubt undergone huge reforms in the last decades, yet there lies a long road ahead. We need to ask ourselves where all this leads in Saudi Arabia. Granted Saudi Arabia is rapidly advancing as it plans for the future needs of its people and seeks its place in the international community. In a country deeply entrenched in religious-social culture, one must expect to come across opposing points of view in relation to these changes. There must always be give and take when at times one sees movement two steps forward and one step back or vice-versa. However, education cannot be separated from the larger sociopolitical context in which it takes place. Successful educational models encourage new ideas and new thinking. Saudi Arabia remains a very traditional, conservative society where new concepts are not easily implemented.

In the light of the research presented the following questions are yet to answered: “Can an institution designed to bring together top international scientists to collaborate on research thrive within a walled-off campus in the desert? How long will international scientists be willing to remain in a society that places unaccustomed limitations on their personal lives? How easily will foreign women forgo their right to drive a car or adapt to the gender segregation that defines the society beyond the KAUST campus? Is it possible to create the relaxed collegial camaraderie that often generates new ideas over a glass of apple juice? And what will the future be for the 120,000 scholarship students when they return from abroad? After being exposed to so many different cultures and ideas, will women easily re-integrate into a more conservative and restrictive society? Will young adults be content to relinquish the freedoms and opportunities that they enjoyed while abroad? What kind of future will a new generation of well-educated Saudis expect? What kinds of limitations will they accept?” (Reisberg, 2011).

One must have patience in attempting to answer those questions coupled with determination because change is inevitable and cannot be imposed on its people. The themes of self-definition and creative outputs are taking on ever more importance in the Southern Arabian region as globalization and its attending ideas slowly leach into this time bound land and its cultures. Cultural identity as a cognitive, moral, and emotional system is morphing in response to the mass global media and influx of westernized cultural models represented by the large numbers of expatriates now being engaged in the educational processes in the region. The role of Arabian Women as global leaders, as homemakers, and as community cornerstones, all these models are currently undergoing rapid change in response to educational and social development in the Arabian Gulf region. Domestic and geographic spaces help Arabian women assess class, value, and identity, when moving from one sphere into another whether that is from, unmarried tribal member into married status or university student into business professional. This is key for the establishment of a new phase of existence for Khaleegy women. The question is: how these women will step outside lives defined by their tribal Islamic heritage and move into ones that are in effect self-defined, and influenced by outside cultural systems. Moreover, how will Saudi Arabia benefit then from this important and well-prepared human capital?

The issues that they are addressing are issues that faced and in some ways continue to face global society: Who am I? Where do I belong? What is important to me? The impact of social development on tribal and urban life in these regions is one which can add depth and texture to the study of human responses to globalization worldwide. The question remains: Will modern education being separated from a modern culture bring about the same results? However, change must come from within and enlightened change comes from the development of a knowledge-based society holding on to the past with one hand and stretching out to the future with the other.

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CONTENT-BASED SYLLABUS

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Abstract

There is growing interest in a model of language education that integrates language and content instruction in EFL/ESL classroom. The current paper looks at content-based syllabus, with content (subject matter) providing the point of departure for it. Influences leading to the emergence of content-based instruction are discussed, followed by a brief description of the syllabus as well as the relevant frameworks for organizing and integrating. The paper then deals with several rationales for the integration of language and content. Next, some techniques, strategies, and activities used in implementing content-based syllabus are briefly mentioned. It is also suggested that pre-service and in-service teacher education can benefit from a focus on language and content integration. Some advantages and disadvantages of the syllabus are discussed at the end.

Keywords: EFL/ESL classroom, content-based syllabus

Introduction

Although estimates of the number of language minority students in U.S. schools vary, there is consensus that the numbers are rising dramatically. The content syllabus is more common in the USA, where there is a larger proportion of Second Language learners than in UK (Skelton & Willis, n. d.). "Increasingly, the American classroom is multiethnic, multiracial, and multilingual at all levels" (Crandall, 1992, as cited in Crandall, 1994). In response, a number of program models have been developed to meet the needs of language minority students, many involving the integration of language and content instruction. In addition, attention to the lack of foreign language proficiency among Americans has led to the development of a number of foreign language programs that integrate academic content into language instruction. In this approach, the second or foreign language is used as the medium of instruction for mathematics, science, social studies, and other academic subjects; it is the vehicle used for teaching and acquiring subject specific knowledge.

The place of the syllabus

A language teaching syllabus, according to Reilly (n. d.), involves the integration of subject matter (what to talk about) and linguistic matter (how to talk about it); that is, the actual matter that makes up teaching. Choices of syllabi can range from the more or less purely linguistic, where the content of instruction is the grammatical and lexical forms of the language, to the purely semantic or informational, where the content of instruction is some skill or information and only incidentally the form of the language. To design a syllabus is to decide what gets taught and in what order. For this reason, the theory of language explicitly or implicitly underlying the language teaching method will play a major role in determining what syllabus is adopted. Reilly goes on to say that there has been much confusion over the years as to what different types of content are possible in language teaching syllabi and as to

whether the differences are in syllabus or method. Almost all actual language teaching syllabi are combinations of two or more of the types.

Influences leading to Content-based instruction

In the United States, Krashen's theory (Brown, 2000) of second language acquisition has influenced the development of integrated instruction at all levels. Krashen suggests that a second language is most successfully acquired when the conditions are similar to those present in first language acquisition: that is, when the focus of instruction is on meaning rather than on form; when the language input is at or just above the proficiency of the learner; and when there is sufficient opportunity to engage in meaningful use of that language in a relatively anxiety-free environment. This suggests, according to Crandall (1994), that the focus of the second language classroom should be on something meaningful, such as academic content, and that modification of the target language facilitates language acquisition and makes academic content accessible to second language learners.

Crandall goes on referring to Cummins (1981) and Collier (1987) that individuals develop two types of language proficiency: basic interpersonal language skills and cognitive academic language proficiency. He suggests that these two types of proficiency vary according to the degree of context available to the individual and the degree of cognitive challenge of the task. Social language can be acquired in 1 to 2 years, but the level of proficiency needed to read social studies texts or solve mathematics word problems can take 5 to 7 years to develop.

Integrated language and content instruction offers a means by which English as a second language (ESL) students can continue their academic or cognitive development while they are also acquiring academic language proficiency. It also offers a means by which foreign language students can develop fuller proficiency in the foreign language they are studying. In foreign language or two-way bilingual immersion programs, in which a portion of the curriculum is taught through the foreign language, some type of integrated language and content instruction appears to be essential (Crandall, 1994).

Characteristics of content-based syllabus

With content-based instruction, learners are helped to acquire language through the study of a series of relevant topics, each topic exploited in systematic ways and from different angles, as outlined in Mohan's "knowledge framework", (Nunan, 1988 pp. 49-50.) Content syllabuses certainly give learners a lot of exposure to the language, which is good.

The Content-Basics perspective assumes that language learning is a by-product of a focus on meaning—on acquiring some specific topical content. This view has supporters who hold that to teach language as if it were a set of patterns or rules or interactions apart from content is not only misguided, but impossible (Crandall 1997). Citing Brinton, Snow, and Wesche (1989), Stoller (2002) states:

In a content-based approach, the activities of the language class are specific to the subject matter being taught, and are geared to stimulate students to think and learn through the use of the target language. Such an approach lends itself quite naturally to the integrated teaching of the four traditional language skills. For example, it employs authentic reading materials which require students not only to understand information but to interpret and evaluate it as well. It provides a forum in which students can respond orally to reading and lecture materials. It recognizes that academic writing follows from listening and reading, and thus requires students to synthesize facts and ideas from multiple sources as preparation for writing. In this approach, students are exposed to study skills and learn a variety of language skills which prepare them for the range of academic tasks they will encounter (p. 2).

The primary purpose of instruction, according to Reilly (n. d.) and Richards and Rodgers (2001) is to teach some content or information using the language that the students are also learning. The students are simultaneously language students and students of whatever content is being taught. The subject matter is primary, and language learning occurs incidentally to the content learning. The content teaching is not organized around the language teaching, but vice-versa. Content-based language teaching is concerned with information, while task-based language teaching is concerned with communicative and cognitive processes. An example of content-based language teaching is a science class taught in the language the students need or want to learn, possibly with linguistic adjustment to make the science more comprehensible.

Content-based syllabus is yet another realization of the analytic and process approach to syllabus design. It differs from task-based syllabuses in that experiential content, which provides the point of departure for the syllabus, is usually derived from some fairly well-defined subject area such as science or social studies, etc (Nunan, 1988).

In task-based syllabus, the tasks are defined as activities with a purpose other than language learning, but, as in a content-based syllabus, the performance of the tasks is approached in a way that is intended to develop second language ability (Reilly, n. d.).

Rationale for integrating language and content instruction in ESL/EFL classroom

There is growing interest in a model of language education that integrates language and content instruction in the second/foreign language classroom (Snow et al, 1989). Several theoretical rationales underlie this shift in perspective.

In the first place, for young children, cognitive development and language development go hand in hand; language is a tool through which the child comes to understand the world. Language, cognition, and social awareness develop concurrently in young children. Integrated second language instruction seeks to keep these components of development together so that second language learning is an integral part of social and cognitive development in school settings. A second rationale behind integrating language and content teaching is that language is learned most effectively for communication in meaningful, purposeful social and academic contexts. In real life, people use language to talk about what they know and what they want to know more about, not to talk about language itself. The academic content of the school curriculum can provide a meaningful basis for second language learning, given that the content is of interest or value to the learners. Another underlying rationale is that the integration of content with language instruction provides a substantive basis for language teaching and learning. Content can provide both a motivational and a cognitive basis for language learning. Content provides a primary motivational incentive for language learning insofar as it is interesting and of some value to the learner and therefore worth learning. Language then will be learned because it provides access to content, and language learning may even become incidental to learning about the content (e.g., in immersion classes). A fourth rationale concerns the intrinsic characteristics of language variation. It is increasingly recognized that language use in school differs in some important general ways from language use outside of school and, moreover, that different subject areas are characterized by specific genres or registers. Thus, learning the school register or specific subject-area registers may be a prerequisite to mastery of specific content or to academic development in general. This is of particular concern to teachers of limited English proficient (LEP) students (Snow et al, 1989; National Center for Research on Cultural Diversity and Second Language Learning, 1995). Fifthly, the success of immersion as a model of foreign language education has provided strong evidence for the effectiveness of language learning through subject-matter learning. Extensive research has revealed that immersion students learn the academic content specified in the school curriculum and at the same time develop significant levels of foreign language proficiency (Genesee, 1987, as cited

in Snow et al. 1989). Furthermore, concern for the education of language minority students in the United States has prompted a reexamination of the methodologies appropriate for teaching English to LEP students in the public schools. Besides, in context-embedded language tasks, support for meaning is readily available through the immediate communicative situation, whether through background knowledge or through visual or other contextual cues. In contrast, context-reduced tasks offer little available contextual support for the learner to derive meaning from the immediate communicative setting (Cummins, 1981, as cited in Snow et al. 1989).

Frameworks

A Conceptual Framework

According to the model proposed by Snow et al (1989), language-learning objectives in a content-based program are derived from three sources: (a) the second/foreign language curriculum, (b) the content-area curriculum, and (c) assessment of the learners' academic and communicative needs and ongoing evaluation of their developing language skills. From these sources, two types of language objectives can be specified: content-obligatory language objectives and content-compatible language objectives. Whereas content-obligatory objectives derive directly from the linguistic needs for communicating the information in the content area, content-compatible language objectives derive from the second/foreign language curriculum and ongoing assessment of learner needs and progress. A natural outcome of such activity is cultural learning.

Knowledge framework

Nunan (1988) mentions Mohan's (1986) framework which can be used for organizing knowledge and learning activities. It consists of a specific and practical side being divided into description, sequence, and choice, as well as a general theoretical side being divided into classification, principles (what principles are there? cause-effect and means-ends and norms etc?), and evaluation (what counts as good or bad?). Nunan mentions two criticisms against the model by Perry (1987): 1) what evidence is there that there are three, and only three, relevant practical knowledge structures? 2) does moving from the practical to the theoretical side suit all learners or do some learn better when they begin from a theoretical base?

Techniques and activities for the implementation of content-based syllabus

- *There are a variety of strategies and techniques used in content-centered second language instruction:*

Cooperative learning

In this method, students of different linguistic and educational backgrounds and different skill levels work together on a common task for a common goal in either the language or the content classroom. Cooperative groups encourage students to communicate, to share insights, test hypotheses, and jointly construct knowledge. Depending on their language proficiency, students can be assigned various roles as facilitator, recorder, reporter, or illustrator. Other grouping strategies involve peer tutoring or pairing a second language learner with a more English-proficient peer (Richards & Rodgers, 2001; Crandall, 1994).

Task-based or experiential learning

In this approach, appropriate contexts are provided for developing thinking and study skills as well as language and academic concepts for students of different levels of language proficiency. Students learn by carrying out specific tasks or projects: for example, "doing science" and not just reading about it (Rosebery, Warren, & Conant, 1992, as cited in Crandall, 1994).

Whole language approach

Crandall (1994) referring to the three following studies states that the philosophy of whole language is based on the concept that students need to experience language as an integrated whole. It focuses on the need for an integrated approach to language instruction within a context that is meaningful to students (Goodman, 1986). The approach is consistent with integrated language and content instruction as both emphasize meaningful engagement and authentic language use, and both link oral and written language development (Blanton, 1992). Whole language strategies that have been implemented in content-centered language classes include dialogue journals, reading response journals, learning logs, process-based writing, and language experience stories (Crandall, 1992).

Graphic organizers

These provide a "means for organizing and presenting information so that it can be understood, remembered, and applied". Graphs, realia, tables, maps, flow charts, timelines, and Venn diagrams are used to help students place information in a comprehensible context. They enable students to organize information obtained from written or oral texts, develop reading strategies, increase retention, activate schema as a pre-reading or pre-listening activity, and organize ideas during the prewriting stage (Crandall, 1992, as cited in Crandall, 1994).

Project work

Project work is viewed by most of its advocates "not as a replacement for other teaching methods" but rather as "an approach to learning which complements mainstream methods and which can be used with almost all levels, ages and abilities of students" (Haines 1989, p. 1, as cited in Stoller, 2002). Project work is particularly effective because it represents a natural extension of what is already taking place in class. In various forms it shares the following features (Stoller, 2002): a) project work focuses on content learning rather than on specific language targets. Real-world subject matter and topics of interest to students can become central to projects, b) project work is student centered, though the teacher plays a major role in offering support and guidance throughout the process, c) project work is cooperative rather than competitive. Students can work on their own, in small groups, or as a class to complete a project, sharing resources, ideas, and expertise along the way, d) project work leads to the authentic integration of skills and processing of information from varied sources, mirroring real-life tasks, e) project work culminates in an end product (e.g., an oral presentation, a poster session, a bulletin board display, a report, or a stage performance) that can be shared with others, giving the project a real purpose. The value of the project, however, lies not just in the final product but in the process of working towards the end point. Thus, project work has both a process and product orientation, and provides students with opportunities to focus on fluency and accuracy at different project-work stages, and f) project work is potentially motivating, stimulating, empowering, and challenging. It usually results in building student confidence, self-esteem, and autonomy as well as improving students' language skills, content learning, and cognitive abilities.

WebQuests

Marco (2002) has proposed that the Web-Quest can be used in a content-based syllabus for ESP. This activity involves the use of authentic material from different Internet sources and engages students in reading extensively on a topic related to their discipline, performing tasks of increasing complexity, and creating oral or written texts to present the results of their online work.

WebQuests fit well in a learner-centered curriculum that seeks to help students develop autonomous learning. The use of technology with a content-based curriculum results in a learning environment in which students take more control of their learning. The role of the teacher is not to transmit knowledge, but to provide resources, help students develop learning strategies, guide the learning process, and offer support throughout the process. The use of WebQuests to learn languages integrates the pedagogical benefits of project work, content-based instruction, and language learning via the Internet. ESP students become more motivated because they are using new technologies and authentic texts to complete authentic tasks related to their disciplines.

The WebQuest is an activity that can be fruitfully exploited in ESP. It helps students develop academic skills such as scanning, skimming, paraphrasing, summarising, organising, analysing, and problem solving. Through extensive reading students acquire the vocabulary related to a topic of their discipline. By using authentic texts to perform real world tasks students become aware of concepts such as purpose and audience and see the utility of studying a second or foreign language (Marco, 2002).

Implications for teacher education

Teacher development in integrated instruction usually begins when one English language teacher seeks out one content-area teacher to discuss the language learning needs or academic language problems of shared students (Short, Crandall, & Christian, 1989, as cited in Crandall, 1998). The teachers' discussion may lead to a number of very productive collaborative strategies, benefiting both the students and the teachers. These include 1) analysis of texts, materials, and curriculum; 2) classroom observation, reflection, and feedback; 3) collaborative action research and reflection; 4) development of integrated or complementary lessons, materials, or curricula; 5) collaborative or team teaching; and 6) collaborative university courses for preservice and inservice teacher education (Crandall, 1998).

As linguistic and cultural diversity and the role of English in some aspect of education or professional preparation increase, it is vital that some attention to integrating language and content instruction be a focus of both preservice and inservice teacher education. At a minimum, the program or education should foster (Crandall, 1998):

1. basic understanding of the developmental nature of second language acquisition and of errors as a sign of learning;
2. understanding of the nature of academic language and skills and helping students to develop this through content study;
3. strategies for accommodating different levels of English language proficiency in the classroom without "watering down" the curriculum by providing multiple opportunities, repetition or rephrasing, learner-centered approaches, demonstrations, etc.
4. an understanding of differences in cross-cultural communication; and
5. strategies for assessment and evaluation, including portfolios, checklists and inventories, and other accommodations, such as the use of the primary language.

This content could be most effectively delivered in a teacher education program that brings together prospective and experienced teachers, administrators, teacher educators, and even students using some of the strategies described above. In fact, if teacher education is to be a seamless process of lifelong learning, then preservice and inservice teacher education needs to be better integrated from the outset (Crandall, 1998).

Issues facing content-based language instruction

Among the issues facing content-centered language instruction in the United States is the need for research to evaluate the effectiveness of integrated instruction, specifying optimal conditions for various programmatic effects, including the timing of integrated instruction, the relative effectiveness of different program models, and the use of various instructional strategies, texts, and assessment measures. Teacher training is another concern as the number of second language learners in U.S. classrooms increases. Proportionately the increase is observed in other parts of the world. To accommodate this diverse student population, content-area teachers need to know how to shelter their instruction, and language teachers need to learn how to integrate academic language and content better in their classrooms (Crandall, 1992, as cited in Crandall, 1994).

Demerits or criticisms

Content-based instruction has not adequately addressed two key questions, which future ELT teachers must address. These questions are “What content?” and “How much content?” A late 20th century maxim of language teaching has been “Don’t teach about language, teach language.” Content-based instruction proponents say, “Don’t teach a second language, teach content in a second language.” But language appears to be the natural content for language teachers to teach. If we are not to teach about language (e.g., grammar), but are to teach content about something, what is the “about something” that we are supposed to teach? In most academic situations, language teachers are neither invited nor equipped to use a second language to teach mathematics, science, history, physical education, or other traditional academic content areas. Some teach, in a second language, content, such as astrology that does not compete with the academic curriculum. This brings its own set of problems. If content is inherent in language use, and if content-based approaches to language learning and teaching seem to promise more effective routes to second language mastery, then we must ask ourselves what content is best for the language class. The natural content for language people is language itself and literature. We are beginning to see a resurgence of interest in literature and in the topic of language as “the basic human technology,” as sources of content in language teaching. More such attention will develop in the future. The second question is “How much content?”. As in other ELT matters, there is often a polar, all-or-nothing approach to content-based approaches. Often there is a hidden assumption that language learning gains are only appreciable when content blocks comprise entire courses or blocks of courses, as in immersion or sheltered immersion teaching. However, much shorter blocks of interesting, meaning-structured units are also highly productive in language learning (Rodgers, 2000).

But is it sufficient to produce a syllabus that is merely a list of topics ? How will teachers know which particular items of language to focus on more closely? Which items will, in the long run, be of more use to the learner? Or are Mohan and others like him who design content-based "immersion programmes", relying, like Prabhu (1986, as cited in Skelton & Willis, n. d.), entirely on natural acquisition happening, with no overt focus on language form? And if so, how do we ensure that the topics and texts chosen will give a sufficiently balanced exposure to the language that is representative of the target situation? This question is a vital one, and relates closely to the concept of linguistic coverage. How can adequate and balanced coverage be assured? The syllabus designer must, in all fairness, produce a syllabus that is accountable to sponsors, testers, future employers, and of course the learners themselves. Here we have another key concept - that of accountability (Skelton & Willis, n. d.). Skelton and Willis (n. d.) state that the problem of checking that the learners each receive an adequately balanced exposure to the language of their target discourse

community is indeed a difficult one. And of course drawing up a standardised test that will be fair to all students is another.

“It is unlikely that desired levels of second/foreign language proficiency will emerge simply from the teaching of content through a second or foreign language.” (Snow et al. 1989, p. 204). Criticizing skills-based syllabus, they also go on saying that after all, in order to infer meaning from context, or to understand discourse signals and clause relations, there are linguistic operations to be made, and words to be learnt, not just skills to be performed. This holds as much true for content-based syllabus as well. Furthermore, they observe that what matters is that if we attempt a syllabus specification which is other than narrowly linguistic we open up the possibility of including an open-ended set of indefinite words to describe our wishes. And we trail this indefinable baggage along with the words that we put on the page.

The solution to the shortcomings in immersion students' productive skills seems to lie in the use of methodologies that apply techniques to practice language forms with a communicative approach. "Such tasks and activities will meet the same criteria as is demanded of the communicative teaching of grammar: purposefulness, interactivity, creativity, and unpredictability" (Clipperton, 1994, p. 746, as cited in National Center for Research on Cultural Diversity and Second Language Learning, 1995).

Merits

By selecting subject areas, the syllabus is given a logic and coherence which might be missing from analytic syllabuses which are little more than a random collection of tasks. In addition, the logic of the subject may provide a non-linguistic rationale for selecting and grading (Nunan, 1988).

Mohan (1979) argues for content-based syllabuses on the grounds that they facilitate learning not merely *through* language but *with* language to which Nunan (1988) also refers, while citing Mohan (1986):

We cannot achieve this goal if we assume that language learning and subject matter learning are totally separate and unrelated operations (p. 49).

Marco (2002) cites at least two major benefits of content-based instruction from two studies. First, if students are given multiple opportunities to interact with authentic, meaningful, and challenging material, the result is better learning (Brinton, Snow, and Wesche, 1989; Kasper, 2000). Second, students' motivation is enhanced with the use of authentic materials relevant to their goals (Chavez, 1998).

Since the main objective of an ESP course is to help students acquire the linguistic and communicative skills related to their disciplines, a content-based approach is especially useful. Content-based pedagogy promotes synthesizing and evaluating, and helps students improve their academic skills by raising their awareness of the concepts of audience and purpose (Kasper, 2000, as cited in Nunan, 1988).

As cited in Stoller (2002), four findings from research in educational and cognitive psychology that emphasize the benefits of content-based instruction are noteworthy: a) thematically organized materials, typical of content-based classrooms, are easier to remember and learn (Singer 1990), b) the presentation of coherent and meaningful information, characteristic of well-organized content-based curricula, leads to deeper processing and better learning (Anderson 1990), c) there is a relationship between student motivation and student interest -common outcomes of content-based classes- and a student's ability to process challenging materials, recall information, and elaborate (Alexander, Kulikowich, and Jetton 1994), d) expertise in a topic develops when learners reinvest their knowledge in a sequence of progressively more complex tasks (Bereiter and Scardamalia 1993), feasible in content-based classrooms and usually absent from more traditional language classrooms because of

the narrow focus on language rules or limited time on superficially developed and disparate topics (e.g., a curriculum based on a short reading passage on the skyscrapers of New York, followed by a passage on the history of bubble gum, later followed by an essay on the volcanoes of the American Northwest).

Evaluations of a variety of immersion programs suggest at least three elements of general relevance for second language instruction: 1) instructional approaches that integrate content and language are likely to be more effective than approaches in which language is taught in isolation; 2) an activity-centered approach that creates opportunities for extended student discourse is likely to be beneficial for second language learning; and 3) language objectives should be systematically targeted along with academic objectives in order to maximize language learning (National Center for Research on Cultural Diversity and Second Language Learning, 1995).

Skelton and Willis (n. d.), talking of notional-functional syllabus, observe that this type of syllabus has 'high surrender value' in that even if you leave the course after one year, or even one term, you can still use what you have learnt in practical situations. The researcher believes that content-based syllabus takes sides with notional-functional syllabus in this regard, that is, CBI has high surrender value.

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VISUALIZING THE DATA VISUALIZATION NETWORK: THE DVMAP PROJECT

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Abstract

Data visualization is a familiar buzzword. Experts in the humanities, social and natural sciences, as well as technology, along with semi-experts and the general public, reach people everywhere with trends and conclusions drawn from visualized data. Governments, industries, businesses, sciences, marketers, academics, students and others value data visualization methods and tools as critical, applicable tools for understanding the world, which provide rich information analyses for specialists and generalists alike.

Unfortunately, no single resource offers a space where people working in the multifaceted field of data visualization can share projects they are working on, tools they created, educational opportunities in the field, nor where they (and their work) are situated geographically. A research group at New Mexico Institute of Mining and Technology seeks to fill this gap with a repository of data visualization resources called “Data Visualization Map (DVMap).” The DVMap is an interactive network data and geographic representation graph that provides a data visualization space for people across the world to share, view and/or collaborate on projects and publications; tools deployed or under development; educational opportunities in data visualization, such as formal programs, summer seminars, conferences; and the geographical locations of the users, projects, tools and educational opportunities.

Given the necessity of this repository, this paper outlines the structure, underlying methodology, and anticipated outcomes for the DVMap data visualization network. The paper also accounts for limitations of the project and the potential problems of creating a map that wants to share work – especially work in progress – with everyone.

Keywords: Data visualization network repository, Interactive network data graph, Geographic representation graph, Information analysis, Research tool, Collaboration tool

Introduction

This is the digital universe. It is growing 40% a year into the next decade, expanding to include not only the increasing number of people and enterprises doing everything online, but also all the “things” – smart devices – connected to the Internet, unleashing a new wave of opportunities for businesses and people around the world. Like the physical universe, the digital universe is large – by 2020 containing nearly as many digital bits as there are stars in the universe. It is **doubling in size every two years** (Turner, Gantz, Reinsel, and Minton 2014)

Data visualization is a familiar buzzword, reflecting the need to help sort the influx of global data into understandable and therefore usable information. Experts, semi-experts and the general public consume and produce data visuals, which governments, industries, businesses, sciences, marketers, academics, students and others use to understand and make decisions about the world.

Yet, very few of us - if any - know who is working on data visualization, the projects they are working on and the tools they deployed or are developing, the educational opportunities in the field, or where they (and their work) are situated geographically. Instead, there are a few lists of tools (e.g., Kirk 2009-2014; National Cancer Institute; Datavisualization.ch), people (e.g., Franchi 2013; Information Management 2014), projects (e.g., NASA Scientific Visualization Studio; visualizing.org), and educational opportunities (e.g., Nielsen 2013). There are almost no references to where the people working on data visualization and the projects and educational opportunities are in the world. Ortiz's "Data visualization references network" is the most complete aggregation of data visualization "blogs, studios, people, tools, books" so far, yet it contains a reduced number of items per topic, and it does not cover data visualization projects and educational opportunities. Also, with the partial exception of Ortiz's network graph, none of the existing resources represent the data for easy viewing, understanding, navigation, exploration, interconnectivity and charting on a map of the world. Nor do the existing resources pay special attention to the contribution and data visualization needs of governments, industries, businesses, sciences, marketers and engineers. In sum, no online resource currently aggregates the complexity of the data visualization network and does it in a manner that makes it easy for users with different needs and preferences to query the data or visually explore it, to see how each element relates to the entire network, and to understand where the elements stand on the world map.

A research group from the Visualizing STEM Research Synergy Cluster of the Humanizing Tech/nology research project at the New Mexico Institute of Mining and Technology seeks to fill this gap with a repository of data visualization resources called "Data Visualization Map (DVMap)." The DVMap is a data visualization space for anyone across the world with Internet access to share, collaborate and visualize projects and publications; tools deployed or under development; educational opportunities in data visualization, such as formal programs, individual courses, summer seminars, workshops; and the geographical locations of the users, projects, tools and educational opportunities.

The DVMap is an interactive network data and geographic representation graph. It is a network data graph because of the volume and complexity of items it displays (people, projects, tools, educational opportunities and places) and the relations among them. It is a geographic representation graph because the majority of these items are geographically located. The DVMap is explorable, searchable and interactive because it is centered on the preferences and needs of the users. With this in mind, we found the Max Planck Research Networks Prototype Moritz Stefaner created for the Institute to be a source of inspiration because of its similar purpose: "reveals how Max Planck Institutes collaborate with each other, and with their international partners." (Max Planck Research Networks; Stefaner 2012)⁷.

In this paper, we outline the structure, underlying methodology and anticipated outcomes of the project. We also account for limitations and the potential problems of creating a map that wants to share work – especially work in progress – with everyone.

⁷ A similar visualization tool, though targeted at visualizing digital library collections, is Thudt, Hinrichs, and Carpendale's The Bohemian Bookshelf information visualization (Thudt, Hinrichs, and Carpendale 2012; <http://www.alicethudt.de/BohemianBookshelf/index.html>)

DVMap structure - The users' view

The DVMap is centered on the user in two ways: users can engage with the interface to either explore the data visualization network, or search it for known items; and users generate (most or all of) the content that is displayed on the interface. In this section, we describe the structure of the DVMap from the perspective of both types of users.

Using the DVMap

When users access the website, they see an interface like the sample page in Fig. 1. The interface is dark colored to afford greater contrast with the data, and it has five components: A, B, C, D, E, and F. The topmost bar (component A) contains the title and navigation functions; panel B displays the overview map, C is the details section of the map, and D describes the information of the active node; E contains the search results. The bar at the bottom (F) contains the search boxes and selection functions.

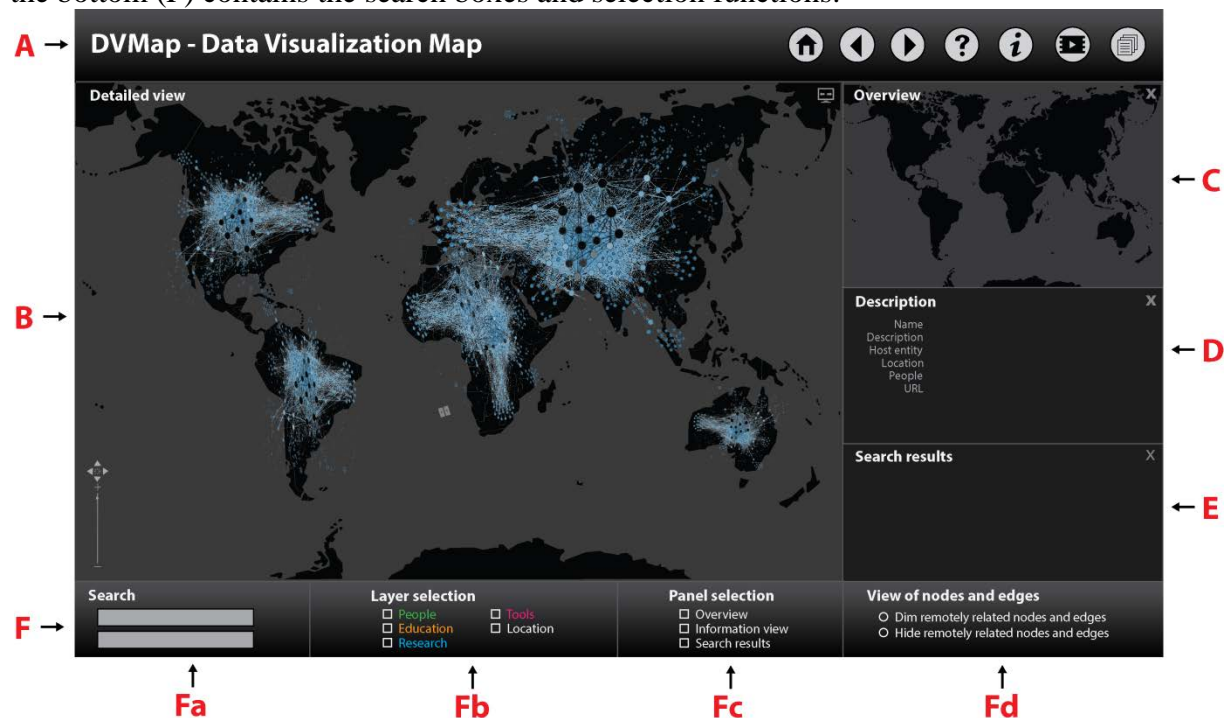


Fig. 1. Sample DVMap landing page, with page sections labeled.

The top bar (A) contains the project title on the left and the navigation menu on the right. Because the top bar is common to the whole website, clicking on the title always takes the user back to the home page. The menu is a graphics navigation bar; we chose this type of navigation bar to help users from different cultures and nationalities use the site with the same ease and user friendliness overall. The icons are: home, back, forward, about us, help, video tutorials, and add resource. Clicking on the about us, help, video tutorial, and add resource icons opens new pages. The help page provides written help on specific topics such as using the panels. The tutorials page duplicates this function in the form of brief videos. Providing the written and graphical help modes caters to users who are more writing centered and users who are more visually centered. Clicking on the add resource icon opens up the questionnaire where users contribute new content for the DVMap database (see Appendix). The menu supports addition of other icons, if necessary.

The center panels are a slight variation on Schneiderman's "Overview first, zoom and filter, then details-on-demand" visual information seeking mantra (1996), with panel C representing the overview, panel B the zoom and filter, and panel D the details-on-demand.

The search results panel (E) also filters the data. The default view displays all the panels (see Fig. 1); users can hide panels C, D and/or E from the bottom bar (section Fc).

Panel C displays a world map where, via a red rectangular frame and a node (see Fig. 2), the user keeps track of both the area of the world he is zooming in on in panel B, and where the active node is on the panel B map. Users may hide panel C by clicking on the *x* on the upper-right corner.

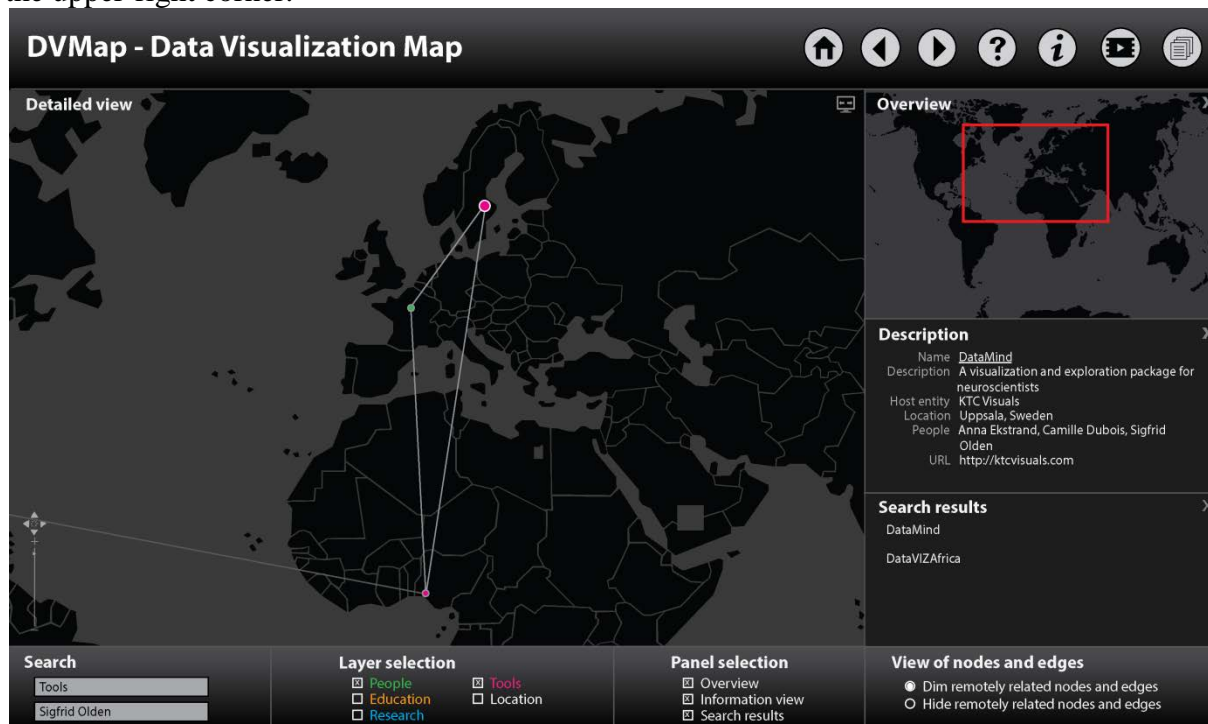


Fig. 2. Sample DVMMap landing page with simulated use scenario.

Panel B displays the actual network on a world map. Here, users can explore the network, zoom in on details, and “filter out uninteresting items.” (Schneiderman 1996). The network nodes and edges are color-coded for the different overlapping layers of content: green for people, orange for education, blue for research, pink for tools, and off-white for places. When a user clicks on a node, they activate the node, which becomes bigger, and both the node and the edges leading off it brighter. At the same time, by default the more remotely related nodes and edges become dimmer (users can dim or hide them from the bottom bar, section Fd). When a node becomes active, the information related to it is displayed in panel D, allowing the user to learn more about the item and navigate its connections and overlaps. Users can also move between the different layers either by zooming in on the corresponding color nodes and edges, or by selecting the desired layer, or layers in section Fb. Users can control zooming and panning in different ways: via the map control widget on the lower-left of the panel, via a mouse, or via touch. Users can also view the map in full screen by clicking on the icon on the upper-right corner of the panel.

Panel D displays the information related to the node: names of people, educational resources, research projects, tools and places. This information is displayed as a form, with the items that are linked to nodes⁸ underlined.

Panel E displays the search results. Like panel D, the items that link to nodes are underlined.

⁸ The items that link to nodes (here called “nodable” items) are names of people, educational, research, and tool resources, and their geographic location.

The bar at the bottom (F) is the search and options part of the DVMap. In section a, users can enter up to two search queries, and the results will be displayed in panel E. The results include both nodable and non-nodable items because search queries search the whole DVMap database and display all the information related to the query items.

Section b allows users to filter their analysis by category. An example of this is users wanting to explore the tools network. They would select the “Tools” checkbox and the corresponding network would be highlighted. If they also want to explore the network of people, they would also select the “People” checkbox. Users can select any combination of categories to analyze. They can also apply this type of selection to filter the search results.

Section c allows users to hide or show panels C, D and/or E. They can also resize panels D and E.

In section d, users select whether they want to dim or hide the remotely related nodes and edges.

Contributing to the DVMap

The content displayed in panels B, C, D and E is generated (wholly or predominantly⁹) by users. When they click on the add resource icon in the top bar, contributors are taken to the “DVMap questionnaire” (Appendix). Fig. 3 depicts the structure of the questionnaire.

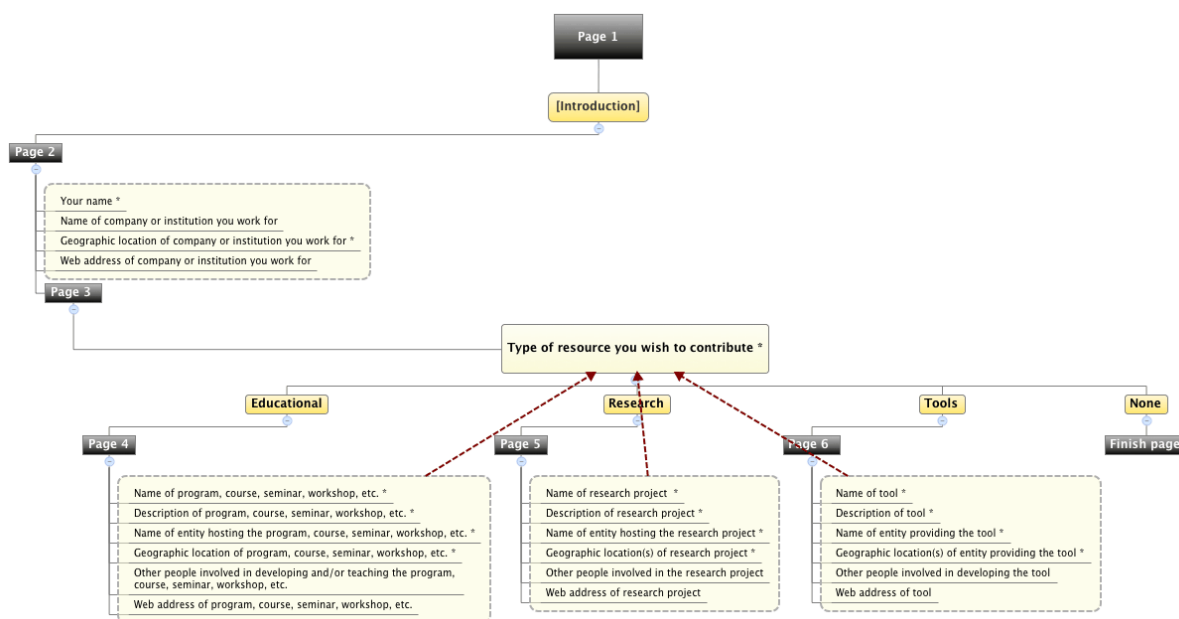


Fig. 3. Questionnaire structure.

The questionnaire contains seven pages, with the first page being the introduction and the last the finish page. After reading the introduction and signing the disclaimer by clicking the “Next” button, contributors are taken to page 2 where they provide their name and information about their workplace. Of the four questions in this section, only the contributors’ name and geographic location of their workplace are required. Contributors are then taken to page 3, where they select the type of resource they wish to contribute (educational, research or tools) or the “None” button that takes them to the finish page. Selecting one of the other options takes contributors to the corresponding question page (Educational to page 4, Research to page 5, and Tools to page 6). After completing one of

⁹ Our intent is that all input be user-generated. However, if the quality and amount of user input is unsatisfactory, we will revisit this decision.

these pages, contributors are taken back to page 3, where they repeat the selection and response sequence until they submit all the desired information.

DVMap methodology - The developers' view

The methodology, or developers' view, includes the content processing cycle (Fig. 4) and the current and future development of the project.

Content processing cycle

Content processing is a three-stage process that begins with users logging into the website, creating an account that is then added to the database, and filling out the questionnaire. This information forms a nugget in the data base. The answers are verified manually to prevent duplicate, inconsistent or incomplete information from being displayed on the interface. The information is then processed into the node/network graph via neo4j, and displayed on the interface for users to explore and search. This allows users to extract specific set(s) of data.

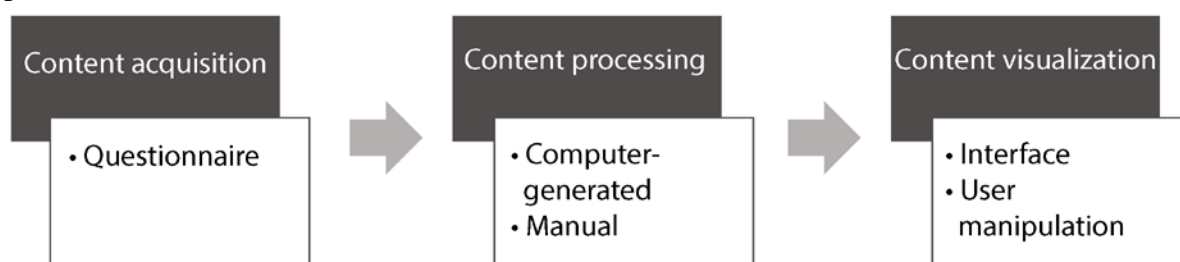


Fig. 4. DVMap content processing cycle

Current and future development

To date, we devised the questionnaire (Fig. 3 and Appendix) and samples of the website (Figs. 1 and 2). We also answered seven questionnaires with simulated data, and one with actual data about data visualization courses and projects at NMT. From the responses, we are developing a sample interactive map (Fig. 2), which will be available on the project website at <http://blogs.nmt.edu/digitalhumanities/cluster-i/data-visualization-map-dvmap/>

Next, we will produce a prototype of the website and perform user experience testing with faculty and students at NMT. We will use the results to produce a beta version of the website and start collecting data from actual contributors via individualized invitations, announcements among data visualization and professional communication communities, publications, and conference presentations. We plan on doing two further rounds of beta testing and integration of the results. Beta testing will be performed with actual users elicited via announcements in data visualization and professional communication communities. We expect to perform the tests at 6-month intervals. We expect to have a fully functional website within two years.

Anticipated outcomes

We anticipate two major outcomes. First, the DVMap will provide a unique interactive repository of data visualization resources for anyone with an Internet connection to share, view and/or collaborate on. Second, make the resource available for free to the academic and research communities, and on a paid basis for other users. Creative ways of generating income, in addition to public or private funding, is important to the sustainability of our effort. Income generating products may include tailored training sessions, project consulting, and more. We will closely follow the strategies of online education or online business in general, and adopt the ones that match the DVMap.

Together, these outcomes will (a) help researchers and practitioners better communicate their findings and applications with peers, other specialists and the public at large, and they will facilitate governments, industries, businesses, scientists, marketers, academics, students and others searching for new work and networking opportunities in or involving data visualization; and (b) ensure the long-term economic and academic viability of the project.

Some of the limitations of the DVMap are that it is not being designed for tablet and mobile devices, nor for different languages and writing systems. The decision to have users contribute the data to populate the network, while circumventing legal and ethical problems, can also be a limitation if the entries are too few and far apart, or are not of required standard.

Some of the problems we anticipate are related to user input. An inevitable problem is people entering incomplete data, inconsistent data, data that is out of date, or two or more people submitting the same data in different ways. Solving this issue is time-consuming and costly as it will require a potentially large pool of people dedicated to verifying the data submitted. A second issue is that almost every day new people become involved with data visualization and new resources are developed that could, and ideally should, be entered into the database; yet, if we depend exclusively on user input to populate the repository, it might quickly, even chronically, be inadequate in size and outdated in time. Both these issues will result in the repository not fulfilling its aims of being a reliable source of information about the data visualization network. (Aylett et al 2012).

A further group of problems is structural: these have to do with the task of maintaining a repository that can register and process increasing amounts data, to do it in such a way as to prevent the above mentioned user input problems, and to do it with as little human intervention as possible. We also foresee problems with the data processing as the larger the data sets become, the longer they take to process, making the real-time updates to the DVMap more cumbersome. Another problem has to do with whether to categorize the data or not. For instance, is it preferable to leave the data relative to tools general, or will it meet users' requirements better if we create taxonomies based on input, output, field/discipline, or others? Categorizing based on input would allow for creation of more specific output forms, such as a historical timeline, that users are already familiar with (Friedman 2007). However, categorizing based on the common output of the tool allows us to potentially streamline our categories based on the current classifications (Meirelles 2013), to which current users of data visualization would already be more accustomed. Finally, categories based on intended field of use, such as science and medicine for mapping cancer genomes, could allow users to better search for tools more relevant to their field. (Zoss 2014; StatSoft, Inc. 2013).

We also anticipate some people issues. One issue is making the website accessible to people with different visual capabilities. For instance, is the dark background adequate for all visualization users and tools? Also, will color-coding the layers suffice, or should we code the nodes for shape also? Another issue is making the website accessible to people from multiple cultures, nationalities and communities of practice. Examples of issues we would need to address in this case would be, as already mentioned, catering to different languages and writing systems.

Conclusion

The DVMap is a repository of data visualization resources that fills a gap in the knowledge about the people, projects, tools, educational opportunities and geographical location of the data visualization network. This makes it a useful tool for governments, industries, businesses, sciences, marketers, academics, students and the general public. In

this paper, we described the rationale, structure, layout and the anticipated outcomes and problems of the DVMap project.

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Appendix

○ DVMap questionnaire

The DVMap is a repository of information about people working in Data Visualization, as well as the projects, tools, and educational opportunities they develop and participate in.

If you are a practitioner, researcher, or faculty member and you developed or participated in Data Visualization educational opportunities, research projects, and tools, please consider answering this questionnaire.

Your answers will help us create an online interactive network map of the people, projects, tools, and educational opportunities in Data Visualization. Your answers will also help other faculty members, practitioners, and researchers, as well as companies, institutions, and students

- better communicate their data visualization findings and applications,
- facilitate searching for new work and networking opportunities in and involving data visualization, and
- provide easy and comprehensive access to a repository of data visualization tools and learning opportunities.

Disclaimer

The DVMap research group, the Humanizing Tech/nology project and the New Mexico Institute of Mining and Technology accept no liability for the information submitted in this questionnaire. Only submit information which you are authorized to share.

○ [2] Your name *

○ [3] Name of company or institution you work for

○ [4] Geographic location of company or institution you work for *

(please provide name of city/town, state (if applicable), country; e.g., “Lagos, Nigeria” or “Albuquerque, NM, United States”)

○ [5] Web address of company or institution you work for

○ [6] Type of resource you wish to contribute *

Educational

(“educational resources” include academic programs [e.g., BA, MS, PhD], individual courses [e.g., “Data Visualization”], summer seminars, workshops, and other educational opportunities)

Research

(“research resources” are typically research projects)

Tools

(“tool resources” include tools for visually displaying quantitative and qualitative data)

None

[7] Name of program, course, seminar, workshop, etc. *

[8] Description of program, course, seminar, workshop, etc. *

(100 words max.)

[9] Name of entity hosting the program, course, seminar, workshop, etc. *

[10] Geographic location of program, course, seminar, workshop, etc. *
(please provide name of city/town, state (if applicable), country; e.g., “Lagos, Nigeria” or “Albuquerque, NM, United States”)

[11] People involved in developing and/or teaching the program, course, seminar, workshop, etc.

(please use commas to separate the names; e.g., “Samantha Smith, Jacques Renault”)

[12] Web address of program, course, seminar, workshop, etc.

[Page 5]

[13] Name of research project *

[14] Description of research project *
(100 words max.)

[15] Name of entity hosting the research project *

[16] Geographic location(s) of research project *

(please provide name of city/town, state (if applicable), country; e.g., “Lagos, Nigeria” or “Albuquerque, NM, United States”)

[17] People involved in the research project

(please use commas to separate the names; e.g., “Samantha Smith, Jacques Renault”)

[18] Web address of research project

[Page 6]

[19] Name of tool *

[20] Description of tool *
(100 words max.)

[21] Name of entity providing the tool *

[22] Geographic location(s) of entity providing the tool *

(please provide name of city/town, state (if applicable), country; e.g., “Lagos, Nigeria” or “Albuquerque, NM, United States”)

[23] People involved in developing the tool

(please use commas to separate the names; e.g., “Samantha Smith, Jacques Renault”)

[24] Web address of tool

[Finish page]

Thank you for taking the time to complete this questionnaire.

TURMAS HETEROGÊNEAS NO ENSINO SUPERIOR: UM DESAFIO PARA O PROFESSOR E PARA O ALUNO

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Abstract

This paper presents a case study about teaching *Forma e Espaço* to a class of students with heterogeneous mathematical background. The course is part of the second semester of the degree in Educação Básica from the University of Azores. The study of teaching heterogeneous classes has been investigated in the past in different education levels: from high school to university. Here we focus on higher education. This problem reached some university courses in the recent past and revealed to be a real challenge both for the teacher and for the students, ending, most of the time, in a disappointing high degree of failures. This research narrates the experience of teaching this course for the past six years; here, we present and discuss the outcome of an inquire made to 36 students about the theoretical and practical subjects taught, as well as the professor's performance. We conclude that even though the outcome from the inquire shows promising results, there is still room for improving the methodologies and techniques used for teaching, which we envision that will contribute to diminish the degree of student failures to classes of this kind.

Keywords: Ensino, Matemática, Sucesso escolar, Turmas heterogêneas, Metodologias de ensino

Introdução

No início da lecionação de uma unidade curricular, o professor tende a ver a turma como um todo homogêneo. Mas, com o decorrer do semestre, cada aluno afirma a sua identidade como um ser único com capacidades, dificuldades, características e problemas diferentes dos restantes. Turmas heterogêneas, em que os alunos têm uma formação bastante díspar sobre um dado assunto—no presente caso a Matemática—, são realmente um desafio para a lecionação. Estas turmas apresentam a particularidade de exigir ao professor a adoção de técnicas inovadoras nas aulas, que simultaneamente complementam a formação de uns sem desmotivar os que detêm conhecimentos mais avançados.

O modelo de ensino adotado acaba também por instruir e inspirar o professor a lidar com diferentes tipos e formas de aprendizagem. O objetivo global continua a ser o de promover e aprofundar o conhecimento de todos os alunos, mas, neste contexto, atende às diversas necessidades e ao ritmo específico de cada aluno. Na medida do possível, assiste-se a um ensino quase personalizado que tem em conta o ritmo da aprendizagem, as diferentes metodologias e contextualizações de cada aluno.

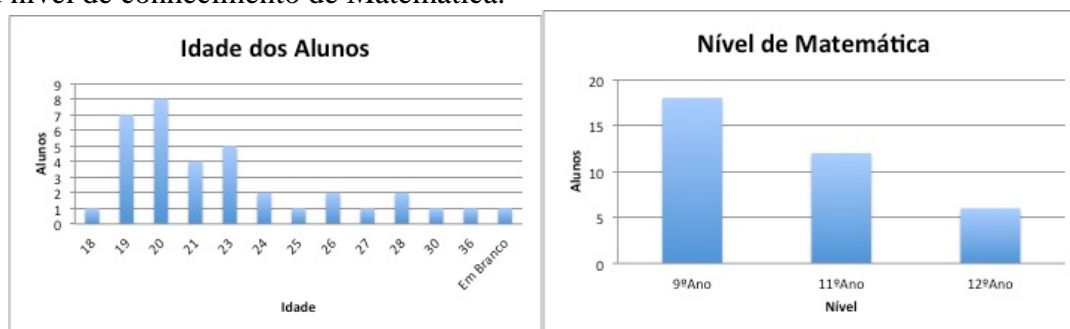
Para o professor é imprescindível traçar um panorama geral e preciso da turma, analisando cada aluno individualmente no sentido de diagnosticar o seu nível de aprendizagem e aferir o nível de conhecimento que detém, determinar o que precisa aprender e de que forma essa aprendizagem deve ser efetuada. Indubitavelmente, o ensino e a aprendizagem em turmas heterogêneas engrandece o trabalho mútuo entre o professor e os alunos, os quais devem participar ativamente no processo da construção da aprendizagem, colaborando com o professor e com os colegas.

O estudo que apresentamos resulta da lecionação de seis edições da disciplina de Forma e Espaço ao curso de Educação Básica, Departamento de Ciências de Educação, Universidade dos Açores, entre os anos 2008/2009 e 2013/2014, aferido por um questionário sobre o conteúdo científico e pedagógico feito aos alunos no decorrer do corrente ano letivo.

O artigo encontra-se estruturado como se segue: a secção dois caracteriza a população alvo e apresenta o inquérito e os seus resultados; seguidamente, a secção três tece algumas considerações sobre os resultados obtidos e sobre o que pode ser melhorado com vista a aumentar o sucesso da disciplina; por último, o estudo do caso termina com uma breve reflexão sobre o ensino heterogéneo, as causas, os problemas e as grandes preocupações que este encerra e apresenta algumas medidas futuras que podem levar a um maior sucesso na lecionação de disciplinas deste tipo.

Caraterísticas dos sujeitos da pesquisa e estruturação do inquérito:

A população que respondeu ao inquérito, num total de 36 alunos de 90 inscritos, tem as seguintes características: 97% são do sexo feminino, com idades que oscilam entre os 18 e os 36 anos e com um nível de escolaridade em Matemática que se estende do 9º ao 12º ano do ensino secundário. De seguida mostra-se graficamente a distribuição de idades dos alunos e o seu nível de conhecimento de Matemática.



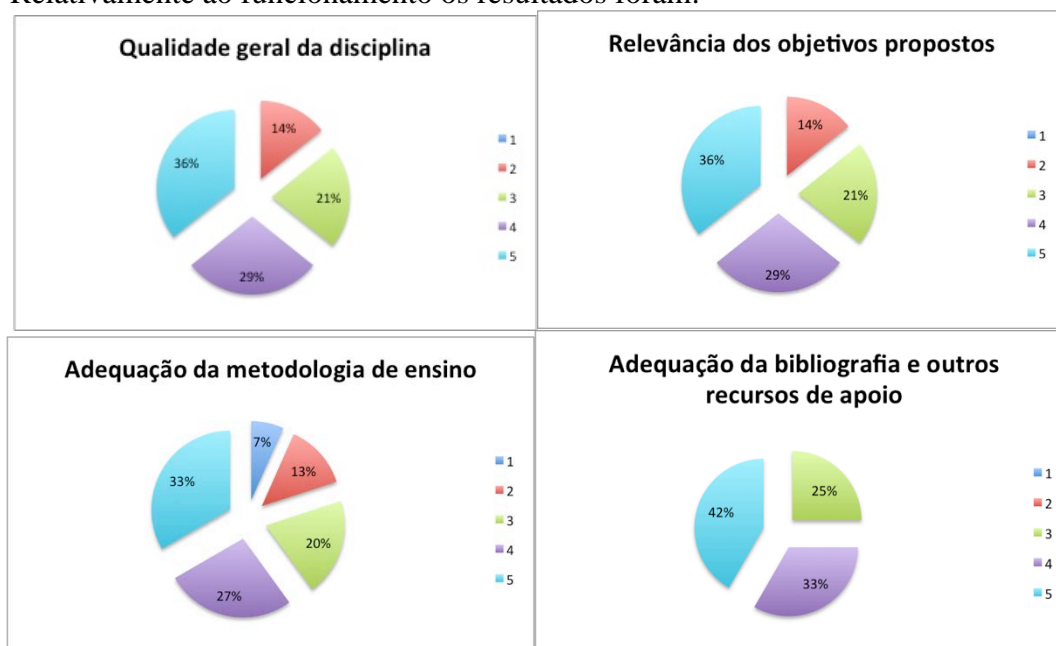
Trata-se de uma turma heterogénea tanto a nível de género (poucos rapazes), das idades e das bases que possuem em matemática. Além disso, o elevado absentismo na disciplina contribui para a dificuldade na lecionação e tem reflexos enormes na avaliação: só cerca de 40% dos alunos assiste às aulas. As causas desse problema são várias: para os alunos repetentes, cerca de 60% (que estão matriculados no 2º ano, no 3º ano ou ainda em Mestrado), há sobreposição de horário com outras disciplinas; para os alunos trabalhador-estudantes existe o obstáculo da permissão em assistirem às aulas por parte das entidades empregadoras; os alunos ordinários apresentam, hoje em dia, uma tendência cada vez maior em faltarem às aulas (que na secção três se tece algumas considerações sobre as possíveis causas). Todos estes fatores somados fazem com que a turma oscile, quase aleatoriamente, ao longo do semestre.

O questionário incidiu sobre o funcionamento da disciplina e sobre o desempenho da docente. O primeiro grupo de perguntas pretendeu medir a qualidade geral da disciplina tendo em conta os objetivos propostos, a metodologia de ensino, os recursos postos à disposição do aluno, quer bibliográfica, quer os disponibilizados na plataforma de *e-learning*, e a adequação da avaliação. O segundo grupo destinou-se a medir a qualidade das aulas teóricas e práticas, o domínio e clareza de exposição da matéria pelo professor e nível de entusiasmo e motivação que colocou na lecionação da disciplina.

No questionário, pediu-se a cada aluno que respondesse a cada questão com valores numa escala de 1 até 5, sendo 1 - Muito fraco; 2 - Fraco; 3 - Suficiente; 4 - Bom e 5 - Muito Bom. Foi também dada aos alunos a possibilidade de escrever alguns comentários e sugestões que achassem pertinentes para melhorar o funcionamento da disciplina.

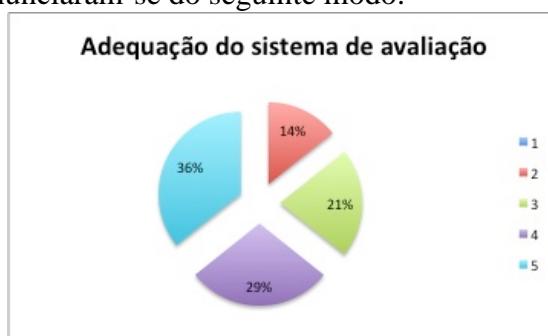
Respostas dos alunos sobre o funcionamento da disciplina:

Relativamente ao funcionamento os resultados foram:



A salientar que nas quatro questões anteriores as classificações positivas obtidas situam-se acima dos 80%, sendo que mais de 30% dos alunos classificam-nas como Muito Bom. Note-se que em relação à adequação da bibliografia e demais recursos de apoio não há avaliações negativas. Para tal contribuiu a disponibilização na plataforma de *e-learning* de um conjunto de documentos de apoio teórico e prático elaborado pela docente da disciplina, fichas de trabalho com soluções e enunciados de todos os elementos de avaliação desde 2010.

O sistema de avaliação da unidade curricular consistiu na realização escrita de duas provas de frequência e com divisão (exclusiva) dos conteúdos programáticos. Sobre o sistema de avaliação os alunos pronunciaram-se do seguinte modo:



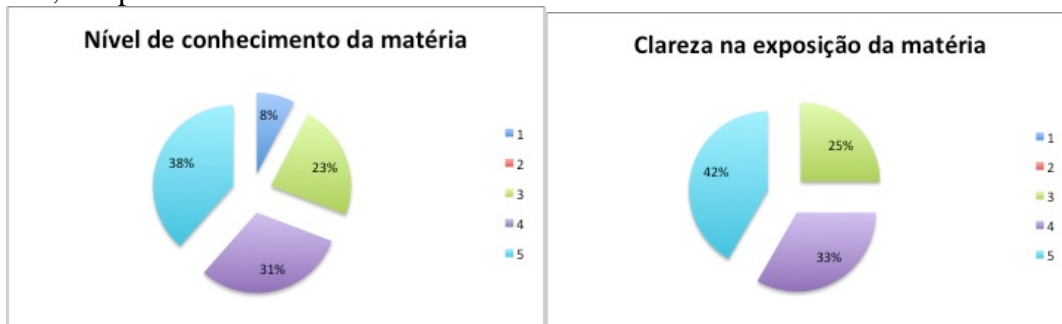
Embora a classificação positiva da adequação do sistema de avaliação se situe acima dos 85%, alguns alunos mencionaram nos comentários e sugestões que o sistema de avaliação poderia conter mais elementos de avaliação, um por módulo, e exclusivos sobre os conteúdos programáticos. Esta abordagem não foi ainda seguida porque acarreta um esforço de correção que não se adequa ao corpo docente da disciplina.

Respostas dos alunos sobre o desempenho da docente:

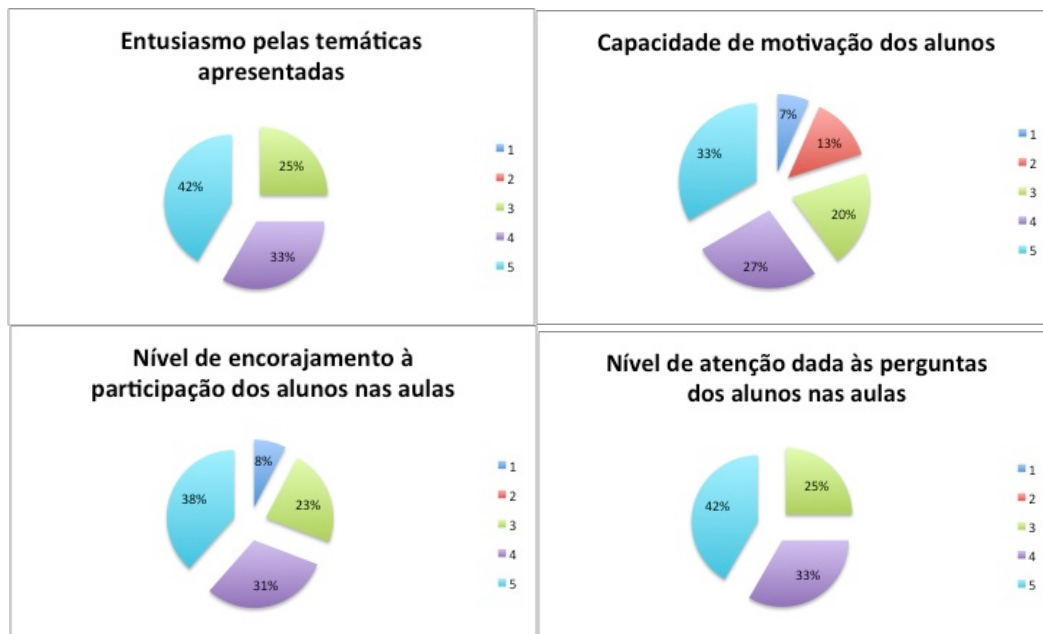
Na vertente relativa ao desempenho global da docente 36% classificou a sua atuação como Muito Bom, 29% Bom, 21% Suficiente e 14% como Fraco. Quanto à qualidade das aulas teóricas e práticas, lecionadas pela mesma docente, as respostas apuradas foram as seguintes. De notar que não há resultados negativos nas respostas dadas.



Sobre o domínio dos conteúdos programáticos e a clareza na exposição das temáticas lecionadas, as opiniões dos alunos são:



Indagados sobre o entusiasmo da docente pelas temáticas lecionadas, pela capacidade de inculcar motivação, pelo encorajamento à participação dos alunos nas aulas e ao nível de atenção dada às perguntas dos alunos na sala de aula, foram obtidos os seguintes resultados. De novo os resultados situam-se acima dos 80% com duas respostas a somarem mesmo 100%.



O horário de atendimento semanal tem a duração de 1 hora e foi estipulado em acordo com os alunos. Nesse período de tempo os alunos podem colocar as suas dúvidas e obter esclarecimentos sobre os conteúdos programáticos abordados. Outra questão relevante a considerar no inquérito consistiu no tempo médio de afixação dos resultados das notas obtidas nas frequências. As respostas sobre adequação do atendimento e tempo médio de afixação dos resultados foram:



Convém salientar que cerca de 90% da turma não recorre ao atendimento para esclarecer dúvidas e os restantes 10% só vai ao atendimento imediatamente anterior à realização das provas.

Resultados da avaliação por frequência:

Dos 90 alunos inscritos em Forma e Espaço, 66 alunos fizeram a 1ª prova de frequência e destes 66 alunos apenas 26 foram à 2ª prova. Em termos de avaliação por frequência 14 alunos dispensaram de exame, sendo o resultado ilustrado na tabela seguinte:

Número de alunos (no total de 14)	Nota em valores
1	16
1	15
2	14
1	13
2	12
2	11
5	10

Reflexão sobre o estudo e conclusões:

O insucesso escolar em unidades curriculares do ensino superior sempre existiu. As disciplinas de maior dificuldade, apelidadas na gíria estudantil por “cadeirões”, sempre deram luta e trouxeram alguma frustração e desânimo aos alunos. No entanto, havia algum esforço dos alunos em obter a nota mínima para passar a disciplina. Hoje em dia, muitos fatores vieram alterar estes comportamentos. As verdadeiras causas são difíceis de apurar e estão interligadas, a saber: a falta de perspectivas futuras; a maior quantidade de informação que é transmitida por disciplina; a dispersão com televisão, Internet, ou computador/telemóvel; e também, porque não, alguma preguiça, comodismo, absentismo, falta de capacidade ou desinteresse. Tudo isto constitui um forte entrave ao sucesso em algumas unidades curriculares.

É importante notar que, a culpa do insucesso escolar passou a ser assumida como um fracasso de toda a comunidade escolar. Desde muito cedo, o percurso escolar do aluno reflete um sistema que não foi capaz de o cativar, de o motivar, de o inspirar ao sucesso e ao êxito. A escola secundária não se preparou convenientemente para a mudança e para o protagonismo da sua preparação a nível superior. Durante muitos séculos, o ensino secundário hierarquizava os alunos de acordo com o seu rendimento escolar, selecionando os mais aptos e proporcionando, de certo modo, a exclusão dos que não revelassem capacidade de acompanhar as exigências impostas pelo ministério. Contudo, as reformas de ensino têm como objetivo trabalhar com todos os alunos envolvidos no sistema educativo, garantindo o sucesso escolar na sua plenitude. Inclusive, criaram-se as “novas oportunidades” para preparar os alunos para os diferentes papéis na sociedade. O resultado, até agora, deste processo é uma mistura de

mentalidades e de atitudes cada vez mais controversas, as quais espelham a agressividade, falta de decisão e indisciplina.

Com esta atmosfera impregnada de muitos dissabores e mal estar, hoje o principal problema do sistema educativo começa com a intenção de identificar as causas e as manifestações do insucesso escolar em geral. A lista inclui vários fatores, mas iremos apenas restringir-nos aos que estão mais diretamente relacionados com o ensino universitário:

- **Falta de vocação.** Uma das causas mais frequentes para o desinteresse, desmotivação e indisciplina dos alunos está na escolha do curso a seguir. Muitas vezes a escolha não é baseada na vocação, mas na empregabilidade.
- **Estilos de vida.** Numa sociedade onde impera a socialização desmedida, há sérias dificuldades em compatibilizar as exigências escolares com as diversas solicitações sociais, tais como: saídas noturnas frequentes e prolongadas, jogos de computador, etc., o que provoca e enraíza hábitos de vida pouco responsáveis. Neste contexto, o aluno passa a encarar as atividades escolares como pouco estimulantes, trabalhos e rotineiras.
- **Conflitos familiares e situação económica do agregado familiar.** A instabilidade familiar e económica, principalmente com a crise atual, fazem parte das causas que podem levar a que o aluno se sinta rejeitado e comece a desinteressar-se pelo meio escolar, adotando a indisciplina e o laxismo como forma de exteriorizar a sua revolta e ou insatisfação.
- **Métodos de ensino, recursos didáticos, técnicas de comunicação inadequadas às características da turma ou de cada aluno** fazem parte de um conjunto de causas que podem levar a uma deficiente relação pedagógica e influenciar de forma negativa os resultados.
- A gestão da disciplina na sala de aula condiciona fortemente o rendimento escolar dos alunos.
- As expectativas positivas ou negativas que os professores tecem no início do semestre sobre os alunos podem influenciar o desempenho escolar.
- **Avaliação.** A própria avaliação dá também um grande contributo para o insucesso escolar. Conforme demonstra a investigação nesse sentido, a avaliação varia em função de vários fatores. A ter em conta, as modalidades pedagógicas, os métodos de avaliação, o contexto escolar, as disciplinas, os professores, os critérios usados e a sua interpretação.
- **Dimensão da turma.** O elevado número de alunos por turma tende a provocar distração e diminuir o rendimento individual.
- **Turmas heterogéneas.** A organização de turmas muito heterogéneas não só dificulta a gestão da aula pelo professor, como também a coesão do grupo, o que pode traduzir-se no aumento do insucesso.
- **As relações professor-aluno.** Num passado recente a relação professor-aluno era marcada pela frieza, formalismo e distância. No entanto, atualmente respira-se uma certa descontração, por vezes, um pouco abusiva.
- **Currículos ambiciosos.** Os currículos demasiado extensos não permitem aos professores a utilização de metodologias ativas, onde os alunos tenham o lugar central. A necessidade de cumprir os programas inviabiliza a adoção de estratégias eficazes e retira tempo ao professor para ultrapassar as dificuldades individuais de aprendizagem que verifica nos alunos.
- **A elevada carga horária semanal dos alunos em atividades letivas é excessiva.** O espírito por detrás da recente adequação dos cursos (conhecida como processo de Bolonha) centra-se na transferência de competências e na maior autonomia dos

alunos. Em alguns cursos, no entanto, ainda subsiste uma carga horária excessiva que faz com que os alunos tenham pouco tempo para outras atividades, tais como: desenvolvimento de hábitos de convivência, afirmação de personalidade e participação em ações coletivas de caráter comunitário.

- **A falta de hábitos de estudo.** Hoje em dia, grande parte dos alunos recorre a explicadores sobre os mais diversos temas. À menor dificuldade enfrentada pelo aluno este recorre de imediato a um explicador. Este estratagema leva a que, grande parte dos alunos, não aprendam a pensar por si e não sejam capazes de criar as abstrações necessárias, que disciplinas como a Matemática fomentam e exigem. O esforço individual na construção do saber passou a assentar em receitas milagrosas fornecidas pelo explicador, que, na maior parte das vezes, almeja resultados imediatos e não a persistência do saber. A dependência atual de explicador inicia-se no ensino básico e arrasta-se até ao ensino superior.

Conclusão

Numa turma como a que deu origem a esse estudo há certas atitudes que deveriam ser tomadas. Julgamos que é mais proveitoso ter turmas com uma dimensão máxima de vinte alunos em oposição aos sessenta alunos que assistem regularmente às aulas. Com grupos mais pequenos, é possível implementar o sistema de ensino que vai ao encontro das necessidades e dificuldades específicas de cada aluno e assim caminhar para um ensino, de facto, personalizado.

Atualmente, fala-se muito em diferenciar o ensino, o que significa para o professor mais uma exigência, para além das que já lhe são atribuídas (por exemplo, a responsabilidade de educar, formar e ensinar) acrescidas das demais burocracias inerentes ao ensino de uma disciplina.

Segundo, Maria Teresa Esteban, “As turmas heterogêneas expressam a riqueza da diferença e abrem um amplo leque de possibilidades para o processo pedagógico, pois incorpora a singularidade do processo de cada aluno, ao encontrar espaço para a ausência, para o silêncio, para a contradição, para os desvios, portanto, para a diferença”.

O principal obstáculo apontado pelos professores em lidar com turmas heterogêneas é a dificuldade de atender às necessidades específicas de todos os alunos, o que requer uma planificação com metodologias diversificadas, tendo em conta a multitudine cultural e social de cada um. Notemos que, a planificação é um processo que exige organização, sistematização, previsão, decisão e outros aspetos que possam garantir a eficiência e eficácia de uma ação. Do ponto de vista educacional, a planificação é um ato político-pedagógico uma vez que explicita o que se deseja realizar e o que se pretende atingir.

Contudo, não podemos esquecer que o homem é um ser social e hoje em dia “a atual sociedade assenta num conjunto de valores que desencorajam o estudo e promovem o insucesso escolar. Diversão, Individualismo e Consumismo, três valores essenciais na sociedade atual, são em tudo opostos ao que a escola significa: atitudes refletidas, procura incessante do saber e de valores perenes, etc.” (Carlos Fontes).

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A PRODUÇÃO DE EDUCAÇÃO NOS AÇORES: O DESEMPENHO DO INDIVÍDUO NA MATEMÁTICA

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Abstract

This work is based on the theoretical tools and analytical framework, developed in the area of the Economics of Education, to evaluate the performance of students in the Azores, based on survey data obtained in various secondary schools in the region. It is intended, therefore, to contribute to a better perception of the relationship between resources (factors of production used) and the production of the educational system in the Azores, according to student performance in 9th grade mathematics.

As individual performance can be explained by the Ordered Probit model, we tested the influence of different sets of variables in determining the classification obtained at the end of 9th grade (in-school summary assessment).

The results point to the existence of a positive relationship between parents with higher education levels and the educational performance of the child. Positive results also occur due to parental involvement with the child, in particular, the moments of conversation about television programs. The conclusions also point to the negative effect of the presence of older siblings in the household on individual educational outcome. Another contribution is the confirmation that the individual within a low-income family is less likely to achieve higher academic results. A strong positive association between the attitude of students towards Mathematics and their performance in the discipline is evident in the results, which also prove that the school and the classroom affect the educational achievement of a student.

Keywords: Family Context, Educational Performance, Education, School, Mathematics Results

Resumo

O presente trabalho alicerça-se no instrumental teórico e analítico desenvolvido no âmbito da Economia da Educação, com o intuito de avaliar o desempenho dos alunos da Região Autónoma dos Açores, com base em dados obtidos através da aplicação de inquéritos aos mesmos, nas várias escolas secundárias da Região. Pretende-se, assim, contribuir para uma melhor perceção da relação entre recursos (fatores produtivos utilizados) e a produção do sistema educativo açoriano, com base no desempenho do aluno na disciplina de Matemática no 9.º ano de escolaridade.

O desempenho do indivíduo pode ser explicado com base no modelo *Probit*, no qual foi testada a influência de diferentes conjuntos de variáveis na determinação da nota obtida no 3.º período do 9.º ano de escolaridade (avaliação sumativa interna).

Os resultados obtidos apontam para a existência de uma relação positiva entre os níveis educativos elevados dos pais e o desempenho educativo do filho, exercendo também influência positiva o envolvimento dos pais com o filho, nomeadamente, os momentos de conversação sobre programas televisivos. O efeito negativo da existência de irmãos mais velhos no agregado familiar sobre o resultado educativo do indivíduo também está patente nas conclusões obtidas. Outro contributo reside na confirmação que o indivíduo inserido

numa família de baixo rendimento tem menor probabilidade de atingir resultados escolares mais elevados. Uma forte associação positiva entre a atitude do aluno em relação à Matemática e a sua realização na disciplina está patente nos resultados obtidos. Também se comprova que, a escola e a turma condicionam o desempenho educativo do aluno.

Palavras-chave: Contexto Familiar, Desempenho Educativo, Educação, Escola, Nota de Matemática

Introdução

Na sociedade moderna o saber é um bem inestimável, pelo que o conhecimento proporcionado pela educação deve ser encarado como uma construção contínua da pessoa humana, dos seus saberes, aptidões e da sua capacidade de discernir e de agir.

A educação é encarada como uma forma de investimento em capital humano por parte do indivíduo, da sociedade e do Estado, por fomentar o aumento da produtividade do trabalho, que se traduz em salários mais elevados, maiores lucros e aumento da cobrança de impostos. A educação tem, assim, uma rentabilidade associada, correspondendo a um sacrifício presente com vista à obtenção de maiores ganhos no futuro. O aumento do conhecimento e, conseqüentemente, da produtividade depende, no entanto, da forma como os recursos são utilizados no processo de produção de educação (Hanushek, 2001 e 2010 e Hanushek e Woessmann, 2011).

A educação é o principal veículo através do qual se verificam mudanças sociais, em que a produção de educação permite promover a qualidade económico-social de toda a sociedade, transferindo os seus membros para diferentes papéis económicos e permitindo maiores diferenciações. A rapidez e a velocidade dessa transição dependem de reformas na educação que preparem os indivíduos para novos papéis na sociedade. A escola é encarada como a estrutura privilegiada para a aquisição de conhecimentos e competências necessárias para a concretização das diferentes finalidades da educação (Soares e Collares, 2006) e a família como a impulsionadora da produtividade do indivíduo na escola. No entanto, o sucesso escolar de um indivíduo está associado principalmente às oportunidades que lhe são oferecidas pela família e pela sociedade em geral antes, durante e após, a sua escolarização. Numa sociedade em que a mulher alcançou os mesmos direitos do homem, numa sociedade em que mulher sai da sua casa para o mercado de trabalho, em que os filhos passam cada vez mais tempo na escola e em atividades fora do lar, distanciando-se da vida familiar, receia-se que o sistema escolar vigente não forneça as capacidades necessárias para sobressair numa economia avançada e num mercado de trabalho cada vez mais competitivo e exigente. Por isso, hoje, a escola e os professores se confrontam com novas tarefas: fazer da escola um lugar mais atraente para os alunos, apelando a uma participação mais ativa dos pais no meio escolar, e fornecer-lhes as chaves para a compreensão de uma verdadeira sociedade de informação.

A capacidade não é uniformemente distribuída, alguns são mais capazes do que outros. Teoricamente, indivíduos num contexto familiar influente são mais capazes, exercendo influência positiva na educação e no mercado de trabalho, o que significa que, o ciclo vicioso da pobreza persistirá durante gerações. Portanto, promover uma maior igualdade de oportunidades para o saber, independentemente da educação dos pais e do nível socioeconómico, é uma importante meta a atingir e, para tal, é necessário refletir no que à realidade açoriana diz respeito.

Nos Açores requalificaram-se e modernizaram-se os espaços escolares, devolvendo-lhes a dignidade, a eficácia e a funcionalidade, criando as condições para a prática de um ensino moderno como também foram criadas as condições efetivas para o sucesso escolar e para a integração plena de crianças e jovens, contribuindo para a sua motivação e garantido a

sua qualificação; registando-se uma taxa de pré-escolarização nos cinco anos superior a 98% e taxas de progressão nos três ciclos do ensino básico superiores aos 90%¹⁰. No entanto, regista ainda a pior taxa de abandono e insucesso escolar a nível da União Europeia.

Analisando em concreto o desempenho do indivíduo na Matemática, utilizando como referência os resultados do relatório PISA 2009, sobre as Competências Científicas dos Alunos Portugueses da faixa etária dos quinze anos, e apesar de Portugal ter sido o país da OCDE que mais progrediu, no conjunto dos três domínios (Leitura, Matemática e Ciências), o desempenho em literacia Matemática¹¹ dos alunos portugueses ainda está abaixo da média da OCDE. Se analisarmos o desempenho por Região, os Açores, no conjunto das sete regiões consideradas (Norte, Centro, Lisboa, Alentejo, Algarve, Açores e Madeira), ocupam o penúltimo lugar. Com base nos dados do relatório TIMSS 2011¹², Portugal encontra-se entre os doze países que melhoraram o seu desempenho relativamente a 1995, tendo assumido uma posição acima da média em relação aos alunos do 4.º ano. No entanto, e segundo o comunicado do Ministério da Educação e Ciência, mais de metade dos alunos portugueses não conseguem ultrapassar o nível, o segundo mais baixo em quatro níveis.

O desempenho do aluno na Matemática merece especial atenção pois, de acordo a investigação existente, muito embora não conclusiva, o crescimento da produtividade económica de um país, ou de uma região, é conduzido de forma mais clara pela proficiência matemática dos seus alunos, do terceiro ciclo do ensino básico, que pelo seu desempenho em outras disciplinas (Hanushek e Woessmann, 2009). O *American Diploma Project* estimou que, “62% dos empregos norte-americanos durante os próximos dez anos, o nível de admissão de trabalhadores, exigirá proficiência em álgebra, geometria, probabilidade e interpretação de dados estatística” (Friedman, 2007). Já a comunicação da comissão europeia sobre a educação de 2006 alertava para a necessidade de reforçar as competências “STEM”. (Science, Technology, Engineering, Mathematics).

Deste modo, perceber se o sucesso ou insucesso na matemática relacionam-se com fatores socioeconómicos do agregado familiar, como por exemplo, o nível de escolaridade dos pais, o rendimento familiar, o número de irmãos, a frequência do pré-escolar deve ser um objetivo de qualquer agente educativo ou económico. Entende-se ser fundamental identificar os fatores socioeconómicos que causam maior impacto no sucesso educativo e fornecer as informações necessárias para incentivar reformas educacionais mais profundas que mudem a estrutura de poder de decisão, visando obter novos dados conducentes ao aperfeiçoamento das políticas educativas vigentes.

A Função de Produção de Educação: Breve Revisão da Literatura

Nos últimos anos tem havido um interesse crescente em analisar a política educativa, em termos de custo, eficiência e justiça social, através de vários estudos realizados. Embora a educação seja cada vez mais objeto de análise económica, continua a ser alvo de um estudo extensivo por parte de outras áreas, nomeadamente, psicologia, sociologia e ciências políticas. Independentemente das perspetivas, a escola é encarada como a estrutura privilegiada para a aquisição de conhecimentos e competências necessárias para a concretização das diferentes finalidades da educação (Soares e Collares, 2006).

A função de produção de educação analisa a relação entre os diferentes *inputs* e o *output* do processo educativo. O *output* do processo educativo – aproveitamento escolar do

¹⁰ Fontes: Direção Regional da Educação e Formação dos Açores.

¹¹ A literacia matemática neste estudo internacional foi definida como “a capacidade de identificar, de compreender e de se envolver em matemática e de realizar julgamentos bem fundamentados acerca do papel que a Matemática desempenha na vida privada de cada indivíduo, na sua vida ocupacional e social, com colegas e familiares e na sua vida como cidadão construtivo, preocupado e reflexivo” (OCDE, 2002).

¹² Os países do Este Asiático continuam a liderar o mundo no domínio matemático.

indivíduo¹³ – está diretamente relacionado com uma série de *inputs*, não descurando o facto que, pese embora o conhecimento adquirido possa ser medido num determinado instante, o processo educativo é cumulativo, isto é, determinados inputs introduzidos no passado afetam o nível de conhecimento de um indivíduo. Acresce referir que, enquanto alguns *inputs*, tais como, as características da escola e dos professores, são diretamente controlados pelos dirigentes políticos, outros (características da família e dos amigos e as habilidades inatas), na generalidade, não o são (Hanushek, 1986, 2010). O contexto familiar é geralmente caracterizado por fatores sociodemográficos, ou seja, a escolaridade dos pais, o rendimento familiar e a dimensão do agregado familiar. As características dos colegas e grupo de amigos, quando incluídas no estudo, são normalmente agregadas às características sociodemográficas do estudante ou ao nível de aproveitamento associado à turma. O efeito escola é avaliado através das características dos professores (nível de educação, experiência, sexo, raça), da organização escolar (composição das turmas, instalações, despesas administrativas) e características da comunidade escolar (por exemplo, níveis de despesa média).

Portanto, o desempenho escolar (nota) de um indivíduo pode ser representado através da seguinte função:

$$y = f(E, F, O)$$

onde: y é o aproveitamento do indivíduo, E é o conjunto de variáveis relacionadas com a escola, F é o conjunto de variáveis relacionadas com a família, O representa o conjunto de outros fatores que possam influenciar o desempenho (área residencial, grupo de amigos, etnia, raça).

A análise de função de produção de educação é minuciosamente descrita em *Equality of Educational Opportunity*, mais conhecido por “Relatório de Coleman” (Coleman *et al.*, 1966). Este relatório, com base na pesquisa realizada a milhares de alunos norte-americanos, conclui que, os efeitos da família e das habilidades individuais dos alunos são superiores aos efeitos das escolas, para explicar as diferenças de aprendizagem.

De acordo com a literatura existente, a forma como a função de produção de educação tem sido abordada, assim como os seus resultados, não têm sido universalmente aceites, principalmente por aqueles que são responsáveis pelas tomadas de decisão a nível educativo, cuja crítica surge como reação a resultados que tendem a demonstrar a ineficiência na utilização dos recursos por parte das escolas (Hanushek, 1986 e 1998).

A Escola

A educação, de um modo geral, é encarada como um contributo para o crescimento da economia e um ingrediente primário na provisão de igualdade de oportunidades para todos os membros de uma sociedade ou ainda uma forma de quebrar a transmissão intergeracional de desigualdades. A educação é considerada um fator preponderante no estímulo das taxas de crescimento económico, existindo, segundo diversos estudos, uma relação positiva entre o capital humano e as taxas de crescimento económico (Hanushek, 1998 e Hanushek e Somers, 1999).

Muitas expectativas são criadas à volta do Sistema Educativo, do qual se espera que as escolas forneçam a preparação necessária para um indivíduo ingressar com sucesso no mercado de trabalho. Espera-se que as características da escola (despesa por aluno, dimensão da turma, rácio professor-aluno, entre outros), muitas das quais afetadas frequentemente por políticas governamentais, tenham efeitos significativos na educação dos alunos e, conseqüentemente, no mercado de trabalho. Contudo, esta visão é controversa na literatura, dada a dificuldade em estimar os efeitos destas características, separadamente de outros

¹³ A maioria dos estudos sobre a função de produção em educação mede o *output* através do aproveitamento do indivíduo, embora sejam utilizadas outras medidas quantitativas, como por exemplo, atitudes individuais, taxa de assiduidade escolar e prosseguimento de estudos *versus* abandono escolar.

fatores. Uma grande fração da variação dos determinantes é o resultado de escolhas feitas pelos pais, administradores, professores e órgãos políticos locais e nacionais.

Os estudos sobre a função de produção de educação fornecem pouco suporte para a defesa que variações nos recursos escolares influenciam o desempenho escolar do indivíduo, dado a controvérsia de resultados (Card e Krueger, 1996). Contudo, apesar dos recursos por si só não serem suficientes para garantir o sucesso, recursos adequados são certamente necessários, existindo uma associação positiva entre aquisição de conhecimentos e qualidade de recursos educativos.

Uma característica institucional, por vezes citada, com efeito positivo sobre resultados educativos dos alunos é a autonomia das escolas, em que na generalidade, os alunos registam um desempenho significativamente melhor em escolas que têm autonomia nos procedimentos e tomadas de decisão (Fuchs e Woessmann, 2007; Woessmann, 2003 e Woessmann *et al.*, 2009).

Analisada a experiência de professor, a maioria dos estudos verifica a existência de uma relação mais positiva com o desempenho do aluno (Jepsen, 2005; Krueger, 1999; Rivkin *et al.*, 2005 e Rockoff, 2004), mas apenas uma minoria dessas estimativas fornece resultados estatisticamente significativos, conforme explicado por Hanushek e Rivkin (2006).

O efeito da dimensão da turma no desempenho educativo é uma questão controversa. A pesquisa internacional sugere que efeitos significativos da dimensão da turma só se registam em sistemas cujos professores são de qualidade relativamente baixa e, neste sentido, é despoletada a questão do custo-benefício de obter um desempenho dos alunos superior pela redução do número de alunos por turma ou pelo aumento da qualidade desses professores, mesmo nos países onde este efeito está presente (Hanushek e Woessmann, 2011). No entanto, segundo Fertig (2003), por exemplo, não é propriamente a dimensão da turma que determina o desempenho do indivíduo, mas sim a sua composição.

A própria dimensão da escola, medida pelo número de alunos matriculados, merece algum destaque na literatura. Evidências apresentadas por Lee e Smith (1997) mostram que, o desempenho dos alunos é superior em escolas de menor dimensão, por utilizarem de forma mais eficaz os recursos existentes.

A Família

O último quarto do século XX viu crescer o interesse das ciências sociais sobre as razões pelas quais alguns indivíduos alcançam o sucesso¹⁴ na fase adulta enquanto outros não. Os economistas têm considerado o processo do conhecimento de um indivíduo como um aspeto da teoria do comportamento familiar. A família, tendo como um dos principais papéis a socialização da criança, é o espaço indispensável para a garantia da sobrevivência, do desenvolvimento e da proteção integral dos seus filhos, proporcionando os suportes afetivos e, sobretudo, recursos materiais necessários ao desenvolvimento e bem-estar dos seus componentes. A família é encarada como uma unidade de produção, cujos *inputs* reais são empregues no sentido de gerar bem-estar aos seus membros.

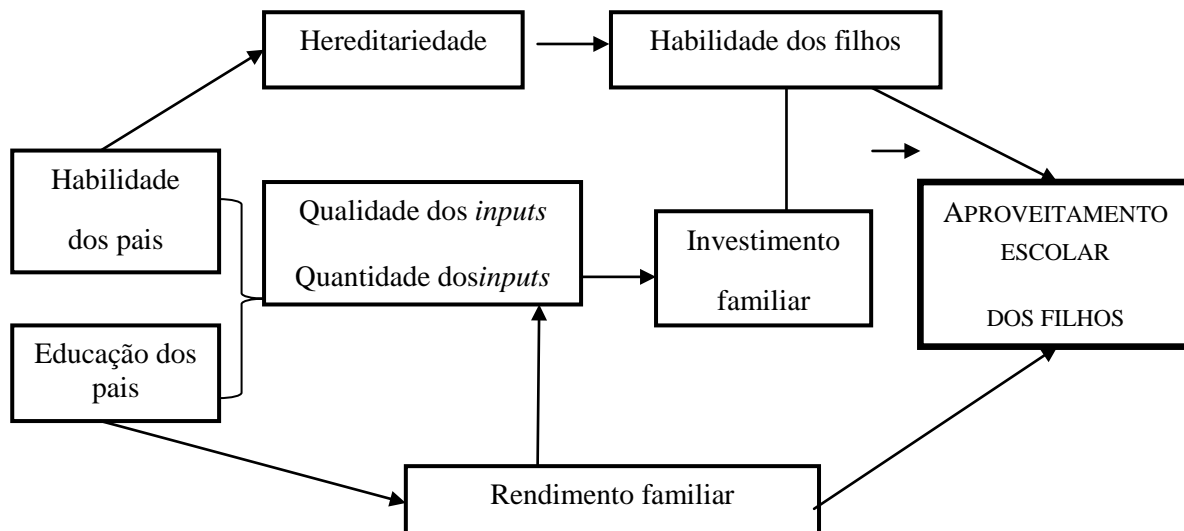
Becker e Tomes (1986) fazem referência a um vasto número de estudos económicos que procuram inserir o comportamento familiar, no que diz respeito à fertilidade, ao estado civil e ao investimento em capital humano. O contexto familiar, a quantidade de recursos familiares destinados aos filhos, a natureza destes recursos e o momento da sua distribuição irão afetar a educação dos mesmos. Estes também serão afetados por um conjunto de escolhas feitas pelos pais, tais como o número de irmãos, a área residencial, o número de

¹⁴ Este sucesso é medido pelos conhecimentos adquiridos a níveis escolares, níveis de ocupação, salários e outros fatores que caracterizem a vida de um indivíduo.

mudanças de residência e as alterações na estrutura familiar (ver também Haveman e Wolfe, 1995, Kaestner, 1997, Peterson e Woessmann, 2007 e Plug e Vijverberg, 2001 e 2002).

Leibowitz (1974), entre outros, apresenta o modelo que se segue (Figura 1), baseado neste mesmo enquadramento sobre o sucesso dos filhos, com algumas implicações adicionais para um trabalho empírico.

Figura 1 – Processo de aquisição de conhecimento



Fonte: Leibowitz (1974)

Neste modelo, as habilidades genéticas dos pais são, até certo ponto, transmitidas para os filhos por via hereditária. Estas habilidades dos pais e as suas escolhas educacionais determinam o nível dos *inputs* (ver também Bjorklund e Salvanes, 2010; Carneiro *et al.* (2007); Currie, 2009; Maurin e McNally, 2008 e Plug, 2002 e 2004), que se traduz no investimento familiar definido em termos de tempo e recursos financeiros. Estes podem ser usados na escolha de melhores escolas para os filhos ou na provisão de um melhor ambiente de estudo em casa. Os *inputs* referentes ao tempo podem consistir, por exemplo, no tempo despendido pelos pais em explicar os trabalhos de casa aos filhos, pois pais mais educados podem ser mais eficientes na educação dos filhos e na provisão de maior suporte académico dos mesmos. A quantidade e a qualidade do tempo despendido pelos pais, que é condicionado pelo número de filhos existentes no agregado familiar, são importantes no sucesso de aprendizagem (Dustmann *et al.*, 2002). Os pais têm objetivos e, ao fazerem escolhas que reflitam esses objetivos, tomam decisões de acordo com o agregado familiar, nível de consumo e poupança, profissão e distribuição do rendimento. Além disso, os pais fazem escolhas quanto ao tipo de monitorização, disciplina, nutrição e o ambiente no qual os filhos são educados. Todas estas escolhas determinam o nível de investimento dos pais nos seus filhos. As habilidades por parte dos filhos (inatas e/ou adquiridas), o rendimento e o investimento familiar determinam o aproveitamento escolar atingido por eles (ver também Becker e Tomes, 1986; Behrman *et al.*, 1995; Haveman e Wolfe, 1995; Jenkins e Schluter, 2002, Mayer, 1997; Plug e Vijverberg, 2002 e Walberg, 2003).

A análise empírica

Descrição do problema a analisar

A presente seção analisa empiricamente, e sucintamente, a produção da educação através da nota obtida pelo aluno na disciplina de Matemática nos Açores no 3.º período do 9.º ano de escolaridade. Pretende-se verificar até que ponto a mesma está relacionada com fatores socioeconómicos do agregado familiar (nível de escolaridade dos pais, nível de

rendimento familiar, número de irmãos), sexo, área de residência, frequência ou não do ensino pré-escolar e com o desempenho académico medido pelo número de reprovações na escola (utilizado como proxy da habilidade do indivíduo, Oosterbeek e Webbink, 1997). Em particular, o impacto dos diferentes fatores familiares associados a um melhor desempenho do aluno é analisado, dividindo-os em quatro categorias¹⁵:

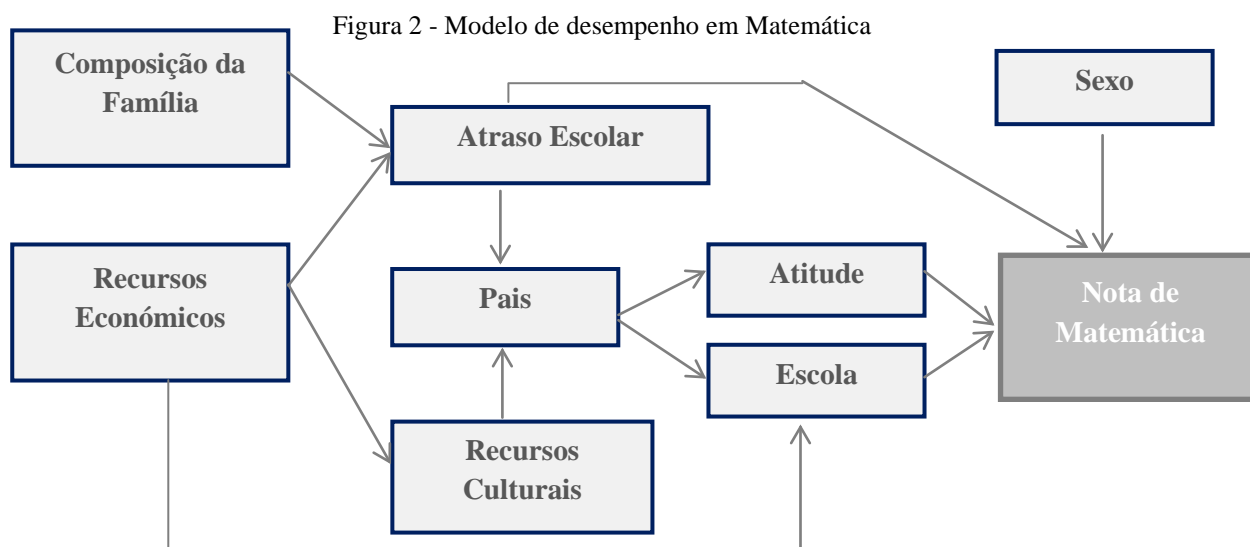
- Recursos económicos, baseados na existência de bens de conforto na casa do aluno (computador e Internet), sendo a profissão dos pais também entendida como indicador indireto do rendimento familiar;

- Recursos culturais, avaliado pela escolaridade dos pais;

- Envolvimento dos pais na educação dos filhos, medido através de itens que registam o tempo gasto pelos pais conversando com os filhos sobre livros, filmes, programas de TV, sobre o que acontece na escola, ajudando nos trabalhos de casa, incentivando-os a tirar boas notas, preocupação para que os filhos não chegue atrasados à escola/aula;

- Composição da família, captada pela presença, ou ausência, de um ou ambos os pais e pelo número de irmãos.

Deste modo, a associação entre fatores familiares e escolares e o desempenho em Matemática pode ser estabelecida com base no modelo proposto por Soares e Collares (2006), em que a família do aluno influencia a sua atitude em relação à escola e desempenha um papel crucial na escolha da escola do filho. Atitudes positivas em relação à escola são mais presentes em famílias nas quais os pais estão envolvidos com a educação dos filhos, postura certamente influenciada pelo capital cultural. No entanto, para que esta cadeia de decisões ocorra é necessário que a família disponha de recursos económicos, além dos necessários para a sobrevivência. O atraso escolar (número reprovações) é utilizado como uma medida precária do desempenho prévio do aluno e é naturalmente influenciado pela estrutura da família e pelos seus recursos económicos.



Fonte: Adaptado de Soares e Collares (2006)

Os dados utilizados no presente estudo foram recolhidos através de um inquérito realizado a 1566 alunos do 10.º ano de escolaridade no ano letivo 2012/2013, dispersos por 18 de 20 escolas secundárias da Região, espalhadas por oito ilhas¹⁶ e diferentes concelhos, abrangendo áreas pedagógicas e contextos socioeconómicos e culturais bastante diversificados, abrangendo mais de metade da população estudantil deste nível de

¹⁵ Com base no modelo aplicado por Soares e Collares (2006).

¹⁶ Não existiam alunos matriculados neste nível de ensino aquando da aplicação do inquérito.

escolaridade. Foram questionados sobre um conjunto amplo de informações nomeadamente quanto à composição da família, rendimento familiar, situação profissional e habilitação dos pais, desempenho e percurso escolar do aluno, hábitos de estudo, intenção de prosseguir estudos e envolvimento dos pais.

Preende-se saber a nota do aluno obtida no final do terceiro ciclo¹⁷, cujos resultados a considerar são apurados numa idade em que muitas das características pessoais, habilidades não-cognitivas e cognitivas estão praticamente desenvolvidas e, conseqüentemente, podem ser maissuggestivosdas consequências permanentes daeducação dos paisobre os resultadosdos filhos (Lundborg *et al.*, 2012). Muitos estudosanterioresconcentraram-seno efeitoedescola-ridade dos paisobreos resultados do indivíduojáno nascimentoouem idades precoces, em quecaracterísticas pessoaisnão estão totalmentedesenvolvidas(Cunha *et al.*,2006).

A influência das variáveis sobre a nota de matemática foi avaliada de forma agrupada e sequencial, cuja estrutura obedeceu ao modelo apresentado na Figura 3 (em anexo).

Caraterização da amostra

A definição da amostra adotou o princípio da realização de inquéritos ao maior número possível de alunos do 10.º ano matriculados, no ano letivo 2012/2013, quer no ensino regular quer em cursos profissionais, dispersos pelas várias escolas secundárias da Região Autónoma dos Açores, não descurando a representação de todas as ilhas, mediante a relação estatística fornecida pela Direção Regional da Educação e Formação dos Açores, indicada na Tabela 1.

Tabela 1 – Distribuição de inquiridos por Unidade Orgânica/ilha

Ilhas/Unidades Orgânicas	Alunos matriculados	Alunos inquiridos	Taxa de resposta
Santa Maria	73	54	74%
São Miguel	1 713	869	51%
Terceira	531	382	72%
Graciosa	37	29	78%
São Jorge	86	46	53%
Pico	114	41	36%
Faial	150	130	87%
Flores	22	15	69%
RAA (TOTAL)	2 726	1 566	57%

Caracterizando em linhas gerais a amostra, destaca-se que 870 inquiridos são do sexo feminino e a idade dos 15 anos é predominante com 949 observações. Analisada a área de residência, verifica-se que surge com maior número de respostas Ponta Delgada (394), seguindo-se Angra do Heroísmo (252) e em terceiro lugar Ribeira Grande (177). Como indicador do rendimento familiar, foi utilizado o apoio da Ação Social Escolar (ASE), repartido por cinco escalões (sendo que o indivíduo abrangido pelo quinto escalão já não beneficia de qualquer apoio), e verifica-se que 679 indivíduos beneficiam do apoio da ASE, assumindo maior expressividade o segundo escalão (255). Em relação à estrutura familiar, a maioria (1237 alunos) pertence a famílias ditas tradicionais, 519 indivíduos estão inseridos em famílias numerosas e 315 são filhos únicos. Quanto à distribuição dos inquiridos segundo a habilitação dos pais, importa salientar que em termos gerais as mães possuem habilitações superiores aos pais, sendo que a maioria tem o ensino básico: terceiro ciclo no caso das mães (correspondendo a 45% da amostra) e o primeiro ciclo no caso dos pais (28%). No que diz respeito à situação profissional dos mesmos, destaca-se a função pública com 440

¹⁷ O ano de 2012 é precisamente o último em que a escolaridade obrigatória é de nove anos.

observações em relação aos pais e 557 em relação às mães. Em relação aos hábitos de estudo, a maioria (mais de 90%) dos indivíduos estuda em casa e sozinho, no entanto, apenas 583 assinalaram estudar todos os dias. Em termos de percurso escolar, 1539 inquiridos frequentaram o pré-escolar e 486 alunos já reprovaram pelo menos uma vez. Quando questionados sobre as disciplinas em que sentem mais dificuldades, Matemática foi a mais mencionada. Também foi a disciplina indicada como aquela a que mais recorrem ao apoio do explicador. A larga maioria possui computador e internet em casa e utiliza o computador sobretudo para jogar e comunicar com outros. Em termos de apreciação global do desempenho dos alunos inquiridos, pode-se dizer que a média das notas atingidas situa-se no nível 3. Questionados sobre o envolvimento dos pais na vida escolar dos filhos, mais de metade da população inquirida não recebe apoio dos pais nas tarefas escolares nem tem por hábito conversar com os pais sobre livros não escolares, mas conversam sobre programas de televisão e sobre o que acontece na escola. A maioria dos pais incentiva os filhos a atingirem bons resultados escolares.

A Nota de Matemática

A variável a explicar é a **nota de Matemática** obtida pelo indivíduo através da avaliação sumativa interna (ocorrida no final do 3.º período do 9.º ano de escolaridade), que é atribuída com base nos resultados dos trabalhos escritos e atitudes, sem incluir a nota de exame realizada nesse mesmo período, de acordo com a escala indicada na Tabela 2.

Tabela 2- Níveis de Classificação (Nota)

Nota	Percentagem	Menção Qualitativa
1	0 a 19%	<i>Não satisfaz</i>
2	20 a 49%	<i>Não Satisfaz</i>
3	50 a 69%	<i>Satisfaz</i>
4	70 a 89%	<i>Satisfaz Bem</i>
5	90 a 100%	<i>Satisfaz Muito Bem</i>

O modelo econométrico - *Probit Ordenado*

Sendo a variável em causa ordinal, escolheu-se para sua análise e explicação o modelo econométrico ***Probit Ordenado*** (veja-se descrição pormenorizada do modelo em Maddala, 1983 ou Greene, 1999) e optou-se por estimar o modelo através do método de máxima verosimilhança. Recorreu-se ao programa LIMDEP v7.0, no qual foi utilizado o modelo Davidson-Fletcher-Powell (DFP).

Resultados

Os resultados empíricos da estimação encontram-se nas Tabelas 3 e 4 (em anexo), cujo cálculo dos efeitos marginais estão indicados na Tabela 5 (em anexo). De acordo com a informação incluída na Tabela 3, a hipótese nula de que as variáveis independentes não têm, no seu conjunto, qualquer valor explicativo é rejeitada a um nível de significância de 5% e 1%, dado que o valor de 791.10 para o teste de rácio-de-verosimilhança para esta hipótese excede, respetivamente, o valor crítico de 126.57¹⁸ e 138.13¹⁹.

O indivíduo de referência é do sexo feminino, filho único, vive com a mãe (família monoparental/reconstruída) e reside no concelho da Horta (ilha do Faial), está matriculado no 10.º ano na Escola Secundária Manuel de Arriaga (concelho da Horta), escola que não frequentou no 9.º ano de escolaridade, e não frequentou o pré-escolar. Os pais são funcionários públicos, com habilitação superior, sendo o pai o encarregado de educação.

¹⁸ $\chi^2_{0.05}(102) = 126.57$

¹⁹ $\chi^2_{0.01}(102) = 138.13$

Nunca reprovou, não apresenta dificuldades no estudo, nem recorre a apoio de explicadores. Tem por hábito estudar todos os dias, sozinho e em casa, sem qualquer apoio dos pais nas tarefas escolares. Não tem computador, nem Internet em casa, por isso, não utiliza o computador em casa para jogar, comunicar, pesquisar, nem para fazer os trabalhos de casa. Não gosta da disciplina de Matemática, embora seja da opinião que essa disciplina apela ao raciocínio e com aplicabilidade ao mundo real. Tem como intenção obter uma licenciatura e considera o estudo muito importante. Em relação ainda ao envolvimento dos pais, estes não conversam sobre livros, programas de televisão, nem sobre o que acontece na escola. Também não o incentivam a obter boas notas, nem se preocupam com a sua pontualidade à escola.

Avaliando, em primeira instância, as características demográficas do indivíduo e a composição familiar (veja-se Regressão 1 da Tabela 3), verifica-se que, a idade tem um valor explicativo sobre a nota de Matemática a um nível de significância de 1%, em que à medida que o fator idade aumenta, menor a probabilidade de obter nota 4 e 5 e maior a probabilidade de obter nota igual ou inferior a 3. Conforme verificado por Woßmann (2003), com base nos resultados TIMSS, estudantes mais velhos têm um menor desempenho, o que presumivelmente reflete o efeito de reprovações de anos de escolaridade. A presença de irmãos no agregado familiar também exerce um impacto negativo sobre a probabilidade de um indivíduo prestar um bom desempenho (atingir o nível 4 ou 5), cujo resultado corrobora os obtidos por Butcher e Case (1994), Hauser e Kuo (1998), Haveman e Wolfe (1995), Kaestner (1997), Levy e Duncan (2000) e Plug e Vijverberg (2001)²⁰.

Inserindo as variáveis referentes aos recursos económicos no modelo (veja-se Regressão 2 da Tabela 3), a presença de irmãos mais velhos continua a ter valor explicativo a um nível de significância de 1%, em que diminui a probabilidade de atingir uma nota igual ou superior a 4 e aumenta a probabilidade de ter nota inferior a 4²¹. Com o mesmo efeito surgem as variáveis associadas ao rendimento *per capita* – apoio da ASE – o que já era expectável pois, de acordo com a teoria da produção familiar, o rendimento fomenta um ambiente familiar propício ao sucesso educativo de um indivíduo (Becker e Tomes, 1986; Behrman *et al.*, 1995; Haveman e Wolfe, 1995; Jenkins e Schluter, 2002, Mayer, 1997; Plug e Vijverberg, 2002 e Walberg, 2003).

A situação profissional da mãe, enquanto trabalhadora do comércio, serviços, indústria ou desempregada²², assume um efeito negativo sobre a probabilidade de ter nota 4 ou 5.

Em relação ao concelho de residência, viver nos concelhos de Nordeste e Vila do Porto parece exercer efeito negativo sobre o desempenho do indivíduo, aumentando a probabilidade de lhe ser atribuído uma avaliação inferior a 4. Em contrapartida, viver nos concelhos de Praia da Vitória e de Velas parece surtir um efeito positivo sobre o desempenho do aluno, na medida em que aumenta a probabilidade de atingir o nível 4 ou 5.

Introduzindo as variáveis relativas aos recursos culturais da família (veja-se Regressão 3 da Tabela 3), não se verificam alterações significativas em termos de efeitos das variáveis anteriormente citadas. O indivíduo por ser do sexo masculino aumenta a probabilidade de ter um fraco desempenho – nota inferior a 4 –, cujo resultado contraria o verificado por alguns autores, de que os alunos do sexo masculino têm um melhor desempenho em Matemática, enquanto os do sexo feminino registam um desempenho muito

²⁰ Segundo estes autores, o desempenho de um indivíduo diminui à medida que o número de irmãos aumenta.

²¹ De acordo com Plug (2001), a ordem de nascimento tem influência sobre o desempenho de um indivíduo, em que os mais velhos e mais novos beneficiam de melhores condições.

²² A situação profissional de desempregada pode, por um lado, estar associada a menos qualificações literárias ou, por outro, a um menor rendimento familiar, em que qualquer uma das situações não promove o sucesso escolar do indivíduo.

superior na Leitura (Ammermueller *et al.*, 2003; OCDE, 2010 e Schnepf, 2004). Todavia, este resultado pode ser justificado atendendo a que mais de 50% dos inquiridos são do sexo feminino e com registo de bom desempenho educativo.

O facto de os pais terem habilitações inferiores a uma licenciatura, bem como as mães qualificações inferiores ao bacharelato, assume valor explicativo (predominantemente a um 1% de nível de significância) na nota obtida, em que diminui a probabilidade de o indivíduo atingir a nota 4 ou 5. O resultado verificado permite deduzir que, filhos de pais mais escolarizados tendem a ter um melhor desempenho (Currie, 2009 e Plug, 2002 e 2004). Além disso, e conforme preconizado pelos autores Carneiro *et al.* (2007) e Maurin e McNally (2008), o aumento da escolaridade dos pais reduz a probabilidade de os filhos repetirem o ano.

Quando introduzidas as variáveis referentes ao envolvimento dos progenitores com o indivíduo (veja-se Regressão 4 da Tabela 3), constata-se que, surge com valor explicativo a situação em que os pais conversam com os filhos sobre programas de televisão, aumentando a probabilidade de obter uma boa avaliação (4 ou 5) e diminuindo a probabilidade de ter nota igual ou inferior a 3²³. Efeito contrário surge quando o indivíduo responde que os pais ajudam nas tarefas escolares, quer seja de forma sistemática, quer seja de vez em quando. Esta constatação pode advir da necessidade dos pais apoiarem o filho perante as dificuldades por ele manifestadas em relação ao estudo (o filho é apoiado por ter menor capacidade de aprendizagem), mesmo quando os pais não se sentem habilitados para esta tarefa. Por outro lado, apoio em demasia pode influenciar negativamente a autoconfiança e autonomia do filho. Com o mesmo efeito assume também destaque a situação em que os pais conversam com o filho sobre a escola, cujo resultado poderá ser explicado pela necessidade de se esclarecer e/ou avaliar eventuais situações de conflito ocorridos no meio escolar e ou de dificuldades de aprendizagem e/ou insucesso escolar.

Pelo facto de um indivíduo viver com ambos os pais, a probabilidade de ter nota 4 ou 5 aumenta, diminuindo a probabilidade de ter nota igual ou inferior a 3. Este resultado reforça o defendido, por exemplo, por Haveman e Wolfe (1995) e Painter e Levine (2000). Segundo estes, crescer com apenas um dos pais biológicos tem impacto negativo no desempenho educativo de um indivíduo, influenciando até o próprio nível de escolaridade atingido.

Na fase seguinte, ao serem introduzidas as variáveis relativas aos hábitos de estudo (veja-se Regressão 5 da Tabela 3), assume efeito negativo o caso em que o indivíduo estuda com colegas, isto é, diminui a probabilidade de lhe ser atribuído uma boa classificação (nível 4 ou 5) e aumenta a probabilidade de lhe ser atribuído um nível igual ou inferior a 3. Se se tiver em linha de conta que, o tempo de estudo com um colega não é sinónimo de qualidade de estudo, ou que a necessidade de recorrer ao apoio de um colega prende-se com dificuldades de aprendizagem (indivíduo com menor capacidade), é explicado o efeito verificado. Estudar apenas na véspera dos testes ou somente ao fim de semana têm valor explicativo (negativo) na determinação da nota de Matemática, a um nível de significância de 1%, o que vem demonstrar a necessidade de rotinas e de práticas de estudo para que se tenha sucesso educativo, nesta disciplina em particular.

Qualquer uma das variáveis relativas ao uso do computador e da Internet não surge com efeito explicativo, cujo resultado não surpreende, tendo em conta os argumentos apresentados por Fairlie e Robinson (2013).

Incluídas as variáveis que caracterizam a relação do indivíduo com o estudo (veja-se Regressão 6 da Tabela 3), importa mencionar que, os casos em que aluno que já reprovou ou que manifesta dificuldades em Matemática, e/ou noutras disciplinas, assumem valor

²³ Conforme mencionado por Dustmann *et al.* (2002), a quantidade e a qualidade do tempo despendido pelos pais com os seus filhos são fatores importantes no sucesso da aprendizagem. Atividades tais como ler, jogar, conversar, são mais frequentes em famílias cujos pais têm níveis educativos elevados (Haveman e Wolfe, 1995).

explicativo na determinação da nota da disciplina em estudo, efeitos esperados caso se considere a reprovação e as dificuldades no estudo como medidas de habilidade individual (Soares e Collares, 2006 e Oosterbeek e Webbink, 1997).

O gosto pela disciplina de Matemática assume um efeito positivo sobre a probabilidade de ter um bom desempenho (nota 4 ou 5), comprovando-se, conforme referido nas sucessivas avaliações do TIMSS²⁴, uma forte relação positiva entre as atitudes dos alunos em relação à Matemática e a sua realização matemática. Efeito contrário é verificado no aluno que não gosta desta disciplina por motivos relacionados com o(a) professor(a). Na verdade, independentemente da controvérsia sobre o professor fazer ou não a diferença, diversos estudos demonstram ou sugerem que as características dos professores são fatores influentes no sucesso educativo de um seu aluno (Greenberg e McCall, 1974; Rivkin *et al.*, 2005; Woessmann, 2010 e Woßmann, 2003b).

Também a intenção do indivíduo abandonar a escola quando terminar o secundário diminui a probabilidade de ter nota igual ou superior a 4, o que comprova a associação positiva entre o desempenho e a pretensão de prosseguir estudos.

Visando avaliar o efeito escolar, verificou-se a necessidade de se eliminarem as variáveis relativas ao concelho de residência por serem colineares com as referentes às escolas. Perante este cenário (veja-se Regressão 7 da Tabela 3), mantém-se como variáveis explicativas, com efeito negativo, o número de irmãos mais velhos e o apoio da ASE, para os primeiros dois escalões. Propriamente em relação ao efeito das escolas²⁵ verificam-se situações que as mesmas assumem valores estatisticamente significativos no sentido de aumentar a probabilidade de atingir nota 4 ou 5, a saber: ES Vitorino Nemésio e ES de Velas. Na verdade, comparando com a média das notas nestas escolas, através da Figura 29, verifica-se que, a ES de Velas e a ES Vitorino Nemésio estão nos primeiros quatro lugares das escolas com melhores médias, em relação aos alunos inquiridos.

Por último, a fim de avaliar o efeito turma, restringiu-se o modelo, por questões de colinearidade e conflito com o próprio modelo, eliminando as variáveis relativas aos hábitos e relação com o estudo. Neste sentido, o efeito escola foi novamente analisado com base nestas restrições (veja-se Regressão 1 da Tabela 4) e confrontados com os resultados obtidos na regressão anterior. Embora os resultados obtidos sejam semelhantes, importa acrescentar o efeito negativo das habilitações dos pais inferiores ao ensino superior sobre a probabilidade do aluno obter uma nota superior a 3. Em relação aos valores indicados na Regressão 2 da Tabela 4, estes demonstram que, efetivamente existem turmas que fomentam o aumento da probabilidade de o indivíduo atingir uma nota elevada (4 ou 5), enquanto outras, pelo contrário, promovem o aumento da probabilidade de ter um fraco desempenho. Era previsível este resultado atendendo à perspetiva mais comum que os colegas, tal como a família, são fontes de motivação, aspiração e interação direta no saber de um indivíduo e que podem até afetar o processo ensino/aprendizagem na sala de aula (Gibbons e Telhaj, 2012 e Zimmerman, 2003). Tendo em linha de conta que, as turmas são constituídas de um modo geral com base no perfil do aluno e no seu percurso escolar, seja em termos de desempenho seja no que concerne aos colegas com quem socializa, turmas com alunos de habilidade elevada conduzem a um sucesso global da turma (Fertig, 2003; Rangvid, 2003 e Rivkin *et al.*, 2005).

²⁴ Veja-se Relatório Internacional TIMSS 2011.

²⁵ Pesquisa diversa demonstra que o desempenho dos alunos está relacionado com as características e recursos das escolas, embora este impacto seja pequeno (Rivkin *et al.*, 2005; Hanushek, 2010 e Hanushek e Woessmann, 2011).

Conclusões

Na sociedade do conhecimento em que se vive, caracterizada pela diversidade, o direito à educação já não se restringe à possibilidade de frequência de uma escola. É também o direito à apropriação do saber e à aquisição de competências de cidadania que apela à necessidade de uma educação de elevadas qualidades pedagógicas e científicas. É inquestionável que as pessoas constituem a maior riqueza de um país, razão pela qual a educação deve proporcionar a cada criança, jovem ou adulto as condições para o desenvolvimento dos seus talentos. O acesso à educação é indispensável, não só ao desenvolvimento dos talentos dos indivíduos, mas também à afirmação dos países e ao equilíbrio do bem-estar das sociedades.

À escola cabe promover a igualdade de oportunidades, sendo a mesma confrontada com a teoria de que a capacidade não é uniformemente distribuída: alguns são mais capazes que outros. Promover uma maior igualdade de oportunidades para o saber, independentemente da educação dos pais e do nível socioeconómico é uma importante meta a atingir, sendo necessário refletir no que à realidade açoriana diz respeito, razão pela qual este trabalho emergiu, o qual apresenta alguns contributos teóricos obtidos através da estimação do modelo conceptual.

Partindo da teoria de Becker e Tomes (1986), o contexto familiar, a composição do agregado familiar, a quantidade de recursos familiares afetos aos filhos, a natureza destes recursos e o momento da sua distribuição, irá afetar a educação dos mesmos. Estes também serão afetados por um conjunto de escolhas feitas pelos pais, tais como o número de irmãos, a área residencial, o número de mudanças de residência e as alterações na estrutura familiar (Haveman e Wolfe, 1995 e Peterson e Woessmann, 2007). Os colegas e grupo de amigos com quem socializam e a escola que frequentam são também outros fatores a ter em linha de conta aquando da análise da proficiência dos indivíduos (Hanushek, 1986, 1998 e 2010; Hanushek e Woessmann, 2011; Jepsen, 2005; Kukla-Acevedo, 2009; Krueger, 1999; Lee e Smith, 1997 e Rivkin *et al.*, 2005).

Os resultados colhidos neste estudo confirmam a influência de alguns fatores explanados no desempenho educativo do indivíduo na disciplina de Matemática no 9.º ano de escolaridade.

Neste sentido, importa destacar a confirmação do efeito negativo da existência de irmãos no agregado familiar sobre a probabilidade de obter um bom desempenho, cujo resultado sugere que, e conforme preconizado por Butcher e Case (1994), Hauser e Kuo (1998), Haveman e Wolfe (1995), Kaestner (1997), Levy e Duncan (2000) e Plug e Vijverberg (2001), o desempenho de um indivíduo diminui à medida que o número de irmãos aumenta. A idade influencia negativamente a avaliação sumativa interna, ou seja, à medida que esta aumenta, menor a probabilidade de obter nível 4 ou 5, o que presumivelmente reflete o efeito do número de reprovações (Woßmann, 2003).

O efeito das variáveis associadas ao rendimento familiar sobre a determinação da nota está patente nos resultados, na medida em que os beneficiários dos escalões mais baixos têm menor probabilidade de atingir um bom resultado na Matemática. Conforme explicado pela teoria do comportamento familiar, o rendimento fomenta um ambiente conducente ao sucesso educativo do indivíduo, que, por sua vez, conduz a maior investimento na educação quando este se torna jovem adulto (Becker e Tomes, 1986; Behrman *et al.*, 1995; Haveman e Wolfe, 1995; Jenkins e Schluter, 2002; Mayer, 1997; Plug e Vijverberg, 2002 e Walberg, 2003). A relação entre a situação profissional dos pais e o desempenho escolar é também confirmada perante, por exemplo, a constatação do efeito negativo de uma mãe desempregada.

A confirmação da importância dos recursos culturais, analisados através das habilitações literárias dos pais, vai ao encontro do preconizado na literatura, na medida em que filhos de pais mais escolarizados tendem a prestar um melhor desempenho (Currie, 2009

e Plug, 2002 e 2004). Deste modo, é validada a influência negativa do nível baixo das habilitações literárias dos pais sobre a nota do indivíduo na disciplina. O facto de ambos os pais terem habilitações inferiores à licenciatura e as mães inferiores ao diminui a probabilidade de atingir níveis elevados de desempenho.

Sendo a família por vezes apontada como a responsável pelo fracasso escolar dos seus filhos, devido ao seu distanciamento da vida estudantil, e como a provocadora em potencial do desinteresse e da desvalorização da educação, este estudo também se focou no envolvimento entre pais e filhos. A quantidade e a qualidade do tempo despendido são fatores importantes no sucesso da aprendizagem (Dustmann *et al.*, 2002), sendo algumas atividades, tais como ler, jogar e conversar, mais frequentes em famílias cujos pais têm níveis educativos elevados (Haveman e Wolfe, 1995). Os resultados apurados demonstram que, o facto de os pais debaterem com os filhos assuntos relacionados com programas de televisão, aumenta a probabilidade de ter nota 4 ou 5. Com efeito negativo destaca-se a situação em que os pais ajudam nas tarefas escolares, seja de forma sistemática ou de vez em quando. A necessidade sentida pelos pais de apoiar o filho perante as dificuldades por ele manifestadas em relação ao estudo, mesmo quando os pais não se sentem habilitados para esta tarefa, justifica o efeito obtido. Além disso, apoio em demasia pode influenciar negativamente a autoconfiança e autonomia do aluno.

A validação dos efeitos negativos da situação de reprovação ou de dificuldades na disciplina em causa, bem como noutras, na determinação da notasão resultados já esperados se se considerar a reprovação e as dificuldades no estudo como medidas de habilidade individual (Soares e Collares, 2006 e Oosterbeek e Webbink, 1997).

A confirmação da relação do desempenho do aluno com as características e recursos escolares sugere que há escolas que efetivamente reúnem melhores condições e promotoras do sucesso educativo, condições eventualmente relacionadas com a qualidade das infraestruturas e dos professores, com o contexto socioeconómico dos alunos e com a própria autonomia na tomada de decisões.

O gosto pela disciplina de Matemática assume um efeito positivo sobre a probabilidade de ter um bom desempenho, comprovando-se, conforme referido nas sucessivas avaliações do TIMSS, uma forte relação positiva entre as atitudes dos alunos em relação à Matemática e a sua realização matemática. Efeito contrário é verificado no aluno que não gosta desta disciplina por motivos relacionados com o(a) professor(a) – cujo resultado sugere que as características dos professores são fatores influentes no sucesso educativo de um seu aluno (Greenberg e McCall, 1974; Rivkin *et al.*, 2005; Woessmann, 2010, Woßmann, 2003 e TIMSS 2011).

Por último, tendo em consideração os resultados observados e a literatura consultada, importa relevar que os resultados sugerem que a escolaridade dos pais pode ser importantecanal de transmissão da desigualdade entre gerações. Esta questão de transmissão intergeracional é fundamental para compreender a eficácia de políticas de longo prazo, quando se implementar programas com vista a melhorar o desempenho educativo de indivíduos de meios socioeconómicos desfavorecidos. Por isso, políticas educativas por si só não são suficientes. Políticas ligadasàs famílias são também relevantes, como por exemplo, programas de literacia para os pais, para que sejam mais capazes, intelectualmente, e terem melhores condições de influir nas tomadas de decisão de ações e de objetivos da escola. É necessário implementar projetos que apelem a uma maior participação dos pais na vida escolar dos filhos, mas, para que os mesmos tenham sucesso, urge, em primeiro lugar, apostar na educação dos progenitores. Só assim estarão investindo na melhoria da qualidade de educação dos filhos, bem como na melhoria da sua própria qualidade de vida, pois esses adultos terão maior capacidade para melhor usufruírem de bens culturais a que têm acesso.

O contributo principal deste trabalho de investigação não é informar um dirigente político da otimização da "verdadeira" técnica da função de produção, mas sim fornecer informações necessárias para incentivar reformas educacionais mais profundas que mudem a estrutura de poder de decisão. Elencar um conjunto de ferramentas que permitam aos agentes políticos delinear estratégias e medidas educativas que se coadunem com o perfil traçado do aluno açoriano e resultados alcançados nesta investigação era uma tarefa necessária. Caberá aos agentes educativos refletir sobre a temática e adotar estratégias que melhorem a sua prática educativa e conduzam ao sucesso educativo dos seus alunos com base nos considerandos.

Seria interessante, em investigações futuras, utilizar uma amostra mais alargada, assim como de outras regiões de Portugal Continental, permitindo um mapeamento diferente sobre a função de produção da educação no país. Repetir o estudo no tempo, de modo a confrontar os resultados futuros com os conseguidos neste trabalho de investigação, seria outra etapa a atingir.

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Anexos

Figura 3 - Análise sequencial dos determinantes sobre a nota de Matemática

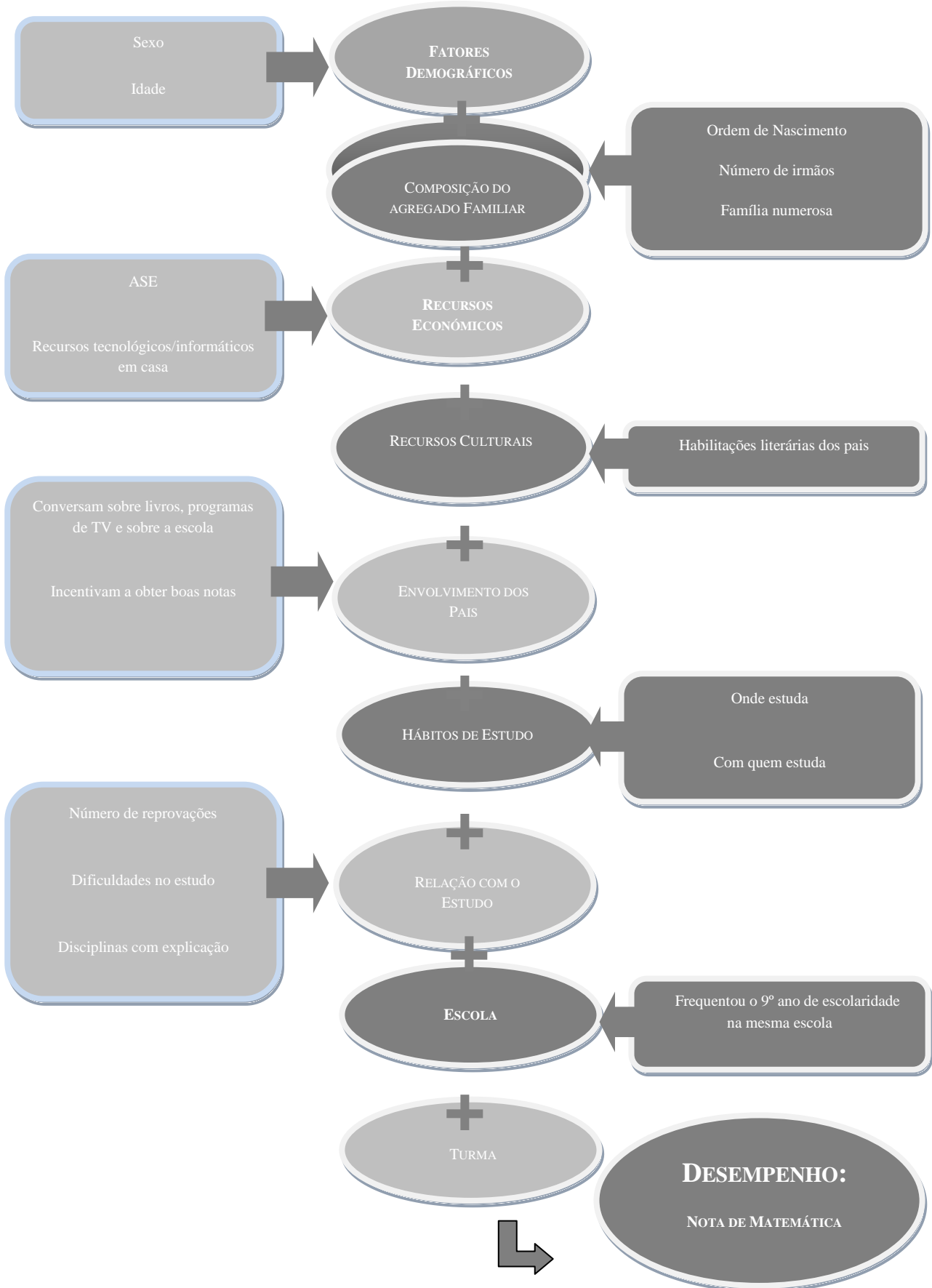


Tabela 1 - Resultados da Estimação – Nota de Matemática do 3.º Período

Variável	Regressão 1		Regressão 2		Regressão 3			
	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão		
Constante	6.270	0.454	6.541	0.561	6.739	0.575		
Masculino	-0.040	0.054	-0.078	0.055	-0.107	0.056	**	
Idade	-0.264	0.028	* -0.254	0.030	* -0.211	0.031	*	
Família tradicional	-0.034	0.145	-0.124	0.150	-0.146	0.151		
Vive com o pai	-0.008	0.203	0.011	0.218	-0.043	0.220		
Vive com ambos	0.228	0.144	0.216	0.147	0.229	0.149		
Família numerosa	0.191	0.168	0.254	0.171	0.152	0.173		
N.º irmãos mais velhos	-0.220	0.064	* -0.183	0.066	* -0.123	0.066	**	
N.º irmãos mais novos	-0.107	0.049	** -0.012	0.052	-0.028	0.053		
N.º irmãs mais velhas	-0.079	0.046	** -0.028	0.047	-0.017	0.048		
N.º irmãs mais novas	-0.082	0.048	** -0.010	0.051	-0.019	0.051		
Apoio da ASE - Escalão 1			-0.487	0.111	* -0.343	0.115	*	
Apoio da ASE - Escalão 2			-0.423	0.082	* -0.254	0.087	*	
Apoio da ASE - Escalão 3			-0.283	0.089	* -0.113	0.093		
Apoio da ASE - Escalão 4			-0.210	0.126	** -0.027	0.128		
Pai - outra profissão			-0.095	0.087	-0.019	0.088		
Pai - trab. do comércio, serviços ou indústria			0.064	0.084	0.157	0.085	**	*
Pai - por conta própria			-0.020	0.093	0.031	0.095		
Pai - agricultor ou pescador			-0.085	0.132	0.040	0.134		
Pai -NR situação profissional			-0.218	0.175	0.453	0.423		
Pai - Desempregado			-0.164	0.105	-0.077	0.107		
Pai -falecido			0.390	0.494	-1.524	1.092		
Mãe - outra profissão			-0.125	0.096	-0.012	0.098		
Mãe - trab. do comércio, serviços ou indústria			-0.247	0.080	* -0.091	0.083		
Mãe - por conta própria			-0.183	0.132	-0.102	0.134		
Mãe - doméstica			-0.018	0.093	0.191	0.099	**	*
Mãe -NR situação profissional			-0.164	0.384	-0.945	0.786		
Mãe -Desempregada			-0.178	0.100	** -0.007	0.104		
Tem computador em casa			0.095	0.339	0.052	0.341		
Número de computadores em casa			-0.001	0.007	-0.004	0.007		
Tem internet em casa			-0.076	0.203	-0.110	0.204		
Tem internet em casa - NR			1.290	1.106	1.411	1.114		

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

(cont.)

(cont.)

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Tabela 3 - Resultados da Estimação – Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 1		Regressão 2		Regressão 3	
	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão
Vive em Ponta Delgada			0.048	0.110	-0.109	0.112
Vive na Ribeira Grande			-0.059	0.126	-0.079	0.127
Vive na Lagoa			0.045	0.140	0.015	0.141
Vive em V. Franca do Campo			-0.102	0.151	-0.097	0.152
Vive no Nordeste			-0.445	0.226	** -0.506	0.229 **
Vive na Povoação			-0.196	0.163	-0.242	0.164
Vive em Vila do Porto			-0.494	0.174	* -0.496	0.176 *
Vive em Angra do Heroísmo			-0.116	0.117	-0.168	0.118
Vive na Praia da Vitória			0.242	0.136	** 0.282	0.137 **
Vive na Madalena			-0.095	0.194	-0.065	0.195
Vive nas Velas			0.811	0.295	* 0.813	0.299 *
Vive nas Calhetas			-0.359	0.221	-0.350	0.225
Vive em St Cruz da Graciosa			-0.327	0.221	-0.402	0.223 **
Vive nas Lajes das Flores			0.369	0.297	0.379	0.299
Habilitação pai - 1.º ciclo					-0.540	0.134 **
Habilitação pai - 2.º ciclo					-0.543	0.133 *
Habilitação pai - 3.º ciclo					-0.521	0.127 *
Habilitação pai - secundário					-0.512	0.124 *
Habilitação pai - bacharelato/curso médio					-0.431	0.190 **
Habilitação pai - NR/NS					-1.175	0.450 *
Habilitação pai - pai falecido					1.974	1.225
Habilitação mãe - 1.º ciclo					-0.613	0.133 *
Habilitação mãe - 2.º ciclo					-0.595	0.125 *
Habilitação mãe - 3.º ciclo					-0.444	0.114 *
Habilitação mãe - secundário					-0.425	0.111 *
Habilitação mãe - bacharelato/curso médio					-0.256	0.163
Habilitação mãe - NR/NS					0.690	0.885
$\mu(1)$	1.231	0.038	1.284	0.040	1.309	0.040
$\mu(2)$	2.480	0.034	2.586	0.035	2.652	0.036
$\mu(3)$	3.509	0.046	3.671	0.048	3.792	0.050
Log - L	-		-		-	
	2008.408		1944.49		1894.61	
			3		2	
Log - L0 (coeficientes=0)	-		-		-	
	2073.804		2073.80		2073.80	
			4		4	
Qui-quadrado	130.791		258.622		358.384	
Número de observações	1564		1564		1564	

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

Tabela 3 - Resultados da Estimação – Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 4		Regressão 5		Regressão 6		Erro-padrão	
	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão		
Constante	7.435	0.705		7.430	0.708		4.937	1.000
Masculino	-0.096	0.057	***	-0.053	0.058		- 0.084	0.060
Idade	-0.246	0.032	*	-0.230	0.033	*	- 0.032	0.055
Família tradicional	-0.169	0.152		-0.175	0.153		- 0.219	0.157
Vive com o pai	0.014	0.224		0.029	0.225		0.186	0.231
Vive com ambos	0.269	0.150	***	0.243	0.151		0.250	0.155
Família numerosa	0.173	0.174		0.164	0.175		0.230	0.179
N.º irmãos mais velhos	-0.137	0.067	**	-0.137	0.067	**	- 0.149	0.069 *
N.º irmãos mais novos	-0.029	0.053		-0.036	0.053		- 0.059	0.055
N.º irmãs mais velhas	-0.018	0.048		-0.024	0.049		- 0.054	0.050
N.º irmãs mais novas	-0.007	0.051		-0.001	0.052		0.000	0.053
Apoio da ASE - Escalão 1	-0.344	0.116	*	-0.301	0.117	**	- 0.246	0.120 **
Apoio da ASE - Escalão 2	-0.240	0.087	*	-0.216	0.088	*	- 0.171	0.090 **
Apoio da ASE - Escalão 3	-0.122	0.094		-0.109	0.094		- 0.111	0.097
Apoio da ASE - Escalão 4	-0.046	0.129		-0.020	0.130		0.006	0.133
Pai - outra profissão	-0.037	0.089		-0.046	0.089		0.049	0.092
Pai - trab. do comércio, serviço ou indústria	0.147	0.086	***	0.154	0.086		0.086	0.088 ***
Pai - por conta própria	0.015	0.095		0.020	0.095		- 0.142	0.098
Pai - agricultor ou pescador	0.029	0.135		0.022	0.136		- 0.072	0.139
Pai -NR situação profissional	0.447	0.427		0.374	0.429		0.562	0.443
Pai - Desempregado	-0.088	0.108		-0.089	0.109		- 0.109	0.112
Pai -falecido	-1.567	1.095		-1.431	1.100		- 1.773	1.128
Mãe - outra profissão	0.003	0.098	***	0.007	0.099		- 0.034	0.101
Mãe - trab. do comércio, serviço ou indústria	-0.079	0.083		-0.071	0.084		- 0.029	0.086
Mãe - por conta própria	-0.094	0.134		-0.091	0.135		- 0.044	0.139
Mãe - doméstica	0.209	0.100	*	0.206	0.100		0.139	0.103
Mãe -NR situação profissional	-1.203	0.801		-1.251	0.803		- 1.393	0.822 ***
Mãe -Desempregada	-0.003	0.104		0.006	0.104		- 0.064	0.108
Tem computador em casa	0.017	0.342		0.013	0.347		0.181	0.359
Número de computadores em	-0.004	0.007		-0.004	0.007		- 0.006	0.007

casa						
Tem internet em casa	-0.049	0.207	-0.022	0.213	-	0.224
Tem internet em casa - NR	1.280	1.118	1.104	1.121	0.734	1.143
Vive em Ponta Delgada	-0.118	0.113	-0.094	0.117	-	0.126
					0.062	
	* significativo a 1%; ** significativo a 5%; *** significativo a 10%			(cont.)	(cont.)	

Tabela 3 - Resultados da Estimação – Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 4			Regressão 5			Regressão 6	
	Coefficiente	Erro-padrão		Coefficiente	Erro-padrão		Coefficiente	Erro-padrão
Vive na Ribeira Grande	-0.090	0.128		-0.096	0.131		-0.028	0.135
Vive na Lagoa	0.001	0.141		0.020	0.145		0.254	0.152 ***
Vive na V. Franca do Campo	-0.104	0.153		-0.078	0.155		0.195	0.161
Vive no Nordeste	-0.512	0.230	*	-0.434	0.233	***	-0.375	0.263
Vive na Povoação	-0.211	0.165		-0.203	0.168		-0.250	0.174
Vive em Vila do Porto	-0.514	0.176	*	-0.558	0.179	*	-0.288	0.188
Vive em Angra do Heroísmo	-0.164	0.119		-0.143	0.121		0.032	0.127
Vive na Praia da Vitória	0.273	0.137	**	0.279	0.141	***	0.411	0.147 *
Vive na da Madalena	-0.047	0.196		-0.045	0.198		0.176	0.206
Vive nas Velas	0.815	0.301	*	0.908	0.303	*	1.109	0.313 *
Vive nas Calhetas	-0.321	0.226		-0.196	0.230		-0.126	0.238
Vive em St Cruz da Graciosa	-0.421	0.223	***	-0.424	0.226	**	0.011	0.234
Vive nas Lajes das Flores	0.334	0.307		0.386	0.310		0.419	0.340
Habilitação pai - 1.º ciclo	-0.559	0.136	*	-0.560	0.137	**	-0.495	0.141 ***
Habilitação pai - 2.º ciclo	-0.550	0.135	*	-0.536	0.136	**	-0.567	0.140 *
Habilitação pai - 3.º ciclo	-0.511	0.129	*	-0.506	0.129	**	-0.438	0.133 ***
Habilitação pai - secundário	-0.514	0.126	*	-0.505	0.126	*	-0.493	0.130
Habilitação pai - bacharelato/curso médio	-0.395	0.191	**	-0.397	0.192	*	-0.523	0.196
Habilitação pai - NR/NS	-1.181	0.455	*	-1.153	0.456	***	-1.337	0.470 **
Habilitação pai - pai falecido	1.704	1.230		1.706	1.235		2.130	1.271 ***
Habilitação mãe - 1.º ciclo	-0.661	0.135	*	-0.639	0.136	*	-0.480	0.141 *
Habilitação mãe - 2.º ciclo	-0.623	0.126	*	-0.602	0.127	*	-0.433	0.131 *
Habilitação	-0.474	0.115	*	-0.466	0.116	*	-0.294	0.120 **

mãe - 3.º ciclo									
Habilitação mãe - secundário	-0.434	0.111	*	-0.415	0.112	*	-0.368	0.116	*
Habilitação mãe - bachare- lato/curso médio	-0.262	0.164		-0.255	0.165		-0.156	0.169	
Habilitação mãe - NR/NS	0.747	0.894		0.789	0.896		0.923	0.916	
Pais ajudam tarefas escolares- sempre	-0.197	0.103	***	-0.215	0.104	**	-0.204	0.106	***
Pais ajudam tarefas escolares - às vezes	-0.117	0.063	***	-0.131	0.064	***	-0.112	0.065	***
Pais conversam com o filho sobre livros	0.062	0.059		0.036	0.060		-0.010	0.061	
Pais conversam com o filho sobre programas TV	0.169	0.070	**	0.178	0.071	**	0.212	0.073	*
			* significativo a 1%; ** significativo a 5%; *** significativo a 10%			(cont.)			(cont.)

Tabela 3 - Resultados da Estimação – Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 4		Coeficiente	Regressão 5		Coeficiente	Regressão 6	
	Coefficiente	Erro-padrão		Erro-padrão	Erro-padrão			
Pais conversam com o filho sobre a escola	-0.186	0.109	***	-0.213	0.109	**	-0.162	0.113
Pais incentivam o filho a ter boas notas	-0.146	0.236		-0.186	0.237		-0.341	0.244
Pais preocupam- se para que filho não chegue atrasado à escola	0.145	0.198		0.176	0.199		0.090	0.204
Encarregado de educação - outro	0.625	0.201	*	0.601	0.203	*	0.499	0.213
Encarregado de educação - mãe	0.095	0.104		0.069	0.105		0.136	0.108
Frequentou o pré- escolar	-0.178	0.226		-0.201	0.226		-0.046	0.235
Frequentou o pré-	0.355	1.138		0.281	1.141		0.164	1.179

escolar - NR					
Estuda regularmente na biblioteca	0.232	0.199		0.103	0.204
Estuda regularmente na sala de estudo	-0.246	0.368		-0.221	0.377
Estuda com outros colegas	-0.085	0.221		-0.006	0.226
Estuda apenas nas vésperas dos testes	-0.449	0.160	*	-0.377	0.165
Estuda apenas ao fim de semana	-0.277	0.073	*	-0.010	0.078
Utiliza computador para jogar e comunicar com outros	-0.240	0.068	*	-0.077	0.071
Utiliza computador para pesquisar	-0.100	0.094		-0.047	0.097
Utiliza o computador para fazer TPC	0.051	0.086		0.009	0.089
Reprovou				-0.417	0.123
Número de reprovações				0.061	0.090
Dificuldade em Matemática				-0.398	0.079
Dificuldade em Português				-0.127	0.163
Dificuldade noutras disciplinas				-0.330	0.070

(cont.)

(cont.)

(cont.)

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

Tabela 3 - Resultados da Estimação – Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 4		Regressão 5		Regressão 6		
	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão	
Disciplinas com dificuldades-NR					-1.743	1.144	
Explicação de Matemática					-0.029	0.084	
Explicação de outras disciplinas					0.096	0.131	
Disciplinas com explicação-NR					-0.942	0.635	
Gosta da disciplina de Matemática					0.404	0.234	***
Não gosta da disciplina de Matemática por ser difícil					-0.460	0.241	**
Nunca gostou de Matemática					-0.666	0.242	*
Não gosta de Matemática por causa do professor					-0.646	0.288	***
Não explica por que razão não gosta de Matemática					-0.116	0.437	
Pretende abandonar a escola após 12.º ano					-0.348	0.077	*
Quando pretende abandonar a escola - NR					-0.495	0.871	
Estudar não é importante					0.286	0.191	
Estudar é importante					-0.207	0.063	*
Estudar é importante – NR					-1.193	1.136	
$\mu(1)$	1.321	0.041	1.326	0.041	1.506	0.047	
$\mu(2)$	2.680	0.036	2.699	0.036	3.103	0.041	
$\mu(3)$	3.833	0.051	3.868	0.051	4.442	0.057	
Log - L	-1879.815		-1865.750		-1681.081		
Log - L0 (coeficientes=0)	-2073.804		-2073.804		-2073.804		
Qui-quadrado	387.979		416.107		785.445		
Número de observações	1564		1564		1564		

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

Tabela 3 - Resultados da Estimação – Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 7		
	Coefficiente	Erro-padrão	
Constante	5.004	1.006	
Masculino	-0.082	0.060	
Idade	-0.038	0.055	
Família tradicional	-0.215	0.157	
Vive com o pai	0.198	0.232	
Vive com ambos	0.260	0.155	***
Família numerosa	0.230	0.180	
N.º irmãos mais velhos	-0.140	0.069	**
N.º irmãos mais novos	-0.057	0.055	
N.º irmãs mais velhas	-0.046	0.050	
N.º irmãs mais novas	0.014	0.054	
Apoio da ASE - Escalão 1	-0.272	0.121	**
Apoio da ASE - Escalão 2	-0.182	0.091	**
Apoio da ASE - Escalão 3	-0.097	0.097	
Apoio da ASE - Escalão 4	0.005	0.133	
Pai - outra profissão	0.051	0.092	
Pai - trab. do comércio, serviço ou indústria	0.083	0.088	
Pai - por conta própria	-0.151	0.098	
Pai - agricultor ou pescador	-0.081	0.140	
Pai -NR situação profissional	0.613	0.444	
Pai - Desempregado	-0.112	0.112	
Pai -falecido	-1.800	1.130	
Mãe - outra profissão	-0.037	0.101	
Mãe - trab. do comércio, serviço ou indústria	-0.028	0.086	
Mãe - por conta própria	-0.037	0.139	
Mãe - doméstica	0.135	0.103	
Mãe -NR situação profissional	-1.332	0.823	
Mãe -Desempregada	-0.053	0.108	
Tem computador em casa	0.239	0.360	
Número de computadores em casa	-0.006	0.007	
Tem internet em casa	-0.247	0.225	
Tem internet em casa - NR	0.742	1.144	
Habilitação pai - 1.º ciclo	-0.478	0.142	*
Habilitação pai - 2.º ciclo	-0.551	0.140	*
Habilitação pai - 3.º ciclo	-0.429	0.133	*
Habilitação pai - secundário	-0.488	0.129	*
Habilitação pai - bacharelato/curso médio	-0.516	0.196	*

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

(cont.)

Tabela 3 - Resultados da Estimação – Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 7		
	Coefficiente	Erro-padrão	
Habilitação pai - NR/NS	-1.332	0.471	*
Habilitação pai - pai falecido	2.198	1.273	***
Habilitação mãe - 1.º ciclo	-0.481	0.142	*
Habilitação mãe - 2.º ciclo	-0.429	0.131	*
Habilitação mãe - 3.º ciclo	-0.292	0.120	**
Habilitação mãe - secundário	-0.362	0.116	*
Habilitação mãe - bacharelato/curso médio	-0.169	0.170	
Habilitação mãe - NR/NS	0.905	0.917	
Pais ajudam tarefas escolares-sempre	-0.208	0.106	***
Pais ajudam tarefas escolares - às vezes	-0.114	0.066	***
Pais conversam com o filho sobre livros	-0.005	0.061	
Pais conversam com o filho sobre programas TV	0.206	0.073	*
Pais conversam com o filho sobre a escola	-0.144	0.114	
Pais incentivam o filho a ter boas notas	-0.349	0.244	
Pais preocupam-se para que filho não chegue atrasado à escola	0.065	0.205	
Encarregado de educação - outro	0.486	0.214	*
Encarregado de educação - mãe	0.148	0.109	
Frequentou o pré-escolar	-0.064	0.236	
Frequentou o pré-escolar - NR	0.300	1.184	
Estuda regularmente na biblioteca	0.111	0.205	
Estuda regularmente na sala de estudo	-0.195	0.379	
Estuda com outros	-0.054	0.228	
Estuda com colegas	-0.399	0.165	**
Estuda apenas nas vésperas dos testes	-0.012	0.078	
Estuda apenas ao fim de semana	-0.087	0.071	
Utiliza computador para jogar e comunicar com outros	-0.053	0.098	
Utiliza computador para pesquisar	-0.006	0.089	
Utiliza o computador para fazer TPC	0.002	0.086	
Reprovou	-0.415	0.123	*
Número de reprovações	0.064	0.090	
Dificuldade em Matemática	-0.402	0.080	*
Dificuldade em Português	-0.147	0.165	
Dificuldade noutras disciplinas	-0.317	0.070	*
Disciplinas com dificuldades-NR	-1.805	1.148	
Explicação de Matemática	-0.037	0.084	
Explicação de outras disciplinas	0.096	0.131	
Disciplinas com explicação-NR	-0.890	0.637	

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

(cont.)

Tabela 3 - Resultados da Estimação – Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 7		
	Coefficiente	Erro-padrão	
Gosta da disciplina de Matemática	0.412	0.234	***
Não gosta da disciplina de Matemática por ser difícil	-0.498	0.243	**
Nunca gostou de Matemática	-0.635	0.243	*
Não gosta de Matemática por causa do professor	-0.616	0.292	**
Não explica por que razão não gosta de Matemática	-0.113	0.438	
Pretende abandonar a escola após 12.º ano	-0.349	0.077	
Quando pretende abandonar a escola - NR	-0.549	0.872	
Estudar não é importante	0.277	0.192	
Estudar é importante	-0.208	0.063	*
Estudar é importante – NR	-1.101	1.137	
ES Domingos Rebelo	-0.022	0.147	
ES das Laranjeiras	-0.078	0.166	
ES Antero de Quental	0.020	0.151	
ES da Ribeira Grande	-0.146	0.158	
ES de Lagoa	0.233	0.155	
EBS de V. Franca do Campo	0.186	0.163	
EBS da Nordeste	-0.402	0.268	
EBS de Povoação	-0.256	0.176	
EBS de Santa Maria	-0.299	0.188	
ES J. Emiliano de Andrade	-0.005	0.155	
EBS Tomás de Borba	0.084	0.160	
ES Vitorino Nemésio	0.386	0.154	**
EBS da Madalena	0.163	0.206	
ES de Velas	1.076	0.313	*
ES da Calheta	-0.126	0.240	
EBS da Graciosa	0.000	0.234	
EBS das Flores	0.439	0.341	
9º ano mesma escola	0.434	0.208	*
9º ano escola do mesmo concelho	0.022	0.083	
$\mu(1)$	1.513	0.047	
$\mu(2)$	3.114	0.041	
$\mu(3)$	4.455	0.057	
Log - L	-1678.255		
Log - L0 (coeficientes=0)	-2073.804		
Qui-quadrado	791.098		
Número de observações	1564		

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

Tabela 2 - Resultados da Estimação (turma) - Nota de Matemática do 3.º Período

Variável	Regressão 1			Regressão 2		
	Coefficient e	Erro-padrão		Coefficient e	Erro-padrão	
Constante	7.384	0.712		5.759	0.732	
Masculino	-0.093	0.057		-0.129	0.061	*
Idade	-0.246	0.033	*	-0.141	0.036	*
Família tradicional	-0.168	0.152		-0.213	0.159	
Vive com o pai	0.028	0.224		0.083	0.235	
Vive com ambos os pais	0.278	0.150	**	0.175	0.156	*
Família numerosa	0.177	0.174		0.249	0.183	
N.º irmãos mais velhos	-0.128	0.067	**	-0.135	0.070	**
N.º irmãos mais novos	-0.024	0.053	*	-0.018	0.056	
N.º irmãs mais velhas	-0.012	0.049		-0.030	0.051	
N.º irmãs mais novas	0.004	0.052		-0.050	0.054	
Apoio da ASE - Escalão 1	-0.361	0.117	*	-0.242	0.122	**
Apoio da ASE - Escalão 2	-0.244	0.087	*	-0.210	0.092	**
Apoio da ASE - Escalão 3	-0.098	0.094		0.018	0.099	
Apoio da ASE - Escalão 4	-0.040	0.129		0.001	0.135	
Pai - outra profissão	-0.033	0.089		-0.065	0.093	
Pai - trab. do comércio, serviço ou indústria	0.142	0.086	**	0.151	0.090	**
Pai - por conta própria	0.002	0.095	*	-0.028	0.100	*
Pai - agricultor ou pescador	0.030	0.135		0.055	0.143	
Pai -NR situação profissional	0.486	0.428		0.302	0.448	
Pai - Desempregado	-0.079	0.108		-0.069	0.113	
Pai -falecido	-1.580	1.096		-1.405	1.137	
Mãe - outra profissão	0.007	0.099		0.059	0.103	
Mãe - trab. do comércio, serviço ou indústria	-0.076	0.084		-0.008	0.088	
Mãe - por conta própria	-0.087	0.134		-0.094	0.141	
Mãe - doméstica	0.206	0.100	**	0.261	0.104	**
Mãe -NR situação profissional	-1.183	0.802		-1.081	0.848	
Mãe -Desempregada	0.007	0.104		0.009	0.109	
Tem computador em casa	0.072	0.343		0.010	0.362	
Número de computadores em casa	-0.004	0.007		-0.007	0.007	
Tem internet em casa	-0.082	0.208		-0.156	0.217	
Tem internet em casa - NR	1.272	1.118		0.307	1.174	
Habilitação pai - 1.º ciclo	-0.528	0.137	*	-0.329	0.144	**
Habilitação pai - 2.º ciclo	-0.519	0.135	*	-0.352	0.142	**
Habilitação pai - 3.º ciclo	-0.487	0.129	*	-0.347	0.136	**

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

(cont.)

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(cont.)

Tabela 4 - Resultados da Estimação (turma) - Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 1			Regressão 2		
	Coefficiente	Erro-padrão		Coefficiente	Erro-padrão	
Habilitação pai - secundário	-0.498	0.126	*	-0.437	0.131	*
Habilitação pai - bacharelato/curso médio	-0.391	0.191	**	-0.297	0.200	
Habilitação pai - NR/NS	-1.182	0.455	*	-1.007	0.473	**
Habilitação pai - pai falecido	1.783	1.232		1.762	1.279	
Habilitação mãe - 1.º ciclo	-0.659	0.135	*	-0.576	0.143	*
Habilitação mãe - 2.º ciclo	-0.614	0.126	*	-0.532	0.133	*
Habilitação mãe - 3.º ciclo	-0.467	0.115	*	-0.383	0.122	*
Habilitação mãe -secundário	-0.436	0.111	*	-0.391	0.117	*
Habilitação mãe - bacharelato/curso médio	-0.272	0.164	***	-0.375	0.173	**
Habilitação mãe - NR/NS	0.767	0.895		0.769	0.943	
Pais ajudam tarefas escolares-sempre	-0.201	0.103	***	-0.076	0.109	
Pais ajudam tarefas escolares - às vezes	-0.118	0.063	***	-0.109	0.067	
Pais conversam com o filho sobre livros	0.065	0.059		0.098	0.062	
Pais conversam com o filho sobre tv	0.166	0.071	**	0.173	0.074	**
Pais conversam com o filho sobre a escola	-0.182	0.109	***	-0.302	0.115	*
Pais incentivam o filho a ter boas notas	-0.151	0.236		-0.164	0.247	
Pais preocupam-se para que filho não chegue atrasado à escola	0.146	0.199		0.078	0.208	
Encarregado de educação - outro	0.622	0.203	*	0.744	0.213	*
Encarregado de educação - mãe	0.112	0.105		0.114	0.111	
Frequentou o pré-escolar	-0.207	0.227				
Frequentou o pré-escolar - NR	0.411	1.142				
ES Domingos Rebelo	-0.047	0.131				
ES das Laranjeiras	-0.247	0.151				
ES Antero de Quental	-0.010	0.139				
ES da Ribeira Grande	-0.126	0.151				
ES de Lagoa	-0.032	0.144				
EBS de V. Franca do Campo	-0.107	0.155				
EBS do Nordeste	-0.523	0.233	**			
EBS de Povoação	-0.198	0.167				
EBS de Santa Maria	-0.516	0.176	*			
ES Emiliano de Andrade	-0.088	0.146				
EBS Tomás de Borba	-0.172	0.143				
ES Vitorino Nemésio	0.296	0.144	**			
EBS da Madalena	-0.050	0.196				

* significativo a 1%; ** significativo a 5%; *** significativo a 10% (cont.)

(cont.)

Tabela 4 - Resultados da Estimação (turma) - Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 1		Regressão 2		
	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão	
ES de Velas	0.787	0.301	*		
ES da Calheta	-0.323	0.228			
EBS da Graciosa	-0.426	0.223	***		
EBS das Flores	0.323	0.307			
9º ano na mesma escola	0.363	0.202	***		
9º ano noutra escola do mesmo concelho	-0.068	0.080			
Turma A da ES Domingos Rebelo				1.132	0.287 *
Turma B da ES Domingos Rebelo				1.273	0.276 *
Turma C da ES Domingos Rebelo				0.148	0.242 *
Turma F da ES Domingos Rebelo				0.572	0.290 **
Turma G da ES Domingos Rebelo				0.179	0.293
Turma H da ES Domingos Rebelo				0.256	0.263
Turma I da ES Domingos Rebelo				-0.716	0.265 *
Turma J da ES Domingos Rebelo				-0.051	0.294
Turma A da ES de Laranjeiras				-0.802	0.270 *
Turma C da ES de Laranjeiras				0.795	0.325 **
Turma D da ES de Laranjeiras				1.128	0.384 *
Turma E da ES de Laranjeiras				-0.509	0.302 ***
Turma F da ES de Laranjeiras				0.075	0.327
Turma G da ES de Laranjeiras				-0.388	0.335
Turma A da ES Antero de Qental				1.322	0.333 *
Turma B da ES Antero de Qental				0.890	0.293 *
Turma D da ES Antero de Qental				0.922	0.281 *
Turma G da ES Antero de Qental				0.168	0.307
Turma H da ES Antero de Qental				0.577	0.657
Turma I da ES Antero de Qental				0.521	0.332
Turma M da ES Antero de Qental				-0.304	0.280
Turma O da ES Antero de Qental				-0.022	0.293
Turma P da ES Antero de Qental				-0.130	0.388
Turma A da ES de Lagoa				1.622	0.287 *
Turma B da ES de Lagoa				0.142	0.274
Turma C da ES de Lagoa				0.036	0.301
Turma D da ES de Lagoa				-0.131	0.342
Turma F da ES de Lagoa				1.363	1.106
Turma G da ES de Lagoa				-0.490	0.353
Turma H da ES de Lagoa				-0.368	0.305

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

(cont.)

Tabela 4 - Resultados da Estimação (turma) - Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 1		Regressão 2		
	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão	
Turma A da EBS de V. Franca do Campo			0.767	0.288	*
Turma B da EBS de V. Franca do Campo			0.721	0.303	**
Turma C da EBS de V. Franca do Campo			-0.305	0.273	
Turma D da EBS de V. Franca do Campo			-0.273	0.273	
Turma B da EBS de Nordeste			-0.053	0.292	
Turma A da EBS da Povoação			0.172	0.325	
Turma B da EBS da Povoação			0.975	0.329	*
Turma C da EBS da Povoação			-1.423	0.320	*
Turma D da EBS da Povoação			-0.329	0.316	
Turma E da EBS da Povoação			0.358	0.438	
Turma A da ES da Ribeira Grande			1.164	0.284	*
Turma B da ES da Ribeira Grande			0.660	0.254	*
Turma D da ES da Ribeira Grande			-0.999	0.578	***
Turma E da ES da Ribeira Grande			-0.188	0.267	
Turma F da ES da Ribeira Grande			-0.086	0.295	
Turma G da ES da Ribeira Grande			-0.755	0.277	*
Turma H da ES da Ribeira Grande			-0.653	0.322	**
Turma I da ES da Ribeira Grande			0.390	0.345	
Turma A da EBS de Santa Maria			0.766	0.418	**
Turma B da EBS de Santa Maria			0.018	0.322	
Turma C da EBS de Santa Maria			-1.050	0.312	*
Turma D da EBS de Santa Maria			-0.539	0.450	
Turma E da EBS de Santa Maria			-0.027	0.425	
Turma A da ES J. Emiliano de Andrade			0.346	0.293	
Turma B da ES J. Emiliano de Andrade			-0.227	0.398	
Turma C da ES J. Emiliano de Andrade			1.372	0.290	*
Turma D da ES J. Emiliano de Andrade			0.584	0.273	**
Turma E da ES J. Emiliano de Andrade			-0.121	0.330	
Turma G da ES J. Emiliano de Andrade			-0.590	0.281	**
Turma I da EBS Tomás de Borba			1.134	0.296	*
Turma II da EBS Tomás de Borba			0.511	0.287	***
Turma III da EBS Tomás de Borba			0.359	0.301	
Turma IV da EBS Tomás de Borba			-0.231	0.369	
Turma V da EBS Tomás de Borba			-0.666	0.308	**
Turma VI da EBS Tomás de Borba			-0.383	0.292	
Turma VII da EBS Tomás de Borba			-0.031	0.383	

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

(cont.)

Tabela 4 - Resultados da Estimação (turma) - Nota de Matemática do 3.º Período (cont.)

Variável	Regressão 1		Regressão 2		
	Coefficiente	Erro-padrão	Coefficiente	Erro-padrão	
Turma A da ES Vitorino Nemésio			1.188	0.285	*
Turma B da ES Vitorino Nemésio			1.174	0.247	*
Turma C da ES Vitorino Nemésio			1.679	0.422	*
Turma D da ES Vitorino Nemésio			1.075	0.325	*
Turma E da ES Vitorino Nemésio			-0.182	0.260	*
Turma F da ES Vitorino Nemésio			-0.132	0.396	
Turma G da ES Vitorino Nemésio			-0.298	0.307	
Turma B da ES Manuel de Arriaga			1.329	0.292	*
Turma C da ES Manuel de Arriaga			0.570	0.328	***
Turma D da ES Manuel de Arriaga			0.589	0.344	***
Turma E da ES Manuel de Arriaga			-0.340	0.238	
Turma G da ES Manuel de Arriaga			0.090	0.250	
Turma CT1 da EBS da Madalena			1.030	0.422	**
Turma CT2 da EBS da Madalena			0.329	0.515	
Turma SEE da EBS da Madalena			1.014	0.380	*
Turma LH da EBS da Madalena			-0.449	0.302	
Turma A da EBS das Velas			1.221	0.320	*
Turma A da EBS da Calheta			0.909	0.365	*
Turma B da EBS da Calheta			-0.596	0.369	
Turma C da EBS da Calheta			-0.737	0.436	***
Turma A da EBS da Graciosa			0.495	0.309	
Turma B da EBS da Graciosa			-0.999	0.341	*
Turma A da EBS das Flores			1.387	0.449	*
Turma B da EBS das Flores			2.253	0.861	*
Turma C da EBS das Flores			-0.742	0.810	
$\mu(1)$	1.328	0.041	1.504	0.047	
$\mu(2)$	2.690	0.036	3.077	0.041	
$\mu(3)$	3.845	0.051	4.424	0.058	
Log - L	-1876.511		-1687.027		
Log - L0 (coeficientes = 0)	-2073.804		-2073.804		
Qui-quadrado	394.586		773.555		
Número de observações	1564		1564		

* significativo a 1%; ** significativo a 5%; *** significativo a 10%

Tabela 3 - Efeitos Marginais - Nota de Matemática do 3.º Período

Variável	Com base na Regressão 1 da Tabela 3					Com base na Regressão 2 da Tabela 3				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Masculino	0.002	0.009	0.004	-0.009	-0.006	0.003	0.017	0.009	-0.018	-0.011
Idade	0.011	0.059	0.029	-0.058	-0.041	0.009	0.057	0.030	-0.059	-0.036
Família tradicional	0.001	0.008	0.004	-0.008	-0.005	0.004	0.027	0.016	-0.029	-0.018
Vive com o pai	0.000	0.002	0.001	-0.002	-0.001	0.000	-0.002	-0.001	0.003	0.002
Vive com ambos	-0.011	-0.053	-0.019	0.051	0.032	-0.008	-0.050	-0.020	0.051	0.028
Família numerosa	-0.007	-0.040	-0.027	0.040	0.033	-0.007	-0.051	-0.040	0.056	0.042
N.º irmãos mais velhos	0.009	0.049	0.024	-0.049	-0.034	0.006	0.041	0.022	-0.043	-0.026
N.º irmãos mais novos	0.004	0.024	0.012	-0.024	-0.017	0.000	0.003	0.002	-0.003	-0.002
N.º irmãs mais velhas	0.003	0.018	0.009	-0.017	-0.012	0.001	0.006	0.003	-0.006	-0.004
N.º irmãs mais novas	0.003	0.018	0.009	-0.018	-0.013	0.000	0.002	0.001	-0.002	-0.001
Apoio da ASE - Escalão 1						0.025	0.121	0.019	-0.114	-0.052
Apoio da ASE - Escalão 2						0.020	0.102	0.026	-0.100	-0.049
Apoio da ASE - Escalão 3						0.012	0.067	0.022	-0.067	-0.034
Apoio da ASE - Escalão 4						0.009	0.050	0.017	-0.050	-0.026
Pai - outra profissão						0.003	0.022	0.010	-0.022	-0.013
Pai - trab. do comércio, serviço ou indústria						-0.002	-0.014	-0.008	0.015	0.009
Pai - por conta própria						0.001	0.005	0.002	-0.005	-0.003
Pai - agricultor ou pescador						0.003	0.019	0.009	-0.020	-0.011
Pai -NR situação profissional						0.009	0.052	0.017	-0.052	-0.027
Pai - Desempregado						0.006	0.038	0.015	-0.039	-0.021
Pai -falecido						-0.009	-0.073	-0.071	0.081	0.072
Mãe - outra profissão						0.005	0.029	0.013	-0.030	-0.017
Mãe - trab. do comércio, serviço ou indústria						0.010	0.058	0.023	-0.058	-0.032
Mãe - por conta própria						0.007	0.043	0.016	-0.043	-0.023
Mãe - doméstica						0.001	0.004	0.002	-0.004	-0.003
Mãe -NR situação profissional						0.007	0.039	0.014	-0.039	-0.021
Mãe -Desempregada						0.007	0.041	0.016	-0.042	-0.023
Tem computador em casa						-0.004	-0.022	-0.010	0.022	0.013
Número de computadores em casa						0.000	0.000	0.000	0.000	0.000
Tem internet em casa						0.002	0.017	0.010	-0.018	-0.011
Tem internet em casa - NR						-0.013	-0.147	-0.305	0.099	0.365
Vive em Ponta Delgada						-0.002	-0.011	-0.006	0.011	0.007

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 1 da Tabela 3					Com base na Regressão 2 da Tabela 3				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Vive na Ribeira Grande						0.002	0.013	0.007	-0.014	-0.008
Vive na Lagoa						-0.001	-0.010	-0.006	0.010	0.007
Vive em V. Franca do Campo						0.004	0.023	0.010	-0.024	-0.014
Vive no Nordeste						0.024	0.112	0.015	-0.104	-0.046
Vive na Povoação						0.008	0.046	0.017	-0.046	-0.024
Vive em Vila do Porto						0.028	0.124	0.013	-0.115	-0.050
Vive em Angra do Heroísmo						0.004	0.026	0.012	-0.027	-0.015
Vive na Praia da Vitória						-0.006	-0.049	-0.037	0.054	0.039
Vive na Madalena						0.004	0.022	0.010	-0.022	-0.013
Vive nas Velas						-0.012	-0.122	-0.181	0.127	0.188
Vive nas Calhetas						0.018	0.089	0.018	-0.085	-0.039
Vive em Santa Cruz da Graciosa						0.015	0.080	0.019	-0.077	-0.037
Vive nas Lajes das Flores						-0.008	-0.070	-0.066	0.078	0.067

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 3 da Tabela 3					Com base na Regressão 4 da Tabela 3				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Masculino	0.003	0.023	0.013	-0.026	-0.014	0.003	0.021	0.012	-0.024	-0.012
Idade	0.006	0.046	0.027	-0.052	-0.027	0.007	0.053	0.032	-0.061	-0.031
Família tradicional	0.004	0.031	0.021	-0.035	-0.020	0.004	0.035	0.025	-0.041	-0.023
Vive com o pai	0.001	0.009	0.005	-0.011	-0.005	0.000	-0.003	-0.002	0.003	0.002
Vive com ambos	-0.008	-0.052	-0.023	0.057	0.027	-0.009	-0.062	-0.026	0.067	0.030
Família numerosa	-0.004	-0.031	-0.023	0.036	0.022	-0.004	-0.035	-0.027	0.042	0.024
N.º irmãos mais velhos	0.004	0.027	0.016	-0.030	-0.016	0.004	0.030	0.018	-0.034	-0.017
N.º irmãos mais novos	0.001	0.006	0.004	-0.007	-0.004	0.001	0.006	0.004	-0.007	-0.004
N.º irmãs mais velhas	0.001	0.004	0.002	-0.004	-0.002	0.001	0.004	0.002	-0.005	-0.002
N.º irmãs mais novas	0.001	0.004	0.002	-0.005	-0.003	0.000	0.002	0.001	-0.002	-0.001
Apoio da ASE - Escalão 1	0.014	0.082	0.024	-0.084	-0.036	0.013	0.082	0.025	-0.085	-0.035
Apoio da ASE - Escalão 2	0.009	0.059	0.024	-0.063	-0.029	0.008	0.055	0.023	-0.060	-0.027
Apoio da ASE - Escalão 3	0.004	0.025	0.013	-0.028	-0.014	0.004	0.027	0.014	-0.030	-0.014
Apoio da ASE - Escalão 4	0.001	0.006	0.003	-0.007	-0.004	0.001	0.010	0.006	-0.011	-0.006
Pai - outra profissão	0.001	0.004	0.002	-0.005	-0.003	0.001	0.008	0.005	-0.009	-0.005
Pai - trab. do comércio, serviço ou indústria	-0.004	-0.033	-0.023	0.038	0.022	-0.004	-0.031	-0.021	0.036	0.020
Pai - por conta própria	-0.001	-0.007	-0.004	0.008	0.004	0.000	-0.003	-0.002	0.004	0.002
Pai - agricultor ou pescador	-0.001	-0.009	-0.005	0.010	0.005	-0.001	-0.006	-0.004	0.007	0.004
Pai -NR situação profissional	-0.008	-0.081	-0.088	0.098	0.079	-0.008	-0.079	-0.088	0.099	0.076
Pai - Desempregado	0.002	0.017	0.009	-0.019	-0.010	0.003	0.020	0.010	-0.022	-0.011
Pai - falecido	0.210	0.333	-0.212	-0.265	-0.066	0.216	0.340	-0.224	-0.268	-0.064
Mãe - outra profissão	0.000	0.003	0.002	-0.003	-0.002	0.000	-0.001	0.000	0.001	0.000
Mãe - trab. do comércio, serviço ou indústria	0.003	0.020	0.011	-0.022	-0.011	0.002	0.017	0.010	-0.020	-0.010
Mãe - por conta própria	0.003	0.023	0.011	-0.025	-0.012	0.003	0.021	0.011	-0.024	-0.011
Mãe - doméstica	-0.005	-0.039	-0.029	0.046	0.027	-0.005	-0.042	-0.033	0.050	0.029
Mãe -NR situação profissional	0.078	0.244	-0.057	-0.204	-0.060	0.122	0.300	-0.121	-0.239	-0.062
Mãe -Desempregada	0.000	0.001	0.001	-0.002	-0.001	0.000	0.001	0.000	-0.001	0.000
Tem computador em casa	-0.002	-0.012	-0.006	0.013	0.007	-0.001	-0.004	-0.002	0.004	0.002
Número computadores em casa	0.000	0.001	0.001	-0.001	-0.001	0.000	0.001	0.001	-0.001	-0.001
Tem internet em casa	0.003	0.023	0.016	-0.026	-0.015	0.001	0.010	0.007	-0.012	-0.006
Tem internet em casa - NR	-0.011	-0.144	-0.339	0.098	0.397	-0.010	-0.139	-0.313	0.122	0.341
Vive em Ponta Delgada	0.003	0.024	0.013	-0.027	-0.014	0.004	0.026	0.014	-0.029	-0.014
Vive na Ribeira Grande	0.003	0.018	0.009	-0.020	-0.010	0.003	0.020	0.010	-0.022	-0.011
Vive na Lagoa	0.000	-0.003	-0.002	0.004	0.002	0.000	0.000	0.000	0.000	0.000

(cont.)

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 3 da Tabela 3					Com base na Regressão 4 da Tabela 3				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Vive na V. Franca do Campo	0.003	0.022	0.011	-0.024	-0.012	0.003	0.023	0.012	-0.026	-0.012
Vive no Nordeste	0.026	0.127	0.014	-0.122	-0.045	0.025	0.129	0.014	-0.124	-0.044
Vive na Povoação	0.009	0.057	0.020	-0.060	-0.026	0.007	0.049	0.019	-0.053	-0.023
Vive em Vila do Porto	0.025	0.124	0.016	-0.120	-0.045	0.025	0.129	0.016	-0.125	-0.045
Vive em Angra do Heroísmo	0.006	0.038	0.018	-0.042	-0.020	0.005	0.037	0.018	-0.041	-0.019
Vive na Praia da Vitória	-0.006	-0.055	-0.047	0.066	0.043	-0.006	-0.053	-0.046	0.065	0.041
Vive na Madalena	0.002	0.014	0.008	-0.016	-0.008	0.001	0.010	0.006	-0.012	-0.006
Vive nas Velas	-0.010	-0.118	-0.187	0.138	0.177	-0.010	-0.117	-0.190	0.142	0.175
Vive nas Calhetas	0.015	0.085	0.021	-0.086	-0.035	0.013	0.077	0.022	-0.080	-0.032
Vive em Santa Cruz da Graciosa	0.018	0.099	0.020	-0.098	-0.039	0.019	0.104	0.020	-0.104	-0.039
Vive nas Lajes das Flores	-0.007	-0.070	-0.071	0.084	0.064	-0.006	-0.062	-0.062	0.077	0.053
Habilitação pai - 1.º ciclo	0.021	0.127	0.042	-0.131	-0.059	0.021	0.131	0.044	-0.137	-0.059
Habilitação pai - 2.º ciclo	0.023	0.131	0.033	-0.132	-0.056	0.023	0.132	0.034	-0.134	-0.054
Habilitação pai - 3.º ciclo	0.022	0.125	0.032	-0.127	-0.053	0.021	0.123	0.033	-0.125	-0.051
Habilitação pai - secundário	0.023	0.125	0.028	-0.125	-0.051	0.022	0.125	0.028	-0.126	-0.049
Habilitação pai - bacharelato/curso médio	0.020	0.107	0.019	-0.105	-0.041	0.017	0.097	0.021	-0.098	-0.037
Habilitação pai - NR/NS	0.115	0.293	-0.103	-0.238	-0.067	0.112	0.297	-0.104	-0.240	-0.065
Habilitação pai - pai falecido	-0.011	-0.152	-0.426	-0.025	0.614	-0.010	-0.148	-0.395	0.046	0.508
Habilitação mãe - 1.º ciclo	0.029	0.150	0.029	-0.148	-0.060	0.031	0.162	0.028	-0.159	-0.061
Habilitação mãe - 2.º ciclo	0.026	0.143	0.034	-0.144	-0.060	0.027	0.151	0.035	-0.151	-0.061
Habilitação mãe - 3.º ciclo	0.017	0.105	0.035	-0.109	-0.048	0.018	0.112	0.037	-0.117	-0.050
Habilitação mãe - secundário	0.017	0.101	0.030	-0.104	-0.045	0.017	0.104	0.031	-0.107	-0.044
Habilitação mãe - bacharelato/curso médio	0.010	0.061	0.021	-0.063	-0.028	0.010	0.062	0.021	-0.065	-0.027
Habilitação mãe - NR/NS	-0.010	-0.107	-0.154	0.129	0.142	-0.009	-0.111	-0.171	0.136	0.155
Pais ajudam tarefas escolares-sempre						0.007	0.045	0.019	-0.049	-0.022
Pais ajudam tarefas escolares - às vezes						0.003	0.026	0.014	-0.029	-0.014
Pais conversam com o filho sobre livros						-0.002	-0.014	-0.008	0.015	0.008
Pais conversam com o filho sobre programas TV						-0.005	-0.038	-0.019	0.042	0.020
Pais conversam com o filho sobre a escola						0.004	0.038	0.029	-0.045	-0.026

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 3 da Tabela 3					Com base na Regressão 4 da Tabela 3				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Pais preocupam-se para que filho não chegue atrasado à escola						-0.005	-0.033	-0.015	0.036	0.016
Encarregado de educação - outro						-0.009	-0.101	-0.134	0.126	0.118
Encarregado de educação - mãe						-0.003	-0.021	-0.011	0.024	0.011
Frequentou o pré-escolar						0.004	0.036	0.029	-0.043	-0.026
Frequentou o pré-escolar - NR						-0.007	-0.065	-0.067	0.081	0.058

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 5 da Tabela 3					Com base na Regressão 6 da Tabela 3				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Masculino	0.001	0.012	0.007	-0.013	-0.007	0.001	0.016	0.013	-0.024	-0.007
Idade	0.006	0.049	0.030	-0.058	-0.028	0.000	0.006	0.005	-0.009	-0.003
Família tradicional	0.004	0.036	0.026	-0.043	-0.023	0.002	0.039	0.041	-0.061	-0.021
Vive com o pai	-0.001	-0.006	-0.004	0.007	0.004	-0.002	-0.032	-0.036	0.052	0.018
Vive com ambos	-0.008	-0.055	-0.025	0.061	0.027	-0.004	-0.052	-0.033	0.069	0.018
Família numerosa	-0.004	-0.033	-0.026	0.040	0.022	-0.002	-0.039	-0.045	0.064	0.023
N.º irmãos mais velhos	0.004	0.029	0.018	-0.034	-0.017	0.002	0.029	0.024	-0.042	-0.012
N.º irmãos mais novos	0.001	0.008	0.005	-0.009	-0.004	0.001	0.011	0.010	-0.017	-0.005
N.º irmãs mais velhas	0.001	0.005	0.003	-0.006	-0.003	0.001	0.010	0.009	-0.015	-0.005
N.º irmãs mais novas	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Apoio da ASE - Escalão 1	0.011	0.071	0.025	-0.076	-0.031	0.004	0.052	0.029	-0.068	-0.017
Apoio da ASE - Escalão 2	0.007	0.049	0.022	-0.054	-0.024	0.002	0.035	0.023	-0.048	-0.013
Apoio da ASE - Escalão 3	0.003	0.024	0.013	-0.027	-0.013	0.001	0.022	0.016	-0.031	-0.009
Apoio da ASE - Escalão 4	0.001	0.004	0.003	-0.005	-0.003	0.000	-0.001	-0.001	0.002	0.001
Pai - outra profissão	0.001	0.010	0.006	-0.012	-0.006	-0.001	-0.009	-0.008	0.014	0.004
Pai - trab. do comércio, serviço ou indústria	-0.004	-0.032	-0.023	0.038	0.020	-0.001	-0.016	-0.015	0.024	0.008
Pai - por conta própria	-0.001	-0.004	-0.003	0.005	0.003	0.002	0.029	0.020	-0.040	-0.011
Pai - agricultor ou pescador	-0.001	-0.005	-0.003	0.005	0.003	0.001	0.014	0.011	-0.020	-0.006
Pai -NR situação profissional	-0.007	-0.068	-0.071	0.086	0.059	-0.003	-0.079	-0.136	0.145	0.073
Pai - Desempregado	0.003	0.020	0.011	-0.022	-0.010	0.001	0.022	0.016	-0.031	-0.008
Pai -falecido	0.173	0.334	-0.186	-0.261	-0.061	0.180	0.426	-0.285	-0.282	-0.038
Mãe - outra profissão	0.000	-0.002	-0.001	0.002	0.001	0.000	0.007	0.005	-0.009	-0.003
Mãe - trab. do comércio, serviço ou indústria	0.002	0.016	0.009	-0.018	-0.008	0.000	0.006	0.005	-0.008	-0.002
Mãe - por conta própria	0.003	0.020	0.011	-0.023	-0.010	0.001	0.009	0.007	-0.012	-0.004
Mãe - doméstica	-0.005	-0.041	-0.033	0.050	0.028	-0.001	-0.025	-0.025	0.039	0.013
Mãe -NR situação profissional	0.129	0.310	-0.133	-0.245	-0.060	0.096	0.371	-0.166	-0.263	-0.038
Mãe -Desempregada	0.000	-0.001	-0.001	0.002	0.001	0.001	0.013	0.010	-0.018	-0.005
Tem computador em casa	0.000	-0.003	-0.002	0.003	0.002	-0.003	-0.038	-0.023	0.050	0.013
Número de computadores em casa	0.000	0.001	0.001	-0.001	0.000	0.000	0.001	0.001	-0.002	-0.001
Tem internet em casa	0.001	0.005	0.003	-0.005	-0.003	0.002	0.038	0.045	-0.062	-0.022
Tem internet em casa - NR	-0.010	-0.131	-0.273	0.143	0.270	-0.004	-0.090	-0.192	0.175	0.111
Vive em Ponta Delgada	0.003	0.021	0.012	-0.024	-0.011	0.001	0.012	0.010	-0.017	-0.005
Vive na Ribeira Grande	0.003	0.021	0.011	-0.024	-0.011	0.000	0.006	0.004	-0.008	-0.002
Vive na Lagoa	-0.001	-0.004	-0.003	0.005	0.003	-0.002	-0.043	-0.051	0.071	0.026
Vive em V. Franca do Campo	0.002	0.017	0.009	-0.020	-0.009	-0.002	-0.034	-0.038	0.054	0.019

(cont.)

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 5 da Tabela 3					Com base na Regressão 6 da Tabela 3				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Vive no Nordeste	0.019	0.107	0.020	-0.108	-0.038	0.007	0.085	0.031	-0.101	-0.023
Vive na Povoação	0.007	0.047	0.019	-0.051	-0.022	0.004	0.054	0.028	-0.069	-0.017
Vive em Vila do Porto	0.027	0.141	0.014	-0.136	-0.046	0.005	0.063	0.030	-0.079	-0.019
Vive em Angra do Heroísmo	0.004	0.032	0.016	-0.036	-0.016	0.000	-0.006	-0.005	0.009	0.003
Vive na Praia da Vitória	-0.006	-0.054	-0.048	0.067	0.041	-0.003	-0.065	-0.090	0.111	0.046
Vive na Madalena	0.001	0.010	0.006	-0.011	-0.005	-0.002	-0.031	-0.034	0.049	0.017
Vive nas Velas	-0.010	-0.122	-0.218	0.149	0.200	-0.004	-0.109	-0.306	0.206	0.213
Vive nas Calhetas	0.007	0.045	0.019	-0.050	-0.021	0.002	0.026	0.017	-0.035	-0.009
Vive em Santa Cruz da Graciosa	0.018	0.104	0.020	-0.105	-0.038	0.000	-0.002	-0.002	0.003	0.001
Vive nas Lajes das Flores	-0.007	-0.069	-0.075	0.088	0.062	-0.003	-0.063	-0.096	0.112	0.049
Habilitação pai - 1.º ciclo	0.021	0.131	0.045	-0.139	-0.058	0.008	0.105	0.056	-0.135	-0.035
Habilitação pai - 2.º ciclo	0.021	0.128	0.035	-0.133	-0.052	0.011	0.127	0.049	-0.151	-0.036
Habilitação pai - 3.º ciclo	0.020	0.121	0.034	-0.126	-0.049	0.007	0.096	0.045	-0.119	-0.029
Habilitação pai - secundário	0.021	0.122	0.030	-0.125	-0.047	0.009	0.111	0.042	-0.132	-0.031
Habilitação pai - bacharelato/curso médio	0.016	0.097	0.022	-0.099	-0.036	0.012	0.125	0.028	-0.137	-0.028
Habilitação pai - NR/NS	0.104	0.292	-0.096	-0.238	-0.062	0.082	0.357	-0.134	-0.265	-0.041
Habilitação pai - pai falecido	-0.010	-0.145	-0.399	0.051	0.504	-0.004	-0.119	-0.501	0.024	0.600
Habilitação mãe - 1.º ciclo	0.028	0.156	0.030	-0.156	-0.058	0.009	0.107	0.045	-0.130	-0.031
Habilitação mãe - 2.º ciclo	0.025	0.145	0.036	-0.148	-0.057	0.007	0.094	0.047	-0.118	-0.029
Habilitação mãe - 3.º ciclo	0.017	0.109	0.038	-0.116	-0.047	0.004	0.061	0.038	-0.081	-0.021
Habilitação mãe - secundário	0.015	0.098	0.032	-0.104	-0.041	0.006	0.079	0.040	-0.101	-0.025
Habilitação mãe - bacharelato/curso médio	0.009	0.060	0.022	-0.064	-0.026	0.002	0.032	0.021	-0.043	-0.011
Habilitação mãe - NR/NS	-0.009	-0.113	-0.185	0.143	0.164	-0.004	-0.101	-0.251	0.197	0.159
Pais ajudam tarefas escolares - sempre	0.007	0.049	0.021	-0.054	-0.023	0.003	0.043	0.026	-0.056	-0.015
Pais ajudam tarefas escolares - às vezes	0.004	0.029	0.016	-0.033	-0.015	0.001	0.022	0.017	-0.031	-0.009
Pais conversam com o filho sobre livros	-0.001	-0.008	-0.005	0.009	0.004	0.000	0.002	0.002	-0.003	-0.001
Pais conversam com o filho sobre programas TV	-0.005	-0.040	-0.020	0.045	0.020	-0.003	-0.043	-0.029	0.059	0.016
Pais conversam com o filho sobre a escola	0.005	0.042	0.035	-0.052	-0.030	0.002	0.029	0.030	-0.045	-0.015
Pais incentivam o filho a ter boas notas	0.004	0.037	0.030	-0.045	-0.026	0.003	0.054	0.074	-0.093	-0.038

(cont.)

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 5 da Tabela 3					Com base na Regressão 6 da Tabela 3				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Pais preocupam-se para que filho não chegue atrasado à escola	-0.006	-0.040	-0.017	0.045	0.019	-0.001	-0.018	-0.013	0.025	0.007
Encarregado de educação - outro	-0.009	-0.097	-0.129	0.125	0.110	-0.003	-0.073	-0.118	0.131	0.062
Encarregado de educação - mãe	-0.002	-0.015	-0.008	0.017	0.008	-0.002	-0.028	-0.019	0.038	0.010
Frequentou o pré-escolar	0.004	0.040	0.033	-0.049	-0.028	0.001	0.009	0.008	-0.013	-0.004
Frequentou o pré-escolar - NR	-0.005	-0.053	-0.051	0.067	0.042	-0.002	-0.029	-0.031	0.046	0.016
Estuda regularmente na biblioteca	-0.005	-0.045	-0.040	0.056	0.034	-0.001	-0.019	-0.019	0.029	0.009
Estuda regularmente na sala de estudo	0.009	0.058	0.020	-0.062	-0.025	0.003	0.047	0.025	-0.061	-0.015
Estuda com outros	0.003	0.019	0.010	-0.022	-0.010	0.000	0.001	0.001	-0.002	-0.001
Estuda com colegas	0.019	0.111	0.021	-0.111	-0.040	0.007	0.085	0.032	-0.102	-0.023
Estuda apenas nas vésperas dos testes	0.009	0.062	0.030	-0.069	-0.031	0.000	0.002	0.002	-0.003	-0.001
Estuda apenas ao fim de semana	0.007	0.053	0.028	-0.060	-0.028	0.001	0.015	0.012	-0.022	-0.006
Utiliza computador para jogar e comunicar com outros	0.002	0.021	0.015	-0.025	-0.013	0.001	0.009	0.008	-0.013	-0.004
Utiliza computador para pesquisar	-0.001	-0.011	-0.006	0.013	0.006	0.000	-0.002	-0.001	0.002	0.001
Utiliza o computador para fazer TPC	-0.001	-0.006	-0.004	0.007	0.003	0.000	0.001	0.001	-0.001	0.000
Reprovou						0.006	0.086	0.054	-0.115	-0.031
Número de reprovações						-0.001	-0.012	-0.010	0.017	0.005
Dificuldade em Matemática						0.006	0.085	0.046	-0.109	-0.028
Dificuldade em Português						0.002	0.026	0.017	-0.035	-0.010
Dificuldade noutras disciplinas						0.005	0.067	0.045	-0.091	-0.025
Disciplinas com dificuldades - NR						0.173	0.424	-0.278	-0.280	-0.038
Explicação de Matemática						0.000	0.006	0.005	-0.008	-0.002
Explicação de outras disciplinas						-0.001	-0.018	-0.017	0.027	0.009
Disciplinas com explicação - NR						0.038	0.252	-0.041	-0.214	-0.035
Gosta da disciplina de Matemática						-0.005	-0.079	-0.061	0.112	0.033
Não gosta da disciplina de Matemática por ser difícil						0.008	0.102	0.045	-0.124	-0.030
Nunca gostou de Matemática						0.013	0.149	0.058	-0.177	-0.043
Não gosta de Matemática por causa do professor						0.017	0.161	0.017	-0.163	-0.031
Não explica por que razão não gosta de Matemática						0.002	0.024	0.016	-0.032	-0.009
Pretende abandonar a escola após 12.º ano						0.005	0.072	0.044	-0.096	-0.025

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 5 da Tabela 3					Com base na Regressão 6 da Tabela 3				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Quando pretende abandonar a escola - NR						0.011	0.118	0.026	-0.129	-0.027
Estudar não é importante						-0.002	-0.047	-0.060	0.079	0.030
Estudar é importante						0.002	0.040	0.033	-0.058	-0.017
Estudar é importante - NR						0.066	0.323	-0.108	-0.244	-0.037

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 7 da Tabela 3				
	NOTA A 1	NOTA A 2	NOTA A 3	NOTA A 4	NOTA A 5
Masculino	0.001	0.016	0.013	-0.023	-0.007
Idade	0.000	0.007	0.006	-0.011	-0.003
Família tradicional	0.002	0.038	0.040	-0.060	-0.020
Vive com o pai	-0.002	-0.034	-0.039	0.055	0.019
Vive com ambos	-0.004	-0.054	-0.034	0.072	0.019
Família numerosa	-0.002	-0.039	-0.045	0.064	0.023
N.º irmãos mais velhos	0.002	0.027	0.022	-0.039	-0.012
N.º irmãos mais novos	0.001	0.011	0.009	-0.016	-0.005
N.º irmãs mais velhas	0.001	0.009	0.007	-0.013	-0.004
N.º irmãs mais novas	0.000	-0.003	-0.002	0.004	0.001
Apoio da ASE - Escalão 1	0.004	0.058	0.031	-0.075	-0.018
Apoio da ASE - Escalão 2	0.002	0.037	0.025	-0.051	-0.014
Apoio da ASE - Escalão 3	0.001	0.019	0.014	-0.027	-0.008
Apoio da ASE - Escalão 4	0.000	-0.001	-0.001	0.002	0.000
Pai - outra profissão	-0.001	-0.010	-0.008	0.014	0.004
Pai - trab. do comércio, serviço ou indústria	-0.001	-0.015	-0.014	0.023	0.007
Pai - por conta própria	0.002	0.031	0.021	-0.042	-0.011
Pai - agricultor ou pescador	0.001	0.016	0.012	-0.023	-0.006
Pai -NR situação profissional	-0.003	-0.083	-0.152	0.156	0.082
Pai - Desempregado	0.001	0.023	0.016	-0.031	-0.009
Pai -falecido	0.185	0.430	-0.294	-0.283	-0.038
Mãe - outra profissão	0.000	0.007	0.006	-0.010	-0.003
Mãe - trab. do comércio, serviço ou indústria	0.000	0.005	0.004	-0.008	-0.002
Mãe - por conta própria	0.000	0.007	0.006	-0.010	-0.003
Mãe - doméstica	-0.001	-0.025	-0.024	0.038	0.012
Mãe -NR situação profissional	0.084	0.359	-0.148	-0.258	-0.038
Mãe -Desempregada	0.001	0.010	0.008	-0.015	-0.004
Tem computador em casa	-0.004	-0.051	-0.027	0.066	0.016
Número de computadores em casa	0.000	0.001	0.001	-0.002	-0.001
Tem internet em casa	0.002	0.041	0.050	-0.069	-0.025
Tem internet em casa - NR	-0.003	-0.090	-0.195	0.176	0.113
Habilitação pai - 1.º ciclo	0.007	0.101	0.055	-0.131	-0.033
Habilitação pai - 2.º ciclo	0.010	0.123	0.049	-0.148	-0.035
Habilitação pai - 3.º ciclo	0.007	0.093	0.045	-0.117	-0.028
Habilitação pai - secundário	0.009	0.110	0.042	-0.131	-0.030
Habilitação pai - bacharelato/curso médio	0.011	0.123	0.029	-0.135	-0.028
Habilitação pai - NR/NS	0.080	0.357	-0.132	-0.264	-0.040
Habilitação pai - pai falecido	-0.004	-0.119	-0.508	0.007	0.624

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 7 da Tabela 3				
	NOT A 1	NOT A 2	NOT A 3	NOT A 4	NOTA 5
Habilitação mãe - 1.º ciclo	0.008	0.107	0.045	-0.130	-0.031
Habilitação mãe - 2.º ciclo	0.007	0.093	0.046	-0.117	-0.029
Habilitação mãe - 3.º ciclo	0.004	0.061	0.037	-0.081	-0.021
Habilitação mãe - secundário	0.006	0.078	0.040	-0.099	-0.024
Habilitação mãe - bacharelato/curso médio	0.002	0.035	0.022	-0.047	-0.012
Habilitação mãe - NR/NS	-0.004	-0.100	-0.246	0.196	0.153
Pais ajudam tarefas escolares-sempre	0.003	0.043	0.026	-0.058	-0.015
Pais ajudam tarefas escolares - às vezes	0.001	0.022	0.017	-0.032	-0.009
Pais conversam com o filho sobre livros	0.000	0.001	0.001	-0.001	0.000
Pais conversam com o filho sobre programas TV	-0.003	-0.042	-0.028	0.057	0.015
Pais conversam com o filho sobre a escola	0.001	0.026	0.026	-0.040	-0.013
Pais incentivam o filho a ter boas notas	0.003	0.055	0.077	-0.095	-0.039
Pais preocupam-se para que filho não chegue atrasado à escola	-0.001	-0.013	-0.010	0.018	0.005
Encarregado de educação - outro	-0.003	-0.071	-0.114	0.129	0.059
Encarregado de educação - mãe	-0.002	-0.030	-0.020	0.041	0.011
Frequentou o pré-escolar	0.001	0.012	0.011	-0.018	-0.006
Frequentou o pré-escolar - NR	-0.002	-0.048	-0.064	0.082	0.032
Estuda regularmente na biblioteca	-0.001	-0.020	-0.020	0.031	0.010
Estuda regularmente na sala de estudo	0.003	0.041	0.024	-0.054	-0.014
Estuda com outros	0.001	0.011	0.008	-0.015	-0.004
Estuda com colegas	0.007	0.091	0.033	-0.107	-0.024
Estuda apenas nas vésperas dos testes	0.000	0.002	0.002	-0.003	-0.001
Estuda apenas ao fim de semana	0.001	0.017	0.014	-0.024	-0.007
Utiliza computador para jogar e comunicar com outros	0.001	0.010	0.009	-0.015	-0.005
Utiliza computador para pesquisar	0.000	0.001	0.001	-0.002	-0.001
Utiliza o computador para fazer TPC	0.000	0.000	0.000	0.001	0.000
Reprovou	0.006	0.085	0.054	-0.114	-0.031
Número de reprovações	-0.001	-0.012	-0.010	0.018	0.005
Dificuldade em Matemática	0.006	0.086	0.046	-0.110	-0.028
Dificuldade em Português	0.002	0.030	0.020	-0.041	-0.011
Dificuldade noutras disciplinas	0.004	0.064	0.043	-0.088	-0.024
Disciplinas com dificuldades-NR	0.187	0.430	-0.297	-0.282	-0.038
Explicação de Matemática	0.000	0.007	0.006	-0.011	-0.003
Explicação de outras disciplinas	-0.001	-0.018	-0.017	0.027	0.009
Disciplinas com explicação-NR	0.033	0.236	-0.029	-0.205	-0.034
Gosta da disciplina de Matemática	-0.005	-0.080	-0.063	0.114	0.034
Não gosta da disciplina de Matemática por ser difícil	0.009	0.111	0.046	-0.134	-0.031

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 7 da Tabela 3				
	NOT A 1	NOT A 2	NOT A 3	NOT A 4	NOTA 5
Nunca gostou de Matemática	0.012	0.141	0.058	-0.169	-0.041
Não gosta de Matemática por causa do professor	0.015	0.152	0.020	-0.157	-0.030
Não explica por que razão não gosta de Matemática	0.001	0.023	0.016	-0.031	-0.008
Pretende abandonar a escola após 12.º ano	0.005	0.072	0.045	-0.096	-0.025
Quando pretende abandonar a escola - NR	0.013	0.134	0.023	-0.141	-0.028
Estudar não é importante	-0.002	-0.046	-0.057	0.076	0.029
Estudar é importante	0.002	0.040	0.034	-0.058	-0.017
Estudar é importante – NR	0.054	0.299	-0.083	-0.234	-0.036
ES Domingos Rebelo	0.000	0.004	0.004	-0.006	-0.002
ES das Laranjeiras	0.001	0.015	0.011	-0.022	-0.006
ES Antero de Quental	0.000	-0.004	-0.003	0.006	0.002
ES da Ribeira Grande	0.002	0.030	0.020	-0.041	-0.011
ES de Lagoa	-0.002	-0.040	-0.046	0.065	0.023
EBS de V. Franca do Campo	-0.002	-0.032	-0.036	0.052	0.018
EBS da Nordeste	0.008	0.093	0.031	-0.108	-0.024
EBS de Povoação	0.004	0.055	0.029	-0.070	-0.017
EBS de Santa Maria	0.005	0.066	0.031	-0.082	-0.019
ES J. Emiliano de Andrade	0.000	0.001	0.001	-0.001	0.000
EBS Tomás de Borba	-0.001	-0.015	-0.015	0.024	0.007
ES Vitorino Nemésio	-0.003	-0.061	-0.083	0.105	0.042
EBS da Madalena	-0.002	-0.029	-0.031	0.046	0.015
ES de Velas	-0.004	-0.108	-0.297	0.206	0.202
ES da Calheta	0.002	0.026	0.017	-0.035	-0.009
EBS da Graciosa	0.000	0.000	0.000	0.000	0.000
EBS das Flores	-0.003	-0.065	-0.102	0.117	0.052
9º ano mesma escola	-0.003	-0.065	-0.100	0.116	0.051
9.º ano escola do mesmo concelho	0.000	-0.004	-0.004	0.006	0.002

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 1 da Tabela 4					Com base na Regressão 2 da Tabela 4				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Masculino	0.003	0.020	0.012	-0.023	-0.012	0.002	0.025	0.020	-0.036	-0.011
Idade	0.007	0.053	0.032	-0.061	-0.031	0.002	0.027	0.023	-0.040	-0.012
Família tradicional	0.004	0.035	0.025	-0.041	-0.023	0.002	0.038	0.039	-0.060	-0.020
Vive com o pai	-0.001	-0.006	-0.004	0.007	0.004	-0.001	-0.015	-0.015	0.023	0.007
Vive com ambos os pais	-0.009	-0.064	-0.027	0.069	0.031	-0.002	-0.036	-0.024	0.049	0.013
Família numerosa	-0.004	-0.036	-0.028	0.043	0.025	-0.002	-0.043	-0.049	0.069	0.025
N.º irmãos mais velhos	0.003	0.028	0.017	-0.032	-0.016	0.002	0.026	0.022	-0.038	-0.011
N.º irmãos mais novos	0.001	0.005	0.003	-0.006	-0.003	0.000	0.003	0.003	-0.005	-0.002
N.º irmãs mais velhas	0.000	0.003	0.002	-0.003	-0.002	0.000	0.006	0.005	-0.009	-0.003
N.º irmãs mais novas	0.000	-0.001	-0.001	0.001	0.001	0.001	0.010	0.008	-0.014	-0.004
Apoio da ASE - Escalão 1	0.014	0.087	0.025	-0.090	-0.036	0.004	0.052	0.029	-0.067	-0.017
Apoio da ASE - Escalão 2	0.008	0.056	0.024	-0.061	-0.027	0.003	0.044	0.027	-0.059	-0.016
Apoio da ASE - Escalão 3	0.003	0.022	0.011	-0.025	-0.012	0.000	-0.004	-0.003	0.005	0.002
Apoio da ASE - Escalão 4	0.001	0.009	0.005	-0.010	-0.005	0.000	0.000	0.000	0.000	0.000
Pai - outra profissão	0.001	0.007	0.004	-0.008	-0.004	0.001	0.013	0.010	-0.018	-0.005
Pai - trab. do comércio, serviço ou indústria	-0.004	-0.030	-0.021	0.035	0.019	-0.002	-0.028	-0.027	0.042	0.014
Pai - por conta própria	0.000	0.000	0.000	0.001	0.000	0.000	0.006	0.004	-0.008	-0.002
Pai - agricultor ou pescador	-0.001	-0.007	-0.004	0.008	0.004	-0.001	-0.010	-0.009	0.015	0.005
Pai -NR situação profissional	-0.008	-0.084	-0.098	0.106	0.084	-0.003	-0.050	-0.063	0.083	0.032
Pai - Desempregado	0.002	0.018	0.009	-0.020	-0.009	0.001	0.014	0.010	-0.020	-0.006
Pai - falecido	0.218	0.343	-0.228	-0.269	-0.064	0.101	0.374	-0.170	-0.266	-0.038
Mãe - outra profissão	0.000	-0.002	-0.001	0.002	0.001	-0.001	-0.011	-0.010	0.017	0.005
Mãe - trab. do comércio, serviço ou indústria	0.002	0.017	0.009	-0.019	-0.009	0.000	0.002	0.001	-0.002	-0.001
Mãe - por conta própria	0.003	0.019	0.010	-0.022	-0.010	0.001	0.019	0.014	-0.026	-0.007
Mãe - doméstica	-0.005	-0.042	-0.032	0.050	0.029	-0.002	-0.046	-0.050	0.073	0.026
Mãe -NR situação profissional	0.116	0.298	-0.116	-0.236	-0.061	0.053	0.293	-0.074	-0.235	-0.037
Mãe -Desempregada	0.000	-0.002	-0.001	0.002	0.001	0.000	-0.002	-0.002	0.003	0.001
Tem computador em casa	-0.002	-0.016	-0.008	0.018	0.009	0.000	-0.002	-0.002	0.003	0.001
Número de computadores em casa	0.000	0.001	0.001	-0.001	-0.001	0.000	0.001	0.001	-0.002	-0.001
Tem internet em casa	0.002	0.017	0.012	-0.020	-0.011	0.002	0.028	0.029	-0.044	-0.015
Tem internet em casa - NR	-0.010	-0.139	-0.312	0.124	0.337	-0.002	-0.050	-0.065	0.084	0.034
Habilitação pai - 1.º ciclo	0.019	0.123	0.043	-0.130	-0.056	0.005	0.069	0.043	-0.092	-0.025
Habilitação pai - 2.º ciclo	0.021	0.124	0.034	-0.127	-0.052	0.006	0.076	0.041	-0.097	-0.025
Habilitação pai - 3.º ciclo	0.019	0.117	0.033	-0.120	-0.049	0.006	0.075	0.040	-0.096	-0.024

(cont.)

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 1 da Tabela 4					Com base na Regressão 2 da Tabela 4				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Habilitação pai - secundário	0.021	0.121	0.029	-0.122	-0.048	0.008	0.098	0.041	-0.119	-0.028
Habilitação pai - bacharelato/curso médio	0.016	0.096	0.021	-0.097	-0.037	0.005	0.066	0.030	-0.082	-0.019
Habilitação pai - NR/NS	0.111	0.298	-0.104	-0.240	-0.065	0.043	0.269	-0.045	-0.229	-0.038
Habilitação pai - pai falecido	-0.010	-0.148	-0.408	0.028	0.538	-0.004	-0.120	-0.450	0.116	0.458
Habilitação mãe - 1.º ciclo	0.030	0.162	0.028	-0.159	-0.061	0.012	0.132	0.046	-0.154	-0.036
Habilitação mãe - 2.º ciclo	0.026	0.148	0.035	-0.149	-0.060	0.010	0.119	0.050	-0.144	-0.035
Habilitação mãe - 3.º ciclo	0.017	0.110	0.037	-0.115	-0.049	0.006	0.082	0.045	-0.106	-0.027
Habilitação mãe - secundário	0.017	0.104	0.031	-0.108	-0.044	0.007	0.086	0.041	-0.107	-0.026
Habilitação mãe - bacharelato/curso médio	0.010	0.064	0.022	-0.068	-0.028	0.007	0.086	0.033	-0.102	-0.023
Habilitação mãe - NR/NS	-0.009	-0.112	-0.177	0.138	0.160	-0.004	-0.094	-0.201	0.179	0.120
Pais ajudam tarefas escolares-sempre	0.007	0.046	0.019	-0.050	-0.022	0.001	0.015	0.011	-0.022	-0.006
Pais ajudam tarefas escolares - às vezes	0.003	0.026	0.014	-0.029	-0.014	0.001	0.022	0.017	-0.031	-0.009
Pais conversam com o filho sobre livros	-0.002	-0.014	-0.008	0.016	0.008	-0.001	-0.019	-0.016	0.028	0.008
Pais conversam com o filho sobre programas TV	-0.005	-0.037	-0.018	0.041	0.019	-0.002	-0.035	-0.024	0.049	0.013
Pais conversam com o filho sobre a escola	0.004	0.037	0.029	-0.044	-0.026	0.003	0.051	0.062	-0.084	-0.032
Pais incentivam o filho a ter boas notas	0.003	0.031	0.024	-0.037	-0.021	0.002	0.029	0.031	-0.046	-0.016
Pais preocupam-se para que filho não chegue atrasado à escola	-0.005	-0.033	-0.015	0.037	0.016	-0.001	-0.016	-0.011	0.022	0.006
Encarregado de educação - outro	-0.009	-0.101	-0.134	0.126	0.117	-0.004	-0.095	-0.191	0.178	0.111
Encarregado de educação - mãe	-0.003	-0.025	-0.013	0.028	0.013	-0.002	-0.023	-0.016	0.032	0.009
Frequentou o pré-escolar	0.004	0.041	0.034	-0.049	-0.030					
Frequentou o pré-escolar - NR	-0.007	-0.073	-0.081	0.092	0.069					
ES Domingos Rebelo	0.001	0.010	0.006	-0.012	-0.006					
ES das Laranjeiras	0.009	0.058	0.021	-0.062	-0.026					
ES Antero de Quental	0.000	0.002	0.001	-0.003	-0.001					
ES da Ribeira Grande	0.004	0.028	0.014	-0.031	-0.015					
ES de Lagoa	0.001	0.007	0.004	-0.008	-0.004					
EBS de V. Franca do Campo	0.003	0.024	0.012	-0.027	-0.013					
EBS do Nordeste	0.025	0.132	0.013	-0.127	-0.044					

(cont.)

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 1 da Tabela 4					Com base na Regressão 2 da Tabela 4				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
EBS de Povoação	0.007	0.046	0.019	-0.050	-0.022					
EBS de Santa Maria	0.024	0.130	0.016	-0.125	-0.045					
ES Emiliano de Andrade	0.003	0.020	0.010	-0.022	-0.010					
EBS Tomás de Borba	0.006	0.039	0.017	-0.043	-0.019					
ES Vitorino Nemésio	-0.006	-0.057	-0.051	0.070	0.045					
EBS da Madalena	0.001	0.011	0.006	-0.013	-0.006					
ES de Velas	-0.009	-0.115	-0.182	0.140	0.166					
ES da Calheta	0.013	0.078	0.022	-0.080	-0.032					
EBS da Graciosa	0.019	0.105	0.019	-0.105	-0.039					
EBS das Flores	-0.006	-0.060	-0.059	0.074	0.051					
9ºano na mesma escola	-0.007	-0.067	-0.068	0.083	0.059					
9º ano noutra escola do mesmo concelho	0.002	0.015	0.008	-0.017	-0.008					
Turma A da ES Dom. Rebelo						-0.004	-0.112	-0.309	0.205	0.220
Turma B da ES Dom. Rebelo						-0.004	-0.116	-0.347	0.201	0.267
Turma C da ES Dom. Rebelo						-0.001	-0.027	-0.028	0.042	0.014
Turma F da ES Dom. Rebelo						-0.003	-0.080	-0.140	0.146	0.077
Turma G da ES Dom. Rebelo						-0.002	-0.032	-0.034	0.050	0.018
Turma H da ES Dom. Rebelo						-0.002	-0.043	-0.052	0.071	0.027
Turma I da ES Domingos Rebelo						0.022	0.183	0.006	-0.178	-0.033
Turma J da ES Domingos Rebelo						0.001	0.010	0.008	-0.014	-0.004
Turma A da ES de Laranjeiras						0.027	0.209	-0.008	-0.194	-0.034
Turma C da ES de Laranjeiras						-0.004	-0.096	-0.209	0.183	0.126
Turma D da ES de Laranjeiras						-0.004	-0.111	-0.309	0.203	0.221
Turma E da ES de Laranjeiras						0.012	0.123	0.027	-0.134	-0.028
Turma F da ES de Laranjeiras						-0.001	-0.014	-0.013	0.021	0.007
Turma G da ES de Laranjeiras						0.008	0.090	0.031	-0.105	-0.023
Turma A da ES Antero Quental						-0.004	-0.116	-0.360	0.195	0.286
Turma B da ES Antero Quental						-0.004	-0.102	-0.238	0.194	0.150
Turma D da ES Antero Quental						-0.004	-0.104	-0.248	0.197	0.158
Turma G da ES Antero Quental						-0.002	-0.030	-0.032	0.047	0.016
Turma H da ES Antero Quental						-0.003	-0.080	-0.142	0.147	0.078
Turma I da ES Antero Quental						-0.003	-0.075	-0.125	0.135	0.067
Turma M da ES Antero Quental						0.005	0.068	0.030	-0.083	-0.020

Quental					
Turma O da ES Antero	0.000	0.004	0.003	-0.006	-0.002
Quental					
Turma P da ES Antero	0.002	0.027	0.017	-0.036	-0.010
Quental					
Turma A da ES de Lagoa	-0.004	-0.122	-0.426	0.156	0.396

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 1 da Tabela 4					Com base na Regressão 2 da Tabela 4				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Turma B da ES de Lagoa						-0.001	-0.026	-0.026	0.040	0.013
Turma C da ES de Lagoa						0.000	-0.007	-0.006	0.010	0.003
Turma D da ES de Lagoa						0.002	0.027	0.018	-0.037	-0.010
Turma F da ES de Lagoa						-0.004	-0.115	-0.371	0.186	0.304
Turma G da ES de Lagoa						0.011	0.118	0.027	-0.129	-0.027
Turma H da ES de Lagoa						0.007	0.084	0.031	-0.100	-0.022
Turma A da EBS de VF Campo						-0.004	-0.095	-0.200	0.180	0.119
Turma B da EBS de VF Campo						-0.004	-0.091	-0.186	0.173	0.108
Turma C da EBS de VF Campo						0.005	0.068	0.030	-0.084	-0.020
Turma D da EBS de VF Campo						0.005	0.060	0.029	-0.075	-0.018
Turma B da EBS de Nordeste						0.001	0.011	0.008	-0.015	-0.004
Turma A da EBS da Povoação						-0.002	-0.030	-0.033	0.048	0.017
Turma B da EBS da Povoação						-0.004	-0.105	-0.264	0.200	0.173
Turma C da EBS da Povoação						0.102	0.377	-0.171	-0.270	-0.039
Turma D da EBS da Povoação						0.006	0.074	0.030	-0.090	-0.021
Turma E da EBS da Povoação						-0.003	-0.057	-0.079	0.097	0.041
Turma A da ES da Rib. Grande						-0.004	-0.113	-0.318	0.205	0.231
Turma B da ES da Rib. Grande						-0.004	-0.088	-0.166	0.163	0.094
Turma D da ES da Rib. Grande						0.045	0.269	-0.054	-0.224	-0.036
Turma E da ES da Rib. Grande						0.003	0.040	0.023	-0.052	-0.013
Turma F da ES Rib. Grande						0.001	0.017	0.012	-0.024	-0.007
Turma G da ES da Rib. Grande						0.024	0.195	0.000	-0.185	-0.034
Turma H da ES da Rib. Grande						0.018	0.165	0.013	-0.165	-0.031
Turma I da ES da Rib. Grande						-0.003	-0.061	-0.087	0.105	0.045
Turma A da EBS de Santa Maria						-0.004	-0.094	-0.201	0.179	0.119
Turma B da EBS de Santa Maria						0.000	-0.003	-0.003	0.005	0.002
Turma C da EBS de Santa Maria						0.049	0.284	-0.064	-0.232	-0.037

Turma D da EBS de Santa Maria	0.013	0.132	0.024	-0.140	-0.028
Turma E da EBS de Santa Maria	0.000	0.005	0.004	-0.008	-0.002
Turma A da ES J. E. Andrade	-0.003	-0.055	-0.075	0.094	0.039
Turma B da ES J. E. Andrade	0.004	0.049	0.026	-0.063	-0.016
Turma C da ES J. E. Andrade	-0.004	-0.118	-0.372	0.192	0.302
Turma D da ES J. E. Andrade	-0.003	-0.081	-0.143	0.149	0.079
Turma E da ES J. E. Andrade	0.002	0.025	0.016	-0.034	-0.009
Turma G da ES J. E. Andrade	0.015	0.146	0.021	-0.152	-0.030
Turma I da EBS Tomás Borba	-0.004	-0.112	-0.310	0.205	0.221

(cont.)

Tabela 5 - Efeitos Marginais - Nota de Matemática do 3.º Período (cont.)

Variável	Com base na Regressão 1 da Tabela 4					Com base na Regressão 2 da Tabela 4				
	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5	NOTA 1	NOTA 2	NOTA 3	NOTA 4	NOTA 5
Turma II da EBS Tomás Borba						-0.003	-0.074	-0.122	0.134	0.065
Turma III da EBS Tomás Borba						-0.003	-0.057	-0.079	0.098	0.041
Turma IV da EBS Tomás Borba						0.004	0.050	0.026	-0.064	-0.016
Turma V da EBS Tomás Borba						0.019	0.169	0.012	-0.168	-0.032
Turma VI da EBS Tomás Borba						0.008	0.088	0.031	-0.104	-0.023
Turma VII da EBS Tomás Borba						0.000	0.006	0.005	-0.009	-0.003
Turma A da ES Vit. Nemésio						-0.004	-0.114	-0.325	0.204	0.239
Turma B da ES Vit. Nemésio						-0.004	-0.115	-0.320	0.207	0.232
Turma C da ES Vit. Nemésio						-0.004	-0.120	-0.437	0.137	0.423
Turma D da ES Vit. Nemésio						-0.004	-0.109	-0.294	0.204	0.204
Turma E da ES Vit. Nemésio						0.003	0.039	0.023	-0.051	-0.013
Turma F da ES Vit. Nemésio						0.002	0.027	0.018	-0.037	-0.010
Turma G da ES Vit. Nemésio						0.005	0.066	0.029	-0.082	-0.019
Turma B da ES Manuel Arriaga						-0.004	-0.117	-0.362	0.196	0.287
Turma C da ES Manuel Arriaga						-0.003	-0.079	-0.140	0.146	0.077
Turma D da ES Manuel Arriaga						-0.003	-0.081	-0.145	0.150	0.080
Turma E da ES Manuel Arriaga						0.006	0.077	0.031	-0.093	-0.021
Turma G da ES Manuel Arriaga						-0.001	-0.017	-0.016	0.025	0.008

Arriaga					
Turma CT1 da EBS da Madalena	-0.004	-0.107	-0.281	0.201	0.191
Turma CT2 da EBS da Madalena	-0.003	-0.053	-0.071	0.090	0.037
Turma SEE da EBS da Madalena	-0.004	-0.107	-0.276	0.201	0.186
Turma LH da EBS da Madalena	0.010	0.106	0.029	-0.120	-0.026
Turma A da EBS das Velas	-0.004	-0.114	-0.334	0.202	0.251
Turma A da EBS da Calheta	-0.004	-0.102	-0.245	0.195	0.156
Turma B da EBS da Calheta	0.016	0.148	0.019	-0.153	-0.030
Turma C da EBS da Calheta	0.023	0.190	0.000	-0.181	-0.033
Turma A da EBS da Graciosa	-0.003	-0.072	-0.117	0.130	0.063
Turma B da EBS da Graciosa	0.044	0.269	-0.052	-0.225	-0.036
Turma A da EBS das Flores	-0.004	-0.116	-0.377	0.185	0.311
Turma B da EBS das Flores	-0.004	-0.121	-0.506	-0.016	0.647
Turma C da EBS das Flores	0.024	0.192	-0.001	-0.182	-0.033

TEACHERS AND STUDENTS' MOBILITY: A CASE OF STUDY IN THE CONTEXT OF THE INTERNATIONALIZATION OF EDUCATION

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Abstract

Over the last years most countries have been immersed in a process of globalization that has given rise to a growing interdependence between societies as well as a strengthening of international relations both in the economic-financial and in the political and communicational levels. New societies are emerging where structural reforms associated to the process of deregulation and liberalization caused deep changes in work relations. These changes became apparent in the need for growing levels of education and training to gain access to a job and in the growth of importance of the service sector in the structure of production. In this context knowledge is one of the most efficient and dynamic productive inputs, laying the foundations of a new world economy based on information and knowledge, and thereby making education a vital component for the generation and transmission of education. Historically, education has evolved hand in hand with socio-technological changes. Nowadays, progress in information-technology and communication promote a new educational paradigm, whereby the search for quality, pertinence, and internationalization in higher education has a prominent place. The goal of this paper will be to present some indicators to analyze the evolution of the process of internationalization of education in the Department of Economics of the National University of the South (Universidad Nacional del Sur).

Keywords: Internationalization of Education, Academic Mobility

Introduction

Over the last years most countries have been immersed in a process of globalization that has given rise to a growing interdependence between societies as well as a strengthening of international relations both in the economic-financial and in the political and communicational levels. New societies are emerging where structural reforms associated to the process of deregulation and liberalization caused deep changes in work relations. These changes became apparent in the need for growing levels of education and training to gain access to a job and in the growth of importance of the service sector in the structure of production. In this context knowledge is one of the most efficient and dynamic productive inputs, laying the foundations of a new world economy based on information and knowledge, and thereby making education a vital component for the generation and transmission of education. Historically, education has evolved hand in hand with socio-technological changes. Nowadays, progress in information-technology and communication promote a new educational paradigm, whereby the search for quality, pertinence, and internationalization in higher education has a prominent place.

Internationalization of higher education refers to a process which involves the design and implementation of policies and programmes and that aims at, on the one hand, incorporating the international and intercultural dimensions in the missions, goals and functions of teaching, research and extension of higher education institutions, and on the other hand at channeling the benefits derived from international cooperation (Knight, 2005). International cooperation at the educational level is conceived of as the way in which educational institutions enter into relations in pursuit of a mutual benefit. Interuniversity cooperation attempts to promote intellectual collaboration through the formation of networks between institutions and teachers to enable the access, transmission and adaptation of knowledge both within countries and beyond their frontiers. Higher education institutions as agents of cooperation play a vital role in cooperation for development.

The aim of this paper is to investigate the process of internationalization of Higher Education. For this purpose different modes of internationalization are presented; then, the vision that the group of organisms and institutions related to the implementation of higher education have of this process is analyzed and finally some indicators which make it possible to measure the depth the process has reached in the Department of Economics of the National University of the South (Universidad Nacional del Sur) are presented.

Modes of internationalization of Higher Education

Even though mobility of higher education students is the pioneering mode of internationalization of higher education, over the last years other forms have emerged which do not necessarily require students moving from one place to the other and that constitute the so called transnational higher education. The distinctive feature of the modes education has adopted is that individuals involved in the teaching or learning process are in different places. So students live in a different country-host country-from the one in which the educational institution is based- providing country. This mode causes teachers and materials to cross national borders (IESALC, 2004).

The following modes of transnational education can be distinguished:

Campus or sites, in this case the foreign institution settles in another country allowing students living in that country to participate in some of the programmes it offers.

Franchises, in this mode a foreign educational institution authorizes an entity located in the country where the student lives to offer, as an official provider, one or more programmes which will enable students to obtain a degree approved by the franchising university.

Articulation Programmes, in these programmes students can take courses in another institution different from the one in which they are enrolled and these courses are then computed with the credits necessary to obtain the degree. The institutions involved sign general or specific agreements for that purpose.

Double degree Programmes, in this case two universities, one a local university and the other a foreign one, offer a joint programme. This programme gives students the possibility to obtain, after taking one course of studies, two degrees: one issued by each of the universities.

Double degree programmes and articulation programmes sometimes involve the student's partial stay abroad.

Corporate Programmes, one institution recognizes the programmes delivered by another entity located in a different country with the sole requirement of passing certain exams.

Distance learning, this proposal aims at incorporating the advantages offered by technology to formal teaching, structuring programmes of study to be delivered in the distance mode, without losing the enriching benefits of contact and personal communication.

The virtual campus allows for the exchange of doubts, opinions, and experiences through its multiple applications.

International institutions, this mode groups the certifications granted by organisms which do not belong to a national system of education.

Teacher, tutors and researchers temporary mobility as well as the tasks performed by consulting agencies and external assessment agencies constitute another dimension of the internationalization of higher education.

Several reasons have allowed for the rapid growth of transnational education over the last decades, among them the most remarkable ones are: the increase in the costs which a student has to pay in order to live abroad that are even more evident for students from less developed countries, the development of ICTs that facilitate distance learning and the efforts made by institutions to convey a professional and business approach to their programmes which may be attractive for non-resident students. (Fernández López et al 2004).

Internationalization of Higher Education as seen by the actors involved

Since the acknowledgement that the development of nations greatly depends on the quality of the education provided by institutions of higher education and on the transmission, beyond the borders of the country of origin, of the knowledge that might be generated and accumulated in them, the chapter dealing with the analysis of Internationalization, regionalization and globalization of higher education of the declaration of the UNESCO World Conference on Higher Education (WCHE) in 2009 in Paris, France, highlights the importance of this process. It indicates that institutions of higher education are responsible for designing strategies to promote the transference of knowledge which will allow all countries to reach development aims.

Within this framework, international networks and associations of universities play a fundamental role, allowing the strengthening of mutual understanding and the achievement of a culture of peace. Moreover, the declaration points out that access to and permanence in quality education must be ensured so that the benefits of the globalization of education reach everybody. At the same time, the importance of the promotion of academic values, the respect for human beings, diversity and national sovereignty must be recognized, without disregarding the sense of belonging of each institution, that is to say, its anchorage to its own historical, cultural and sociopolitical reality.

The Ministry of Education of Argentina has encouraged the process of internalization in Argentine universities for several years by means of actions such as developing projects with the aim of strengthening the offices of international relationships, financing missions abroad, forming networks of cooperation, and participating in higher education fairs.

At present, a programme whose specific aims are encouraging the insertion of Argentine institutions of higher education in the processes of internationalization, integration and local and regional development is being promoted by the Secretariat of University Policies dependent on the Ministry of Education. With the purpose of reaching these aims, actions are being carried out within the national sphere, at the bilateral and multilateral levels.

Within the national sphere, the National Inter-University Council (Consejo Interuniversitario Nacional-CIN-) in particular via the REDCIUN (Red de Cooperación Internacional de Universidades Nacionales-International Cooperation Network of National Universities-) is the organism in charge of dealing with demands on this matter. At the bilateral level the aim of actions is to make cooperation with Latin American countries in general, and with countries members of the Mercosur in particular, more dynamic.

As regards the multilateral dimension, the strategic focus is identified in the Mercosur and the Unasur, along these lines, the Programme participates representing Argentina in the meetings of the Regional Coordinating Committee of Higher Education of the Educational

Sector of Mercosur and in the meetings of the South American Council of Education, Culture, Science, Technology and Innovation of Unasur. The Programme also participates in the Latin American Space of Knowledge (SPU-Secretariat of University Policy).

Internationalization is a relatively recent process within the National University of the South (Universidad Nacional del Sur-UNS), even though an important number of teacher-researchers have kept fluid cooperative relations with akin groups around the world for a long time. It involves activities which project over all ranks or groups, not only at the level of teaching and research. Along those lines, the process has begun to extend towards those who are in charge of the university management at all levels.

The National University of the South has become a destination for many students coming from the rest of the world in the last recent years, due to several factors such as the qualification obtained in the processes of evaluation and accreditation, the courses of graduate and postgraduate studies which are part of its varied academic offer and its strategic localization.

Although stays abroad- for research or for further education- are acknowledged as being of significant importance in the schooling of graduates and teachers, for different reasons this practice is not widely spread up to the present moment. With the purpose of extending the benefits of internationalization, the system of *internationalization at home* (IatH) has been implemented since the end of the last century. The IatH is an approach which has the aim of promoting international education to the interior of the educational institutions, from the institutions themselves, aiming at the appropriation and involvement of all actors (students, teachers and researchers, technical and/or administrative staff) (Juárez Salomo, 2012).

Internationalization of higher education in the Department of Economics at UNS

The Department of Economics is one of the sixteen academic units of UNS. This Department was born together with the National University of the South (Universidad Nacional del Sur) and with the first graduate studies of Bachelor in Economics at the national level. It is in charge of the study and further knowledge of matters related to economics, within the framework of social sciences. With this purpose academic activities tending to the transmission of knowledge are developed in it, both at the graduate and the postgraduate levels. At the graduate level: the Bachelorship and the Teacher Training Course in Economics are offered. At the postgraduate level: Master and PHD in Economics, Master in Agrarian Economics and Rural Management, Master in Sociology, Specialization in Economy and Health Services Management, Specialization in Innovation and Technology Management, and, jointly with other academic units: Master in Politics and Strategies and Master in Territorial Development and Management. All the postgraduate courses have been accredited by the CONEAU. Moreover, courses of specialization and training at the management and company level in the on-campus modality and, since 2005 in the blended modality with the technological support of www.continuar.uns.edu.ar virtual campus.

Together with the Institute of Economic and Social Research of the South, the Department carries out policies aiming at encouraging the formation and consolidation of research groups; training of human resources; organization of disciplinary and interdisciplinary groups.

The Department of Economics has a long tradition in national as well as international cooperation, especially within its most consolidated research areas, which has resulted in many postgraduate students studying abroad and the joint development of scientific research and production with foreign universities. These activities were developed within the framework of International Programme accords, agreements, or calls. Although some agreements of cooperation were signed in the 90's, there has been a remarkable increase in

the signing of agreements in the last decade. 56 % of them were made with Latin American institutions, of which 40 % were located in Brazil. The institutions located in Spain and Germany (annex chart 1) predominate among the European institutions which have created bonds of cooperation.

Among the programmes at multilateral level in which the department has participated, the Programmes of Cooperation of the European Union ALFA MASMEDIA (coordinated by the Technical University of Berlín), the Programme of Inter-University Cooperation (Programa de Cooperación Interuniversitaria-PCI) of the Spanish Agency of International Cooperation (Agencia Española de Cooperación Internacional-AECI), the ALFA RomaAnet programme (coordinated by the University Degli Studi di Roma Tor Vergata), the LINNEUS-Palme Programme (Linköpings Universitet of Sweden), the ALFA AURES Programme (coordinated by the Technical University of Berlin), the programme of Associated Centers for the Strengthening of Postgraduate Studies (Centros Asociados para el Fortalecimiento de Posgrados-CAFT_BA-CAPES/SPU, among others, stand out.

Teachers' Mobility

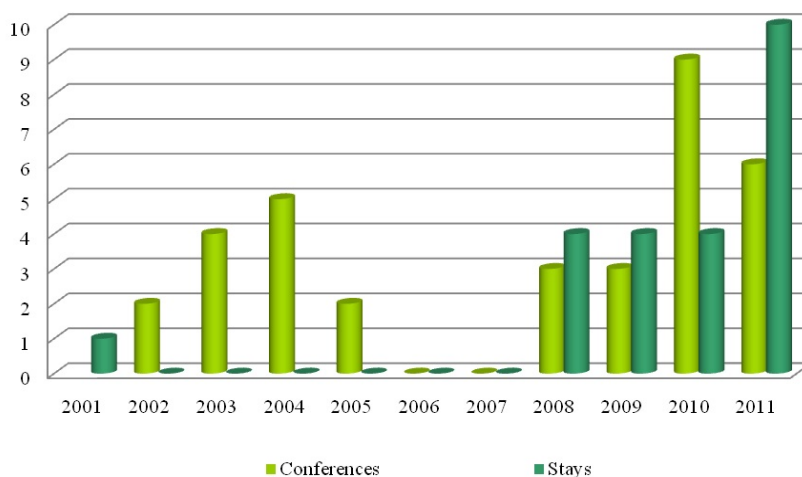
Among actions carried out with the purpose of promoting the training of teachers, support for activities in educational institutions in the rest of the world is really significant. Over the last years teachers from the department have dictated postgraduate courses, participated in panels and symposiums where they have lectured on different topics. Furthermore, they have stayed in well-known European and Latin American universities on research programmes directed by prestigious researchers.

It is worth pointing out that this kind of experiences allows the teacher to be in contact with other realities- with distinct cultural, social and linguistic diversity- besides contributing to his or her academic education. They will foster the development of new integration and leadership aptitudes, which will prove useful in his or her professional activity.

Likewise, five teachers have attended postgraduate studies in foreign universities, three of which achieved the master degree and several teachers who are doing postgraduate studies rely on the advice of teachers from foreign universities- as directors or co-directors of their grants or thesis-.

Even though international teacher mobility is incipient and the diversification of the modes adopted is scarce, observing its evolution- for lecturing as well as for research stays- it may be stated that an increasing trend is apparent over the period analyzed, which, in the light of recent cooperation agreements signed might become even more marked (Graph 1).

Graph 1. Department of Economics of UNS. Teachers' Mobility



Source: Based on The Department of Economics Yearbooks.

Undergraduate Students' mobility

Within the framework of the policy of internationalization, the Department of Economics of the National University of the South (Universidad Nacional del Sur) has always promoted exchange programmes for undergraduate students, mainly under the *Articulation programmes* mode. The Academic Committee of International Mobility (Comisión Académica de Movilidad Internacional-CAMI) is responsible for the recognition of subjects attended by students during their stay in foreign centers. The aforesaid Committee is formed by the Academic Secretary and the coordinators of the thematic areas of the said academic unit.

Over the past years a group of students doing the Bachelorship in Economics has participated in study stays at institutions abroad, most of them at European universities. The participation of 44 % of the students was financed by scholarships granted in the framework of agreements signed between organisms in the sphere of the Ministry of Education of the Nation and the destination institutions; the rest of the students obtained their finance from the destination country and two of them paid for the expenses of the trip with their own funds.

All the courses attended by these students during their stay abroad have been recognized as part of the curricula of their studies to graduate as Bachelor in Economics.

In the particular case of the student whose stay took place in the University of Lille, the host institution recognized the courses passed at the National University of the South (Universidad Nacional del Sur) Universidad Nacional del Sur, enabling him to graduate as Bachelor in Economics with a special orientation on Social Economics at the said institution during his stay in France. –*Corporate programs* – (Chart 1).

Chart 1. Department of Economics of UNS. Mobility of students at the graduate level.

Destination country	Host institution	Students	Financing	Period
France	Rouen Business School	2	Self-financed	1999
Austria	University of Applied Sciences, Krems.	5	Ernst Mach Grant from the Austrian government	2008-2013
Holland	Universidad de Groningen	1	Erasmus Mundus Programme ⁱ	2010-2011
France	Universidad des Sciences et Technologies de Lille	1	Erasmus Mundus Programme	2010-2011
Spain	Universidad Rovira Virgili	3	SPU. Redes Programme ⁱⁱ	2011
Germany	Universidad de Ciencias Aplicadas de Osnabruck	1	Grant from host institution	2013
Mexico	Universidad Autónoma de Chiapas	1	JIMA Programme ⁱⁱⁱ	2007
	Universidad de Chapingo	1	JIMA Programme	2013
Chile	Universidad de Valparaíso	1	Self-financed	2013

Source: Auto-elaboration. Based on The Department of Economics Yearbooks.

The comparison of the figures that account for the entire UNS undergraduate students' outgoing mobility with those corresponding to the Department of Economics and, taking into consideration that some exchange programmes apply to specific disciplines, would explain the importance attributed to this process within the sphere of the said department, since in the last five years, each year around 20 undergraduate students in average from all the university participate of stays abroad. (Morresi, 2013)

Final considerations

The reasons that drive higher education institutions to carry out policies leading to internationalization can be classified into four basic categories: political, economic-financial, academic and cultural. (Knigh, 2005). The mission of the National University of the South (Universidad Nacional del Sur) views this process as an opportunity for learning and institutional projection, which contributes to: strengthening the functions of teaching,

research and extension, the contact with institutions that have similar ends, the creation of employment opportunities for graduates, and the reinforcement of the ability to deal with regional, national and global problems, among other practices.

UNS vision gives internationalization a distinguished place, making it possible to deepen the process each year signing new cooperation agreements, establishing networks, developing projects in conjunction with foreign institutions and basically through the mobility of all the members of the university community.

On the other hand, the Department of Economics of UNS considers that all these experiences are more and more important for the education of graduates, since they favor a comprehensive education and promote the ability to adapt to new cultures and environments and job placement in a global world. The data analyzed shows that even if this is still an incipient process it has a growing trend that is on the process of consolidating itself with time to reach the above mentioned goals.

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- i. The cooperation in higher education programme 2007-2013: Erasmus Mundus External Cooperation Window aims at higher education institutional cooperation between the European Union and third countries. It intends to train national universities human resources in the areas of study, teaching, and research by means of the mobility of students at all levels and teachers.
- ii. The formation of international networks is a programme run by the Secretary of University Policies dependent on the Ministry of Education which aims at creating and deepening academic bonds with institutions of countries which were defined as priority areas. (Latin America, Africa and Asia).
- iii. The JIMA Programme is originated from an agreement between the Republic of Argentina's National Interuniversity Council (Consejo Interniversitario Nacional) and the National Association of Universities and Higher Education Institutions (ANUIES) of the Republic of Mexico and it consists in a Specific Agreement of Cooperation for the Exchange of students at the graduate level

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Annex

Chart 1. Department of Economics of UNS. International cooperation agreements.

Institution	Year
Rovira i Virgili University (Universidad Rovira i Virgili), Spain	1994-2010
Fachhochschule Osnabrück (now Hochschule Osnabrück), Germany	1996
Technical University of Berlin, Germany	2000
Institut de Formation Internationale, Groupe ESC Rouen	2002
University of Applied Sciences, Austria	2006
International University College (IUC), Italy	2008
University of Seville (Universidad de Sevilla), Spain	2009
Autonomous University (Universidad Autónoma), Mexico	2006
Human and Social Sciences Institute of the Federal Rural University of Rio de Janeiro, Brazil	2008
Research and Urban and Regional Planning Institute– University of Rio de Janeiro, Brazil	2008
Autonomous University of San Luis de Potosí, Mexico	2008
EAFIT University, Republic of Colombia	2008
Sao Paulo's University Institute, Brazil	2009
Sao Paulo's State University, Brazil	2009
University of Business Sciences, Nicaragua	2009
University of Antioquia, Republic of Colombia	2010
Autonomous Juarez University of Tabasco, Mexico	2010
Autonomous University of Valparaíso, Chile	2013
Birla Institute of Management Technology, India	2008

Source: Auto-elaboration. Based on The Department of Economics Yearbooks

RISK MANAGEMENT IN PROJECT BUSINESS – A CASE STUDY ON THE ACQUISITION OF CONSTRUCTION PROJECTS AT BILFINGER BERGER CIVIL

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Abstract

This paper deals with risk management in project business. In particular, it examines the specific risks during the acquisition of construction projects. First of all the characteristics of the construction industry and the risks occurring during bid preparation and negotiation of construction projects are described. Then a case study explores which strategies the subject company pursues to manage these risks. In focus of the case study is the company Bilfinger Berger Civil, a large, international construction company, which is an active player in the project business and has already carried out a variety of construction projects successfully. The author deals with various aspects of practical risk management: optimization of the project portfolio, risk analysis and determination of the offer price with the help of a simulation model and the work of the company's Project Controlling Department that monitors the high-risk projects. The risk management of Bilfinger Berger Civil is finally assessed in form of a summary. The reader gains information about theories on risk management and numerous impressions on their practical application in a real construction company.

Keywords: Risk, risk management, project management, construction industry, case study

Introduction and theoretical background

Business companies in the project business are to be characterized by several specifics, which also applies to the requirements with regard to their risk management. This can be further differentiated in terms of the industry in which the company operates. In particular, the construction sector must be characterized by some specific attributes. The classic risks of project management, such as risks of quality, cost and time of course apply to the construction industry, too, but the sector can be described in detail through some further anomalies that *Horsch* (Horsch, 2002) summarizes as follows:

- Every building project can be characterized by uniqueness
- Very often the construction contract is concluded first, and only after that the execution planning with detailed designs is done
 - Large construction projects involve a high degree of technical complexity, for which the construction companies partly do not have core competences (any more)
 - The technical complexity is tangent to the contractually owed functioning
 - Each individual order represents a high financial volume (which is why the credit line is impacted by issuing of a contract performance guarantee and warranty bond)
 - The contractual and legal warranty obligation is long (usually five, for some components even ten years), in their nature often unpredictable (for example in bad faith) and - depending on the subsequent use of the object - in addition to reparation of defects also damages-triggering.

The author points out that, in particular, the preliminary phase, consisting of bid preparation and tender, and the subsequent contract negotiations, including conclusion of the contract, involve increased risks: "*A bad contract is a bad contract. No amount of professional construction management can make up for, for example, calculation errors or realizing contractual risks (geological risk, unrealistic construction schedule with corresponding penalties, etc.)*" (Horsch, 2002). Göcke (Göcke, 2003) who describes the following risks that used to occur especially in the phase before contract conclusion also took up this idea and explains the following risks:

- Risks of calculation
- Risks of final price decision
- Conclusion of lump sum contracts
- Sales-oriented behavior during acquisition

Risks of calculation

As in other industries, the price is determined by calculating in advance. Construction projects are, generally speaking, extremely complex projects with many influencing factors that need not rarely several years to be completed. A full coverage of all the construction work-affecting risk factors during the calculation phase is under an economic point of view simply not possible. For this reason, often inaccuracies or omissions used to arise in the calculation, which, as they exceed a certain level, burden the result of the project. To make matters worse, often only little time is available for the calculation of costs and the capacities are limited due to a usually low success rate.

Risks of final price decision

The final pricing is often not based on a calculation with a determined offer price, which includes premiums for risk and profit, but in separate rounds of negotiations. Here, the awarding party will require the submission of a final offer, in which often the price is the sole distinguishing feature, and on the basis of which the awarding of the contract will be made to the bidder with the lowest price. Partly this is a situation deliberately promoted by the contracting authority, which can be characterized by pressure in terms of time, competition and success on the part of potential contractors. Often discounts are given on the original price, which can only be inadequately examined and which are not accompanied by any reduction of cost or risk at the time of submission of the bid.

Conclusion of lump sum contracts

The tendency in the conclusion of contracts goes towards the conclusion of contracts with fixed prices. Contracts that include a settlement based on the quantities conducted and the provided unit prices get more and more in the background. Lump sum prices are binding for billing for the duration of the project and are independent of any increase or decrease in quantities. The Contractor may assert any additional cost during conduction only afterwards and the approval of the demand is uncertain. This affects both, the amount of the claim, and on the other hand, the timing of approval to which the project is to be funded additionally by the contractor. Thus after conclusion of the contract the project result can be essentially controlled only on the cost side.

Sales-oriented behavior during acquisition

Sales-oriented acquisition behavior is often found in connection with the previously described special circumstances of bidding and final pricing. The focus is on the sales-oriented project acquisition, but not the profit- and risk-based acquisition of projects. Since construction projects are generally characterized by a one-digit profit margin, in sales-oriented project acquisition easily such projects can be "won" that can only be conducted at a

loss and thus burden the result of the entire company. Nevertheless, there are various reasons for such behavior. For example, managers try to earn at least a portion of the contribution margin to bind existing capacities or to survive economically difficult times. In addition, this strategy is used when new markets are to be entered or the opportunity of lucrative follow-up contracts is given. Regardless of these the sales-oriented acquisition behavior is a high-risk activity, since not only the asset situation of a company forms a criterion for the company's continued existence, but also liquidity must be guaranteed at all times. The underpriced project also may be subject to additional risks that can push a project offered with calculated profit into the loss area.

Construction projects are further characterized by risks that have to be accepted as given and can often be influenced only after conclusion of the contract by appropriate work preparation, project controlling or intense claim management. In the past reduction of risks was attempted especially with the traditional means of the construction process: professional work preparation, cooperation with reliable subcontractors, taking advantage of opportunities in procurement and the use of qualified personnel. These means are neither enough to survive in the market in the future, nor to prevent runaway projects on time. Runaway projects are projects that can only be conducted with such a negative result that the positive results of numerous other successfully completed projects are nullified. A single of these runaway projects can sometimes distort even the entire outcome of a branch, a subsidiary or even the entire company into the negative range. A method by which the project risk can be reduced and the amount of the contribution margin can be increased is described by *Blecken/Meinen* (Blecken/Meinen, 2004). The authors recommend the following procedures:

- Strategic optimization of the contract portfolio
- Offer rating to select profitable projects

Under the strategic optimization of the contract portfolio essentially the orientation of the order structure on the planned or potential corporate earnings rate is understood. It follows as a conclusion that the company should refrain from taking part in tenders of unilaterally risk-intensive projects in order to optimize the project portfolio and not to burden it with loss-making projects. This path leads probably to a smaller number of projects; however, it also offers the opportunity to increase the overall result. The aim of offer rating is to avoid runaway projects even within the framework of generally permissible projects. This includes the pre-selection of the targeted market segments, the risks of which should be included in the individual valuation of projects, as well as verifying each individual project before bidding in terms of specific risks. In case of the identification of individual risks, the offer price can then be raised with predetermined risk premiums. It should be noted that the embedment of risk premiums into the price is very difficult due to the market situation, as competition usually is decided by the price and factoring in of risks may lead to a safe margin, but contract awarding can not be expected in every case.

Bilfinger Berger Civil at a glance

Bilfinger Berger Civil comprises the Group's activities in this area of construction, the business is focused on demanding infrastructure projects. The company ranks among the recognized suppliers for large infrastructure projects and was able to work out an excellent reputation. The expertise of the company is concentrated in specialized units, whose competence the strong competitive position is based on. These include the core technologies bridge construction, tunneling, transportation infrastructures, civil engineering, hydraulic engineering and water technology.

The focus of the business is on international markets, selected European and African countries, the Gulf region as well as in Germany. Although being a German company, about 80% of the revenue is generated abroad. The business is affected by the strong dependence on

public investment and the business cycle as a whole. Furthermore, clients often base their project awarding policy exclusively on the cheapest offer without rewarding quality sufficiently. Another characteristic is the relatively high radiation effect of individual risky projects on the earnings situation of the whole company. Regardless of this, the list of projects handled is very impressive, and includes the largest offshore wind park in the world off the coast of Denmark's with 91 wind turbines. In Doha, Qatar, the company built a completely new urban area for 20,000 inhabitants, consisting of the turnkey construction of about 6,000 apartments in total and a contract value of over 1 billion Euros. In Switzerland Bilfinger Berger Civil is involved in the construction of the Gotthard Base Tunnel, this occurs at a depth of 800 m and will be the longest railway tunnel in the world after its completion with a length of 57 km. In 2008 Bilfinger Berger Civil generated a turnover of more than 4 billion Euros and had a workforce of more than 14,000 employees.

Optimization of the project portfolio

In 2009 Bilfinger Berger Civil introduced a new system for the classification of projects that on the one hand has the goal of supporting the decision about submitting a bid on a tender and on the other hand is used to control the mixture of the project portfolio. The aim is to take only such risks that are measurable and controllable by the company. In the focus of the project evaluation stand the form of contract and the acceptance of budget or quantity risks in case of a contract. The projects are classified into four different risk classes whose two essential criterions are defined as follows:

- Risk category 1 No budget or quantity risk, Reimbursement of cost-contracts or orders smaller than 10 million Euros order value (in case of reimbursement of cost-contracts the contractor is entitled to charge the costs incurred plus an agreed margin)
- Risk category 2 Limited budget or quantity risk, Unit-price-contracts or contracts with up to 10% lump sum content (in case of unit-price-contracts the contractor is entitled to charge the built and approved units multiplied with the agreed unit prices)
- Risk category 3 Complete budget or quantity risk, Lump-sum-contracts or unit-price-contracts with more than 10% lump sum content (in case of lump-sum-contracts the contractor is entitled to charge the agreed price, less or more units do not entitle to any changes in price)
- Risk category 4 Budget or quantity risk not measurable, Disadvantageous contract clauses and incalculable risks

Furthermore, the size of the project, previous experience with the client, cooperation with partner companies, the technical and logistical complexity of the project and the available construction time are evaluated during the classification of the project as well. These are the criteria for classification of a project to a risk category, on the basis of which subsequently the decision is made whether or not to take part in the tender. Especially for large projects, which are often technically demanding and provide by their contractual, financial and logistical complexity high demands on the project organization, also other aspects still serve as a basis for discussion to assess the attractiveness of the project. In this context, the market attractiveness is judged according to the following factors: market growth, market access, competition, profit potential, as well as partner and subcontractor availability. The project risks include staff availability, project size, technical expertise, client behavior, market knowledge as well as the contract and payment conditions. Each criterion is assessed separately to classify the project into one of four risk classes. A detailed overview of the different risk categories is given in *Table 1*.

Risk category	1	2	3	4
Budget- and quantity risk	No or low	Restricted and containable	Distinct, completely	Not measureable, incalculable
Contract type	Alliance- or Cost+Fee- contracts (Contracts for reimbursement of costs)	Unit price contracts, including partly consolidation into a lump sum up to 10% and with a small part of design planning	Lump sum contracts or unit price contracts with consolidation into a lump sum above 10%, Design- and Construct contracts	Adverse contract terms, not manageable or not affordable risks
Project size	up to 10 million €	< 200 million €	> 200 million €	
Client		New or irregular customer, that is known as competent / not hard to work with	New or irregular customer, that is known as hard to work with	Client is known to be little competent
Labour community		Bilfinger Berger has technical or commercial leadership	Partner company has overall control (leadership)	No or very small possibility for control on behalf of Bilfinger Berger
Technical and logistic complexity		From small to high (standard methods), responsibility at Bilfinger Berger	Very challenging, responsibility at Bilfinger Berger	Very challenging, no or small responsibility at Bilfinger Berger, Partner- or subcontractor Know-How necessary
Construction time		Sufficient (has spare time)	Very tight (no spare time), but presentable	Not presentable

Table 1: Risk categories for project evaluation

Source: Civil News, Employee magazine of Bilfinger Berger Ingenieurbau GmbH, Issue No. 1/2009, Wiesbaden, Germany, 2009, p. 5.

If, depending on the various criteria different risk classes apply for a project, so for the final rating of the overall project always the highest classification of a single criterion is taken into account. Within a year after the introduction of the project evaluation with the help of risk classes and risk profiles positive results have already been achieved, justifying the optimization of the project portfolio as the right path. The following positive effects were registered in detail:

- A clear shift from high risk to middle risk and low risk projects
- A clear shift from mega-projects with an order volume of over 1 billion Euros to large and middle size projects
- Significantly more intense dealing with risks on all levels of management

With the help of the presented risk classification, initially the existing risk profile of the individual business units was analyzed in order to develop the future desired target profile. Then provision is made not to conduct projects in risk category 4, which are accordingly generally no longer offered. In addition, the share of projects with risk class 3 shall be reduced to below 50% of the total portfolio. Accordingly, the proportions of projects in risk categories 1 and 2 are to be expanded, which should account for more than half of the future project portfolio. Both in the past and in the future projects in risk class 3 have an over-proportional share of the total portfolio, which can be explained with the fact that many construction projects are tendered as lump sum contracts. Nevertheless, the focus of project execution shall be clearly directed to those projects that can be characterized by a balanced

distribution of risks between client and contractor. The percentage distribution of individual risk categories within the current and future project portfolio can be seen from *Figure 1*.

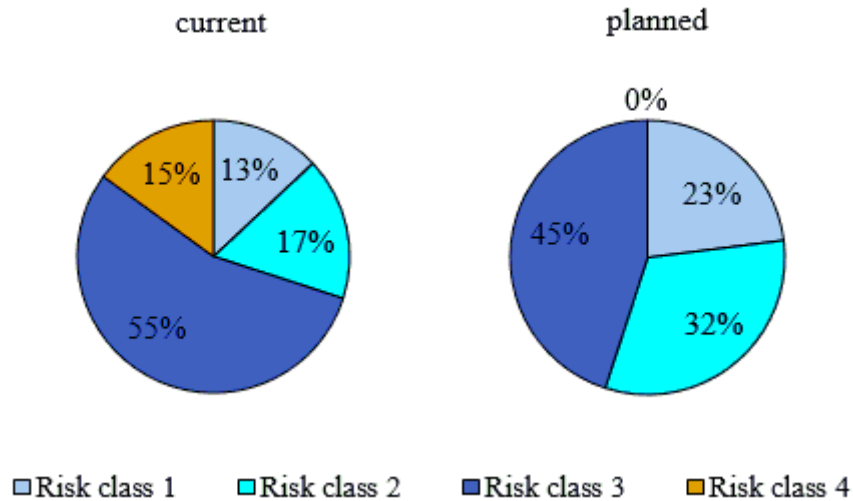


Figure 1: Distribution of Risk categories

Source: Civil News, Employee magazine of Bilfinger Berger Ingenieurbau GmbH, Issue No. 1/2009, Wiesbaden, Germany, 2009, p. 5.

Risk analysis with the help of the Cassandra-Tool

The Cassandra-Tool is an instrument with help of which Bilfinger Berger Civil specialists analyze quantifiable risks statistically. Essentially, it is based on the Monte Carlo simulation, in which a variety of different scenarios is generated in order to draw conclusions from the distribution of the results with respect to the considered risk. The Cassandra-Tool is utilized particularly in the bidding phase of projects, for example, when the influence of individual risk factors on the overall project shall be predicted or a likely outcome of the project is to be calculated. The method consists of three steps which are applied one after the other:

1. Identification and analysis of opportunities and risks with regard to the individual components of the offer price
2. Evaluation of the preceding considerations with help of the Cassandra-Tool
3. Presentation of the analysis and consideration in the offer price

The offer price is according to the model made up from the calculated profit as well as four types of costs: direct costs of subcontractors and materials, indirect costs of staff, rent, etc., costs for extraordinary risks and opportunities and costs of price increases. With exception of the profit all the above categories can be added another category with help of the Cassandra-Tool: variable costs of risk premiums. First, opportunities and risks in relation to the four types of costs are determined in the first step of the process. For this purpose, a risk workshop is conducted, in order to analyze the identified opportunities and risks, for example, by estimating the probabilities of occurrence or interdependencies. For the direct costs and the indirect costs the best case, worst case and the likely case are determined, similar to the offer calculation separately for quantities and prices. In the presence of extraordinary risks or opportunities, in addition the probabilities of these are estimated as well as in case of anticipated price increases assumptions are made for their eventual extent. Thereafter, the individual values for quantities and prices are multiplied with each other. Already at this stage first further analyzes can be carried out. Thus it can be seen how much of the calculated scenarios lead to costs below a certain threshold (cumulative frequency) or how many scenarios end within a predefined interval of costs (distribution function). Furthermore, it can be decided whether and to what extent a variable risk premium shall be

set up that will be part of the final offer price. This procedure is then repeated for each type of cost and each particular risk factor. This results in a Monte Carlo simulation with a variety of different scenarios, each leading to a specific offer price. The distribution of the total cost can very well be illustrated graphically, for example the intervals of costs on the x-axis and the number of scenarios within an interval on the ordinate axis of a two-dimensional coordinate system.

During the second step of the Cassandra program the foregoing considerations are analyzed and the graphs obtained evaluated. While with the conventional approach no information about the range between best and worst case is available, with the help of Cassandra-Tool new insights can be gained. They include:

- the progression of the project costs and the associated sub-exceedance probabilities between best-and worst-case
- the expected spread of the project costs
- differences between projects with high uncertainty regarding costs and low uncertainty regarding costs
- the sub-exceedance probabilities of costs calculated with the conventional approach
- identification of advisable risk premiums

In the third and final step, the findings of the analysis are processed for decision-makers in a standardized presentation of results. This includes the evaluation of the distribution curves and the review of the analyzed input calculation in order to possibly incorporate reserves in the calculation, which are intended to ensure that the predicted costs are not exceeded. Furthermore, the topics with the highest risk and opportunity potential or the greatest impact or the greatest uncertainty are presented in order to take them into account accordingly in the future project control. In addition, the presentation of results includes a written report with an interpretation of the findings. The benefits of Cassandra-Tool can be summarized with the following points:

- The project team deals in a structured way with opportunities and risks.
- All uncertainties will be further examined with the same methodology, the calculated effects are therefore comparable.
- It is possible to take dependencies and links between the different uncertainties into account.
- The model allows one to infer both individual risks, as well as the overall risk.
- The calculated scenarios can be compared with the calculated costs and risk premiums, but also with the results of other methods.
- The amount of reserves or risk premiums can be determined that are needed to achieve a certain level of security or a sub-exceedance probability.
- The project team can focus their work on the significant risks.

However, regardless of the usefulness of the instrument, the model also has limitations that should be considered in its application. The Cassandra-Tool is a useful component in risk management, but it represents only a single part of it. The results obtained must be compared with the estimates of other methods and then scrutinized. Furthermore, it must be noted that the model can reflect only what has been previously assessed. The quality of the data generated by the model is very closely connected with the quality of the data entered by the user. Cassandra is "only" a computer-based analysis algorithm that neither is being able of discrete thinking nor makes assumptions or evaluations. However, the instrument is to support decision-making, it cannot replace it. This is also underlined by the handle that responsibility for the adopted estimates and content of the risk assessment remains with the project team.

Monitoring of projects by the central Project Controlling Department

The central Project Controlling department monitors individual projects in the bidding phase, the negotiation phase, as well as in the execution phase and plays an essential role in the management of project risks.

The monitoring process begins with the bidding phase of a project. At the beginning, the operational unit that is in charge for the project has to fill the so-called "Offer Notice Sheet". This is a form that contains a number of risks and project characteristics in a standardized format, and categorizes them according to their extend. The form has to be submitted at the beginning of the offer preparing process by the respective operational management to the central department with all available information at this time. The central department checks the information and considers whether there is any criteria that justifies the refusal of approval to tender and agrees this with the management of the operational area and the responsible board member. If the evaluation of all criteria leads to an overall to negative impression, bid preparation and tender is called into question, but it is being tested in each case, what criteria are negotiable and whether the risks can be excluded in the offer. As part of its task, the Project Controlling department analyzes and rates the bid preparation in terms of quality of bid processing, engineering, contracting, estimating, construction time, personnel and organization, as well as risks and opportunities. At the same time, the central department decides about the future intensity of monitoring the project at which the following options are possible:

- Due diligence of the entire project
- Observance of certain portions of the project
- Monitoring of the project during the entire bid preparation
- Attendance at the final calculation meeting
- Consultation of other in-house departments
- Consultation of external special advisors

In the analysis of the offer the preliminary bid amount, the risk review, pointing out of how and where the risks have been considered in the offer and personnel planning are the fields of special importance. If necessary, the central department sets up a supplementary report for the Executive Board. The responsibility for complete and accurate bid preparation and the implementation of the recommendations by the central Project Controlling always remains, however, at the relevant operating unit.

After submission of the offer by the operational unit the central department monitors the project, where appropriate up to contract award. During this time, the operating entity is required to forward all information about the development of the project regularly and promptly to the corporate headquarter. Here contractual changes of any kind compared to the agreed terms of the offer are of particular importance, especially changes of contract terms, or increases or decreases of services and changes in the construction time or interim deadlines. Other focal points of observation are on the withdrawing of exclusions in the offer, discounts, the extension of the offer-binding period or bid bonds and of course changes in the risk profile of the project. Before signing of the contract, the Project Controlling finally checks any negotiation results.

Projects that have been monitored by the central department during the offer phase are usually observed after placement of the order, too. However, so-called risk projects can newly be included in the monitoring process. These projects are already in the construction phase, however, have not been checked yet. These projects are characterized by abnormalities or signs of higher levels of risk, which the central department tries to counteract by more intensive care. The following criteria are used to define risk projects:

- With regard to the entire project:

Difference between current profit forecast and the profit that is still needed to reach profit plans > -5%

- With regard to the fiscal year:

Difference between current profit forecast and original profit forecast > -5%

If a project is monitored during the construction phase, the project management is required to make all requested contract documents or other documents available to the headquarter and to prepare regular monthly and quarterly reports. The central Project Controlling, for example, takes part in supervision meetings and regularly collects information about all relevant procedures and measures influencing the project, the progress of construction and other technical concerns. In addition, commercial details are checked, such as the result of the construction site at the reporting date or the result forecast for the end of construction time. In summary, the central department analyzes and evaluates projects in the execution phase in terms of quality of construction management, engineering, contracting, performance and result, construction time, personnel and organization, as well as risks and opportunities. Furthermore, audits are performed, reports and analyzes generated about risk factors and possible project control measures suggested. As in the offer phase responsibility for the proper execution and implementation of the recommendations remains in the relevant operating unit.

Parallel to the project monitoring the central department also reports to higher-level units. Reports will be provided to the project managers, as well as their line manager and the responsible Board member. Before finalizing and distributing the reports and analyzes are sent to and discussed with the relevant project managers. In case of a different opinion the project management can represent their dissenting view in the reports.

Conclusion

The internal control system of Bilfinger Berger Civil was mainly driven by organizational measures. This includes primarily the creation of several specialized central departments. The presence of an internal audit is explicitly required by the legislative side, but other central departments, such as the Project Controlling, monitor the risk situation of the company and thus contribute to a legally compliant risk management structure. Risk management does not exist separately, but was integrated into the existing reporting structures and thus into the existing process structure of the company, whereby it is present at all levels of the Group.

A special position within the company comes to the central departments. In them, the expertise in the respective area is bundled to support and advise the operational units in their business. Important legal cases and contracts are handled by the Corporate Legal Department. The Treasury Department acts as the in-house bank for the entire group, while the Group Controlling collects the detailed reports of all business units. The Internal Audit Department and the Project Controlling accompany projects of outstanding importance or in individual cases if necessary. Many processes run together in the company's headquarter, the departments are at least given a voice in a variety of decisions. Furthermore, the central departments provide regular reports, such as quarterly or as separate risk reports, which support the Board in its work. On the other hand, the importance of corporate departments must not be overstated. On one hand, different thresholds are applied in reporting or in selecting projects to be observed. Therefore, not every project is accompanied through all phases of project life cycle and decision-making is delegated to intermediate management levels. On the other hand, the capacity and the number of employees in the corporate headquarter are limited, resulting in the necessity to focus on priority activities and apply broad guidelines. A centralized risk management does not exist. Neither is a central Risk Management Officer in charge, nor a risk management department installed as an

independent department. Rather, the principle of integration has been implemented, risk management is integrated in the organizational structure and the line functions of the company.

In addition to the advantages already described, however, the risk management system at Bilfinger Berger Civil has its limits, too. For improvement, among others is the field of tools for project management. The shortcomings do not concern the instruments themselves, but rather their systematization and universal utilization. With a comprehensive reporting system, ongoing project calculations and a conscientious determination of performance the common tools of project management are available in the company Bilfinger Berger Civil. These should allow a professional risk management and thus also a professional project controlling. However, there are improvement opportunities in dealing with these instruments. Employees are not always familiar with all the elements of project controlling or cannot safely handle them. This cannot be generalized because of the rising complexity of the projects and the increasing demand for training and experience of the personnel employed, however, weaknesses in individual cases cannot be excluded. For example, the project calculation is not continuously updated or uncertainties in the determination of performance appear.

The rules and regulations of the risk management system are in addition to its backbone at the same time also its limits. Thus, the existing schemes can be used, of course, only if employees also know them. For this purpose, there are several media available, such as circulars, the e-mail system or the group-wide intranet, but not all employees do always have regular access to these media. For example, on construction sites, access to the intranet is not always ensured, larger construction organizations sometimes also use own e-mail systems or individual employees are not on the distribution of circulars. It is therefore impossible to ensure full and to monitor the actual compliance with all rules and regulations.

Additional potential for conflict is caused by the "human element" in the project management, the fact that in all positions people with individual characters work, possessing subjective perceptions, vanities and other human weaknesses. The cooperation between the two endpoints of the Group hierarchy depends to a large extent on the personalities of the employees involved. Is it weakened by personal factors, asymmetry of information, delays and other conditions may arise that complicate the management of emerging risks. The "human factor" comes also into play, when the employees are not aware that they themselves are the first and most important risk managers. In this respect, Bilfinger Berger Civil, however, is classified as a model, since in various media, the employees are named repeatedly as the most important risk managers.

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BUSINESS STRATEGY: USING SHIFT LEFT PRINCIPLES TO MANAGE IT PROJECTS EFFECTIVELY

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Abstract

Customer satisfaction is seen as a key differentiator in a competitive market place. As per Gartner 2012 report, only 75%-80% of IT projects are successful. Customer Satisfaction should be part of the business strategy. As a project manager, the associated project parameters should be pro-actively managed and the project outcome needs to be predicted. There is lot of focus on the end state and in minimizing defect leakage as much as possible. Focus should be to pro-actively manage and shift left in the life cycle. Identify the problem upfront in the project cycle and not wait for lessons to be learnt and take re-active steps. This paper gives the practical applicability of shift left techniques and illustrates use of predictive model in a project to predict system testing defects thus helping to reduce residual defects

Keywords: Project, customer satisfaction, shift left, project management

Introduction

A project is temporary endeavor with defined objectives. Project Management involves managing the project throughout the lifecycle. Project life cycle includes initiation phase, planning phase, executing phase, monitoring and control phase and finally close down phase. The challenge lies in understanding and meeting the project goals with the defined project constraints. Every project is unique and need to be planned well. A project has a defined start and end date. Project management is applicable across industries like production, information technology, textile to name a few. In the Information Technology industry, project management plays a crucial role. Industry experts have highlighted the importance of project management. 20%-25% of IT projects fail due to poor project management. Project Management principles need to be understood well by the project managers. Proactive management is the key for success of any project. Ability to predict project outcomes and take preventive actions will determine the success of the project. The focus on shifting left in the project life cycle is vital.

Shift Left Approach

Shift left is one of the approaches where the focus is to concentrate on the upstream activities. The intent is to reduce the defect leakage upfront such that there is less impact to downstream activities. This approach is applicable for any type of industry. In a software development project, the shift left refers to section of quality management concerned with prevention planning. Designing the shift left strategy is important. Focus should be to improve overall operational efficiency and ensure early defect detection while reducing risks

and costs. The process phases for a typical software lifecycle project is define phase, design phase, develop phase, test phase and finally deployment phase. A management layer ensures these processes are followed as planned. Shift left strategy need to be inbuilt in this process so that the project manager can identify defects upfront.

In requirements phase of project life cycle, shift left approach can be implemented. In requirement phase, few process steps that can be added are requirement harvesting, requirements review by the right stakeholders and requirements testability. Requirement harvesting is not only about getting the requirements from the end user and to baseline it, but to deep dive on the requirements. Requirements should be explored and understood in detail to understand the business context and objectives clearly. Requirement review is a process that is crucial and it is important to bring the right stakeholders from the business and user community to validate the requirements. From the given requirements it is important to break it down to testable requirements. Of these requirements, identify those which can be tested individually, as a group, or those that cannot be tested. This phase is the first step and it is crucial to do it right. The focus is to detect defects early in the life cycle. Test driven development plan should be the focus in design phase. New project development models talk about test driven development. Test cases are written, executed and based on the failure of the test cases, codes are developed and tested again. Smoke testing and test environment validation need to be included before testing starts. Root cause analysis at every stage is vital to look at the corrective and preventive actions. These actions need to be implemented to avoid defect leakage and re-occurrence of defects. Project managers need to be aware of these process improvement activities and implement them in the project. Process quality consultants play a vital role in training the project managers with relevant case studies so that they can implement these improvement process steps.

Prediction Model

Prediction models should help the project manager to predict the project outcomes. Project outcomes include schedule, costs and defect parameters. A project manager has to consider the project requirement, project context and project constraints, to manage the project successfully. A project manager needs to be proactive in tracking project goals instead of being reactive. Prediction models are statistical and simulative in nature. These models should help in simulating project scenarios and help in determining outcomes. It can model the different variation factors. These models help the manager with the predicted range or the variation of its outcomes. Based on the different project scenarios, project manager needs to perform 'What-if' analysis. This analysis will help the manager to change the project parameters based on different scenarios and select the best option.

Client objectives should be translated into quantitative objectives. These objectives should then be converted to project goals. For each of the goal based on the contract, the service level agreements should be tabulated. Project manager can review these goals and go with client goals or if organizational goals are even stringent, manager can set that as the project goal. After the goals are clear, operational definition for each of this goal should be documented and agreed upon. This should also include the metric, measures, collection mechanism and frequency of collection. Process and product measures need to be considered. Influencing factors for these measures should then be identified. Based on the measures and influencing factors, predictive models can be built to predict project outcomes. Prediction models can be used to predict interim and final outcomes. Influencing factors can then be modified to analyze the impact and determine actions to be taken.

Process quality managers play a key role to ensure projects adhere to quality standards. In an organization, the quality group should focus on developing standard prediction models for basic project parameters. A prediction model for project schedule

variance, project effort variance and project defect density would be a good start. Process teams can build these models using rich organization project data. These models can then be used as reference for the project managers. When a project manager starts a project, organizational prediction models can be inherited and then customized to the project context. The influencing factors and project constraints might vary from project to project.

Defect Prediction Model

System testing is an important phase in project development life cycle. At this phase, systems are tested extensively. This also includes the integration of systems. For a project manager, system testing defect density is an important parameter to track. The number of defects identified during system testing determines the quality of the development. Project subject matter experts identify the different parameters that influence the system testing defect density through brainstorming session. Based on the influencing factors, the key ones that impact the system testing defect density is chosen. Then the operation definition, metrics and measures are arrived at. Project data was collected for these parameters. Linear regression was performed against the data to find out the key variables that influences the system testing defect density. After many trial and error methods the below two variables were established as the x factors.

1. Y – System Testing defect density – No of defects identified in system testing of the project against effort spent during system testing phase of the project
2. X1 - Technology experience – Average relevant technology experience of the team, in person months
3. X2 – Requirement Clarification Index – Number of requirements clarification resolved against number of requirement clarification raised during requirement phase of the project

The project data collated for the x and y factors are as shown in the Table 1. Data points from 25 projects in an organization were collected and considered for analysis. Projects factored in were similar in nature. The null hypothesis considered is that X1 and X2 have no influence over Y. Technology experience and requirement clarification index does not impact system testing defect density.

Y	X1	X2
System Testing Defect Density	Technology Experience(in months)	Requirement Clarification Index
0.085	35	80.000
0.092	31	75.000
0.092	33	80.000
0.123	35	70.000
0.114	25	50.000
0.113	21	60.000
0.124	22	65.000
0.132	33	70.000
0.115	35	75.000
0.141	18	65.000
0.095	34	80.000
0.070	40	90.000
0.071	42	90.000
0.078	48	90.000
0.083	39	90.000
0.084	41	90.000
0.131	34	75.000
0.133	28	80.000

0.131	25	55.000
0.342	4	50.000
0.620	3	30.000
0.390	5	20.000
0.089	43	95.000
0.095	41	95.000
0.520	6	40.000

Table 1 – Project data values

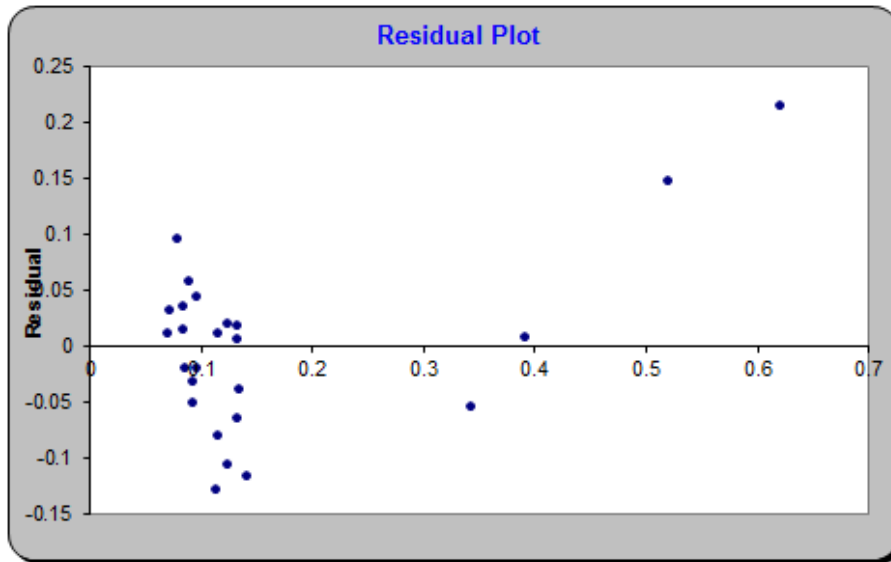


Figure 1.1 – Residual Plot

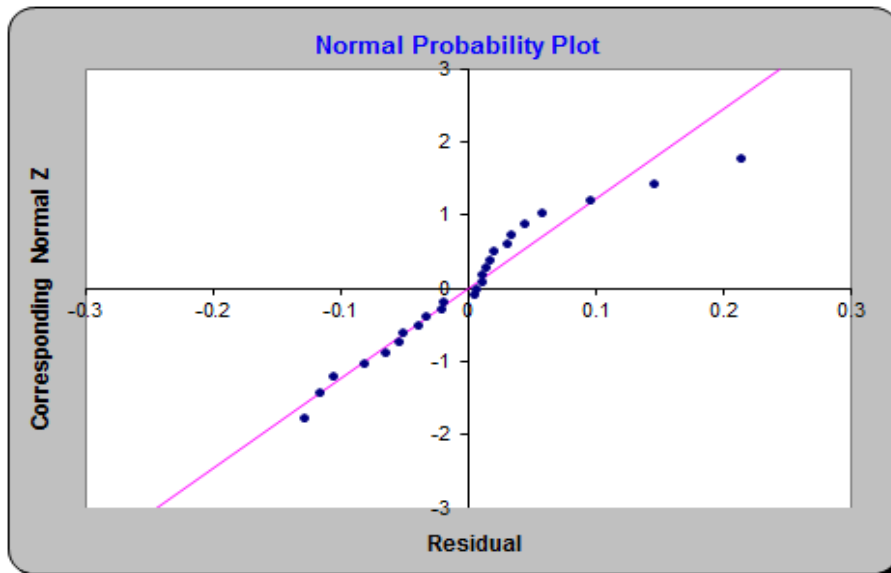


Figure 1.2 – Normal Probability Plot

Mirror pattern is not found in Figure 1.1, Residual Plot and hence no heteroscedasticity is found. The normal probability plot in Figure 1.2, is approximately linear. This would indicate that the normality assumption for the errors has not been violated.

Looking at the p value, since it is 0.001 which is < 0.05 , null hypothesis is not valid, which means the variables selected have an impact to Y. Technology Experience and Requirement clarification index have an impact to system testing defect density.

Intercept	Technology Experience(in months)	Requirement Clarification Index
0.47301	-0.0073	-0.0014

Table 2 – Regression Equation

As shown in Table 2, technology experience has a negative influence on overall defect density. As the team's technology experience increases, there are less project defects and hence the system testing defect density is reduced. The influence of requirement clarification index is negative. This means that when the values of requirement clarification index are high the system defect density will be low and vice versa. The more requirements clarifications are resolved, lesser the probability of defect injection.

The data proves that the system testing defect density is influenced by requirements sub process and technology experience. Project quality group in the organization shares the base line data for these variables. For each sub process, based on the type of project, the organization values can be considered. The project manager can then use these reference values to determine the upper specification limit and lower specification limit for the project. These values will be available for each of the sub process parameter. The project manager can determine which sub process he would like to control and select the threshold values based on that. For example, in requirement management process, requirement clarification sub process, organization value might recommend 85% as the baseline value. Project manager might decide to refer this and make it more stringent and use 90% as the baseline value. Based on the current project context, the other sub process parameters and technology experience values can be considered for prediction.

Based on the selected threshold values, what-if analysis is performed. Going by the process sub parameters and their values, system testing defect density is predicted. The predicted outcome is then compared with the thresholds. Based on the gap, sub process parameters are further tweaked to understand the variation. It is important to note that while changing the parameters, project manager should understand the practical implication in the project. It is not only about the mathematical model, but about how it can be put in practice. For example, if, based on the prediction model, the team average technology experience is expected to be around 60 months. Then the project manager has to look at the project constraints. To on-board a team of experienced developers, the cost impact and the impact to on-boarding schedule need to be considered. So though the prediction model considers the key influencing factors to predict the system defect density, the influencing factor values might have an impact to project schedule and project cost, which need to be analyzed.

Project manager might decide to adjust the predicted outcome based on the project constraints. At every step, the manager should document the assumptions, risks and mitigation plans. Detailed defect prevention plan should be in place. At every step, the defect, its type, cause, preventive action, owner and target date should be documented. A simple example of a defect at requirement phase would be that the business analyst would have assumed that the requirement has no impact to a particular business segment. The requirement clarification raised, was probably ignored and team went ahead with the design phase. This is a typical case of defect leakage. It is important to understand why business analyst didn't think through the current production scenario. Why the requirement clarification got missed and analysis phase didn't consider the pending requirement clarifications. Thus at every step the quality gates are important. Quality gates need to be defined at every phase in the project life cycle. The quality gates need to be reviewed and approved by the project manager. Process quality manager should also review these quality gates and suggest improvements as need be. Different root-cause analysis techniques like 5-why can be used to pin down the root cause. After identifying the root cause the next steps in

terms of corrective and preventive actions should also be thought through. It is recommended to have process quality experts review these plans so that they can bring in their experience and highlight any improvements in these plans.

For a project manager to manage the project parameters, access to the right tools and techniques is important. Project managers should learn to manage project pro-actively than being reactive. Shift left techniques should be adopted. Defect injection at the initial stages of project life cycle should be controlled. The focus of shift left is to arrest defects up in the life cycle so that defect leakage is minimized or eliminated in the downstream process. Capability Maturity Model recommends usage of quantitative models. These models help in building prediction models. Though Capability Maturity Model highlights quantitative models at length, the practical implementation in industry is minimal. Focus on quality should be a culture in the organization. It is about doing it right at the first time. Regular trainings and awareness of process quality and product quality would help in building the culture in the organization.

Building quality gates in project life cycle

A typical software project development life cycle will go through requirements phase, design phase, development phase, unit testing phase, system testing, user acceptance testing and finally implementation phase. Quality is an important project parameter at every phase in the life cycle. In the requirement phase, project manager need to ensure that the scope of the requirements are thoroughly documented and signed off. Requirement traceability matrix need to be created. Every requirement should be traceable as the project moves from one phase to the next phase. Adherence to change management process throughout the process is vital. Project manager should ensure that change control board is formed during the project initiation phase itself. Requirement clarifications need to be tracked and closed. Requirement reviews should be formally signed off. During the design phase, design prototypes need to be prepared and validated with the user groups.

Design standards, templates and tools need to be decided and used in the project to ensure compliance. Traceability of design modules to requirements is important. Build sequence need to be factored as part of design process. Project manager need to ensure that coding standards are followed. Configuration management needs to be implemented. Organization configuration tool or client configuration tool can be utilized. Detailed configuration management process should be laid down. Project manager need to ensure all the relevant stakeholders participate in design and code review process. It is recommended to use code review tools. Defect prevention plans need to be implemented.

Detailed test strategy and test plan should be laid down for system testing. Defect management process should be actively followed. Test case coverage is vital. Defect Triage meetings is recommended for faster turnaround of defects. Entry and exit criteria at every testing phase should be called out and followed. Project manager need to ensure that all business scenarios are covered as part of test coverage. Clearly defined standards and procedures should be implemented. Periodic quality reviews and audits are recommended. Project manager need to conduct retrospective meeting and implement the preventive actions. A quality mindset with the project team and all relevant stakeholders is important.

Conclusion

In any business, customer defines the business. Customer Satisfaction is vital for survival. In an IT organization, the customer satisfaction index is pivotal. Customers can make or break business. Customer can in turn act as brand ambassadors and recommend new business for the organization. The main parameters that influence customer satisfaction are faster time to market, quality and cost. Based on the customer context, the priority of these

parameters will change. Few additional parameters can get added. But overall, cost, quality and schedule sets the base. These three parameters are again related to each other. As a project manager it is important to understand the customer expectations and ensure that these critical parameters are managed well. Prediction models help in managing these parameters effectively. A manager can predict desired project outcome, perform scenario based analysis and take right decisions to meet project goals. The practical case study demonstrated how project manager can predict system testing defect density considering technology experience and requirement clarification index. The usage of prediction model, what-if scenario analysis, corrective and preventive actions, assumptions and risks, all these process steps help the manager to meet the project outcomes. Project managers need to be trained on prediction models and should be comfortable to use these models effectively in projects. Shift left techniques determine the project success. Prediction models is not a one time activity, it should be continuously used during the project life cycle.

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ASSESSING THE BUSINESS INCUBATORS' PERFORMANCE REFERRING THE LOCAL DEVELOPMENT IN ITALY

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Abstract

Literature assign to business incubators an important role in promoting innovative entrepreneurship and economic growth. This study investigates the relationship between incubators performance and local development in Italy, focusing on those characteristics of regional contexts that enhance the role of incubators. Using a sample of 162 incubators, the regional economic index for 18 regions and the performance data for 405 new technology ventures located within these regions, we show that the local context features play a positive effect on the incubators performance. The nature of founders team of incubators is also important to implement effective entrepreneurial initiatives, while the sectorial specialization isn't an essential requirement for the success of NTVs. Different factors of local context contribute positively to generate an environment that enhance the incubators' activities.

Keywords: Incubators, new technology ventures, regional context, geographic proximity, performance

Introduction

Science parks, incubators, technology clusters and technopoles²⁶ have become a growing phenomenon that attracts the attention of several financing programs and researches. These organizations provide social, technological, managerial and financial resources for the start up phase of a new venture that transform a technology-based business idea into an innovative firm. However, literature shows that new technology ventures (NTVs) are highly vulnerable and fail in few years after the incubation phase (O'Shea and Stevens, 1998; Zahra and Covin, 1993) due to the high financial needs, the commercial efforts in markets niche and the lack of managerial competences. Literature on this topic can be divided in different issues (Phan et al., 2005): those studies that analyze the performance and the features of incubators (Rothaermel and Thursby, 2005; Bigliardi et al., 2006; Scilitoe and Chakrabarti, 2010; Löfsten and Lindelöf, 2003); those that focus on entrepreneurial activities that derived from these intermediaries (Grandi and Grimaldi, 2005); those that attempt to provide an assessment of the incubated firms, their performance and the entrepreneurial orientation of their founders (Almus and Nerlinger, 1999; Ferguson and Olofsson, 2004). Several studies criticize the use of the rate of firm survival as variable that explain the performance of incubators (Monck et al., 1988; Siegel et al., 2003; Barbero et al., 2012) preferring the local

²⁶In this paper we refer to the broader concept of incubator by including in it also the categories of science parks, technopole or innovation pole and technology clusters. Although the research has been conducted jointly, is shown below the parts relating to Christian Corsi and Daniela Di Bernardino: Christian Corsi: sections 3, 4, 5.1, 6; Daniela Di Bernardino: sections 1,2,5, 5.2.

development indexes or the market success of tenured ventures, the employment growth or innovation delivered, because the survival of incubated start-ups does not necessarily imply their development (Oloffson and Wahlbin, 1993). Other studies shows that a regional economy may benefit from the presence of incubators, specialized universities research centers and from the genesis of NTVs that interact with mature firms (Patton and Kenney, 2010; Sternberg, 2014). In the other way, regional context may contribute to the knowledge transfer between producers and users of technology and so enable the role of incubators and their performance. Supporting the creation and the growth of innovative ventures is therefore becoming one of the priority policies for emergent economy and countries with a weak innovation system. This research aims at analyzing the relationship between the development of the context and the performance of incubators located in it, specifically, among the characteristics of context and the ability of incubators to promote local development and the generation of new ventures with good performance. To this purpose, the research is based on a sample of 162 Italian incubators, broadly understood, recorded on the 31st of December 2013 and located in 18 regions, in relation to which some ISTAT territorial indicators have been extracted, according to important characteristics of the local productive and innovative system.

The business incubators and the generation of NTVs

Science parks, incubators, technology clusters and innovation pole play an important role in supporting the start-up of new innovative firms, promoting partnerships between university and industry, facilitating the transfer of technology and competencies useful for the market. Specifically, the incubator is a business initiative that promotes and supports the generation of new technology enterprises, delivers managerial services and physical spaces, provides an environment where small ventures may interact with external partners. Frequently the incubator is developed within university departments or laboratories or within the science park area. Science and technology parks may develop into innovation pole or technology clusters and, in these case, they play an important role in promoting a cooperative environment between new and mature firms, knowledge producers and users, experts and young entrepreneurs and support the sharing of best practices among firms. In the paper we refer to the term of incubator for describes the role of these intermediaries. The main advantage that literature assigns to those entities is given by cost and time reductions to start up a new venture and the added value of transferred competences, outcomes that will favor an increased survival rate of new technology ventures (NTVs) on the market and their faster growth. However, there are few confirmations of the effectiveness of this business action, especially in the long time (Ferguson and Olofsson, 2004; Squicciarini, 2009), where the effectiveness is to be understood in terms of creating performing firms that are capable of giving their contribution to the socio-economic development of the area where they operate. The incubators have usually been analyzed as a tool of regional development policy (Siegel et al., 2003; Rathino and Henriques, 2010) and, in this respect, literature measure incubators' performance focusing on the regional economic impact (Allen and McCluskey, 1990; Lundvall *et al.*, 2002; Carayannis and von Zedtwitz, 2005; Rooney *et al.*, 2005) and choosing these variables: new job creation, new ventures ratio, tenant sales, patent applications and other measures associated to regional innovation (Mian, 1996; Colombo and Delmastro, 2002). The regional entrepreneurial context is important for implementation of successfully incubators. Previous studies on Italian incubators investigate the characteristics and the performance of on-park firms and out-of-park ventures (Colombo and Delmastro, 2002; Bigliardi et al., 2006; Squicciarini, 2012; Salvador, 2011) Colombo and Delmastro (2002) show that on-park firms present an higher growth rate and perform better in term of innovation. Squicciarini (2012) find that tenant ventures present a comparatively better

performance in innovation outcome, but during the life cycle there are a common tendency to reduce patenting. Bigliardi et al. (2006) find some determinant factors for incubators' performance: the characteristics of regional context, the stakeholders interests, the legal form of incubators and the knowledge sharing between incubator and university. In this study the authors propose a performance measurement model for incubators, based on these elements: patrimonial structure, internal development, impact on territory; economic and financial measures. Other studies observe the type of services offered to new firms and the strategies employed by their management teams (Grimaldi and Grandi, 2005) and attempt that the real mission of incubator play an important role in the consequent strategies and policies adopted. To evaluate the effectiveness of incubators, especially in the case of public or mixed intermediaries, in this paper we highlight their ability to contribute to the development of a robust and innovative business system, in order to assess the suitability of public investments in this direction. We consider that the different nature of the incubators' shareholders may have an influence on the several directions of development. While the presence of universities can increase the chances of transferring innovative knowledge into contexts with a weak technological development (Colombo et al., 2010; Muscio, 2010), the participation of financial institutes and venture capitalists could improve the creditworthiness of NTVs, as well as the proximity to other mature firms which could promote an easier access to the end markets. Based on these considerations, it can be postulated that the geographic proximity to incubators (hp1) and the nature of their shareholders, specially financial institutions, (hp2) may positive influence the performance of NTVs.

The role of regional context

The role played by business incubators as business activators in a local setting (Aernoudt 2004; Mian, 1996) and drivers of its economic growth (Markley and McNamara 1996), as well as their own development, in turn depend on the features and extent of the same local setting where they are located, which either support or hinder their full development and growth. In this regard, literature lacks a theoretical reference framework concerning the underlying reasons for the differences arising in the development of business incubators and the greater presence of the latter in different geographical settings. More generally, literature provides few in-depth assessments of the crucial factors accounting for their development, effectiveness and performance (Ghasemizad *et al.* 2011; Ghasemizad, 2009). However, a few studies (Autio and Klofsten, 1998, Ketchen et al., 1993, Weinberg et al., 2005) point out the role played by external factors and their effects on business incubators. Within this scope, Ghasemizad (2009) states that those non-organizational determiners can positively affect incubator effectiveness and development. In order to expound the topic in greater depth, the existing studies on innovation and entrepreneurship geography as well as structural and economic theories are worth noting. In this regard, business incubator development is affected by such factors as tax burdens and the local financial market drive (Bartik 1989), which hint at a flexible structural setting allowing high regional growth levels, while enabling full business development and the creation of start-ups, especially SME agglomerates (Qian et al., 2009). Therefore, an incubator located in an innovative setting, with plenty of opportunities to interact with local businesses and access many diverse infrastructural and business resources, is more likely to succeed and develop (Hackett and Dilts, 2004, Teece and Pisano, 1994; Albert and Gaynor, 2006).

Another equally significant determiner is the business culture found in a given geographical area, which is actualized in local venture capital initiatives, company capital development and business support services as well as the knowledge arising from local university research. The latter factor is crucial, as the role newly played by university in stimulating entrepreneurship (Etzkowitz et al., 2000; Powers, 2004; Slaughter and Leslie,

1997; Meyer, 2003; Shane, 2004; Smilor et al., 1993) favours regional infrastructural development, such as scientific parks and incubators (Etzkowitz, 2006; Etzkowitz and Zhou, 2006; Gunasekara 2006; Huggins and Johnston, 2009). The above-mentioned aspects are closely linked to the knowledge spill-over theory of entrepreneurship (Audretsch, 1995; Acs et al., 2009), which improves business opportunities and supports human capital, thus typifying different geographical settings (Lee et al 2004.; Acs and Armington, 2006). The entrepreneurial behaviour adopted in a region is closely linked to business culture and represents a context determiner - though personal because it is attributed to entrepreneurs – which evidently affects business incubator development and success by contributing to the effectiveness and performance of the business activities and the growth of locally incubated businesses (Rice, 2002; Christensen et al., 2010). Furthermore, consistently with institutional theory, incubator development is greatly affected by legal policies and local authority, government and university support (Eisenhardt, 1989; Scott, 2005). Indeed, most incubators are non-profit, and incubators and other business facilitators (such as scientific parks) often arise from public/private partnerships, which means that the entities involved (such as community, regional and state government authorities) greatly affect their missions and operational procedures (Phan et al., 2005). More specifically, incubators appear to draw their resources from the local regional system (government, market and other businesses), but those processes are not always mediated by market factors due to their nature, whereby they are subject to political interests in managing the funds provided for their support. Political trends and trend-setters in local authorities therefore play an essential role in their development (Lendner and Dowling, 2003). Regional policies, mediated by state government, are also crucial in stimulating and accelerating regional economic growth and entrepreneurship (O’Gorman and Kautonen, 2001), so that incubators become the main instrument to achieve that purpose. Besides the above-mentioned remarks, in a study on the Helsinki region, Finland, Abetti (2004) comments that public policies as well as educational institutions (universities and research centres) and regional and local business entities can play a successful role in the development of new incubators and high-tech businesses in order to be proactive and create a successful learning setting rather than reactive against market failure, by strategic funding and investments. The above-mentioned conditions contribute to creating an ideal setting to stimulate entrepreneurial initiatives, especially technology-based ones, and subsequently lay the foundations to start business incubator activities.

Data and method

The empirical analysis is based on a a statistic model, focused on business incubators features and a particular type of NTVs: the academic spin-offs. Primary data on NTVs were extracted from NETVAL database (www.netval.it) and universities websites on 31 December 2013; we assed a sample of 405 active Italian academic spin offs, equal to 54.21% of the population identified, divided into geographical macro-area clusters (North - Central - South). Secondary data collection was performed from several sources and refer to the financial statements (Infocamere, AidaBvdep) of academic spin offs. Information regarding the 167 national business incubators were gathered from institutionally websites of universities, of MIUR (Ministry of Education, University and Research), of the regional authorities and private business incubators. Data concerning the incubators’ performance consider the NTVs established in the regional area, collected by the Italian National Institute of Statistics database (ISTAT) and the economic and financial performance of NTVs, measured by ROE and Current Liquidity Ratio (CLR). Input data referring to the local socio-economic context was processed through Pearson’s bivariate analysis on these variables structured for single regional department: company competitiveness degree, corporate demographics, risk degree in

the capital markets and, finally, industrial innovation and research dynamism. The competitiveness degree is described by three variables: capital accumulation intensity (%Acc_capital) as a percentage of gross fixed investment out of GDP percentage; company service development capacity (%Busserv), as a percentage of work units in the company service sector out of total AWUs of retail services; industrial added value (Ind_VA) which expressed production and distribution capital gain at chained industry prices in million Euros. Corporate demographics was measured by the gross registration rate in the National Companies Register (%Buss_gross_enrol) and the latter expressing the net registration rate in the same register (%Buss_net_enrol). The capital market is described via a variable measuring funding risk (%Financrisk) as funding decay percentage. Finally, three variables are used to explain the scientific research and innovation level present on the local context: the company R&D spending rate (%Buss_R&D), expressed as GDP percentage of Research & Development expenditures (both public and private); the innovation skills (%Innovation_resexp), expressed as GDP percentage of intramural expenditures born by public administration, Universities and public and private entities for Research & Development activities; the R&D personnel rate within the NTVs (N_R&DStaff). Information on incubators, concerning the nature and features of these entities, are described by these variables: Incub_gen (% of general incubators per area), Incub_mixpublic (mixed-public nature), Incub_fininst (presence of financial institutions), Incub_uni, (presence of universities), Industry (number of incubators specialized within specific sector), Aggregated (number of aggregated entities within the region i.e. pole and technology clusters), S&TI (number of incubators and science and technology parks) and Legal nature (profit or non profit oriented).

Results and discussion: incubators features

The empirical analysis collected a sample of 162 Italian incubators. In this sample, frequency distributions on the regional level (Table 1) appears to be homogeneous, even though a slightly higher prevalence of these entities can be observed in the northern regions. Most of these incubators are the result of public intervention, particularly by local authorities and regional development agencies and that indicates a prevalence of their non-profit character. If we consider the legal nature of these entities we identify a large part of non profit oriented incubators (59,88%) and only a few part (16,6%) with a private nature oriented to capital market for financial sourcing (spa). In the southern area, the presence of universities in incubators is significant; this leads to consider universities as a preferential tool for technology transfer from public research to the market. On the other hand, there is a weak participation in the share capital of incubators by financial institutions, primarily represented by banks, especially in the regions of the South. The predominantly public nature of those entities and their non-profit character may act as a deterrent to the attraction of financial partners, especially in the social and economic areas that are experiencing phases of stagnation. Science and Technology parks and incubators, in narrow sense, are the predominant entrepreneurial tools present in the northern regions, while in the south the 49,40% of these entities evolve into technopole and technology clusters. In the southern regions we observe a greater degree of sectorial specialization of incubators, that focus in the area of engineering, biotech and ICT. The sectorial focus decreases in the central regions, where the incubators take a multiple sectorial nature, which reveals the presence of heterogeneous technology skills, but also the absence of a specific industrial vocation within the territory. However, the 61,11% of Italian incubators prefer specialization, focusing its knowledge and services.

Table 1: Incubators

Geographic distribution	No. Incubators	% incub_gen by geographic area	% Incub_mixpublic	% Incub_finint	% Incub_uni	S&T	Aggregate d	industry
CENTER	45	27,78%	77,78%	24,44%	62,22%	30,38%	25,30%	19,19%
EMILIA ROMAGNA	5	3,09%	80,00%	20,00%	60,00%	2	3	2
LAZIO	9	5,56%	88,89%	44,44%	100,00%	5	4	3
MARCHE	7	4,32%	42,86%	14,29%	85,71%	3	4	3
TOSCANA	17	10,49%	94,12%	23,53%	47,06%	12	5	5
UMBRIA	7	4,32%	57,14%	14,29%	28,57%	2	5	6
NORTH	64	39,51%	85,94%	31,25%	68,75%	54,43%	25,30%	37,37%
FRIULI VENEZIA GIULIA	5	3,09%	100,00%	40,00%	100,00%	2	3	2
LIGURIA	4	2,47%	100,00%	25,00%	100,00%	2	2	1
LOMBARDIA	18	11,11%	72,22%	33,33%	50,00%	13	5	7
PIEMONTE	19	11,73%	94,74%	21,05%	63,16%	13	6	18
TRENTINO ALTO ADIGE	5	3,09%	80,00%	0,00%	40,00%	3	2	2
VENETO	13	8,02%	84,62%	53,85%	92,31%	10	3	7
SOUTH	53	32,72%	88,68%	9,43%	88,68%	36,70%	49,40%	43,43%
ABRUZZO	14	8,64%	100,00%	0,00%	100,00%	1	13	14
BASILICATA	1	0,62%	100,00%	0,00%	100,00%	1	0	0
CALABRIA	8	4,94%	87,50%	12,50%	50,00%	2	6	6
CAMPANIA	10	6,17%	100,00%	30,00%	100,00%	2	8	7
PUGLIA	8	4,94%	100,00%	0,00%	87,50%	1	7	8
SARDEGNA	7	4,32%	71,43%	0,00%	85,71%	3	4	5
SICILIA	5	3,09%	60,00%	20,00%	100,00%	2	3	3
Tot	162	100,00%	84,57%	22,22%	73,46%	79	83	99

Regional features

When assessing the relationship between the number of business incubators in a region and the features of the relevant local setting (Tab.2), the findings immediately point out a significant positive ratio between the presence of various types of incubators and industry added value, the number of start-up businesses in the territory and the net registration rate in the National Companies Register. This finding shows that the entrepreneurial drive found in a given territory positively affects the presence of business incubators, which may access a favourable entrepreneurial setting for business development via incubation. However, the very incubated businesses profit from this process, as they can rely on a wider reference market where they can grow and expand with greater returns even for incubators themselves, that can rely on more resources and added value. Furthermore, the findings point out a significant positive ratio between the presence of incubators and R&D personnel and spending. This shows that the research and innovation drive in a region provides ground for development and the exchange of cutting-edge knowledge, allowing the creation and expansion of incubators, especially technology-oriented ones, where

technologically-oriented start-ups are incubated. Another significant positive ratio is the one between the presence of public-sector incubators and corporate R&D spending, which points out the positive synergistic contribution arising from co-operation activities implemented in research partnership agreements between companies and public-sector incubators, funded by local government policies for entrepreneurship development and local growth. By further analysing the findings for the various regional incubator types, there are significant positive relationships between financial-institution participation incubators and corporate service development, industry added value as well as the many variables linked to local research and innovation potential [R&D corporate spending, innovation potential, R&D staff]. This finding shows that the presence of financial partners in incubators is affected by the level of local competitiveness, entrepreneurial drive and innovation potential. This feature moreover contributes to determining their investment and funding options, consistently with the strategic trend of venture capitalists and their role in the development of innovative start-ups. A further aspect worth noting is the significant positive relationship between university participation incubators and the number of local businesses, which points out the role of universities as local entrepreneurship catalysts, profiting from the connections established with the companies located in that territory, which definitely stimulate the presence of corporate incubators in order to start knowledge spill-over processes involving universities, incubated start-ups and the local area. Therefore, based on assessment findings, the positive aspects of the features and size of the local setting appear to operate as activators of regional incubators, by determining localization options and existing conditions.

Table 2 – Correlation Matrix: Local Context Attributes

	NoIncub	Inc_mixpublic	Inc_fininst	Inc_uni	%Busservice	In_Va	%BussGrossenrol	%Bussnetenrol (2011)	%Bussnetenrol (2012)	%BussR&D	%publicR&DonGDP	N_R&Dstaff
NoIncub	1	,962**	,687**	,799**		,605**	,658**	,568*	,566*	,469*		,620**
Inc_mixpublic	,962**	1	,613**	,835**		,466				,480*		,506*
Inc_fininst	,687**	,613**	1	,572*	,501*	,728**				,544*	,491*	,763**
Inc_uni	,799**	,835**	,572*	1			,508*					
%Busservice			,501*		1	,616**				,629**	,613**	,680**
In_Va	,605**	,466	,728**		,616**	1				,569*		,969**
%Bussgrossenrol	,658**			,508*			1					
%Bussnetenrol (2011)	,568*							1	,581*			
%Bussnetenrol (2012)	,566*							,581*	1			
%BussR&D	,469*	,480*	,544*		,629**	,569*				1	,884**	,716**
%publicR&DonGDP			,491*		,613**					,884**	1	,567*
N_R&Dstaff	,620**	,506*	,763**		,680**	,969**				,716**	,567*	1

Incubators' performance

We can observe the incubators' performance considering their ability to promote the generation of NTVs and supporting their economic and financial performance. The paper assumes that the nature of incubators' shareholders and the attributes of these entities are important factors to determine the effectiveness of their initiatives. Moreover, the geographical proximity between incubators, universities and firms may contribute positively to NTVs performance. The correlation matrix (Tab. 3) shows positive and significant correlations when financial institutions are present into incubators. This result confirm the positive contribution of financial actors on entrepreneurship activity, for the start-up stage and the economic and financial stability of NTVs (Hp2). The presence of university within the incubator and the sectorial specialization appear to be not significant for the NTVs performance, while if we consider the ability of incubator in promoting the generation of NTVs we identify a positive correlation between the number of NTVs and the presence of some types of intermediaries, science and technology parks and incubators, located in proximity (Hp1). Public and universities incubators have a greater propensity to sectorial specialization, but this attribute doesn't contribute to economic and financial stability of NTVs located nearby. The negative relation between ROE of these firms and the presence of aggregated entities is a critical data, that leads in-a-depth analysis of the services delivered, the policies adopted and the knowledge sharing activities between technopole, technology clusters and NTVs. If we compare the previous data (Tab.1) with these correlations, we observe that the southern regions present a greater percentage of aggregated entities. In fact, the average values of ROE in the south take a negative measure (-0,11%), confirming the ineffectiveness of such intermediaries for the economic stability of NTVs within this area. The result should be further investigated by gathering information relating the local innovation policies and the socio-cultural attributes of these regions.

Table 3 – Correlation Matrix: Incubators' performance And Attributes

		No. inc	Inc_mixp ub	Inc_finist	Inc_uni	S&TI	Aggreg ated	industry	No.N TVs	ROENTv s	CL RN TVs
No. Incub.	Pearson		,962(**)	,687(**)	,799(**)	,834(**)	,547(*)	,767(**)	,517(*)		
	Sig. (2- code)		,000	,002	,000	,000	,019	,000	,028		
	N		18	18	18	18	18	18	18		
Inc_Mix pub	Pearson	,962(**)		,613(**)	,835(**)	,743(**)	,615(**)	,803(**)			
	Sig. (2- code)	,000		,007	,000	,000	,007	,000			
	N	18		18	18	18	18	18			
Inc_finist	Pearson	,687(**)	,613(**)	1	,572(*)	,833(**)			,508(*)	,514(*)	,509(*)
	Sig. (2- code)	,002	,007		,013	,000			,032	,029	,031
	N	18	18	18	18	18			18	18	18
Inc_uni	Pearson	,799(**)	,835(**)	,572(*)		,508(*)	,676(**)	,756(**)			
	Sig. (2- code)	,000	,000	,013		,031	,002	,000			
	N	18	18	18		18	18	18			
S&T	Pearson	,834(**)	,743(**)	,833(**)	,508(*)				,578(*)		
	Sig. (2- code)	,000	,000	,000	,031				,012		
	N	18	18	18	18				18		
Aggrega ted	Pearson	,547(*)	,615(**)		,676(**)			,745(**)		-,480(*)	
	Sig. (2- code)	,019	,007		,002			,000		,044	

	N	18	18		18		18		18
industry	Pearson	,767(**)	,803(**)		,756(**)		,745(**)		
	Sig. (2-code)	,000	,000		,000		,000		
	N	18	18		18		18		
No.NTVs	Pearson	,517(*)		,508(*)		,578(*)			
	Sig. (2-code)	,028		,032		,012			
	N	18		18		18			
ROENTvs	Pearson			,514(*)					-,480(*)
	Sig. (2-code)			,029					,044
	N			18					18
CLRNTvs	Pearson			,509(*)					
	Sig. (2-code)			,031					
	N			18					

** significance at level 0,01 (2-code).

* significance at level 0,05 (2-code).

Conclusion

The analysis highlights that the presence of incubators, science parks, technopole and technological clusters may generate local technological spillover affecting the generation of NTVs. These intermediaries attract groups of research-intensive firms, stimulating innovative practices but the geographic proximity with them is not sufficient to guarantee a good economic and financial performance of NTVs. Paradoxically, in presence of aggregated entities, represented by technology clusters and innovation pole, the NTVs have a lower profit performance, which requires consideration about the role of the local economy on the effectiveness of incubators. A better result can be observed only in presence of financial institutions that participate in the share capital of the incubators, which takes on both a public and a private nature in the sample. The nature of the partners of an incubator acts, therefore, as a predictor for the effectiveness of the entrepreneurial initiatives of the these entities; hence, the choice made by a private investor, in this case by banks, to keep on investing in an incubator can be said to be is often driven by the expectations of the return on investment, here intended in a broad sense, which is related to them. The contribution of public incubators, that is the regional and university ones, is even less effective, although they represent most of the business facilitators activated in the context observed. The geographical proximity between business facilitators and firms meaning to create innovation on the territory is not a sufficient condition to guarantee the establishment of relations capable of contributing effectively to the economic and financial outcomes of the firms involved. In addition, the analysis reveals that the features and dimensions of the local context can affect in a sensitive manner the numerousness of incubators in a certain region. Indeed, the presence of a very strong industrial system, which produces high value added for the regional area, stimulates the creation of new firms in the area and therefore incubators have a fertile ground for their establishment in order to generate new start-ups. Another element affecting significantly the presence of incubators in a region is the innovation capacity and the generation of new knowledge through research and development of a local context. In this sense, play a key role the universities here located and local governments to development public policies to support entrepreneurship, economic growth and innovation through research funding and agreements partnership between universities, incubators and the regional entrepreneurial system. This aspect become more obvious considering the strategic investment decisions made by the agents of the local financial system, as it observes that

incubators participated by financial institutions are more numerous in those local contexts who appear more competitive, innovative and vibrant in entrepreneurial sense. Essential elements to attract one of the major forms of financial resources of incubators: the venture capital.

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SOCIAL MEDIA IN MODERN BUSINESS

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Abstract

Social media help companies to reach new customers. New areas where companies can use social media include web-based training, team-based projects, distribution of updates about plans and activities to employees, search for new offers and verification of information during staff recruitment. The purpose of this article is to identify possible trends in the use of social media for enhancing the performance of modern business ventures. This paper compares selected classifications of the Internet development phases. The rule of content co-creation and sharing, typical of Web 2.0, remains valid during the subsequent stage of development, i.e. Web 3.0. A qualitative difference consists in adding a new function of using semantic analysis of messages posted in the virtual space, most notably in the social media. Semantic analysis is applied primarily in order to adjust the products offered to consumers' needs. Application of semantic tools may also be associated with information exclusion. This paper also analyzes the implications of semantic web in the new context, the effect of information extraction from the social media.

Keywords: Social media, semantic web, information exclusion, web personality

Introduction

Although initially treated as a tool for social communication, social media are increasingly common in other domains of socio-economic life. In the public sphere, they made quite a spectacular appearance in times of unrest in the Middle East and North Africa and the protests against ACTA. In politics, social media gained full recognition with the success of Barack Obama's election campaign already at the beginning of his first term in office.

In the business world, social media sneaked in unnoticed, initially enabling companies to set up fanpages and post news, photos, and videos, mainly for image-building purposes. Over time, however, companies began to appreciate the special advantages of web communication with customers as well as the application of this tool to enhance their product/service range and to engage customers in new product/service development and testing.

Social media help companies to reach new customers (especially young ones) more easily as this communication channel is increasingly popular with the young generation. New areas where companies can use social media include web-based training, team-based projects, distribution of updates about plans and activities to employees, search for new offers and verification of information during staff recruitment.

The purpose of this article is to identify likely trends in the use of social media for enhancing the performance of modern business ventures.

This paper analyzes the implications of semantic web in the new context and the effects of information extraction from the social media. The issue that seems particularly important is that of violating privacy of users of Internet services which require registration (and the provision of many personal details). Another important consequence of semantic analysis is information exclusion. Semantic tools through which data streams are profiles

may subjectively restrain access to information which falls beyond the scope of users' key areas of interests. For instance, an avid angler will not learn anything about Kalevala, the Scandinavian saga, if none of his/her previous online activities concerned literature, Scandinavia or, somewhat surprisingly, jewellery.²⁷ Therefore, it is important to distinguish between the different functions of personalised messaging, which desirably narrows down the stream of marketing information but also limits the inflow of other kinds of information.

History before our eyes

The Internet era in Poland dates back to November 1990, when the first ever e-mail message reached our country [Malik, 2011]. Wikipedia, which is currently the most popular source of information and, at the same time, the largest collaborative project worldwide, came into being in 2001. The first social media in today's meaning of the term, with LinkedIn and MySpace among them, began to emerge in 2003. Further on, 2004 saw the launch of Grono.net (no longer in operation) yet the main limitation and a barrier for rapid expansion of that website lied in the elitist character intended by the creators of that site. Looking back, the principle of referrals which was introduced at the launch (i.e. new users were unable to register on Grono.net unless they had received an invitation from a member) obviously contradicted the essential rule of network goods, whereby each new individual joining the network boosts the network utility. One might venture to say that the real 'avalanche' of social media solutions started with the arrival of Facebook in 2004 and YouTube in 2005. The majority of Polish Internet users began their adventure with social networks at NaszaKlasa.pl (currently: Nk.pl), launched in November 2006. The Polish fraction of Facebook made its first steps in about the same time. Starting from September 2011, the number of Polish Facebook users began to outweigh the user community gathered around Nk.pl (with many people holding profiles on both those sites in parallel). Facebook enables users to maintain contacts in multiple languages and to use all new solutions offered to all users worldwide at the same time, thus becoming a medium for both global and local communication. This increasingly popular global site was embraced by many Polish users as a destination which offered no barriers in international communication while retaining the benefits of a local social micro-network.

Generations of the Web

The arrival of the Internet was a breakthrough in the history of mankind. Today, this claim is no longer debatable. However, in its early days, the Internet seemed, at best, an easier way to communicate for the 'chosen few' who were initiated into that mode of exchange. The development of a protocol which allowed people to build websites and move from one to another (www) marked the beginning of the Internet in the technical and utilitarian sense, and that early phase was later labelled as Web 1.0. This name meant to indicate a separate and static character of websites available back in those years. On the other hand, the opportunity to co-create and share online content is a feature of another, improved version of the Internet, commonly referred to as Web 2.0. This label became a symbol of this mode of online communication and also of a new, different understanding of intellectual property and access to information. The Web 2.0 culture has brought us initiatives such as Wiki, blogs and social networking services. The notion of Web 3.0 signposts a new phase in the history of the world wide web, i.e. semantic webs, with computers generating new information based on accumulated highly personalised data. Those data are largely sourced from the social media. The principle of content co-creation and sharing, originating from

²⁷The descriptions of ancient jewellery found in Kalevala were used as a basis to design its modern equivalents made of bronze, silver and gold. Therefore, 'jewellery' is one of the tags associated with 'Kalevala'.

Web 2.0, remains valid whereas the next stage adds personalised semantic analyses of messages posted in the virtual space (Web 3.0). While the final shape of Web 3.0 is fairly easy to imagine, the next one, Web 4.0, still remains in the sphere of guesses, based on our contemporary technical solutions and vague user expectations. We can predict that Web 4.0 will be followed by the arrival of another stage, based on a universal ‘web personality’ of each user, and the information flow will be highly personalised. However, it is difficult to foresee the technological solutions that might be used for that purpose [Fig. 1].

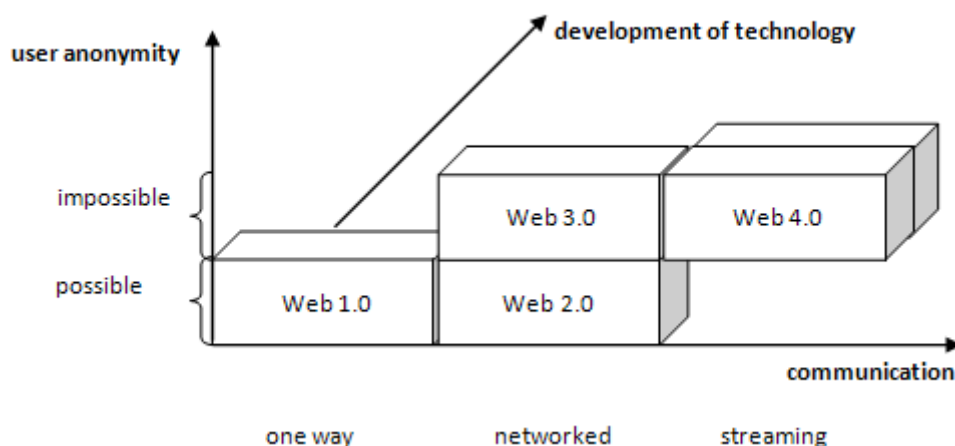


Figure 1. Internet evolution stages.
Source: Author's own analysis.

The most crucial difference between Web 3.0 and Web 4.0 seems to lie in the sanctioning of users' web personalities. More precisely, content will become available only after users have logged onto a popular social networking service using their login name and password. Such a universal solution for online identification has been gaining more and more support among Internet users who feel increasingly tired and annoyed by the need to register at one portal after another. Portals make their content available in exchange for users' personal details and information on their shopping preferences, all of which are subjected to multi-faceted semantic analyses. Users pay for the seemingly free content with their easy identification and online invigilation.

Not surprisingly, views on the subsequent stages of the Internet vary among authors who write on the subject. Table 1 contains a summary of selected three classifications, all of which include a subdivision into four stages that are foreseeable from today's technological perspective.

The classification proposed by Aghaei, Nematbakhsh and Farsani [Aghaei et al. 2012] identifies four generations of websites, adopting the potential connections as a differentiation criterion, namely: Web 1.0 – the web of information connections, Web 2.0 – the web of people connections, Web 3.0 – the web of knowledge connections and Web 4.0 – the web of intelligence connections.

On the other hand, Pileggi, Fernandez-Llatas and Traver [Pileggi 2012, p. 853] applied the criterion of functions fulfilled by a website to identify subsequent stages of Internet evolution. While four stages of website evolution were identified, the current stage of semantic social networks was labelled as Web 2.5. The authors probably intended to single out an interim phase between the stage of advanced social networking solutions and a stage of developed semantic tools, “yet-to-be-realized for the most part” [Pileggi et al. 2012, p. 861].

Table 1. Comparison of selected classifications of Internet evolution phases

	Internet evolution phases			
	Web 1.0	Web 2.0	Web 3.0	Web 4.0
S. Aghaei, M. A. Nematbakhsh, H. K. Farsani [Aghaei et al. 2012]	web of information connections	web of people connections	web of knowledge connections	web of intelligence connections
S. F. Pileggi, C. Fernandez-Llatas, V. Traver [Pileggi et al. 2012, p. 853]	world wide web	social web	semantic web	web OS ²⁸
K. Polańska [a modified version of Polańska 2013, p. 104-5]	anonymous users download content	registered users download and upload content	authorised users assess and improve content – a defined profile in social networks	personalised data streams to and from users who have a universal network personality

Source: Author's own analysis.

In the last classification (in Table 1), subsequent phases of Internet evolution were identified on the basis of types and conditions of online activity offered to users. That last classification highlights the fact that as technologies evolve, Internet users become increasingly identifiable and their involvement in the creation and consumption of content becomes more intensive. While losing their anonymity, users gain targeted access to relevant information through semantic technologies. Their activity on the web and, particularly, in the social media, provides the input for building a profile. On this basis, content that may be potentially of interest to them is suggested.

Social media

'Social media' stand for an information stream which takes the shape of multimedia-based, multi-channel networked communication for specific social or business purposes within various types of sites, each of which builds a user community.

Social media differ from traditional news media mostly in that messages travel not only from the sender to the recipient but also vice versa (Table 2). This offers an opportunity to co-create and share the news and information via publicly accessible channels that enable uploading and downloading information, photos and videos, including e-mailing, texting or multimedia messaging. Anyone can publish any content and verification is performed directly by recipients, without any go-betweens such an editor-in-chief, a publisher or a censor. While some view this as a token of genuine freedom, others talk of anarchy. In fact, this kind of communication contains elements of both.

Table 2. The differences between the use of traditional media and social media in business

	Traditional media	Social media
Information content	homogeneous for all	personalised
Interactions with consumers	one-way to the customer	two-way dialogue
Building a product range	company	company and online communities
Product or service offered	mass scale	niche, using Long Tail
A group for market research	focus group	brand community

Source: Author's own analysis.

Another major difference between traditional and social media lies in the fact that products may be both more diverse and tailored to individual needs (low costs of

²⁸Including, for instance, the mechanisms to explore resources, a selection of global names, remote process control, resources management, authorisation and security.

personalisation for orders placed online), as well as created by the community as niche products.

In modern marketing theory, social media comprise: online communities and forums/bulletin boards, blogs and social networking sites [Kotler et al., 2012, p. 586]. Hence, the notion of 'social media' refers to various forms of interactions on forums and within online communities, on blogs and social networking sites. However, that classification is highly relative: for instance, a 'wall' on a social networking site may also serve as a discussion forum, and microblogs may complement traditional blogs. Social networking sites are the broadest group of portals classified as social media.

Considering the nature of communication links between users, social networking sites can be subdivided into the following groups:

1. socialising (e.g. Facebook, Myspace),
2. professional (e.g. GoldenLine, Profeo),
3. posting/publication (e.g. YouTube, Picasa, Flickr),
4. microblogs (e.g. Twitter, Blip),
5. related to collective consumer activity: group shopping (e.g. Groupon, CityDeal) or claims (e.g. Pozywamy-zbiorowo),
6. crowdfunding: donations (e.g. Flatter), investments (e.g. MegaTotal) or lending (e.g. Kokos, Ducatto),
7. platforms for social co-creation and social sharing of content (Wiki initiatives such as Wikipedia, Wi-enzyklopaedie²⁹).

Creativity in establishing new sites is usually inspired by user observations (things that can be offered to attract a large group of users who would be willing to visit the site regularly and recommend it to friends), as well as business needs since companies may consider online communities as interesting target groups for their purposes. However, the new web-based business ideas that work best in Poland are those which have previously proven to work in the U.S. and which make concessions to special characteristics of Polish users and incorporate local cultural memes.

Using social media for business

The most obvious application of social media in business is to use them for various kinds of promotional activities. Initially, those activities consisted in maintaining good customer relations and promoting brands, companies or products. Further on, marketers began to appreciate another feature of social media, i.e. the possibility to engage customers in developing/shaping new products. Information about customer preferences sourced from such media turned out to be invaluable for designing personalised advertising. It also created new opportunities for products and services on the basis of needs identified through semantic analysis of users' postings.

Therefore, it seems obvious that social media can be used in public relations and marketing (notably word-of-mouth marketing), yet many Polish companies adopt a very cautious approach here [Miłkowski, 2012]. The results of a relatively small qualitative study among 22 major Polish companies, published in 2012, indicate that few companies engage in communication with social media users outside Facebook [Sumara et al., 2012].

In 2012 Social Media Examiner carried out a study on the use of social media by marketers. A total of 3,813 responses to a web survey were received, with a half of them coming from the U.S. The study suggests that social media are considered important for business by 83% of the respondents [Stelzner, 2012, p. 10]. The researchers found that social media marketing offered the following benefits [Stelzner, 2012, p. 15]: increased exposure

²⁹ Enzyklopädie der Wirtschaftsinformatik – Online Encyclopaedia Business Information Systems in German.

(85 %), increased traffic (69 %), provided marketplace insight (65 %), generated leads (58 %), developed loyal fans (58 %), improved search rankings (55 %), grew business partnerships (51 %), reduced marketing expenses (46 %), and improved sales (40 %).

The costs involved in social media activity do not easily translate into sales growth. To measure the impact of such efforts, analysts usually refer to ROI (Return on Investment). However, this ratio is criticised for being focused on maximising short-term benefits for the brand, without taking account of customers' engagement and long-term effects [Hoffman et al., 2010, p. 49]. In the ideal situation, social media activities should be part of a coherent marketing strategy and should contain cross-references to ongoing advertising campaigns. Marketing efforts in the social media may be outsourced to specialised providers or entrusted to a dedicated unit in companies' marketing departments. However, those activities should not be viewed as a 'hobby' for a staff member. Many managers perceive social media as a free advertising channel because it uses a publicly accessible medium i.e. the Internet. However, social media will not become effective until they are used creatively, with systematic, day-to-day efforts to build confidence in the brand and a loyal user community.

Customer expectations

The question asked today by business leaders is not whether to communicate with customers but, rather, how to communicate with them through social media, considering the singularities of their industry, products offers and characteristics of target consumers. An indirect answer to this question comes from identifying user expectations towards social media. In 2006–2010, a global social media study, sponsored by Universal McCann, was conducted among active Internet users [Hutton et al., 2011, p. 564]. The study showed that social networks were perceived as very useful, especially for meeting new people and staying in touch with friends [Hutton et al., 2011, p. 566]. The same survey pointed out the key reasons why users would join online brand communities. In all the studied regions, the most important factors were: 'to get advance news of products' and 'to learn more about it'. The remaining drivers were more varied, depending on the region. In Europe, the following reasons for liking a brand fanpage were mentioned: 'to support a cause I like', 'to get free content', 'to feel part of like-minded community' and 'to share my appreciation with others' [Hutton et al., 2011, p. 569].

A pilot study about the use of Facebook by first-year students, conducted in early 2012 at the Warsaw School of Economics, found that only 10 out of 167 respondents were not fans of any brand fanpage [Polańska, 2013]. The key motivations for joining a Facebook fanpage included: 'a sense of community with people who like the same thing', 'access to news updates', 'contests', 'news on upcoming events', 'a sense of influence' and 'an opportunity to express my views'.

The way social media are used by members of online communities depends on many factors. For his study on a group of 656 YouTube users, Yeo developed psychographic consumer profiles. Statistical analysis confirmed his supposition that relationship-oriented consumers were more likely than individualists to engage in word-of-mouth marketing. As a rule, only a small proportion of consumers take an active part in social media initiatives. For this reason, it is crucial for any campaign relying on user engagement to engage mostly those users who are oriented towards relations with others [Yeo, 2012, p. 307] since it is those users who would encourage their friends to explore a product or a brand, and to take part in promotional activities. Therefore, it is important to attract active users who have wide social networks. This fact is particularly important when designing the mechanics of contests with prizes. Customers who are happy with their wins will become brand ambassadors among their friends.

False identities in the social media

The greatest hazard for a company in the social media is when a false account is set up in a social networking site [Polańska, 2011, p. 85]. Few social media offer an account verification functionality to establish authenticity (for instance, Twitter offers the Verified Badge option for that purpose). A false profile is a powerful tool to harm a company (this applies also to fanpages of celebrities as well as private individuals). A false account may only be effectively removed by a web administrator or through protracted litigation where litigants need to provide evidence to prove that content of such a false fanpage was actually detrimental. For this reason, it is highly rational for companies to set up their official profiles in all social media available. Additionally, by including an icon of the social site and a link to the corporate profile on a corporate website, companies may authenticate their account. It is best for companies to define their own official communication channels with customers and indicate that they feel responsible for such channels. Considering the potential perils of false brand identities, it makes more sense to keep even a 'dead' fanpage than to have none. Nevertheless, business life is never one-dimensional. Once a decision about setting up a corporate account in the social media has been made, the account needs to be supported on an ongoing basis: a lack of response to customer messages may be interpreted as ignoring those customers, and this may undermine the brand showing that it has not mastered modern-day consumer communication technologies. Another reason behind social media presence of brands is to boost awareness, yet this task should be viewed in a long-term perspective. Moreover, it is important to remember that a customer who becomes a fan in social media is no longer anonymous. For a social media user, setting up a profile means that they create a web personality, authenticated by their friend network. And what is the point of companies knowing users' web identities? Well, above all, it allows them to accumulate information about consumer preferences, typical needs and niche interests. Semantic analysis of a fan's postings helps companies to offer products that would address needs that the fan has not even managed to express.

Semantic web in the social media

Most data found online are not ordered or structured. They are sometimes understandable only for those who are able to analyse highly complicated logic structures and derive specific knowledge on this basis. However, the amount of information available online is so enormous that only specifically programmed computers may be effective in comprehensive processing [Sivakumar et al., 2013, p. 186]. The large sets of data, commonly referred to as 'Big Data', constantly being fed into the world wide web, turn out to be more relevant, pertinent and useful for predicting the near future than complex economic models based on historical data from official statistics [Brynjolfsson, 2013, p. 46].

Web 2.0 tools can be instrumental in gathering data to identify users, to create user group segmentations and to define target groups, e.g. to plan marketing activities [Breslin et al., 2009, p. 31]. Information obtained from various sources (using data bases, customer relationship management tools or data mining) is extracted in order to customise and personalise products and services in response to customers' expectations [Garrigos-Simon et al., 2012, p. 1883]. For this reason, social media are also used to download and archive seemingly unrelated data which, when subjected to semantic analysis, can help to personalise advertising messages, analyse their impact and engage users in the suggested endeavours. Social media are a source of current factual news but also a source of comments and opinions which emerge in response to various events. Eye witnesses accounts are as believable as reports by emergency services and journalists arriving on the spot. However, the former are delivered instantly and are rapidly communicated online, and their reliability may be subsequently verified through reports from other sources. Users of social media have "an

important desire to share experience and emotions” [Sumara et al., 2012, p. R3]. Oftentimes, members of a community want to inform their social network about their experience and they want to do it instantly. In order to do that, they publish comments, photos, and even films on unexpected events (disasters, comments from influential people, weather phenomena etc.), and also share they everyday experience (e.g. road congestion, blooming shrubs in the neighbourhood, favourite cafés, recommended products). Social media receive a gigantic information flow which, if properly utilised, may be a source of knowledge, even specialised one, without resorting to sophisticated analytical tools.

As a rule, when semantic analysis is used for business purposes [Ebersbach et al., 2011, p. 273], it is expected to target the right consumers and offer specific products. This kind of analysis is also used for day-to-day monitoring of the political and economic situation. Signals about a potential peril, natural disaster or economic decisions are analysed using heuristic algorithms and may provide an impulse for stock exchange behaviours (leading to sell orders or buy orders for specific stocks, securities or commodities). False information or erroneous interpretations of signals may lead to a rapid collapse on world stock markets.³⁰

Companies have most influence on the content as well as promotional and marketing activities on their own corporate websites and corporate blogs. Given companies’ wide opportunities to influence the content of such websites and blogs, such tools are referred to as ‘controlled own media’. In order to view them, users may register on such websites or, increasingly often, log onto them through a popular social networking site.

‘Managed own media’ [Back et al., 2012, p. 160] is a term that describes corporate subaccounts in social media such as a Facebook fanpage, a Twitter account, a You Tube channel or a Flickr account. Instead of building a dedicated community of its own, companies utilise access to social networks and build micro-communities there, based on technical solutions and practices of the host medium. In this way, companies also gain access to their fans’ personal information and, upon request, also to their account activity statistics.

Corcoran has suggested a subdivision into three domains of online media:

1. “owned media: a message delivered from a company to consumers through channels controlled by the company;
2. paid media: a message delivered from a company to consumers by paying to leverage a channel not controlled by the company;
3. earned media: a message about a company passed between consumers as a result of an experience with the brand” [Corcoran 2009].

In fact, owned media are the only ones which allow two-way communication with consumers and offer an opportunity to respond promptly to signals received from customers. This helps companies to build and maintain good customer relations, whereas customers cease to be anonymous. Managed own media are used mostly to motivate and encourage purchases but rarely to effect transactions, even though direct selling of products is also enabled. On the other hand, Facebook is considered to be a relatively unfavourable environment for conducting sale-purchase transactions. This is evidenced by the fact that there are still no examples of such activities on Facebook [Ebersbach et al., 2011, p. 113]. Attempts to apply the so-called ‘f-commerce’ are being made by telecom operators (e.g. they offer mobile phone top-ups), and by financial institutions which increasingly offer the functionality of small money transfers via banks’ fanpages (e.g. ‘Przelewy Getin Bank’, an app available from inside Facebook). However, f-commerce does not seem to be the right

³⁰ For instance, as a result of a hacker attack in April 2013 news about alleged explosions in the White House were posted online. This impulse, sent to computers which steered New York stock exchange orders, caused a slump in many stock prices. Once the confusion was clarified, the prices bounced back and reached their previous levels, albeit with losses to original holders.

business model for everyone. To date, it has played a marginal role, producing results only if the goods or services offered are embedded in the context of socialising

The outcomes of using the semantic web

Users sacrifice their privacy in order to get access to information. Their online behaviours and published content, shopping preferences and even consumer likes and dislikes are recorded, extracted and potentially used afterwards as part of a knowledge database related to specific Internet users or groups of users (identified on the basis of selected online personality characteristics) for the purposes of media profiling. To some extent, this is helpful and useful whenever Internet users experience an unmet need. Prompts based on the analysis of previous searches and messages posted online, potentially reflecting individual preferences, may prove useful and help to satisfy such a need. For instance, Allegro.pl (the major Polish auction site) uses the *Liker* application to collect data on things that users marked as 'liked'. It also uses *Gifter*, which builds a list of potentially desirable gifts for a particular user, based on analysing the *Liker* data, and makes it available to friends of the person concerned [Sumara et al., 2012, p. R9]. However, when tools which explore user-related knowledge are applied to create unconscious needs, this begs a question on the ethics of online media personalisation. Appearance of simple personal details (e.g. first name, date of birth, location) sourced from a social networking profile in an advert targeted directly at a particular person is not particularly disturbing. However, if the content of an advertising message implies that it is based on information originating from the monitoring of that user's online comments and behaviours (e.g. messages addressed only to friends, description of events concerning a particular person, his/her mood or views), this may generate a sense of threat to privacy and a suspicion of online invigilation. This also poses a question on the boundaries of privacy in the social media and its safeguards. Should online privacy be guarded by companies which use semantic tools, or perhaps by users themselves? Users would be more effective but in order for such privacy guards to work well they would need to exercise a lot of self-control over everything they publish online. In that case, they could no longer respond spontaneously to various outside events and would have to build their image consciously, consistently multiplying it throughout all social media.

Information exclusion is another issue that deserves a mention. Such exclusion may be provoked by semantic analysis which is too sophisticated and, as a result, prevents access to many areas of knowledge. Semantic tools, designed for the profiling of data streams, take account of data in the context of specific utterances and other online activities. Information that lies beyond users' main areas of online interest may never reach them. Given the information overload on the Internet, it is impossible to have access to everything. While data stream profiling does help users to stay updated on areas of interest, it aggravates the knowledge gap in other areas, in which case we can talk about information exclusion brought about by the semantic web.

Conclusion

There is no doubt that social media cannot be ignored as a channel for information exchange and marketing efforts, especially with respect to the young generation of consumers: for them, social media are a natural environment for sourcing, creating and exchanging information.

Social media are not confined to social networking sites such as Facebook but they also include the ever more popular microblogs (e.g. Twitter), traditional blogs (operated by corporations, industries, opinion leaders) as well as online forums and communities. In order to support them, companies need to take account of special characteristics of interactions with communities and show professional commitment while performing this task.

In all likelihood, activities in social media are needed not only to reap benefits from this new channel of communication with customers but also to protect companies against web-originated risks. A false corporate profile in social media may lead to costs and inflict serious, hard-to-assess damage to image/reputation. Well, if companies cannot eliminate a phenomenon, it is reasonable for them to set it to serve their own purposes. For companies, social media presence offers an opportunity not only to control the audience of their messages but also to receive feedback which they can plough into further business, such as designing products/services, and personalising them to meet consumers' needs. A creative use of social media represents business potential that is worth leveraging to outpace competitors.

As for the sources of customer information it is extracted, from various corners of the Internet, as long as users have engaged in any traceable activity such as comments, photos, key words searches etc. Social media, with an opportunity to publish various materials, opinions and recommendations for friends, are a particularly rich source of information on consumer preferences. Semantic tools are used to delineate users' areas of interests in order to personalise the range of products and services offered. On the one hand, this helps companies to take their products to potential buyers and give answers to consumers' questions (even before such questions are actually asked). On the other hand, the results of semantic analysis may constrain access to information which goes beyond the circle of already disclosed areas of interest. As a consequence, this might lead to information exclusion, caused by lack of access to information streams identified and disabled by semantic tools.

Most social applications are already available for mobile devices. The trend to use mobile communication in social media stems from the fact that users are now able to stay in touch with their communities on an ongoing basis, anywhere and at any time. Mobile devices allow easy geolocation of their users, and, as such, become a source of extra information about users' potential needs.

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POSITION OF TALENT MANAGEMENT IN CONTEXT OF ORGANIZATIONAL FUNCTIONS

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Abstract

This paper deals with problem of talent management position t within set of organizational methods a management tools. As the problem of talent management is new , there are many problems with terminology and justification of talent management in context of others management tools , especially in relation to human resource management. Paper presents definitions of relevant terms concerned talent management, relation of talent management to human resource management, and stresses specific role of talent management in gaining of competitive position and presents important tools of talent management. Created is model of talent management with a description of important components of talent.

Keywords: Talent, talent management, talent management model, human resource management

Introduction

The result of many studies and researchers indicated, that talent management has become one of the priorities of the management. The main reason for this importance is similarity of dynamic global, demographical , economical social cultural, and business trends, where scope and speed are creating a significant talent gap. As the gap is widened , it is difficult for organizations to acquire an retain talents to achieve success through the traditional practices of human resource management(Areiqat et. al., 2010). To acquire, retain and develop the talented people is only one way how to obtain idiosyncratic sustainable advantage. This idea is generally accepted, but in the implementation of this idea are many difficulties. This difficulties are arising mainly from following reasons:

- definition of talent and talent management (TM),
- relations between talent management and human resource management,
- missing talent management mindset,
- lack of knowledge aboutt talent management,
- difficulties with effectiveness evaluation of talent management.

The aim of this article is:

- to present and select appropriate definitions related to talent and talent management,
- to clarify the relations between talent management and human resource management(HRM),
- to specify the role of talent management in achieving organization´s success ,
- to propose the suitable model of talent management.

Definition concerned talent and talentmanagement

The first issue which should be considered before starting the talent management implementation is the term talent. Organizations and TM professionals need to understand

who they regard as talented people before implementing the talent management policies and practices (Zhang and Bright, 2012). Gaining consensus on the meaning of talent is a foundation of being able to manage talent well.

The term talent is used differently in the organizational practice, see below (Tansley, 2011):

- No use of the term talent in policy or processes and absence of an organizational definition;
- Limited use of the term in policy and processes and emerging understanding of an organizational definition;
- Widespread use of the term in the strategy, policy and processes and common understanding of an organizational definition.

Whilst a number of definitions of talent exist, none of them is widely accepted. Broadly, talent is defined as “a natural ability to do something well” (Longman Dictionary of Contemporary English, 2006). According to Gagne (2000) the term talent designates the superior mastery of systematically developed abilities and knowledge in at least one of the fields of the human endeavor.

Thorn and Pelant (2006) define talent as “someone who has the ability above others and does not try hard to use it. These people excel with easiness and grace. A talented person has a certain aura in his/her ability that others wish to emulate and from which lesser mortals draw inspiration”.

Michaels et al. (2001, p. 3) define talent as “the sum of a person’s abilities, his or her intrinsic gifts, skills, knowledge, experience, intelligence, judgment, attitude, character, and drive. It also includes his or her ability to learn and to grow potential for further development.

To summarize the above definitions the talent is mostly regarded as an innate disposition and ability to do something well in a particular field.

The Chartered Institute of Personnel and Development (CIPD) sees talents as those who can make the greatest difference to the organization’s performance, either through their immediate contribution or in the longer term by demonstrating the highest levels of potential (CIPD-Chartered Institute of Personnel and Development, 2007).

Definition SHRM (Society for Human Resources Management, 2007) defines talent as a core group of leaders, technical experts and key contributors who can drive their business forward. Many other experts hold the same positions and some of them only consider senior managers to be talents. Another exclusive approach is the position-related understanding, which views the right people in the key positions as talents (Zhang and Bright, 2012).

Therefore the empirical evidence showed that many organizations have adopted an exclusive approach, but our experience suggests that a mixture of both approaches may be more appropriate for organizations. As talent is specific in any organization, its meaning should be defined with regard to the context of the organization.

For the purpose of talent management implementations we recommend to define a talented person as “a person of high potential, who stands out as far as his/her knowledge, skills, experience, capabilities and development potential are concerned and who contributes to his/her organization's efficiency increase”. Definition of talent and talent management should be clarified before starting talent management implementation (Egerová et al. , 2013)..

Talent management

Although the term talent management has become increasingly popular and is widely used, it does not have one single, authoritative definition and, therefore, various definitions are being used.

- Talent management as a set of typical personal processes, functions and activities. From this perspective the talent management is considered more or less synonymous with

human resource management or is viewed as a specific area within HR. Talent is viewed as a substitute for HR. Generally, this concept is closely related to the traditional definition of HRM and hence the talent management is mostly associated with typical human resource management practices and activities.

- Talent management is a set of processes aimed at the creation of databases of talents (talent pools). This perspective highlights the concept of ‘talent pools’ and emphasizes the development of talent pools focusing on “projecting employee / staffing needs and managing the progression of employees through positions” (Lewis and Heckman, 2006, p. 140).
- Talent management is closely related to either high-performing or high-potential employees or to talent in general. From this perspective which takes a more general view, talent management has no concern for organizational boundaries or specific positions and it is primarily focused on sourcing, developing and rewarding employee’s talent. Collings and Mellahi (2009) add the fourth stream which emphasizes the identification of the key positions contributing to the competitive advantage of the organization in different ways. The systematic identification of the key positions is at the core of this concept rather than talented individuals per se.
- Talent management is defined as a systematic and dynamic process of discovering, developing and sustaining talent. What works, depends on the context and the way the organization implements the practices. So talent management may be organizationally specific and dependent on the context and could be defined as follows:
 - Talent management is a systematic attraction, identification, development, engagement, retention and deployment of those individuals with high potential who are of particular value to an organization (CIPD, 2006);
 - Talent management means the implementation of integrated strategies or systems designated to increase the workplace productivity by developing improved processes of attracting, developing, retaining and utilizing people with the required skills and aptitude so that they can meet the current and future business needs;
 - Talent management is defined as an integrated set of HR practices or functions, such as recruitment, selection, development and performance appraisal aimed at increasing the capacity of organization (SHRM, 2006; Fegley 2006; Mercer 2005);
- Talent management focuses on:
 - The appropriate selection of people – talents; but it is not just the selection of the best people but it is the search for the “appropriate material” which is to be dealt within such a way that the long term company strategy is considered;
 - Selection of job positions to which talents are to be placed;
 - Motivation of talents so that they may perform at their best for their company;
 - Development of talent potential with the aim of earning the company as good business results as possible.
 - Identifying employees' strengths and areas for their development;
 - Preparing talent for executing demanding tasks and problem solving;
 - Full and effective utilization of talents in connection with achieving the possible results for organization;
 - Engaging talents;
 - Measuring the effectiveness of talents;
 - Creating career advancement of the individual talents;
 - Talent development in connection of extending their knowledge, abilities, skills and competencies;
 - Basis for remuneration and care for employees;
 - Basis for placing employees and creating their job content;

- Development of leaders and building leadership community;
- Creation of positive working conditions and working environment.

Organizations which continuously support talent management focus on building organizational abilities by bringing talents into the processes and systems. They focus on the development of a high level of awareness and the abilities to support talent management in three groups: the individuals themselves, the line managers, and the professionals in human resources (Ali Taha and Sirková, 2012).

Talent management versus human resources management

The relationships between human resources management and talent management have been frequently discussed in recent years. Confusion between TM and HRRM is one of the reasons, why many organization don't adopt talent management. Many authors argue that talent management is only a new buzzword for old activities. Undoubtedly, there are many similarities between human resource management and talent management. The main HR functions are the planning of human resources, attraction, selection, retention, development and allocation of HR. Many researchers mentioned that talent management has been serving the same function albeit with a different focus. Creelman (2004) defines TM as the process of attracting, recruiting and retaining talented employees.

But there are key differences between HRM and TM (Chuai et al., 2008). TM is talent focused, with a more directed and detailed focus on certain groups of people. TM, unlike HRM, focuses on all staff. One of the differences that should be noted is that the talent management system is integrated with other activities. Egalitarianism, which is typical for HR activities, is acceptable in talent management only with difficulties. Well-proportioned resource allocation, typical for HRM, is not suitable for talent management. On the other hand HRM is more focused on the development of people. Talent management is viewed as a strategic process mandatory for the global strategy (Vladescu, 2012). Talent management supposes the implementation of methods for recruiting and selecting employees, and it also applies methods to scout out talents. The talent mindset implemented in talent management is another difference between TM and HRM.

Company's approach to human resource management is important for the success of talent management. In fact, it is the core of talent management, and so it makes sense that effective processes in all the traditional areas of HRM are an essential part of talent management. Building the employer's brand is an important role of HRM. A positive employer helps to attract the best talents for organization.

Human resources management focuses on all employees, while talent management focuses on "key employees" or "talent" or "top talent". Top talent can be defined as a person "who routinely exceeds expectations while exhibiting the right behaviors and is agile in the learning approach. These are the people whom customers pay a premium and others strive to work with (Morgan and Jardin, 2010, p. 24.).

Human resources (HR) departments can set the stage for success by hiring and training capable employees. But developing such personnel into a team of dynamic, motivated, long term participants in the company's processes must be the responsibility of all management from the CEO to a floor supervisor. TM is a part of HRM

Talent management tools

For the successful implementation of talent management organizations look for some new tools, principles, practices and processes that need to be developed and implemented. By means of these tools theoretical knowledge is transformed into organizational documents and measures to be taken. In the process of the elaboration of principles and practices the organizational context should also be taken into consideration.

Accordance to Stahl et al. (2012) it is needed to differentiate between practices and principles. The best practices are the best only in the context in which they have been designed. The principles have broader application. Practices can be built on the basis of principles in the given context.

The below stated principles have been developed in line with Stahl's findings and completed on the basis of the author's experience.

- a) Involvement of top management in talent management, including the talent mindset;
- b) Definition of talent management in the context of a particular organization;
- c) Linking the talent management strategy with the organization strategy;
- d) Linking the talent management strategy with the HR strategy;
- e) Embedding TM principles in the corporate culture;
- f) Providing internal consistency -integration of TM activities;
- g) Creating and dividing groups of the work positions according to the requirements for talents;
- h) Evolving and implementing TM practices, notably:
 - attracting employees;
 - selecting employees;
 - learning and development;
 - engaging employees;
 - rewarding employees;
 - retaining employees;
 - evaluating TM programs.

On the base of abovementioned principles can be created talent management model , which is portrayed on next page, the figure 1.

Describing of important talent management components.

Top management involvement

The talent management implementation needs to involve managers at all levels, especially the top level management. The talent management mindset must cascade from the top, with the top manager as a driver (Morton, 2005). In accordance with Michaels et al. (2001, p. 54) the talent mindset is defined as a deep-seated belief that having better managers at all levels allows your company to outperform its competitors. It is the recognition that better talent pulls all other performance levers. This belief gives the leaders the determination to strengthen their talent pool and the courage to take a bold action to do it. Leaders who have adopted the talent management mindset understand that this responsibility cannot be delegated. They consider talent management a critical part of their own jobs. Talent management must be the central part of running a company. Companies that practice outstanding talent management have the talent management mindset embedded in the institution.

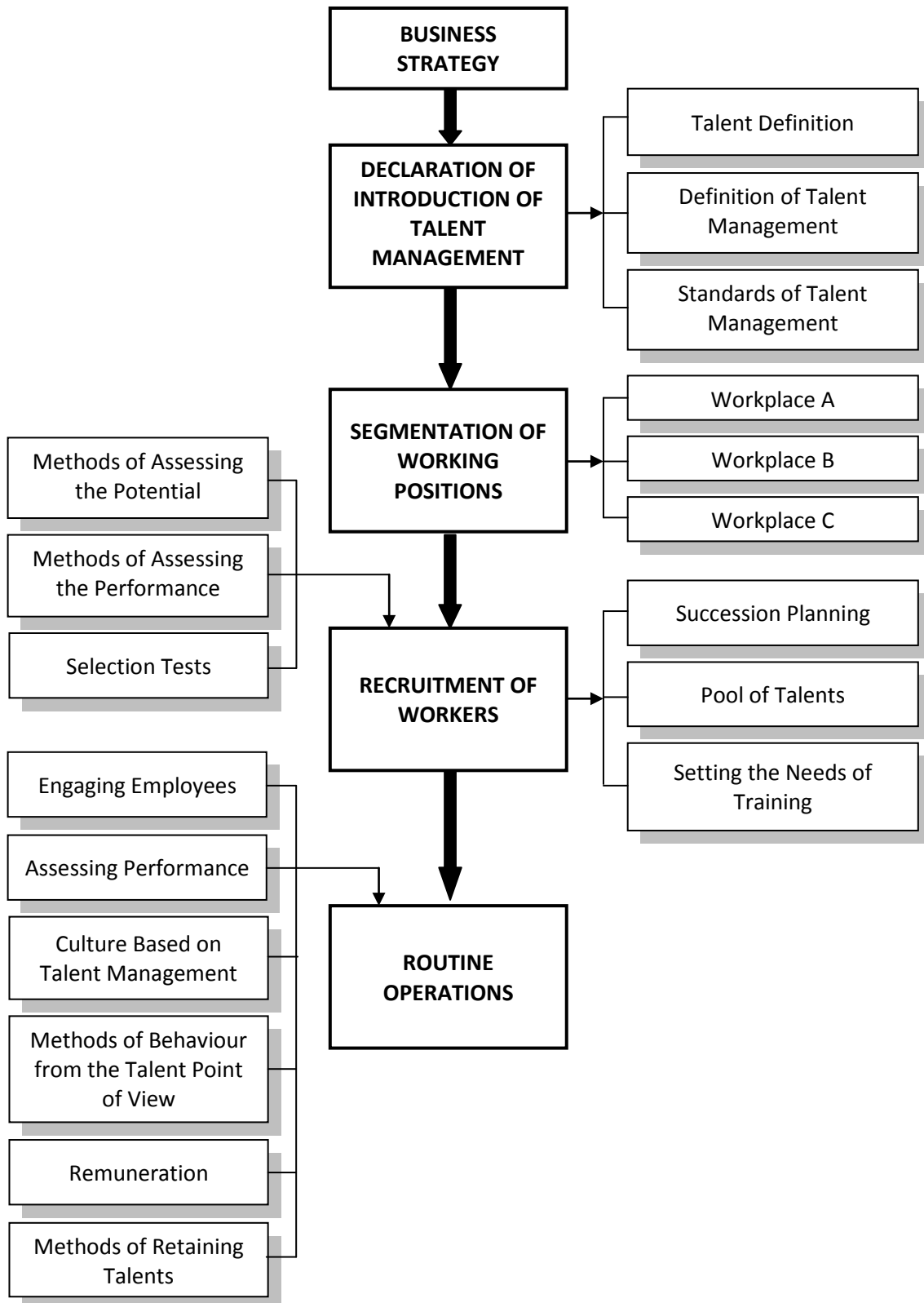


Figure 1: Talent Management Model. Source: own processing

Definition of talent management

Talent management may be defined as a comprehensive, integrated approach spanning the whole enterprise and the employees’ entire lifecycle. As has been already pointed out above, the comprehensive definition of talent should be transformed according to

the organizational context. Talent means something else for each organization. Some of the above mentioned definitions can be adopted for a particular company.

Linking the talent management strategy with the business strategy

Creating the strategy of talent management that is based on the organization strategy and is in compliance with it is one of the principal preconditions of effective talent management. Business strategy is the starting point of the talent management strategy. Mutual linking of the organization strategy with the given strategies enables to identify the processes of talent management which are crucial from the point of view of meeting the organization objectives. The right talent strategy starts with the organization strategy and continues by understanding the organization position in the business environment. The business strategy indicates the product to be produced, strategic goals to be reached and the competitive advantage to be won. Talent management should underpin this strategy by attracting, selecting and engaging suitable talents.

Linking talent management strategy to HR strategy

Human resources strategy defines what organization should do and change in the human resources management in order to meet the objectives. The strategy should be formulated in connection with the organization strategy. Formulating the talent management strategy should be done in a similar way. The initial step is, as has already been said, the organization strategy. Similarly as with the previous level, the human resources strategy should be linked with the talent management strategy while the talent management strategy should be formulated in connection with the human resources strategy. The integration of talent management with the human resources strategy may be done in various ways, from applying the philosophy and principles that are the basis of the human resources strategy, through applying various HR systems, up to applying the competency models.

Talent culture

The corporate culture is considered a source of the sustainable advantage. The culture supporting the processes and practices of talent management is a precondition of its successful integration in the organization. All the TM principles must be embedded in the corporate culture. The company has to make deliberate effort to transform all the TM principles in the corporate documents into the training programs for employees. Specifically, it must be included in the search for employees and in the selection process. The transformation should be done by means of incorporating the TM principles into the existing corporate culture. All staff of the organization should be informed about the new or transformed corporate culture. The TM principles should be included in the relevant documents and learning plans.

Internal consistency

The internal consistency or integration of TM components means, that various talent management practices and HR activities, systems and processes are aligned with one another. It is necessary for the individual processes of talent management not to be isolated or independent but to be interlinked to a certain extent at least and also integrated with other HR processes and systems. It is, at the same time, necessary for them to be managed as key processes.

For instance, if the company has accepted the talent mindset, this must be cascaded top-down. All the workplaces must be divided and later organized in separate groups according to the requirements for talented employees. The requirements for talents are estimated by means of job analyses. Then the company must adopt tools for finding the

best talents. Further training will be developed on the basis of the comparison of the real skills present at the workplace. If the organization invested money in the development of employees, measures must be taken to engage and retain employees. To evaluate the efficiency of talent management it is necessary to create evaluation methods for its performance and the system of rewarding.

Key position identification

Key position identification is one of the first activities in the talent management implementation. It is possible to see two main streams of approaches to this problem. One stream (Michaels et al., 2001 and many other scholars) emphasizes the identification of A performers, B performers and C performers. Emerging literature and author hold another opinion consisting in identifying the key work position (Boudrou and Ramstad, 2005; Huselid et al., 2005). This stream proposes that having identified the pivotal position within an organization, the key role of talent management is the development of a talent pool to fill these positions.

Evolving and implementing TM practices

TM practices are evolving from HRM practices. They constitute the superstructure of HRM practices. TM practices are usually elaborated by HRM departments and TM principles and organizational context are taken into consideration. The main practices are as follows:

Recruitment of employees

According to Towers Perrin's study (2005, p. 17), the following factors are considered as recruitment drivers: competitive base pay, work/life balance, career advancement opportunities, competitive benefits, challenging work, salary increase linked to the individual performance, learning and development opportunities, competitive retirement benefits, the calibre of co-workers and the reputation of the organization as a good employer.

Selection of employees

The process of selecting talent is more sophisticated. The requirements resulting from a job analysis are the basis for selecting employees. On the basis of the analysis it is possible to compile the required competencies and the performance indicators. The talent performance and the potential is an important dimension in connection with talent identification. The performance is measured against specific objectives.

The potential expresses future competencies and future performance. It is determined by a combination of the observation assessment and discussion. The potential is difficult to determine because it requires inferring future contribution based on the current data. Talent management requires both the performance and the potential.

There are processes and activities how to define the sources of talent and how to search for them. The requirements for future talents, especially for future leaders depend on the needs of organization and the nature of work.

Talent retention

People are the best assets of each company. In case of the talented people it is even more important. Company should have programs for employees' retention, especially for the talented people. There are many reasons for talent retention. Firstly, talented employees are the competitive advantage against competitors. Secondly, if a company invests money in recruitment, training and development, the money is lost if they leave. Thirdly, talented people represent the knowledge, especially the tacit knowledge which is difficult to share or

to retain in a codified way. The loss of important knowledge can have fatal consequences (Dobrovič,2009).

Similarly, in a situation when the economy faces a temporary decline, each company has to provide three rules to stress the importance of recruiting quality talents during the period of downturn. In these cases it is, firstly, necessary to avoid the lay-off of the key talents at all costs, secondly to guarantee constant recruiting and to ensure that talent channels are open, and thirdly, to maintain the talent development programs.

Employee´s engagement

Engagement is very often cited in connection with talent management. Employee´s engagement is similar to talent management, but it does not have any precise definition. A talented employee has no value for organization if he/she is not engaged. A definition by Gibbons (2006) is very often cited in connection with engagement. It goes like this: “employee´s engagement is a heightened emotional and intellectual connection that an employee has for his/her job, organization, managers, or co-workers that in turn influences him or her to apply discretionary effort to his/her work.

Performance management and rewarding

Organization should implement a performance management system. Strategic goals must be cascaded top-down. Individual key performance indicators and a performance evaluation system have to be adjusted for each employee and a sufficient amount of information has to be given as well. The performance system has to be interlinked with the reward system.

Evaluating the effectiveness of talent management

Currently there are no generally accepted and standardized methods for the TM effectiveness evaluation. Not enough effort has been devoted to find suitable methods, not even from scholars. The problem is that the gathered data on effectiveness tend to be more qualitative than quantitative and therefore more subjective.

In general, there are two possibilities how to evaluate the talent management effectiveness:

- Qualitative methods;
- Quantitative methods.

Qualitative methods are based on the specifications of the talent management practices. Principles for each of the practices will be determined for any required level.

Quantitative methods are based mainly on the estimation of ROI by measuring the expected outcomes and conducting the cost-benefit analysis.

Conclusion remarks

- Talent management is a real challenge for all organizations that do not only want to survive on the market, but they would rather thrive on today´s highly competitive business environment;
- A range of factors influences the corporate talent management;
- Organizations need to fit and tailor their talent management approaches to their own context;
- The first step in being able to manage talent effectively is the definition of talent and winning agreement on it;
- There are significant differences in the extent to which talent management is implemented in organizations;
- Companies need to align talent management with their business strategy, HR strategy and the organizational culture;

- Business strategy is the starting point of the talent management strategy. Talent management must be driven by the business strategy;
- Talent management is perceived as part of the company culture. The talent management implementation needs to involve managers at all levels;
- Talent management does not only need the co-existence with other organizational programs and systems but its role is also to support and coordinate them.(Egerová, 2013).

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RISK MANAGEMENT IN E-BANKING SECTOR – AN ANALYTICAL STUDY

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Abstract

E-banking or internet banking refers to systems that enable bank customers to access accounts and information on bank products and services through a personal computer or other intelligent device. Information technology is the key driver of the information age. It is a highly cost-effective channel for delivery of banking services; it is not free from risks. Apart from cost reduction in cost of transactions, internet banking also brought about a new set of risks that too in new forms. Regulators and supervisors all over the world are aware of different types of risks in internet banking. An important and distinctive feature of internet banking is that here technology plays a significant role as a source of tool for control of risks. Because of faster and speedier information technology, there is no finality either in the type of risks or measures to control them.

Keywords: E-banking, Information technology, delivery of banking services

Introduction

Banking as a major part of the financial sector, is the lifeblood of the whole industry, necessary to survive. It plays a decisive role in accelerating the rate of economic growth in each economy. Technology is another emerging trend in the banking sector and new issues have started cropping up, which is going to pose certain problems in the future. Even though internet banking it is not free from risks. Apart from reduction of cost of transactions, internet banking also brought a new set of risks. Internet banking also brought a new set of risks. That too in new norms. Regulators and supervisors of all over the world are aware of different types of risks in internet banking. It increases level of deregulations along with the increasing levels of competition have facilitated globalization on Indian banking system and placed numerous demands on banks.

Banks have come to realize that survival in the new e-economy depends on e-delivering some or all of their banking services on the internet while continuing to support their traditional infrastructure. The risk of e-banking is redefining business relations and the most successful banks will be those that can truly strengthen their relationship with their customers. Without any doubt, the international scope of e-banking provides new growth prospective and internet business is a catalyst for new technologies and new business processes. However, banks are uncertain about the regulatory framework for conducting the e-business and regulatory and taxation issues for governing cyberspace presents formidable problems.

Impact of e-banking in India is not yet apparent. Many global research companies believe that e-banking adoption in India near future would be slow compared to major Asian countries. Indian e-banking is nascent, although it is fast becoming a strategic necessity for most commercial banks as competition increases from private banks and NBFC's.

Objectives of the study

- To highlight the various types of risks faced by e-banking users.
- To understand and measure the significance of technology on e-banking services

- To know the changes in risks and opportunities and to take remedial measures to improve the banking services.
- To suggest the suitable recommendation to the problems.

Methodology

The study has been conducted with help of primary secondary data. The secondary data collected was reinforced with the primary data collected with respondents. A structured questionnaire was used for the purpose. Data for study was collected from 100 respondents. A cover letter attached to each questionnaire explained the objectives of survey and assured respondents confidentially of their responses and voluntary nature of participation and survey.

Risk associated with e-banking sector.

Table 1. Showing the age of respondents

Gender	Male	Female
Age 21-30	23	10
Age 30-50	38	28
Age 50 and above	09	02
Total	60	40

Table table

Table 1. Shows the age and gender of the respondents. Among the respondents majority are the male and they are age between 30 to 50. by this it is clear that young people are very huge attracted by the e-banking compare to other respondents. In addition, the age between 21-30 little high attractions on e-banking activities like usage of ATM, Debit card, Credit card etc.

Table 2. Showing the annual income of the respondents

Income level	No. of Respondents
Less than 25,000	25
25,001-50,000	33
50,001-1,00,000	20
1,00,000 and above	22
Total	100

As per the table 2. Annual income between Rs.25001 to 50,000 is high in numbers. So it is clear that having middle income are very high and attracted by e-banking activities. And also the income level less than Rs.25,000 respondents are almost same and it indicates that people having this income quite less compare to traditional banking.

Table no.3. Reasons to visit the bank

Reasons	No. of Respondents
To make Deposit	15
To enquire about the balance	28
To withdrawal of cash	43
To deposit the cheque	14
Total	100

Table 3 reveals that return to visiting the branches different people visit the different purposes. Some purposes can fulfilled without visiting the branch. So decide how the purposes for which the customers visit the branch can be fulfilled through e-banking. It is clear from the above table 43 respondents were visiting the branch for withdrawal of cash .28 respondents visit the bank branch for balance enquiry or get a bank settlement and remaining 18 respondents were for to make deposits and another 14 for depositing the cheques.

Table 4. Showing the respondent's opinion of operational risk.

Risk Factors	No. of Respondents
Weakness in design	22
Lack of awareness in technology	16
Negligence by customers	14
Fraudulent activities of employees	48
Total	100

Table 4. shows the opinion about operational risk from respondents are think about there are factors and most of 48 respondents are fraudulent activities from employees are more while operating in e-banking. Where as 14 respondents were due to negligence by employees and other 16 were due to lack of technical knowledge and 22 were face-operating risk due to weakness in design.

Table 5. Showing the respondent's opinion of security risk

Risk Factors	No. of Respondents
Back doors	23
Brute force and hijacking	32
Sniffing and spoofing	21
Security threat	24
Total	100

The table 5. discloses that there are security risk while in e-banking activities referred that most of risk factors like., 32 respondents says that suffer from hijacking, 23 respondents were from back doors and 22 were sniffing and spoofing and 24 respondents were highly suffer from security threat shifting hardware technologies, etc.

Table 5. Showing the respondent's opinion of legal risk

Legal Risk Factors	No. of Respondents
System deficiencies	21
Significant security breach	09
Privacy protection	13
Unwanted litigation	42
Total	100

As per table 6. Majority of the respondents mentioned that there is number of problems and risks while operating e-banking. There is reputational risk of 21 respondents of e-banking not meeting the system deficiencies and in legal risk privacy protection is major problem in e-banking services i.e. 13 Respondents . where as 42 respondents are under the legal litigation of unwanted factors like, theft etc,

Findings

1. Adopting new technologies is high risk.
2. There are most of the fraudulent activities in e- banking services.
3. For attracting the customers of online banking is quick where as it not free from security threat.
4. They have given more preference to customer satisfaction but privacy protection may possible.

Conclusion

Internet banking carries it various risks for individual banks particulars and banking system in general. The rapid pace of technological innovation is likely to change the nature and scope of risks, which banks face. There must be balance between risks and benefits.

Supervisory regulatory authorities are required to develop methods of identification and new risks ,assessing ,managing and controlling the exposure to risks.

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EXCHANGE RATE DETERMINATION IN HIGH FRAGILE EMERGING COUNTRIES

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Abstract

There exist exchange rate determination problem together with removing the restrictions on financial capital movements after 1970's. In the economics literature various type of models that are purchasing power parity, Mundell Fleming Model, Sticky Price Monetary Approach, Flexible Price Monetary Approach and Hibrit Model are explicated and tested for countries' economies. There may be more threats for the high fragile emerging countries. Argentina, Russia and Chile are included to the "fragile five" countries i.e. Turkey, Brazil, India, Indonesia and South Africa.

Central Bank of USA (FED) announced to reduce the bond purchases and applied this issue gradually. Mostly emerging countries but also others suffer damage to their economies because of this argument. In this study the fragile countries that are mentioned above are examined whether their exchange rates behave like one of the determination model in the 1980-2011 periods. Our hypothesis is these countries behave like *Flexible Price or Sticky Price Monetary Model* consistent with the literature. Unit root test and cointegration are used to test the hypothesis.

Keywords: Exchange rate determination, fragile countries, cointegration

Introduction

In the last decade there is an enormously increasing interest to cointegration analysis on monetary model of the exchange rates determination. The studies in the literature have mainly data from the developed countries. From the perspective of the emerging markets, the difficulty with the theoretical construct model may be that it does not have a long history like it does in the major industrialized countries (Bahrumshah, Mohd and Ahn, 2009:1762)

Most of the authors dealing with determination of exchange rate using monetary models have found significant and successful results (Frankel, 1979; Hacche and Townend, 1981; Hooper and Morton, 1982; Hoffman and Schlagenhauf, 1983; Frankel, 1984; Macdonald and Taylor, 1991; Macdonald, 1999; Tawadros, 2001; Westerlund and Basher, 2006; Chin, Azali and Matthews, 2007; Uz and Bildir, 2009). Some of them found that monetary model is not consistent with data (Djong and Husted, 1993; Dutt and Ghost, 2000; Alteville, 2006; Bahrumshah, Mohd and Ahn, 2009). Çavuşoğlu (1997) and Korap (2008) indicate that there may be a long run relationship but there is no consistent monetary model. Basher and Westerlund (2008) differently use the structural breaks and find a successful monetary model. Literature review up to date is given in Table 1

Table 1. Literature Review

Authors	Country	Period	Methodology	Result
Dornbusch (1976b)	-----	-----	theoretical	
Mussa (1976)	-----	-----	theoretical	
Frankel (1979)	Germany, USA	1974:M7 - 1978:M2	OLS	He found consistent results comparing with Dornbusch.
Hacche and Townend (1981)	USA, France, Germany, Japan and Italy	1972-1980	OLS	They found negative relationship between domestic interest rate and exchange rate.
Hooper and Morton (1982)		1973:Q2 - 1978:Q4	OLS	They found consistent results.
Hoffman and Schlaghauf (1983)	France, England, Germany, USA	1974:M6 – 1979:M12	ARMA	Monetary model is consistent with the current exchange rate movements.
Frankel (1984)	Germany, France, England, Japan and Canada	1974:M1- 1981:M6	Cochrane -Orcutt	Interest rate differential is found consistent for the aggregate data.
Macdonald and Taylor (1991)	Germany, USA, Japan and England	1976:M1 – 1990:M12	OLS	They asserted that monetary model could be used as a long run exchange rate determination model.
Djong and Husted (1993)	Germany, France, Canada, Japan, Holland and England	1974:1 - 1988:12	Cointegration	Their test fails for the monetary model.
Çavuşoğlu (1997)	Turkey, USA	1984:Q1 – 1996:Q2	Cointegration	He found a cointegration relationship but the model was not sufficient to explain the exchange rate movements.
Macdonald (1999)	Japan, Germany, USA	1973:Q2 – 1993:Q4	VECM	Monetary model is more successful than the PPP approach.
Dutt and Ghost (2000)	Japan, USA	1959:M1 – 1996:M12	KPSS, Johansen - Juselius	They said that Monetary approach is not a long run equilibrium model.
Tawadros (2001)	Australia, USA	1984:M1 – 1996:M1	Dynamic VECM	Dynamic vector error correction model is successful for both forecasting and estimating.
Altaville (2006)	Euro Zone, USA	1979:Q1 – 2004:Q4	Cointegration	There is an instable relationship between the variables.

Westerlund and Basher (2006)	18 OECD countries	1973:Q1 – 1997:Q1	Panel Cointegration	Monetary model is found successful.
Chin, Azali and Matthews (2007)	Malaysia, USA	1981:Q1 – 2003:Q1	Cointegration	Monetary model is found successful.
Basher and Westerlund (2008)	18 OECD countries	1973:Q1-1997:Q1	Cointegration	Monetary model is found successful with structural breaks.
Korap (2008)	Turkey, USA	1987:Q1 – 2006:Q4	Cointegration	Nominal exchange rate is cointegrated with the variables that are offered in the economics theory.
Bahrumshah, Mohd and Ahn (2009)	Malaysia, USA	1971:Q1 – 2006:Q3	Cointegration	Macroeconomic factors don't affect the exchange rate in the long run.
Chin, Habibullah and Azali (2009)	Indonesia, Malaysia, Philippines, Singapore, Thailand	1981:Q1-1994:Q4	Cointegration, VAR	In the financial liberalization period divisia money has more consistent results than basic aggregate money.
Uz and Bildir (2009)	Argentina, Brazil, Taiwan and Turkey	1986:Q1–2006:Q4	Cointegration	Interest rate is more sensitive than the other variables in the vector error correction model for determination of exchange rate.
Uz and Ketenci (2009)	Latvia, Poland, Slovenia, Turkey, Hungary and Slovakia	1993:Q1 – 2005:Q4	Cointegration	There exist no cointegration. However, coefficients in the monetary model are statistically significant.

The outline of the remaining parts of the paper is as follows. The data set is described and empirical results are discussed in data and methodology section, unit root and cointegration test results are given in empirical results section, and final section presents the some concluding remarks.

Data and Methodology

All data are gathered from International Financial Statistics online services reported by the International Monetary Fund (IMF) and World Bank data services. This publication has annual data for USA and 5 fragile countries from 1980 to 2012.

Following MacDonald & Taylor (1994), in Model 1, we have exchange rate (ER), domestic money supply (M), foreign money supply (M^*), domestic GDP (Y), foreign GDP (Y^*), domestic interest rate (i_s) and foreign interest rate (i_s^*) variables.

$$ER = \alpha + \beta_1 M + \beta_2 M^* + \gamma_1 Y + \gamma_2 Y^* + \varphi_1 i_s + \varphi_2 i_s^* + \varepsilon \quad (1)$$

The variables used in this paper are real gross domestic product, money supply, discount rate (real interest rate), and exchange rate. For a consistent monetary model we have to have $\beta_1 = 1, \beta_2 = -1, \gamma_1 < 0, \gamma_2 > 0, \varphi_1 > 0, \varphi_2 < 0$.

Empirical Results

For fragile 5 countries' macroeconomic variables unit root test results are given in Table 2.

Table 2. ADF Unit Root Test Results

Series	W Statistics(Probabilities)		
	Level	First Difference	Results
USA_GDP	-2.748(0.225)	-3.626(0.043)	I(1)
USA_M	-2.822(0.200)	-7.129(0.000)	I(1)
USA_i	-2,815(0.067)	-4.921(0.002)	I(1)
TR_GDP	-1.480(0.815)	-5.553(0.000)	I(1)
TR_M	-1.452(0.824)	-9.625(0.000)	I(1)
TR_i	-1.802(0.680)	-5.639(0.000)	I(1)
TR_ER	-1.958(0.600)	-5.114(0.001)	I(1)
BR_GDP	-0.815(0.953)	-5.766(0.000)	I(1)
BR_M	-1.347(0.593)	-5.417(0.000)	I(1)
BR_i	-3.398(0.069)	-5.333(0.000)	I(1)
BR_ER	-1.651(0.749)	-5.541(0.000)	I(1)
END_GDP	0.309(0.997)	-3.896(0.024)	I(1)
END_M	-1.397(0.147)	-8.575(0.000)	I(1)
END_i	-2.554(0.302)	-6.112(0.000)	I(1)
END_ER	-1.898(0.632)	-5.344(0.000)	I(1)
IND_GDP	0.062(0.995)	-2.786(0.212)	I(2)*
IND_M	-0.635(0.433)	-9.026(0.000)	I(1)
IND_i	-1.542(0.793)	-4.087(0.015)	I(1)
IND_ER	-3.232(0.098)	-6.909(0.000)	I(1)
SA_GDP	-1.193(0.894)	-4.600(0.004)	I(1)
SA_M	-1.618(0.098)	-6.270(0.000)	I(1)
SA_i	-0.807(0.357)	-6.648(0.000)	I(1)
SA_ER	-2.984(0.151)	-5.801(0.000)	I(1)

Note: The critical values for the ADF are from Davidson and MacKinnon (1993). (with constant and trend) Lag length in []. The critical values for the KPSS are from Kwiatkowski et al.(1992). The critical values are 0.216, 0.146, 0.119 for 1%, 5% ve % 10 respectively.

Table 2 suggest that all of the variables are not stationary on the levels, all the variables are integrated of the same order, i.e. I(1) except gross domestic product of India. Because of this we exclude India from the analysis.

All variables are seasonally adjusted by E-views 6-beta_X11. Lag length is found 1 as to Schwarz criteria. Using this lag length, Johansen-Juselius test results for all 4(Turkey, Indonesia, South Africa, Brasil) countries follow.

Table 3 Johansen-Juselius Cointegration and Normalized Cointegration Coefficients for Turkey

Eigenvalue	Trace Test(TT)	0.05 Critical Value	Prob.**	Hypothesized No. of CE(s)
0.817550	154.6906	125.6154	0.0003	None *
0.724579	101.9510	95.75366	0.0175	At most *1
0.610290	61.97784	69.81889	0.1797	At most 2
0.404518	32.76491	47.85613	0.5698	At most 3
0.254186	16.69501	29.79707	0.6625	At most 4
0.216337	7.603377	15.49471	0.5087	At most 5
0.001493	0.046333	3.841466	0.8295	At most 6

Eigenvalue	Max-Eigen Statistics	0.05 Critical Value	Prob.**	Hypothesized No. of CE(s)
0.817550	52.73966	46.23142	0.0089	None *
0.724579	39.97312	40.07757	0.0514	At most 1
0.610290	29.21293	33.87687	0.1630	At most 2
0.404518	16.06990	27.58434	0.6598	At most 3
0.254186	9.091638	21.13162	0.8250	At most 4
0.216337	7.557044	14.26460	0.4255	At most 5
0.001493	0.046333	3.841466	0.8295	At most 6

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Normalized cointegrating coefficients (standard error in parentheses)						
TR_ER	TR_GDP	USA_GDP	TR_M2	USA_M2	TR_I	USA_I
1.000000	0.001544 (0.01232)	-0.009080 (0.01271)	0.015745 (0.00175)	-0.066185 (0.01948)	-0.025463 (0.00719)	0.130290 (0.03583)

Turkey cointegration results indicate that there is a long run relationship but no statistically significant monetary model totally.

Table 4 Johansen-Juselius Cointegration and Normalized Cointegration Coefficients for Brazil

Eigenvalue	Trace Test(TT)	0.05 Critical Value	Prob.**	Hypothesized No. of CE(s)
0.925980	181.2019	125.6154	0.0000	None *
0.755471	103.0994	95.75366	0.0142	At most 1*
0.608654	60.84677	69.81889	0.2103	At most 2
0.430199	32.70186	47.85613	0.5733	At most 3
0.332664	15.82779	29.79707	0.7243	At most 4
0.110787	3.693938	15.49471	0.9267	At most 5
0.005696	0.171370	3.841466	0.6789	At most 6

Eigenvalue	Max-Eigen Statistics	0.05 Critical Value	Prob.**	Hypothesized No. of CE(s)
0.925980	78.10257	46.23142	0.0000	None *
0.755471	42.25262	40.07757	0.0280	At most 1*
0.608654	28.14491	33.87687	0.2069	At most 2
0.430199	16.87407	27.58434	0.5908	At most 3
0.332664	12.13385	21.13162	0.5345	At most 4
0.110787	3.522568	14.26460	0.9060	At most 5
0.005696	0.171370	3.841466	0.6789	At most 6

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Normalized cointegrating coefficients (standard error in parentheses)						
BR_ER	BR_GDP	USA_GDP	BR_M2	USA_M2	BR_I	USA_I
1.000000	0.141179 (0.01138)	-0.120333 (0.00949)	0.001670 (0.00011)	0.016575 (0.02432)	-0.000215 (3.4E-05)	0.235089 (0.02954)

Brazil cointegration results indicate that there is a long run relationship but no statistically significant monetary model.

Table 5 Johansen-Juselius Cointegration and Normalized Cointegration Coefficients for Indonesia

Eigenvalue	Trace Test(TT)	0.05 Critical Value	Prob.**	Hypothesized No. of CE(s)
0.950196	249.4875	125.6154	0.0000	None *
0.829462	156.4982	95.75366	0.0000	At most 1*
0.757202	101.6655	69.81889	0.0000	At most 2*
0.609889	57.78414	47.85613	0.0045	At most 3*
0.501099	28.60310	29.79707	0.0682	At most 4
0.179955	7.047337	15.49471	0.5721	At most 5
0.028522	0.897048	3.841466	0.3436	At most 6

Eigenvalue	Max-Eigen Statistics	0.05 Critical Value	Prob.**	Hypothesized No. of CE(s)
0.950196	92.98931	46.23142	0.0000	None *
0.829462	54.83274	40.07757	0.0006	At most 1 *
0.757202	43.88135	33.87687	0.0023	At most 2*
0.609889	29.18104	27.58434	0.0309	At most 3*
0.501099	21.55576	21.13162	0.0436	At most 4*
0.179955	6.150290	14.26460	0.5940	At most 5
0.028522	0.897048	3.841466	0.3436	At most 6

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Normalized cointegrating coefficients (standard error in parentheses)						
END_ER	END_GDP	USA_GDP	END_M2	USA_M2	END_I	USA_I
1.000000	127.1493 (10.4584)	-291.6703 (10.5622)	-167.6387 (11.1681)	-269.3884 (23.2670)	234.1613 (15.4374)	795.7156 (57.3209)

Indonesia cointegration results indicate that there is a long run relationship but no statistically significant monetary model.

Table 6 Johansen-Juselius Cointegration and Normalized Cointegration Coefficients for South Africa

Eigenvalue	Trace Test(TT)	0.05 Critical Value	Prob.**	Hypothesized No. of CE(s)
0.858658	189.6357	125.6154	0.0000	None *
0.749192	128.9820	95.75366	0.0000	At most 1*
0.652392	86.10696	69.81889	0.0015	At most 2*
0.564263	53.34986	47.85613	0.0140	At most 3*
0.473858	27.59762	29.79707	0.0878	At most 4
0.219501	7.689922	15.49471	0.4991	At most 5
0.000240	0.007450	3.841466	0.9308	At most 6

Eigenvalue	Max-Eigen Statistics	0.05 Critical Value	Prob.**	Hypothesized No. of CE(s)
0.858658	60.65367	46.23142	0.0008	None *
0.749192	42.87508	40.07757	0.0236	At most 1*
0.652392	32.75710	33.87687	0.0676	At most 2
0.564263	25.75224	27.58434	0.0842	At most 3
0.473858	19.90769	21.13162	0.0734	At most 4
0.219501	7.682471	14.26460	0.4119	At most 5
0.000240	0.007450	3.841466	0.9308	At most 6

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Normalized cointegrating coefficients (standard error in parentheses)						
SA_ER	SA_GDP	USA_GDP	SA_M2	USA_M2	SA_I	USA_I
1.000000	0.145710 (0.02011)	-0.178409 (0.02153)	0.233907 (0.03026)	-0.206266 (0.04185)	0.131413 (0.04280)	0.465019 (0.09216)

South Africa cointegration results indicate that there is a long run relationship but no statistically significant monetary model.

Conclusion

This paper's aim is to analyze relationship between exchange rate and economic indicators(GDP, short term interest rate, money supply) using time series data for fragile 5 countries over the period 1980-2012 within a multivariate framework. Exchange rate determination problem is going to be obvious after removing the restrictions on financial capital movements after 1970's. Most of the emerging countries also contributed this process. However, a wealthy financial capital movement needs strong social, legal and political stability. The countries that have problems are going to be categorized. So fragile 5 countries i.e. Turkey, Brazil, India, Indonesia and South Africa are like that. In the exchange rate literature trend is examining the emerging countries for determination. This study observes

the more specific group among the emerging countries. It is found that there exist a cointegration between the exchange rate and the money supply, short term interest rate and gross domestic product. However, neither sticky price nor flexible price monetary models are consistent and successful for 5 fragile countries. For the further studies, together with used economic indicators, one may use other macroeconomic indicators like inflation or long term interest term. Also it may be good to compare developing countries data with industrialized ones.

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PRODUCTION AND OPERATIONS DIRECTED TO ORGANIZATIONAL COMPETITIVENESS BY USING BEST MANAGEMENT PRACTICES

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Abstract

The new global economy has stimulated new forms of organization and production process. It is up to managers to develop production capacities and adopt best practices in the pursuit of continuous improvement of operational performance. The aim of this study was to analyze the best practices of different organizations in main national and international journals in the area of POMs. Returned a portfolio of 93 practices considered benchmarking or just a good practice. We conclude that regardless of being considered world class practices or specific to certain contexts, should serve as examples to be followed in pursuit of organizational competitiveness.

Keywords: Competitiveness, best practices, production system

Introduction

The complexity of the knowledge economy and the possibilities of IT raised the standard of organizational competitiveness. Doing more with less, do better, involve team work to find solutions and produce innovations to ensure competitiveness are factors that make the difference between relevance and irrelevance of organizations regardless of industry. According to Hayes et al (2008), the new global economy has prompted new forms of industrial organization that contributed to redefining the role of operations management.

The various combinations of structural resources and infrastructure, plus the adoption of best practices in pursuit of organizational sustainability have shown that the winning companies had to change to survive. Correa and Correa (2011) warn that there is a better way to manage operations. Therefore, it is necessary that managers define a strategic direction to support their decisions.

Moreover, to understand and interpret the business reality in a complex and interconnected, systemic approach to complex-has been a relevant theoretical framework for this purpose. From the perspective of complexity theory, we seek to know how the operations of companies can achieve results? Since the performance of production operations is reflected in the ability to compete? What are the practices adopted expressing its sustainability? Based on these questions, this article aims to uncover the best practices adopted by different organizations. Therefore, we performed a literature search on secondary sources. It is noteworthy that the practices were grouped unveiled a compendium of "Best Practices" as a final product of post-doctoral de Azevedo (2012).

The diagnostic tool of managing the production system

The Center for Interdisciplinary Studies in Management and Production Costs (NIEPC)/ Santa Catarina Federal University has developed a tool to assess, diagnose and assist in decision making on production systems, considering a complex perspective of the relationships between the various elements that comprises such a system.

When considering that the production system consists of a series of inter-relationships of different processes and operations that enable the development of a product (or service), Schulz (2008) and Silveira (2010), through studies based Hanson, Voss (1995), determined the structural subsystems of the production system, from thirteen categories of analysis: Operational Performance, New Product Development, Technology and Equipment, Factory, Investment, Environmental Management, Organization and Culture, Quality, Health and Security, Cycle Time, Production Planning, Production Scheduling and Production Control.

Secondly, we tried to bring the instrument to the notion of competitiveness (PIANA; ERDMANN, 2012; ROMAN et al, 2011). Factors practice then became part of the structure of the instrument in order to propose a reflection on what actions and / or programs may be employed according to the perceived weaknesses or review, identification of opportunities for positive performance of the system production. Figure 1 illustrates the relationship between the categories of analysis and factors of competitiveness.

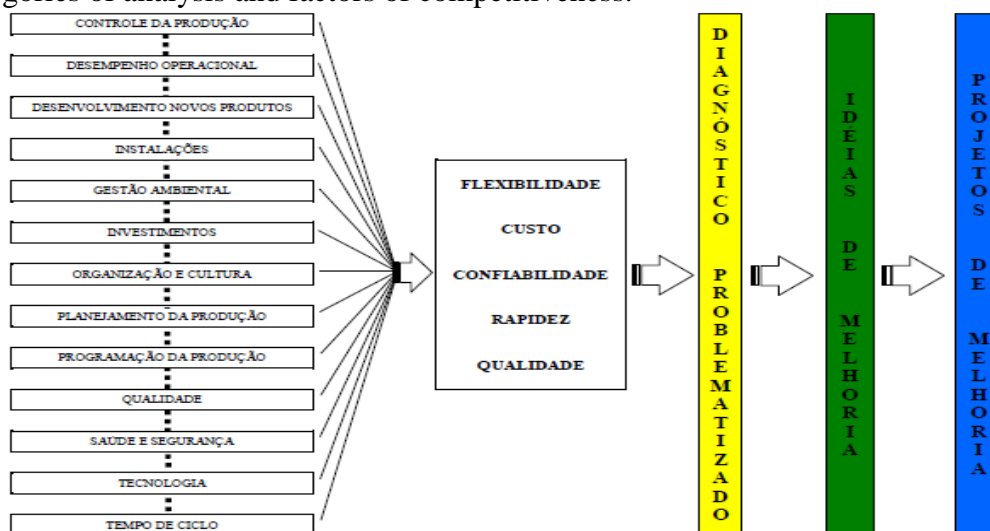


Figure 1: Assessment tool management system of production (NIEPC)
Source: Authors (2012)

With reference to Figure 1, it is said that the diagnostic tool of production systems is composed of a structure of thirteen categories related to five factors results which are achieved through practice of ten factors. These relationships produce assertions, which are located between two scenarios (optimistic and pessimistic). This allows the participants to reflect on their actions and decisions. Reflection arise improvement ideas that could become action plans or projects.

Regarding approaches to support the instrument NIEPC, it was based on the model created by the London Business School on the best practices of a process of Benchmarking Industrial (HANSON, VOSS, 1995), where lean production systems manufacturing, concurrent engineering, and total quality organization and culture form the mainstay of the main components of the model. Its construction was guided by the logic that each structural element of the system has a relationship with variables that give the organization competitive.

Thus, based on the literature review, thirteen categories were defined components of any production system. The variables which give the organization competitive represent what is necessary for a production system to survive and be competitive. The thirteen categories

act influenced by and influencing factors of competitiveness (factors of practical factors results).

The practices refer to stresses or generating abilities features result, ie, those capable of providing direct competition organization. The result of factors are key features vital to the organization and be successful in the long term (SLACK et al, 2002). Or, are able to provide competitive features directly to the organization. They are: reliability, cost, quality, speed and flexibility.

The factors of practice, according to Slack et al (2002) and Roman et al (2012), representing the patterns or profiles of good organizational practices. These are actions or programs that relate to Strategic Alliances, Human Capital, Knowledge, Cultural Factors, Innovation, Customer Relations, Social Responsibility, Control Systems, and Production Techniques; ICT.

The thirteen categories of instrument are compared with what researchers in the field of production management and operations called "subsystems of production," ie, areas on which choices are made structure and infrastructure (HAYES, WHEELWRIGHT, 1984; VOSS, 1995; HILL, 2000; RITZMAN, KRAJEWSKI, 2004; BOYER; LEWIS, 2009).

Still, in terms of theoretical support of the instrument is possible to mention the three paradigms of manufacturing strategy called respectively competition by manufacturing, strategic choices, and best practices (VOSS, 1995).

Paiva et al (2004) believe that the strategic direction of the production must take into account the so-called competitive criteria that enable a more assertive about the positioning of goods and services to the demands of the market and customers, as well as resources and / or internal training capabilities of each organization. Voss (1995, 2005) and Silveira; Souza (2010), based on studies carried out since the 70s, that in addition to complementary perspective alignment between market demands and the skills within the organization, managers have designed and implemented the operations based on the perspectives of development of productive capacities and the adoption of best practices.

In the first paradigm: competing through manufacturing, assume prominence, Skinner, Hayes, Wheelwright, Hill, Platts and Gregory. The idea was proposed by Skinner (1969) when he proposed key areas on which production decisions should be made: plant and equipment, planning and control of production, labor and human resources, design and product engineering and organization and management. The concept of key areas was related to the notion of trade offs. For, if there were trade offs between performance objectives defined from market requirements, would also trade offs in areas where such objectives should be put into practice.

The second paradigm, referring to strategic choices, also defended by the same authors (Skinner, Hayes, Wheelwright, Hill, Platts and Gregory), based on internal and external consistency, ie, between the context of business and products and options in content production strategy. In this sense, for example, the choice between buying or producing and where produce has led to outsourcing of various stages of production processes, the aggregate services provided by the integration of Supply Chain.

The strategic choices are made in areas of decision and actions categorized by Hayes and Wheelwright (1984) in structure and infrastructure. Thus, the understanding that different companies in the same sector of activity compete in different ways to achieve the result of factors makes their managers to create a single system, integrated and consistent to pursue a particular competitive advantage (PAIVA et al, 2004). The challenge is to pursue best practices with attributes of efficiency, efficacy and effectiveness.

The third paradigm, referring to best practices, its main authors, Hayes, Wheelwright, Schonberger, Hanson and Voss. These are assumptions based on the need to adopt "best practices", ie by practices adopted by companies of "World Class Manufacturing".

According to Voss (1995), the set of best practices highlight the principles of lean production, total quality and certifications. The programs and actions arising contribute to performance and higher capacities. These in turn add greater organizational competitiveness. This paradigm focuses on the continuous development of best practices in all areas within a company.

Despite the vision of best practices were legitimized both academia and in business practice, its implementation indiscriminately may have contributed to criticisms that arose regarding the real benefits. According to Voss (2005), the following questions in two directions (fashion and formalism). As a fad, practices would be adopted simply because other organizations were adopting, regardless of performance improvement. As a formality, the criticism comes from institutional theory, which suggests that organizations adopt certain practices due to external pressure, such as the case of ISO certification.

Thus, practices were adopted in isolation or as the solution to all problems, instead of having a greater reflection on whether such practice would be appropriate for the organization and actually attend the competitive needs (Powell, 1995; VOSS, 1995; UGAN 2004; BEAUMONT, 2005).

Methodology

This study is an exploratory / descriptive, qualitative approach, because it was intended to identify and systematize information that express the best practices used by companies characterized as competitive and successful.

This is a literature, or, more specifically, a meta-synthesis, ie, a systematic review of the literature with the purpose of obtaining a summary of evidence related to a particular phenomenon, by applying systematic and explicit methods to search, critical appraisal and synthesis of selected information (WHITTEMORE; KNAFL, 2005).

In this case the meta-synthesis was used in the step of analyzing the collected data, since it has one integrative analysis of individual descriptions of best practices extracted from each material previously analyzed. We tried to gather several examples of practices related to each of the analysis categories that compose the management technology, highlighting the relationship that such practices with the factors of competitiveness, as well as identifying the discrepancies and similarities between them.

In terms of data collection between January and May 2012 was selected a portfolio of materials from the survey at the portal of CAPES periodical database Web of Science. As search criteria we used the descriptors: best practices, production practices, world-class management, decision categories, performance objectives. With filtering purposes, each descriptor was crossed with each of the thirteen structural elements of the production system (Figure 1).

The material found, we chose to include those more aligned preliminary research area in operations management, administration and production engineering. After reading all the summaries, various articles (around 30%) were excluded because they did not fit the theme of research. The final sample was comprised of a portfolio of 296 publications (national and international), which covered the years 1997 to 2012.

With possession of the material collected, we did a brief reading of each, looking plug them from three points: reference, main idea and best practice extracted. Right now, those who were excluded precede any examples of good practice to be only a theoretical, or even contain information on surface and / or vague. Finally came up to an amount of 91 selected articles for further reading so that it could be part of a compendium of best practices following the presentation following structure: a category of analysis, best practices, goal, steps, and lessons learned; reference .

Presentation and discussion of results

To present and discuss the results we chose to present only a best practice relevant to each of the thirteen production subsystems that compose the instrument NIEPC since this balizou the collection and analysis of data.

Accordingly, among the 91 best practices in portfolio analysis, we chose 13 examples are described below:

In the category of analysis "Organization and Culture", presented a model of instrument performance evaluation of human capital, related to TD & E (training, development and education of personnel). The lesson learned was that the human capital assessment allows the organization to identify, in a timely manner, which intangibles need to align strategic planning resources necessary to achieve their goals. Accordingly, it is inferred that the adoption of this practice reflects a greater quality and reliability of the production function (VARGAS et al, 2008).

In the category "Environmental Management" was presented as best practice an instrument (EPM-KOMPAS) to assess the environmental performance. To Gunther; Kaulich (2005), it is software that follows the features of an economic system of performance evaluation. The instrument should be used in Small and Medium Enterprises to help them in the implementation of environmental management and measurement of environmental performance. From the data collected with the instrument and the use of the SWOT matrix can take action to prevent environmental impacts. The lesson learned is that the adoption of EPM-KOMPAS may be reflected in lower cost, higher quality and reliability of the production process.

It is observed that the practices illustrated in the "Organization and Culture" and "Environmental Management" are aimed at presenting a tool for performance measurement and evaluation of policies and practices aimed at fostering a culture of learning and a culture of environmental sustainability. Both one and the other has a flexible structure with the purpose of enabling comparisons and support improvement projects.

In the category "Production Scheduling", presented as best practice mapping the flow of production and application of the Global Operating Income Index (IROG) in the production process (PRATES; BANDEIRA, 2011). The lesson learned is that the collection of data from different sources (mapping of the productive process, measuring the times of operations), and its subsequent analysis, enable the production manager perform the balancing of production flow, reduce lead time and process propose other potential improvements. The principal effects of the adoption of the practices mentioned focus on faster and lower system cost.

In the category "Cycle Time" was a proposal for implementation of the principles and techniques of QRM (Quick Response Manufacturing) to reduce lead time budgeting process for a manufacturer of writing materials. We conclude that with the adoption of QRM, you can find new ways to perform actions with emphasis on reduction of lead time, focusing on the synchrony between dependent activities, the efficient flow of work and the production of conforming items. Accordingly, to reduce the lead time can be obtained improvements in quality management, reduce cost and increase the speed of the production process (LIMA et al, 2012).

In the category "Investments" were identified as best practices presentation of OEE (Overall Equipment Effectiveness) as a metric used to assess the current scenario of productivity of a given production system and its use in conjunction with computer simulations to enable improvements in systems automated manufacturing (ALOCK MATHUR et al, 2011). The lesson that OEE can be seen as a metric percentage that represents how are the "best practices" regarding the company's production process, because it takes into account three important variables productivity: the availability of equipment for

production, quality that is produced and the performance of the system. Still, it is possible to identify different types of losses, and propose improvement actions.

It appears that the categories "Production Scheduling", "Cycle Time" and "Investments" were related practices aimed to diagnose, from comparisons and indicators, resources and productive capacity, with the purpose of reducing the "lead time" and maximize operational performance. The focus here is focused on the production process mapping, identification of bottlenecks and constraints of the system. Thus, we mentioned the following tools: value stream mapping, measurement of operating times, the value chart, fishbone diagram, and FMEA software simulations.

In the category "Operational Performance" presented a set of best practices for managing cutting tools in the automotive industry (FAVARETTO et al, 2009). The lesson learned is that practice is seen as a strategy to achieve increased productivity and efficiency, as it seeks to solve problems related to the various activities that involve the use of tools, including acquisition, storage, development of database tools, selection and allocation tools, inspection, preparation, delivery lines, switching, monitoring and inventory control. The reflection of the adoption of these actions occurs from the minimization of costs, faster by eliminating waste and maximizing the flexibility of the production process.

In the category "Health and Safety" was presented a set of good practices related to the management of OSH (Occupational Safety and Health at Work) on manufacturers of automotive batteries State of SP (Oliveira et al, 2010). The lesson learned from the adoption of these practices is that the support of senior management, HR and the active participation of employees in OSH management is crucial to the success of this system. The result of an effective OHS management system focuses mainly on reducing costs by avoiding accidents and diseases and improve the quality and reliability of the production process

It thus appears that in the "Operating Performance" and "Health and Safety" was presented a set of recommendations for adoption of management systems (cutting tool and health and safety). In both, it is clear the need for compromise and blame everyone involved, create a database, conduct training and encourage the participation of people in relation to the sharing of knowledge aimed at improving the production system.

In the category "Quality" was presented as best practice internal communication as a tool for promoting quality in organizations. For Almeida et al (2010), the successful adoption of systems and programs for quality improvement in organizations, depends, among other factors, the commitment of its employees. It appears that the question of the involvement of everyone and sharing knowledge, which stands for internal communication serve as a tool to promote quality you need to create a culture conducive to such compromising those involved, in addition to choosing the most appropriate vehicles communication for each objective to be achieved.

In the category "Production Control" presented as best practice development of an SI for the control of production in an industry self-adhesive (GEORGES, 2010). Based on the modeling of processes, we obtained a unique and cohesive functioning of the company, which made explicit the part that fit each one, emphasizing that the central object is the customer service end. The SI was developed in such a way that allowed the specific needs of the production of self-adhesive, in particular the control of inventories, the need to purchase and manage emissions from production orders. On the factory floor, the appointment has to be done directly by the operator and allowed the PCP and the managements online tracking of what was being produced. As a consequence, there was a higher speed, quality and reliability of the information, and lower cost production process

In the category "Production Planning", identified a set of practical production planning and inventory on pharmaceutical companies (MOSQUE; SANTORO, 2004). Good practice was related to the use of integrated systems and investment in training production

managers, focusing on issues such as production planning, mathematical modeling and computation. The lesson learned is that the adoption of analytical models for decision support contributes to greater speed, quality and reliability of the information, and in a more longitudinal view to reducing the cost of operation of the production system of the pharmaceutical industry.

There is light of the foregoing, that the categories "Production Control" and "Production Planning", the practices were focused on the development of a SI to serve both the planning and control and to support decisions of the management of production. The common characteristic of SI's proposed was developed customized according to the needs and peculiarities of each context, as well as the possibility of integrating different functional areas of the organization.

In the category "Factory", illustrated as an example of best practice to present a mathematical method to evaluate the performance of the layout and signaling a hospital. The mathematical method used was exposure index (VI), developed in the 80s by Braaksma and Cook. The lesson learned was to study the layout and reformulations that are necessary pathways may decrease and response times, resulting in lower cost, higher speed and quality of service provided there (RANGEL; MONT'ALVÃO, 2011).

In the category "New Product Development", presented as an example of best practice the description of the implementation of lean principles in Product Development Process (PDP), specifically at the stage of conceptual design of an electronic product (DAL OVEN et al, 2008). The lesson learned is that with the use of lean practices in PDP reduces the lead-time of product launch and add value to them. The main consequences can be identified to increase the speed, flexibility and quality of new product launches, as well as to reduce costs by efficient allocation of resources.

It is thus that the category "Factory" was presented an evaluation model of the layout of the hospital and, in the category "New Product Development" sought to show how the adoption of lean principles in the development stages of new products, especially in the conceptual design stage, could, with the aid of QDF, SBCE contribute to increase the speed and flexibility of the production system. It is worth remembering that the structural organization of the layout enabled by assessment also aimed to increase the speed of the system. In both situations, it was also necessary process mapping.

In the category "Equipment and Technology" best practices presented are part of a set of recommendations for revisions to the project due to the organizational decision to adopt AMT (Advanced Manufacturing Technology) (COSTA et al, 2010). The lesson that can be learned is that with the adoption of the list of recommendations is possible to obtain information and resources to assist in decisions to be taken from various perspectives. Such recommendations are important because it appears that most companies assign more importance to issues of financial nature when planning the implementation of an AMT, leaving aside other issues such as the impacts on the organization, setting organizational structure, personnel training, and other aspects that are of relevance in this process.

It is inferred from the examples presented is that managing an organization, whatever its size or its industry, requires maximum training, skills development and constant innovation. In the struggle for competitiveness, there is urgent need to add value to production through the creation of differentials, obtained at the expense of improvements in products and processes. This new style of produce requires support from upper administration, flexibility and initiative of employees to perform multiple simultaneous tasks, in addition to solving unexpected problems.

Moreover, we perceive the need to know the production process through different methods and procedures legitimized by theory and / or empirical. From the analysis of the situation, can be planned improvement actions and support the decisions arising.

Conclusion

The idea of systematizing examples of best practices from the secondary data analysis was motivated by the intention to obtain information that would allow operations to know how companies can achieve results, how their performance is reflected in the ability to compete, and which express practices adopted its sustainability.

In terms of scientific and social relevance, the study started from the premise that it is important to concentrate examples to be followed in a document that brings together the best practices to illustrate and guide the academic and production. It is hoped that this compendium can be seen as a set of information that will help in the formulation of (re) change projects in the productive system.

It is noteworthy, however, that as a matter of definition, we chose to present only one of the examples of best practice that is part of the portfolio of 91 practices. Such a definition was based on the composition of the instrument NIEPC. We tried to thereby illustrate how organizations can be competitive by adopting practices that help them better understand their internal resources and adjust them to the needs of the market and other stakeholders.

The adoption of certain practices may be part of the content of operations strategies, and even sometimes the process of such strategies because ultimately implies structural decisions and infrastructure aimed at meeting the demands of the market and also to performance objectives (RITZMAN, KRAJEWSKI, 2004).

Best practices help organizations conduct their operations better than before. Therefore, it is up to them to invest in developing new technologies, or through combinations of existing technologies, the use of new knowledge, new methods of production or new management techniques and work organization.

To do something better than before must first know how the system is structured and how it works, how the activities of production and operation are developed, how they interrelate, and especially what is the implication of each for the final result. This all requires methods, tools and other technology enabling measure, evaluate, compare, learn and change in pursuit of business sustainability.

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INFLATION VS. UNEMPLOYMENT - SOME POLEMIC ISSUES

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Abstract

The relationship between the rate of inflation and the rate of unemployment is one of the most discussed macroeconomic issues in economic theory and business practice. A. W. Phillips published in 1958 his pioneering article and for the first time pointed to this relationship. Later the issue was addressed by other prominent economists: P. Samuelson, R. Solow, M. Friedman and E. Phelps. The original Phillips curve, as a part of the Keynesian theory instruments, formed the basis of Keynesian economic policy. The monetarist interpretation of Phillips curve is based on so-called natural rate of unemployment and inflation expectations. Currently there are turbulent debates, often contradictory and conflicting, under way over the validity of the Phillips curve and over the various factors that affect the relationship between unemployment and inflation. The paper deals with the polemic issues of mutual relationship between unemployment and inflation and presents European perspectives as well. Both inflation and unemployment belongs to the convergence criteria relevant for a successful monetary union. Eurozone countries have relevantly different trends in the competitive position due to different inflation and wage growth.

Keywords: Inflation, unemployment, Phillips curve, convergence, expectations

Introduction

The relationship between the rate of inflation and the rate of unemployment is one of the most discussed macroeconomic issues in economic theory and business practice. Over the long term theoretical and practical research in economics has been devoted to inflation-unemployment relationship. At the same time it is an issue that is causing contradictory and conflicting perspectives. And it also affects the current development of European economies. The relevance of the relation between unemployment and inflation has been emphasized in the process of European integration as well. One of the optimum currency area criterion is the similar inflation rate. Furthermore, unemployment rate belongs to the parameters of real convergence. The paper deals with the relations between two relevant macroeconomic parameters: inflation and unemployment from theoretical point of view and European perspective too. In theory we have witnessed many debates and different opinions on this issue.

Relationship between inflation and unemployment

In 1958 the New Zealand economist A. W. Phillips in his famous article 'The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957' analyzes the behavior of wages and unemployment rates in the UK. He states that "there is a clear tendency for the rate of change of money wage rates to be high when unemployment is low and to be low or negative when unemployment is high" (Phillips, 1958, p. 290). He concluded that low inflation and at the same time low

unemployment cannot coexist. Two years later Nobel Prize laureates P. Samuelson and R. Solow demonstrated a consistent inverse relationship between inflation and unemployment based on data collected in the United States. They concluded that such a situation occurs because low unemployment is associated with high aggregate demand, and that increases wages and prices throughout the economy. Samuelson and Solow termed this inverse relationship between inflation and unemployment the 'Phillips curve'. During that period economists glorified these findings and considered them an important discovery of economic science. The original Phillips curve, as part of the Keynesian theory instruments, formed the basis of Keynesian economic policy. Economic policy representatives would naturally like to achieve low inflation and low unemployment at the same time. Historical experiences as well as current developments show that such combination is unattainable. Currently we do not anymore encounter the original interpretation and orthodox reading of this relationship. Already the 1970s were characterized by stagflation which meant the increase in both inflation and unemployment together with economic performance decline. The position of Keynesianism and its economic policy implications was weakened.

The monetarist interpretation of Phillips curve emerged as a reaction to the Keynesian concept. This interpretation of the Phillips curve is based on so-called natural rate of unemployment and inflation expectations.

For the functioning of a market economy long-term Phillips curve is important according to the monetarist view. It is based on natural rate of unemployment and inflation expectations. The discrepancy between expected and actual inflation is for Friedman the reason for accelerating inflation explained by so-called acceleration theorem. According to him a rapid rise in prices is caused by the difference between the expected and actual inflation. When business entities find out that their inflation estimates were erroneous they adjust their activities to the actual (higher) rate of inflation which leads to a further inflation acceleration. It is a case of so-called adaptive expectations that vary based on experience.

Inflation expectations discussed by Friedman have so-called adaptive nature since the errors are rectified based on experience and therefore in the learning process they provide the monetarists with a new explanation of the inflation process. The classic Phillips curve proceeds from the inflation-unemployment relationship. Monetarist view is based on the changes in money supply (as a result of monetary policy) and these changes accelerate the entire process. Increase in the money supply leads after a lapse of time to price rise which in turn with a certain time lag affect unemployment and production.

Monetarists admit the possibility of so-called natural or equilibrium unemployment rate that is determined by labor market situation and its imperfections. The natural unemployment rate includes structural and frictional unemployment and also so-called voluntary unemployment. Any economic policy is according to monetarists powerless against the natural unemployment. They do not allow the existence of involuntary unemployment.

Natural rate of unemployment can be in their view reduced in several ways: by removing the monopoly of trade unions, which restricts the free game of automatically active forces on the labor market, by increasing the labor mobility, by removing the minimum wage etc.

Long-term Phillips curve is vertical and intersects the horizontal axis at point of steady-state equilibrium, or the natural rate of unemployment. With his concept of the natural rate of unemployment Friedman tried to release the macroeconomic analysis from its Keynesian contents. In 1970s, however, Friedman's theory of inflation and unemployment was not confirmed. Higher rate of inflation was not accompanied by the same rate of unemployment as predicted by theory of the natural rate of unemployment, in fact, it was accompanied by a much higher unemployment rate. According to Friedman, a trade-off between inflation and unemployment, their interdependence, expressed by the Phillips curve,

is therefore of extremely short-term nature. Long-term trade-off does not exist. As the expectations are adapted, short-term curves are shifted upwards. It draws on so-called adaptive expectations. Under these expectations it is assumed that the business entities learn from experience, while it is monitored how their latest assessment differed from reality. According to this interpretation the Phillips curve is valid only in the short term when inflation expectations deviate from the actual (higher) inflation and adapt to it subsequently. Government intervention (fiscal and monetary policy) can affect the unemployment rate (and hence the shape of the curve) only in the short term, while in the long run equilibrium natural rate of unemployment is established.

The criticism of the Phillips curve by two Nobel Prize laureates, M. Friedman and E. Phelps, is based on these assumptions. According to Phelps, the curve has a simple statistical significance and it does not in any way consider the impact of consumer and business expectations. Phelps assumed that inflation depended not only on unemployment but also on what price and wage rise employees and entrepreneurs expected. While analyzing these issues, Friedman and Phelps suggested the use of so-called expected inflation. Originally Friedman did not examine inflation with respect to unemployment.

Inflation is according to Friedman a purely monetary phenomenon and therefore the money supply growth is to be maintained at the same rate as the growth of the nominal gross domestic product. Inflation is caused by flawed government policy (monetary policy included), in particular by irresponsible increase in government spending and excessive growth of money supply.

Inflation rate (% 2001 - 2012)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
EU 28	3,2	2,5	2,1	2,3	2,3	2,3	2,4	3,7	1,0	2,1	3,1	2,6
USA	2,8	1,6	2,3	2,7	3,4	3,2	2,8	3,8	-0,4	1,6	3,2	2,1
Japan	-0,7	-0,9	-0,3	0,0	-0,3	0,3	0,0	1,4	-1,4	-0,7	-0,3	0,0
Slovakia	7,2	3,5	8,4	7,5	2,8	4,3	1,9	3,9	0,9	0,7	4,1	3,7
Czech Republic	4,5	1,4	-0,1	2,6	1,6	2,1	3,0	6,3	0,6	1,2	2,1	3,5
Poland	5,3	1,9	0,7	3,6	2,2	1,3	2,6	4,2	4,0	2,7	3,9	3,7
Hungary	9,1	5,2	4,7	6,8	3,5	4,0	7,9	6,0	4,0	4,7	3,9	5,7

Source: Eurostat

There is always only temporary trade-off between inflation and unemployment, not a permanent one. “The temporary trade-off comes not from inflation per se, but from unanticipated inflation, which generally means, from a rising rate of inflation” (Friedman, 1968, p. 11). The widespread belief that there is a permanent trade-off demonstrates confusion between ‘high’ and ‘rising’ inflation. “A rising rate of inflation may reduce unemployment, a high rate will not” (Friedman, 1968, p. 11).

Based on the aforementioned theoretical background monetarists explain the mechanism of inflation in their own version: inflation emerges when the quantity of money in circulation is increased. This means that the amount of cash available to entrepreneurs and consumers (money supply) is higher than needed (demand for money). Therefore the owners of ‘excess’ cash (at a given price level) get rid of it. This increases the part of income spent on consumption and thereby decreasing savings. And this in turn increases the overall demand for money while raising the overall level of prices. Whereas the increase in the cost of living objectively reduces the real purchasing power of money balances, the market participants have a higher need for cash. This process continues until the money supply is matched with the demand of businesses and consumers. A new level of equilibrium can be reached by the increase in overall level of prices.

This can happen in the long run. Friedman and Phelps argued that the inverse relationship between unemployment and inflation is valid only in the short run and it cannot be assumed to be valid in the long run. When the expected inflation is taken into account (which changes over time) it means that the relationship between inflation and unemployment also changes over time. The expected inflation affects prices and wages (which result from expectations among consumers and businesses). This can affect the money supply which in turn causes fluctuations in real GDP growth, unemployment and inflation. According to Friedman and Phelps this can only happen in the short run. Phelps argued that by raising inflation the unemployment can be reduced only temporarily, in the short run, since it has a tendency to return to its natural level. This is in the economic literature known as the natural rate hypothesis. It states that unemployment always returns to the natural rate regardless of the rate of inflation.

When the monetary expansion induces an increase in aggregate demand and as a consequence a general increase in the prices of goods (while the nominal wage rates remain unchanged), the demand for labor will increase while the labor supply remains unchanged. Compared to the starting point, unemployment rate is reduced. The analysis concludes that there are exogenously given price level expectations by workers behind a modified Phillips curve (Felderer and Homburg, 2005).

Unemployment rate (% 2001-2012)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
EU 28	8,6	9,0	9,2	9,3	9,1	8,3	7,2	7,1	9,0	9,7	9,7	10,5
USA	4,8	5,8	6,0	5,5	5,1	4,6	4,6	5,8	9,3	9,6	8,9	8,1
Japan	5,0	5,4	5,3	4,7	4,4	4,1	3,9	4,0	5,1	5,1	4,6	4,3
Slovakia	19,5	18,8	17,7	18,4	16,4	13,5	11,2	9,6	12,1	14,5	13,7	14,0
Czech Republic	8,1	7,3	7,8	8,3	7,9	7,1	5,3	4,4	6,7	7,3	6,7	7,0
Poland	18,3	20,0	19,8	19,1	17,9	13,9	9,6	7,1	8,1	9,7	9,7	10,1
Hungary	5,6	5,6	5,8	6,1	7,2	7,5	7,4	7,8	10,0	11,2	10,9	10,9

Source: Eurostat

Monetarists tend to think that inflation threatens the economic growth. Thereby they take a critical stand toward the Keynesian monetary policy. In particular they reject the regulatory role of the interest rate. In the Keynesian concept the money supply is influenced from the demand side: changes in interest rates cause changes in demand for money. In the monetarist approach the amount of money is regulated from the supply side: the money supply is affected by the central bank using indirect instruments of monetary policy.

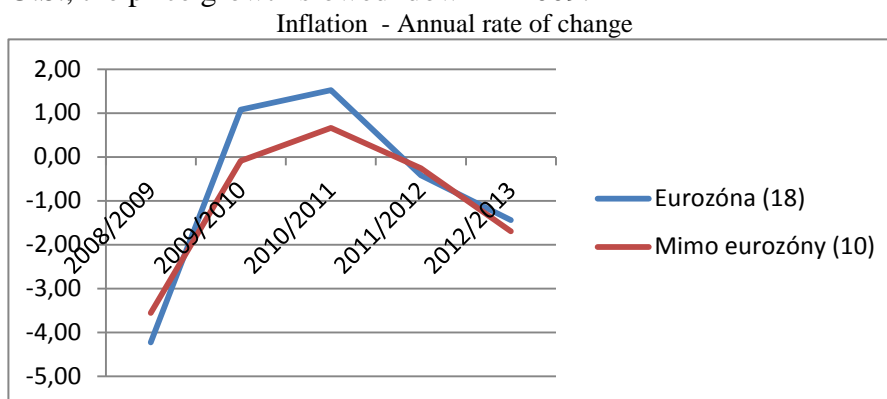
An optimal solution for monetarists would be to replace discrete (conscious) regulation (which supposedly causes uneven development of money supply and thus overall economic imbalance) by introducing a special rule of steady increase in the amount of money in circulation and this to such an extent that corresponds to the increase in gross domestic product. According to monetarists such a steady growth of money supply would remove or reduce fluctuations in the economic development. Therefore the government should not seek to prevent short-term fluctuations by temporary changing the quantity of money in circulation. On the contrary, it must strive to increase the amount of money in circulation in correspondence to the rate of economic growth.

Inflation vs. unemployment - European context

The euro area countries have relevantly different trends in the competitive position due to different inflation and wage growth, thereby worsening their internal and external balance. It was pointed out that only countries with almost the same rate of inflation may

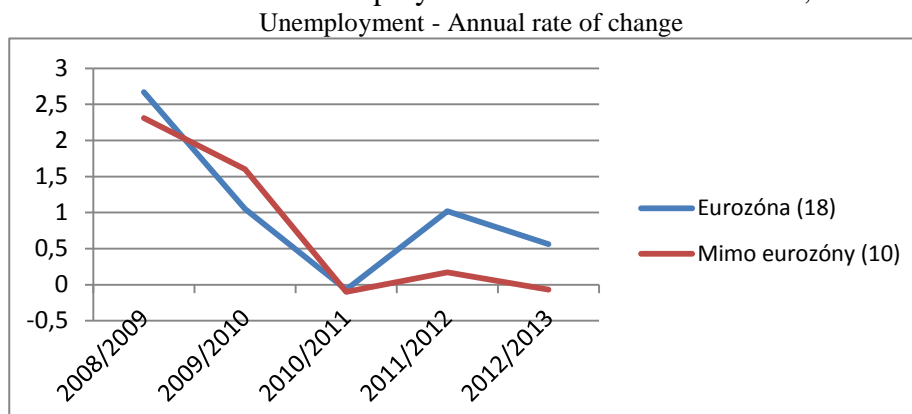
enter and remain fixed exchange rates (Fleming, 1971). Different rates of inflation are the main cause of current account imbalances. The same rate of inflation between countries enables the maintenance of relative purchasing power parity and, consequently, leads to the stabilization of business conditions. In the long run the stable foreign trade relations lead to current account balance and the need to use the exchange rate change is minimized. If inflation diverges too much a system of fixed exchange rates between countries can not be maintained in the long-term. It means that the candidates for a monetary union membership must undergo the steps towards convergence of inflation rates. Prior to joining monetary union all EU-15 countries reduce inflation differentials. Currently a divergence of competitive positions in the euro area is also the result of varying trends of structural reforms in member states. The sources of divergence are results of existing differences in national political systems, which generate potential to divergence movements in employment and output.

Situation that preceded the financial crisis was characterized by expansion in all EU countries. Economic growth affected the growth of wages in various sectors of the economy, input prices and prices of goods and services. Until 2008, the government, the ECB and other central banks in the monetary union focused on the objective of price stability, price level grow by an average 2.1% per year. After the shock, which occurred in 2008 by the financial crisis in the U.S., the price growth slowed down in 2009.



Source: Eurostat

One of the indicators that responds to economic development with a time lag is unemployment. In terms of unemployment rate in the euro area it may be said that unemployment rising in 2009 in all euro area countries except for Germany. The period 2007-2013 can be evaluated as significantly negative for the development of the labor market in Spain. The relevant increase in unemployment was recorded in Ireland, Greece and Spain.



Source: Eurostat

Final comments

Different view on the current problems of inflation and unemployment promotes P. Krugman. According to him, high unemployment could be solved by higher inflation rate (of 3 to 4 %) which would mean not only higher prices but also higher wages and thus it would help to repay the debt and apply for new loans. And that would in turn contribute to an increase in production and economic performance.

Many economists argue that by reducing inflation government causes economic growth to fall and unemployment to rise. On the other hand, reducing inflation has its costs. To estimate these costs the so-called 'sacrifice ratio' is used. The sacrifice ratio is defined as the change in unemployment rate over the change in inflation for the given period. Since the drastic reduction in inflation can cause a large drop in economic growth, this process needs to be spread over several years.

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FROM ENTREPRENEURIAL INTENTION TO ACTION: CROSS-COUNTRIES EMPIRICAL EVIDENCES

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Abstract

As research on entrepreneurship matured, the activators and inhibitors of entrepreneurial intention has been widespread. However, the implementation of ideas and development of new innovative enterprises is more than intent. It requires action. Therefore, to clarify what is known about the intention of entrepreneurship and shed light on important issues that could help entrepreneurs and policy makers to develop a more comprehensive understanding of why some countries tend to be more entrepreneurial than others, the intent of this study is to use existing theories and change the ratio of the fundamental variables. The main variables were compared directly using a probit model applied to a sample of 10,267 entrepreneurs from twenty-seven countries. The results of the study offer a different perspective from previous research in our understanding of entrepreneurship beyond the entrepreneurial intention and therefore, provides insight into the decision in creating new.

Keywords: Entrepreneurial action; entrepreneurship intention; business formation

Introduction

Entrepreneurship has been recognized has a stimuli to innovation, the revival of certain regions, economic growth, rejuvenation of productive structure, and employment (Pendiuc & Lis, 2013; Veit & Gonçalves, 2008; Verlegh, 2007).

Contrarily to the typical focus on intention, we focus our attention on actual entrepreneurial action. As stated by Shaver (2012), entrepreneurial action has various antecedents, both exogenous and endogenous to the entrepreneur, which compel the action itself. Following the suggestion for more “action” research, the present study explores entrepreneurial actions in Europe, North America, South America, Asia and Middle East.

The model links individuals’ entrepreneurial antecedents and country factors to entrepreneurship initiative. To identify differences in entrepreneurial action we used a framework that considers: (i) theory of planned behavior (Ajzen, 1991), that suggests that individual attitudes, subjective norms (SNs), and perceived behavioral control (PBC) influence intentions, together with entrepreneurial event theory (Shapero & Sokol, 1982); and, (ii) the concept of entrepreneurship as a “generically social, a collective phenomenon” (Johannisson, 2000, p. 306[7]) that can’t be understood only through the attributes of individuals, and needs to consider exogenous context, such as the country where the opportunity occurs. The model is tested with a probit analysis.

This paper is structured as follows. In the first section we review the literature, in the second we define the empirical analysis, in the third section we explain the methodology, the

sample and measures used, and then present the major findings. The presentation of findings is followed by a discussion section highlighting the implications for theory and practice.

Literature Review

When looking at the plethora of studies on entrepreneurship it is possible to categorize most of them into three categories: the effect of entrepreneurship education on entrepreneurial propensity; what drives entrepreneurship intention; and what happens when entrepreneurs act. However, as Corbett and Katz (2012) recall, for a field defined by an action, it’s surprisingly the reduce number of studies analyzing how they act.

Developing an intention venture into an entrepreneurial career can be the first step in the often long process of business creation. Several theories can be used when analyzing entrepreneurial intentions.

Looking at the different models and its applications in the entrepreneurial domain, the TPB has been shown to predict entrepreneurial intentions most consistently (Hajer & Habib, 2013; J. N. F. Krueger & Carsrud, 1993; Krueger Jr, Reilly, & Carsrud, 2000; Lee, Wong, Foo, & Leung, 2011; Liñán, Rodríguez-Cohard, & Rueda-Cantuche, 2011).

Table 1 – Different theoretical approaches (1/2)

Authors	Theory	Variables	Country
Abebe (2012)	TPB	SN	United States
Ali, Lu, and Wang (2012)	EEM	PD, PF	Mixed
Almobaireek and Manolova (2012)	TPB/EEM	SN, PD, PF	Arab nations
Altinay, Madanoglu, Daniele, and Lashley (2012)	TPB/EEM†	ATB, PA	United Kingdom
Ang and Hong (2000)	EEM†	PA	Mixed
Autio, Keeley, Klofsten, Parker, and Hay (2001)	TPB	ATB, SN, PBC	Mixed
Basu (2010)	TPB	ATB, SN, PBC	United States
Borchers and Park (2010)	EEM†	ESE, PA	United States
Brännback, Krueger, Carsrud, and Elfving (2007)	EEM	PD, PF	Finland
Byabashaija and Katono (2011)	EEM	ESE, PD, PF	Uganda
Carr and Sequeira (2007)	TPB	ATB, SN, ESE	United States
Chen, Greene, and Crick (1998)	EEM†	ESE, PA	United States
Chowdhury, Shamsudin, and Ismail (2012)	TPB	ATB, SN, PBC	Various
Chuluunbaatar, Ottavia, and Kung (2011)	EEM	PD, PF	Mixed
Criaco (2012)	EEM	PD, PF	Mixed
De Clercq, Honig, and Martin (2013)	EEM	PD, PF	Canada
De Pillis and Reardon (2007)	TPB/EEM†	ATB, PA	Various
De Pillis and DeWitt (2008)	TPB/EEM†	ATB, PA	United States
Devonish, Alleyne, Charles-Soverall, Marshall, and Pounder (2010)	EEM	PD, PF	Barbados
Dohse and Walter (2010)	TPB	ATB, SN, PBC	Germany
Drennan and Saleh (2008)	TPB/EEM	SN, PD, PF	Bangladesh
Emin (2004)	TPB/EEM	SN, PD, PF	France
Engle et al. (2010)	TPB	ATB, SN, ESE	Various
Espiritu-Olmos and Sastre-Castillo (2012)	EEM†	PA	Spain
Ferreira, Raposo, Rodrigues, Dinis, and do Paço (2012)	EEM†	PA	Portugal
Fini, Grimaldi, Marzocchi, and Sobrero (2009)	TPB	ATB, SN, PBC	Italy
Fitzsimmons and Douglas (2011)	EEM	PD, PF	Mixed
Frank, Lueger, and Korunka (2007)	EEM†	PA	Austria
Garg, Matschediso, and Garg (2011)	EEM†	PA	Botswana
Gird and Bagraim (2008)	TPB	ATB, SN, PBC, PA	South Africa
Godsey and Seborra (2010)	EEM	PD, PF	United States
Goethner, Obschonka, Silbereisen, and Cantner (2009)	TPB	ATB, SN, PBC	Germany
Göksel and Belgin (2011)	EEM†	PA	Turkey
Griffiths, Kickul, and Carsrud (2009)	EEM	PD, PF	Mixed
Grundstén (2004)	TPB/EEM	SN, PD, PF	Finland
Gurel, Altinay, and Daniele (2010)	EEM†	PA	Various
Hack, Rettberg, and Witt (2008)	TPB	SN, PBC	Germany
Hmieleski and Corbett (2006)	EEM†	ESE, PA	United States
Hulsink and Rauch (2010)	TPB	ATB, SN, PBC	The Netherlands
Iakovleva, Kolvereid, and Stephan (2011)	TPB	ATB, SN, PBC	Mixed
Iakovleva and Kolvereid (2009)	EEM/TPB	ATB, SN, PBC, PD/PF	Russia
Izquierdo and Buelens (2011)	TPB	ATB, ESE	France
Katono, Heintze, and Byabashaija (2010)	TPB	ATB, SN, PBC	Uganda
Kautonen, Kibler, and Tornikoski (2010)	TPB	ATB, SN, PBC	Finland
Kennedy, Drennan, Renfrow, and Watson (2003)	TPB/EEM	SN, PD, PF	Australia
Kolvereid (1996)	TPB	ATB, SN, PBC	Norway
Kolvereid and Isaksen (2006)	TPB	ATB, SN, ESE	Norway
Kristiansen and Indarti (2004)	TPB/EEM†	ATB, ESE, PA	Various
Krueger (1993)	EEM	PD, PF, PA	United States
Krueger and Kickul (2006)	EEM	PD, PF	Mixed
Krueger et al. (2000)	TPB/EEM	ATB, SN, PD, PF	United States
Leffel and Darling (2009)	TPB	ATB, SN, PBC	United States
Lepoutre, Tilleuil, and Crijns (2011)	TPB/EEM	ATB, PD, PF	Belgium
Leroy, Maes, Sels, Debrulle, and Meuleman (2009)	TPB	ATB, SN, PBC	Belgium
Liñán and Chen (2006)	TPB	ATB, SN, PBC	Various
Lucas and Cooper (2012)	TPB/EEM	ESE, PD, PF	United Kingdom
Lüthje and Franke (2003)	TPB/EEM†	ATB, SN, PA	United States
Mokhtar and Zainuddin (2011)	TPB/EEM†	ATB, SN, PBC, PA	Malaysia
Moriano et al. (2012)	TPB	ATB, SN, ESE	Various
Mueller (2011)	TPB	ATB, SN, PBC	Mixed
Mushtaq, Hunjra, Niazi, Rehman, and Azam (2011)	TPB/EEM	SN, PD, PF	Pakistan
Nistorescu and Ogarcă (2011)	TPB	ATB, ESE	Rumania
Nwankwo, Kanu, Marire, Balogun, and Uhiara (2012)	TPB	ESE	Nigeria
Orooch (2006)	TPB/EEM	SN, PD, PF	Kenya
Plant and Ren (2010)	TPB	SN, PBC	Mixed
Pruett, Shinnar, Toney, Ulopis, and Fox (2009)	TPB	SN, ESE	Mixed
Rasheed and Rasheed (2003)	EEM†	PA	United States
Rittippant, Kokchang, Vanichkitpisan, and Chompooodang (2011)	TPB/EEM	ATB, SN, PBC, PD, PF	Thailand
Sánchez, Lanero, Villanueva, D’Almeida, and Yurrebaso (2007)	TPB/EEM†	ATB, ESE, PA	Spain

Table 1 – Different theoretical approaches (2/2)

Authors	Theory	Variables	Country
Santos and Liñán (2010)	TPB	ATB, SN, PBC	Mixed
Scherer, Brodzinski, and Wiebe (1991)	TPB/EEM [†]	ATB, ESE, PA	United States
Schwarz, Wdowiak, Almer-Jarz, and Breitenecker (2009)	TPB	ATB, SN	Austria
Segal, Borgia, and Schoenfeld (2005)	TPB/EEM	ESE, PD, PA	United States
Shiri, Mohammadi, and Hosseini (2012)	TPB/EEM	SN, PD	Iran
Shook and Bratianu (2010)	TPB/EEM	SN, ESE, PD, PF	Romania
Solesvik (2013)	TPB	ATB, SN, PBC	Ukraine
Solesvik et al. (2012)	TPB/EEM	ATB, SN, ESE, PBC, PD, PF	Ukraine
Souitaris, Zerbinati, and Al-Laham (2007)	TPB	ATB, SN, PBC	Mixed
Thompson (2009)	EEM [†]	PA	Various
Thun and Kelloway (2006)	TPB	SN, ESE	Canada
Tkachev and Kolvereid (1999)	TPB	ATB, SN, PBC	Russia
Urbig, Weitzel, Rosenkranz, and Witteloostuijn (2013)	EEM	ESE	The Netherlands
Van Gelderen et al. (2008)	TPB	ATB, SN, PBC	The Netherlands
Van Praag (2011)	EEM [†]	PA	The Netherlands
Varamäki, Tornikoski, Joensuu, Viljamaa, and Ristimäki (2011)	TPB	ATB, SN, PBC	Finland
Vazquez, Naghiu, Gutierrez, Lanero, and Garcia (2009)	EEM	ESE, PD, PF	Spain
Wagner (2011)	TPB	ATB	Various
Wagner (2012)	TPB	ATB	Germany
Wang, Wong, and Lu (2002)	TPB/EEM	ATB, ESE, PD, PF	Singapore
Wang, Lu, and Millington (2011)	EEM	PD, PF	Mixed
Wilson, Kickul, and Marlino (2007)	TPB	ESE	United States
Wurthmann (2013)	EEM	PD, PF	United States
Yan (2010)	EEM [†]	PA	United States
Yang, Hsiung, and Chen (2011)	TPB	ATB, SN, ESE	Taiwan
Zali, Ebrahim, and Schøtt (2011)	TPB	ESE	Mixed
Zapkau, Schwens, Steinmetz, and Kabst (2011)	TPB	ATB, SN, PBC	Germany
Zellweger, Sieger, and Halter (2011)	EEM [†]	ESE, PA	Mixed
Zhang, Duysters, and Cloodt (2013)	EEM	PD, PF	China

Note: Studies with various countries provided individual country data, while studies with mixed data sets used a pooled data set including several countries. In the theory category all EEM marked with an [†] indicate those studies that used locus of control, which is assumed to be a measure of the propensity to act.

Source: Adapted from Schlaegel & Koenig (2014)

As mentioned by Krueger, et al. (2000) the TPB model offers a comprehensive and commonly applicable theoretical framework, which has originated a considerable number of contributions in various fields of business and influence on behavior. Unlike other models, it explains almost every type of human behavior taking into account not only personal but also social factors (Krueger Jr, et al., 2000). As referenced in the work of Liñán et al (2011), the TPB and the EET are complementary models as observed in table 2.

Table 2 Correspondences between TPB and EET

Theory of Planned Behavior (Ajzen, 1991)	Entrepreneurial Event Theory (Shapero & Sokol, 1982)
Perceived behavioral control	Perceived feasibility
Attitude toward behavior Subjective norm	Perceived desirability

Looking closely to perceived feasibility and perceived behavioral control, their common ground is the fact that both regard the individual’s perception concerning his/her own capacity and control to perform a behavior. However, some considerations needs to be made: the related concepts of self-efficacy and feasibility (Shapero & Sokol, 1982) do not totally correspond to perceived behavioral control, because it includes not only the feeling of being able to perform something, but also the perception of behavior control (Ajzen, 2002). Nonetheless, the alignment of both models was initially proposed by Krueger et al (2000). Krueger’s subsequent work emphasized the critical role of past experiences in forming

entrepreneurial beliefs and cognitive structures towards entrepreneurship (N. Krueger, Liñán, & Nabi, 2013).

Models of entrepreneurial intention arise in this context as they can predict the entrepreneurial behavior of individuals. Several authors have shown that entrepreneurial intentions are crucial to comprehending the entrepreneurial process (Bird, 1988; Lee, et al., 2011; Liñán, et al., 2011; Pendiuc & Lis, 2013).

However, even considering that entrepreneurial intention is the most often expressed factor studied antecedent of venture creation, we can forget that entrepreneurship has too many facets: a process of business creation or a career option, among others. For these reasons, is relevant to understand how opportunities of entrepreneurship take form. This is a popular topic, as the works of Arend (2013) and Alvarez and Barney (2013) showed.

In 2000, Shane and Venkataraman suggested that one of the key traits of a entrepreneur was his/her [30]ability to recognize good business opportunities when they appear. It is interesting to note that depending on the entrepreneurial facet chosen, the acceptance of opportunity will vary: (i) opportunities already existing in the market; (iii) new combinations, innovations or transformations; (iii) opportunities created from stakeholders' interaction and network systems (Alvarez & Barney, 2013; Arend, 2013; Popescu, 2013; Shane & Venkataraman, 2000). Indeed, recognizing opportunities is an important dimension in the entrepreneurial action process and requires looking outside the dimension of entrepreneur behavior. In this sense, Johannisson (2000) suggested that entrepreneurship needs to be consider as a “generically social, a collective phenomenon.” Moreover, the country where the opportunity appears or the action occurs is a cornerstone.

Many scholars have developed models that consider the influence of exogenous variables in entrepreneurship intention: access to capital (Lüthje & Franke, 2003); government (Pendiuc & Lis, 2013); education and training (Kumar & Kumar, 2013; Liñán, et al., 2011; Rasmussen, 2011); access to physical structures (Verlegh, 2007); spin-offs ventures (Rasmussen, 2011); culture and competitiveness (N. Krueger, et al., 2013). In general, these factors Have a direct effect on an individual's perceptions of desirability and feasibility, and consequently on his or her entrepreneurship intention.

Empirical analysis

This paper answers the question: *What drives entrepreneurs to invest so much effort in the long journey to success?* The models presented above claim that any entrepreneurial behavior is preceded by the intention to develop such behavior; this intention is influenced by different endogenous factors. Therefore, to understand “what actually happens” the framework needs to consider the following elements: (i) entrepreneurial activities, independently of the definition of entrepreneurship adopted, are carried out by individuals; (ii) the individual personal frame (personality, background, skills, etc.) is relevant to determine the motivation to engage into entrepreneurial activities; (iii) contextual variables are also relevant, enhancing opportunities as well as promoting environmental settings conducive or not to entrepreneurship approaches.

As referred in the work of Rasmussen (2011), most research on this field is not designed to examine the different levels of activity that constitute the entrepreneurial process or what impulses someone to become an entrepreneur.

Therefore, the approach drawn here relies on a well-established body of literature linking intention to subsequent actions (Ajzen, 1991, 2002), including a set of variables from TPB and EET that have been proposed several times as the best predictor of entrepreneurial behavior (Krueger Jr, et al., 2000; Schlaegel & Koenig, 2013; Shapero & Sokol, 1982).

In this article, we provide a contrasting view of these previous models, questioning if the exogenous variables can directly influence directly entrepreneurship behavior, instead of

affecting only entrepreneurship intention through the individual's perceptions of desirability and feasibility.

The empirical analysis performed let data decide which of the variables identified in the theoretical literature above exerts a stronger influence on the creation of a new venture, considering as the preliminary assumption that all the dimensions of the individual personality as well as the environmental factors directly affect entrepreneurial behavior.

Methodology And Results

The data used in this work was obtained from the Flash Eurobarometer (Commission, 2012)(Commission, 2012)(Commission, 2012)354 on "Entrepreneurship in the EU and beyond." This database includes information from 27 countries from the European Union and 15 non-European Union countries, among which Brazil, Israel, India and Russia are included for the first time.

This data base includes over 42.000 respondents from different social and demographic groups that were interviewed via telephone (except for India, where interviews were conducted face-to-face). For this work we selected the respondents who replied to the questions in the variables used, eliminating the cases that did not answer or did not know what to answer, ending with a total of 10.267 observations.

The dependent variable is the effective start of a business activity and is divided into three levels (No, yes you are taking steps to start/took over a business and yes you started/took over a business). In table 2 we can see that that the majority of participants, 69% of the total did not start any business, 19.8% were taking steps to start a business, and 11.1% had started a business.

The explanatory variables used were individual characteristics: age and gender; individual environment, including business antecedents and income; perceptions, specifically feasibility, desirability, benefits and social norm and contextual elements, namely education and country variables, specifically innovation index and grouping by continent. The statistical distribution of these variables can be seen in table 2.

Table 2 *Descriptive statistics of the variables used*

Variables	Dimesions	N	Marginal Percentage
Start Business	No	7089	69.05
	Yes, you are taking steps to start/take over a business	1143	11.13
	Yes, you started/took over a business	2035	19.82
Gender	Male	4814	46.89
	Female	5453	53.11
Antecedents	Self-employed	3037	29.58
	White-collar employee in the private sector	1609	15.67
	Blue-collar employee in the private sector	2803	27.30
	Civil servants	2162	21.06
	Not in paid employment	656	6.39
Income	Live comfortably on current income	2469	24.05
	Get by on current income	4748	46.25
	Find it difficult to manage on current income	1998	19.46
	Find it very difficult to manage on current income	1052	10.25
Feasibility	Very feasible	1514	14.75
	Fairly feasible	2764	26.92
	Not very feasible	2166	21.10
	Not feasible at all	3823	37.24
Desirability	Very desirable	2719	26.48
	Fairly desirable	3564	34.71
	Not very desirable	1509	14.70
	Not at all desirable	2475	24.11
Continent	Europe	8108	78.97
	North America	1062	10.34
	South America	300	2.92
	Asia	677	6.59
	Middle East	120	1.17
Education	Yes	2724	26.53
	No	7543	73.47
Total		10267	100

Considering that the dependent variable used to analyze the entrepreneurial activity is defined on an ordinal scale we estimated an Ordered Probit model to test the hypothesis. The results for the model fit information are presented in table 3 and confirm that the model is valid with a high significance.

Table 3 *Model Fit Information*

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	16852.7			
Final	15109.7	1743.0	24	0

The results estimates show that the coefficients of all variables analyzed were significant, except for two that refer to the level of income and country innovation index. The variables coefficients were significant at the 1% level for age, gender, desirability, feasibility, social norm, education and continent and were significant at the 5% level for antecedents and benefits.

Analyzing the coefficient signs for the significant variables, we can observe that age has a positive effect on the start of business activity. Another significant variable is gender and women show less business activity than men.

In terms of antecedents, we can observe that this variable is significant, but only in the case of “white collar employees in the private sector” that are less probable to start a business than the reference category that is “not in paid employment individuals.”

Analyzing the perceptions, we can observe that they are positively related to starting a business in term of perceived desirability and feasibility and also in the case of perceived social norms. In terms of desirability, the results show that the individuals who consider it very desirable to have a business are more probable to act than does that don't consider at all desirable. When we analyze the feasibility we can observe that individuals that consider very feasible and fairly feasible are more liquidly to act than those that consider not feasible at all.

For the perception of benefits, we considered an indicator that includes the dimensions of “personnel independence and self-fulfillment,” “exploit business opportunities,” “better income perspectives,” “freedom to choose the place and time or work” and “avoid the uncertainties related to paid employment.” The results show a positive relation between this indicators and starting a business.

For the perceptions of social norm, we divided the variable into two indicators. The first is the positive view of entrepreneurs in terms of the creation of products/services and also jobs; the second, related to a negative view of entrepreneurs, is taking advantage of other people and thinking only of their own pockets. The results show a positive relation of starting a business with the positive view and a negative relation with the negative view of entrepreneurs.

Table 4 *Coefficients Estimates*

Variables	Estimate	Std. Error	Wald	df	Sig.
	Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound
Age	0,02	0,00	572,80	1,00	0,000 ***
Benefits	0,03	0,01	4,73	1,00	0,030 **
Innovation	0,00	0,00	0,37	1,00	0,543
Social Norm +	0,05	0,01	15,81	1,00	0,000 ***
Social Norm -	-0,07	0,01	27,40	1,00	0,000 ***
Male	0,32	0,03	143,69	1,00	0,000 ***
Female	0,00			0,00	
Self-employed	0,09	0,06	2,31	1,00	0,129
White-collar employee in the private sector	-0,15	0,06	5,37	1,00	0,020 **
Blue-collar employee in the private sector	-0,08	0,06	1,70	1,00	0,192
Civil servants	0,06	0,06	1,02	1,00	0,312
Not in paid employment	0,00			0,00	
Live comfortably on current income	-0,03	0,05	0,30	1,00	0,583
Get by on current income	-0,07	0,05	2,37	1,00	0,123
Find it difficult to manage on current income	-0,08	0,05	2,42	1,00	0,119
Find it very difficult to manage on current income	0,00			0,00	
Very feasible	0,72	0,05	243,18	1,00	0,000 ***
Fairly feasible	0,46	0,04	125,31	1,00	0,000 ***
Not very feasible	0,00	0,04	0,00	1,00	0,965
Not feasible at all	0,00			0,00	
Very desirable	0,29	0,05	39,13	1,00	0,000 ***
Fairly desirable	0,07	0,04	2,53	1,00	0,111
Not very desirable	-0,04	0,05	0,73	1,00	0,393
Not at all desirable	0,00			0,00	
Europe	0,05	0,13	0,18	1,00	0,668
North America	0,34	0,13	6,74	1,00	0,009 **
South America	-0,65	0,16	16,35	1,00	0,000 ***
Asia	-0,12	0,14	0,72	1,00	0,395
Middle East	0,00			0,00	
Yes	0,27	0,03	83,26	1,00	0,000 ***
No	0,00			0,00	

*Significant at 10%, ** significant at 5% and *** significant at 1%

Another variable that was included in the model is entrepreneurial education. This variable showed a positive relation to starting a business, demonstrating that the contacts with contents that reinforce the development of business project and turning an idea into action have a positive influence on entrepreneurship.

In terms of continents, we can see that North Americans have a higher probability of starting a business. South Americans have less probability than do Middle Easterners, which was the reference category. There were no differences between Europeans and Asians to the reference category.

Discussion And Conclusion

For seeking what stimulates someone to become an entrepreneur, the literature points to several theories about intention-behavior. The two most widely used theories, the Theory of Planned Behavior and Entrepreneurial Event Theory have been used to study entrepreneurship intention behavior (Krueger Jr, et al., 2000). In the work of Liñán and Chen (2009) certain contextual and personal factors were consider as influencing entrepreneurial intention and leading entrepreneurial behaviors into practice.

The research findings provide evidence for a positive relationship between age and entrepreneurship. These results are not similar to the ones found in the most of the research analyzing entrepreneurship intention (Lee, et al., 2011). Another positive relation is between being male and higher business starts. This result is in line with previous studies, but reveals that in a large sample of countries, (male) gender is still a relevant factor in business creation (N. Krueger, et al., 2013; Malach-Pines & Schwartz, 2008).

A positive relation is also encountered between family antecedents and business creation. In this case the estimates show that when the father is a white-collar employees in the private sector it leads to less action in terms of business creation, than in the case of non-paid employment. This finding implies that professional careers tend to be interesting and rewarding alternatives to business creation.

Among the external variables, income was a variable that did not show relevance in the business start action. This result shows no significant relation in this large sample between family income and entrepreneurship. However the variables used do not allow for a distinction between a low prospective entrepreneurship in terms of subsistence from a high value entrepreneurship in terms of value creation.

Another external variable in this study is education. The results show that entrepreneurial education can have a positive impact on business creation (Liñán, et al., 2011). That result stresses the importance of entrepreneurial education in fostering business creation by developing competencies and increasing awareness.

Central to the TPB model are the dimensions of attitude, subjective norm and perceived behavior control (Ajzen, 2002). The results demonstrate that attitude is positively related to business creation, namely the perception of benefits and desirability. This result reinforces the importance of the image and concept of the advantages of owning a business in the action to invest.

Another element of the model is subjective norm, which is the way a society or community considers entrepreneurship. The results support this perspective since we found a positive relation of business creation to positive evaluation of entrepreneurship and a negative association to a negative perspective of entrepreneurship.

The control dimension is the perspective individuals have of the feasibility in starting a business. The results show a positive relation; people who feel capable of starting a business are much more likely to invest.

These results support the proposed model and reveal that it can provide an integrated explanation of the level of business creation. These results are relevant because they are based on a large-scale and broad sample.

In addition to these dimensions we included in the model a set of variables to measure country effects in order to control the results. The results show that the region was a significant variable and that Middle Easterners have a lower level of entrepreneurship than North Americans; in South America occurs the opposite, with less entrepreneurial activity. The implication is that country or region variables have to be taken in account when analyzing the factors that affect business creation.

Based on these results, we consider that the model used shows that external variables are important in business creation and that in addition to personal characteristics and antecedents, education has a crucial role.

That means there is a need for investment in entrepreneurial education, showing the advantages of investing in a business and developing competencies. Governments have to integrate this aspect of entrepreneurial education in their policies.

The way attitude, social norm and control are relevant factors reinforces the need of government to communicate to students and develop a culture of business creation and investment, since that culture will be instrumental in establishing a positive attitude toward entrepreneurship and in creating a culture that nurtures and values business initiative.

The feasibility of creating a business is a question of competencies, experiences, and perception, showing the need for public policies to promote the development of competencies and emphasize the possibility of success.

Any empirical study of this kind has limitations and in this case the results are relevant, but could vary by country, gender or social group. The findings therefore must be

addressed with these considerations in mind. Another limitation is the fact that the methodology used to test the model results does not allow for indirect effects and other relations among the variables that would be interesting to evaluate.

Based on these results, future research should analyze the differences in variables of gender, age and occupation and country, considering economic and cultural variables. Another suggestion is to test with other methodologies that can relate variables in sequence and determine indirect effects, namely structural equation models.

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WORLD TRADE ORGANIZATION AND THE DEVELOPING WORLD NIGERIAN ECONOMY: A CASE STUDY

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Abstract

This research study seeks specifically to ascertain the implications and effects of W. T. O. trade policies on the development of Nigeria economies. It will seek to answer the following pertinent questions: How has Nigerian external trade fared since she became a signatory to the W. T. O. in 1995? How has the adherence to the provisions of the organization affected non-oil exports in Nigeria? How has trade liberalization affected imports into Nigeria? What are the sectoral effects of such imports? Which particular industries are most affected by this liberal import regime? What is the direction of such effects? This research study would be useful in various ways. It will further draw the attention of the government, managers of the economy as well as the general public to the problems associated with the full liberalization of trade. It will also assist policy makers in the choice of policy options as it relates to trade, as issues raised in this study will serve as guide. It will further enhance the available literatures on the trade dynamics between developed and developing countries or between centre states and peripheral states. Finally, it is our hope that the findings of the study will stimulate further researches in this field which will further expand the understanding of the position of third world economies in the global trade system.

Keywords: Economy, Government and Trade

Wto And The Developing World (A Case Study Of Nigeria)

Since, Nigeria registered the world trade organization treaty in December 1994, there has been occasional focus on the economic implication of this treaty for the Nigerian economy. Nigeria registered the WTO treaty in December 1994 and thus became a founding member of the organization in January 1995.

The WTO which is the only International body dealing with the rules of trade between nations went into trade agreement with various nations of the world. The legal documents emanating there from provided the legal ground rules for International commerce. They are essential contracts, binding governments of various countries of WTO agreement within agreed unit.

In recent years, the manufacturing sector particularly has raised alarm over the negative impact of globalization on the Nigerian economy. Olu Adeleye (2002;24) observed that it was noticed earlier that during the negotiation that represented. This according to him has necessitated the frequent calls by the manufacturers for further negotiations of the WTO

treaty in order to protect the local industry and the Nigerian economy from massive dumping of foreign goods.

In another development, the organized private sector (OPS) comprising the manufacturers Association of Nigeria (MAN), the Nigerian Association of Chamber of Commerce, Industry, Mines and Agriculture (NACCIMA), and the Nigerian Employers Consultative Association (NECA) in its recent pre-budget memorandum to the federal government raised on alarm that the full liberalization policy and full adoption of WTO treaty has made the Nigerian economy vulnerable to the pressures of imported goods that could otherwise be produced locally. The local economy is dependent, on virtually nothing but crude oil that is sold at the global market. That is why the local market has consequently been turned into a dumping ground for goods and services from countries which operate more efficient systems. He noted also that most Nigerian goods cannot compete in terms of rice and quality in the open international market; and the attributed the problems to the cost profile of the manufacturing processes, which has hardly been helped by the high cost of obtaining basic services that are taken for granted elsewhere. And today for any manufacturer to succeed, it must provide its own water works, electricity, telephone and so on. The result is that Nigeria has become a huge dumping ground for all types of sub-standard products coming into the country. (Adeyemi 1999:58)

In recent years, factories have been closed down in a number of sectors as a result of the obvious hostile environment of production. Hardest hit sectors include textile, toiletries, electronics, chemical engineering, oil milling etc these industries have been faced with the daunting challenges of dumping of goods which are more competitive than the locally produced ones.

The Structure Of The Wto

The Uruguay Round of talks which was negotiated over a period of seven years (and ended towards the end of 1993) apart from the nomenclatural change may have just transformed GATT'47 to another GATT given the, fact that in addition to the introduction of such new issues as; the General Agreement on Trade in Services (GATS), Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPs), Agreement on trade Related Aspects of Investment Measure (TRIMS) and an agreement on Implementation of Article VI (Antidumping and Countervailing Duties) of GATT'47 the Uruguay Round largely, either amended, extended or even retained the core agreements in GATT'47. (Seattle 1996:1)

But it will however, be misleading to think of the WTO as an extension of the GATT. Rather, it replaced it because, whereas, the GATT was a forum where "Contracting Parties" met from time to time to discuss and solve world trade problems, the WTO is an established permanent world trade body with legal status, enjoying such privileges and immunities as those of the IMF and the World Bank though not an agency of the United Nations (Jhingan, 1998:540). The WTO has the core agreements of the GATT subsumed within its. The legal status of the WTO gives it the capacity to enforce compliance of member states to its rules with sanctions for defaulters. Under the GATT, compliance could be selective. Whereas, the GATT had just a small secretariat managed by a Director-General the WTO has a large secretariat and a huge organizational set up (Jhingan, 1998:532). Structurally, the WTO has a Ministerial Conference – its core decision making organ made up of representatives of all members and meets at least once in two years. The General Council, comprising representatives of member nations oversees the operation of the WTO Agreement and ministerial decision. It also acts as a Dispute Settlement Body (DSB), Trade Policy Review Body (TPRB) and encompasses other sub-committees such as the Council for trade in Goods, The Council for Trade in Services, the council for Trade-Related Aspects of Intellectual

Property Right (TRIPs) etc, there is also the secretariat of the WTO headed by the Director-General. (Cocklin 1996:381)

The general objective of the WTO include raising standards of living and incomes, ensuring full employment, expanding world production and trade in goods and services and ensuring the optimal use of the world's resources taking cognizance of the preservation of the environment in a manner consistent with respective needs and concerns at different levels of economic development (Jhingan, 1998:534). When fully operational, the WTO will boost the world's GDP by an estimated \$6 trillion or 8 percent (McConnell & Brue, 1996:112). The WTO apart from continuing the process of trade liberalization also finally completes the objectives of the Bretton Woods system devised by the World War II Allies in 1944 for facilitating economic relations in post war world (Mings, 1995:390-391).

WTO And Developing Countries: A Theoretical Framework Of Analysis

WTO in the developing countries can best be evaluated by examining the problems faced by the third world. The prospect and contribution of WTO to third world economics and finally to examine the hypothetical research questions and find its relevance with the available variables. In studying and analyzing this paper liberal and underdeveloped theories are applied.

PROSPECTS: the liberal theoretical framework is a Smithsonian study, which encourages bilateral trade relationship among nations. The theory is of the opinion that the best way to maximize profit is when various nations engage in an International trade and each nation specializing in the production and exportation of goods in which it has a comparative advantage. The liberalist assumes that the price mechanism should determine the exchange of goods in the International system. The implication of this is that countries should open their borders and let goods come in freely that is free flow of goods and services must be the norm in the International system. If the International economic relation is allowed to operate as such there will be equilibrium and stability established amongst states. The equilibrium will optimize the movement of investments. In other words, it will help to streamline the rate of investment produces will be able to maximize profits worldwide while the consumers will be able to get the optimum price. The theorists are optimistic about the prospects for the third world countries development within the existing International market structure. Therefore the liberal school believes that contact with developed market economics is a means of development.

Considering the liberal theories of economic development, African Countries will remain on the fringe of the global economy if they fail to compliment tariff reductions on trade associated with the WTO. Also they must do this through enhancing productive capacities in their economics.

The United Nations Industrialization Development Organization (UNIDO) representative in Nigeria Dr. Sarbu Auton Sid "Industrialization is one of the most crucial issues for the fortune of the continent and its effective integration into the emerging global economy. He also said that fore seeing the global market environment as poised to be more competitive in the years ahead. He explained that African Countries can only push themselves to the central state of competition by transforming from raw materials export dependent to manufacture driven ones. And this is easier to achieve in the new world order because Uruguay Round Table of Agreement and WTO have lowered tariffs and eliminated non-tariffs barriers to trade. Therefore, the liberal theorists are of the opinion that independence would elevate Africa's economies system from an exporter of raw materials to an exporter of manufactured goods.

Underdevelopment theorists see North-South trade relationship as horizontal and parallel trade transaction. A system where a practical economic developed world only export

raw materials, the underdeveloped theorists believed that the continue stay with WTO shall continue to stunt their industrial growth as sub-standard goods will force their manufacturing industries to remain perpetual stickler who may not be able to run the industrial race for the benefit of their children thereby perpetuating their permanence in poverty and the slave market. (Santos T. Dos 1973:16)

WTO has never promoted free trade as shown in the treaty. This has heritably sparked disagreement among developing Countries on one hand and disagreement between the developed and developing Countries on the other hand. For instance Countries such as China has refused to join the body.

In Nigeria the organized private sector has criticize the entire agreement, which member say have been lopsided in favour of the developed countries. They hold the view that if the Nigeria economy is to remain relevant in the globalized economic system, the world trading must be reversed.

It is the view of the underdeveloped theorist that the massive influx of foreign finished goods into the country has bent to near collapse of local industries.

The nations landscape is lettered with the debris of dead industries killed by unbridled importation. Efforts to employ WTO rules have often been frustrated because of the problem of dumping. The underdevelopment theorist condemned the principles of WTO, which include principle of trade without discrimination on rights and obligations in goods, services and intellectual property. Taken into consideration that WTO remains a permanent negotiating forum, the developing theorists have hence called for overhaul of the entire agreement to ensure that the Nigeria economy is protected. According to them, the interest of the developing countries was not taken into account when the WTO agreement was signed. The negative effect of this is they argued in a situation whereby the developed nations dictate the prices of their manufactured goods and prices of their primary commodities produced by the developing nations.

The concluding part of this paper is devoted to the examination of the propositions earlier put forward in this research work. The propositions put forward are:

- i. What are these inequalities in the World Trade Organization?
- ii. What are the strategic efforts to alleviate the problem of the developing countries?
- iii. Can third world membership in WTO improve their economies?
- iv. Does WTO perpetuate backwardness and dependence in the third world?

In the first proposition, we can begin from the promise that joining WTO must have been resulted by bad advice to the developing nations or error of judgment as they have no business being, as they have very little or nothing to offer by way of finished goods to support active exports rather they have succeeded in making developing countries dumping ground for sub-standard goods.

The developing nations have no comparative advantage to rub shoulder with WTO expert practitioners' therefore their countries stay with WTO shall continue to stunt their industrial growth as sub-standard goods will force their manufacturing industries to remain perpetual stutters. Other traces of inequalities in the WTO is the position of the developing world which is characterized with high birth rates, heavy reliance on primary product weak industrial and technological bases and balance of payment problems.

In the second proposition to be examined are the strategic efforts to alleviate the problem of the developing countries. The developing nations shall take a position and prepare draft reflecting their position paper for debate at the next round. It is better that the debate is based on their position that to wait for the advance countries to prepare a draft position paper for debate. Also from the experience from the industrialized nations, developing countries should focus on fair inter-linked strategies and plans.

- A strategy for Industrialization through international competitive exports
- A strategy for global contract through inter-connectivity with the rest of the world by building the necessary infrastructure in communication, power and transport.
- A strategy of human development through effective policies and programmers in education training and health care development.
- A strategy to initiate debate at the next WTO meeting from the position of developing countries.

The third proposition argued if third world membership in WTO can improve their economics. WTO is rooted in the decreasing cost of communication decreasing trade barriers and the competitive presumption new competitors as a result of increased inventive and innovative activities. The question now is, how are developing nations involved and participating? We have noted that WTO is anchored on sound economy, sound technology base, improved communication and some basic infrastructure etc. None of the developing nations with exception of South Africa have put up these prerequisite. They are still grouping with low rudimentary technology no comparative advantage to trade and weak communication infrastructure. (Layi Adaloyi 2002:23)

The Effect Of Wto On Small And Middle Enterprises

It has been observed by many scholars that there is an intrinsic link enterprises development. Hence, Dr. Nkenma Jombo Ofo urged the federal government to undertake a dispassionate examination of this issue with a view to assessing their frightening implications for the weak developing Nigerian Economy. He also notified that current structure and rules of WTO have impeded the growth of SME in underdeveloped nations especially Nigeria. The chamber boss emphasized that only a dispassionate stance from the government will enhance the country's competitiveness in the global market as small and medium enterprises are allowed to develop and grow. Jomo – Ofo testified that the current operative mode of the WTO has engendered “unequal technological strength among nations with the result that technologically weak nations cannot compete on equal terms with the advanced ones”. He also argued that the 28th agreement (of the 28 tenet Uruguay Round Table Agreement) that established WTO has as its essence “a design to encourage free market access”. He however regretted that “the structure and rules of the WTO have frightening implication for the weak, underdeveloped nations including Nigeria when dispassionately examined”. Situating the problems of underdeveloped economies, Jombo – ofo identified “The weak small and medium enterprises (SME) development in the countries. This situation that underscores the need to take practical steps towards their development as “SMEs represent the critical pillars that are important in the nation's construction”. Along this line he argued;

“We as a nation must make certain strategic decisions to equip ourselves technologically to enhance our competitiveness in the global market if were to seize the window of opportunity offered by the Uruguay Round Table Agreement.

Conclusion

The textile workers in Nigeria emphasized on the need to re-address the policies affecting textile industries at Seattle, United States of America. The workers under aegis of textile, garment and Tailoring Senior Staff Association of Nigeria (TaTSSAN) are essentially asking the government to set up a multi-disciplinary and multi-sectoral body that would draw up documents on the position and policy of the nation with a view to effectively articulating pains of the country and its desired change in the current content of the treaties at the meeting. According to TaTSSAN

“There is need for a multi-disciplinary / sectorial body to be set by government. To draw up far-reaching documents on the position and policy of those sectors that would be

identified in the course of deliberations. It is urgent and a must if we must take change of or promote our interest.

The need for the government to go Seattle with a mission, according to the workers has become the more compelling because of the all-pervasive destructive effect of the WTO treaties on all sectors of the developing economics, especially in Nigeria.

Touting the textile industry as the most devastated of all sectors at the receiving end, TaTSSAN said, nevertheless, that many more industries and trade are covered in this predicament. "In order words, our organization is suggesting the setting up of the body to do something quickly before it is too late".

Essentially, the textile workers are tasking the government at the Seattle meeting to demand:

1. The re-negotiation of our membership with WTO.
2. Review the implementation of WTO rules in our external trade as in America, China and Germany, among others. Dissatisfied with the government's apparent lack of pre-active and determined commitment to the Seattle meeting the textile workers called for concerted collective effort to address the dilemma of the WTO agreement on Nigeria to save textile industry.

As quoted by the TaTSSAN chairman, "We see that our government is looking at the WTO agreement as fait accompli in which it is hopeless in all its totality. We disagree with this position, not because we claim to be wiser or more patriotic than those there, but because we are victims of this policy. It has devastated and it is devastating our industries in the country".

WTO treaties have been described as another means of slavery and colonialism. TaTSSAN saw the continual operation without effective negotiation or outright repudiation of same (treaties) as a modern day vehicle for the subjugation of the weak i.e. developing countries by the strong (the developed countries). According to aqua the experience of the "Asian tigers" which crashed mainly because their investment main stay was dependent on the developed countries is enough lesson for all. "Nigeria he said "Should be alive to the politics of WTO and go out to the meeting to demand its equitable right to prosperity". He stated also that "It is not difficult to visualize the state of confusion that has engulfed WTO organization because opening up the borders of all nations for trade among unequal nations without rules for checks and balances and without institutions to implement or monitor, cannot create a viable working arrangement at that level that is what WTO is doing today".

As a fallout of the lopsided operation of the WTO among nations, TaTSSAN cited the Nigerian textile industry's woes as enough evidence of the treaties disservice. Reaching out statistics TaTSSAN stated that "within the last three years, not less than 24 textile mills have closed down". Presently not less than eleven textile mills are distressed and four situations persist; they are close down if nothing positive is done by government. More than ten mills are requesting for redundancy exercises". TaTSSAN also said that over 100,000 workers have lost their jobs. But if those people in general supply, retailers of finished textile products sellers of dye stuff and chemicals and associated organizations are added, with their dependants to this number, it would be almost one million Nigerians who have lost their jobs in the textile industry. TaTSSAN also concluded that more jobs are still on the line with over 150,000 Nigerians about to lose their jobs expect the government do something now to change the trend (Isagua 1999:57)

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THE EFFECTS OF PUBLIC WORKS PROGRAMS – THE CASE OF THE SLOVAK REPUBLIC

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Abstract

The long-term unemployment in Slovakia belongs traditionally to the highest group of such in the EU and represents one of the most serious problems for the Slovak labour market. More than one half of the unemployed are those with the lowest level of education, this paper thus focuses on the current situation of the low-qualified workforce as well as on the assessment of the effects of activation policy programs in Slovakia which are aimed at stimulating the growth of labour demand, especially for those who belong to the most disadvantaged groups on the labour market. However, international experience (e. g. Kuddo, 2009) points to the fact that, when taking into account the low efficiency and cost ineffectiveness of this measure, it simply turns into a “safety net” supporting the income of individuals and decreasing the poverty rate among individuals disadvantaged in the labour market. The studies also uncovered that in the long run the impact of such measures on employment is in many cases negative, defining stigmatization of the program's participants as one of the reasons – the persons having participated in the programs are automatically considered as less productive, which decreases the probability of their job placement. The efficiency and cost effectiveness of these programs may be influenced considerably by the so-called lock-in effect which means that program participants may receive less job offers while attending the program as well as that they may be less motivated to seek for job openings.

Keywords: Public works, active labour market policy, unemployment

Introduction

Active labour market policy represents the complex of the programs designed to improve access to job openings and to enhance effective labour market functioning. It consists of various types of programs oriented on education, financial support for employers to boost new job openings, promotion of self-employment or direct support in the form of employment creation in the public sector. Especially those programs oriented on job creation are those being frequently criticized for their low efficiency, in terms that they actually do not improve the chances of job seekers in the open labour market, and for their insufficient cost effectiveness when it comes to public finance spent. There is a lack of studies that would provide a complex assessment of the active labour market policy programs (ALMP) in Slovakia, implying the evaluation of their efficiency and cost effectiveness; that is why the presented paper summarizes the results of the public works programs' cost-benefit analysis, both from the perspective of public finance as well as from the perspective of the programs' participants. As regards the programs' participants, we have focused on the results of a qualitative analysis, due to the low availability of data on participants' incomes after job placement in the open labour market (on an individual basis).

Current situation in the labour market

The post-crisis situation on the Slovak labour market is of concern to many policy makers, unemployment rose notably due to recession in 2009 and still remains high; at the beginning of 2010, the number of unemployed climbed to 400 thousand persons (the value last seen in 2005) and although the economy's recovery was somewhat better when compared to many other European states, the labour market's performance remains weak even after several consecutive years of economic growth. In 2013, the unemployment rate in Slovakia reached 14.2 % of the active population, the fifth highest in the EU (27). Low employment elasticity and weak relation between economic growth and job creation is known also from the past – even during the favourable macroeconomic development during the pre-crisis period, the employment threshold in the SR represented approximately 4 % (GDP growth rate); the rate of GDP growth at about 4 % or more was necessary to ensure employment growth over the decade before 2009. Also, the latest data confirms that it is again long-term unemployment which drives the total unemployment the most. Long-term unemployment currently represents more than two thirds of the total unemployment and the fact that it actually used to be 70 % also in the past (e. g. in 2006, at the beginning of the aforementioned favourable macroeconomic period) reveals that it is a structural problem and consists in certain specifics of the Slovak labour market.

Between 2002 and 2012, Slovakia ranked first among the EU countries in the long-term unemployment rate comparison. This decade-long negative leadership reflects several aspects that complete the overall picture of the current situation. Unemployed persons who have never had a job represent 20 % to 25 % of total unemployment (in the long-term); the absence of work experience, skills and acquired work habits creates a serious barrier in their employability. Next, the problem of unemployed persons without work experience is closely connected with the issue of youth unemployment and the problem of a low-skilled (low-qualified) labour force. While in the case of youth unemployment, the convergence towards the European average was obvious in the pre-crisis period (between 2000 and 2008 the youth unemployment rate figure for the SR dropped from the highest one in the EU to the eighth place, i.e. to the average value), in the case of low-qualified persons Slovakia occupies the absolute long-term leadership in the European comparison. The unemployment rate of low-educated persons in the SR varies from 40 % to 50 % in the long-term (categories 0-2 in Eurostat methodology). And lastly, the problem of the aforementioned disadvantaged groups in the labour market is linked to the situation of the marginalized Roma community and its perception in the Slovak labour market. Despite a slight improvement in the employment situation of the low-educated in the last year (2013), still 52 % of all unemployed in Slovakia are those with the highest attained primary education or vocational education without school-leaving exam (more than 200 thousand persons of a total, approximately, 386 thousand unemployed). Scaling up active labour market policy instruments and searching for policy solutions has risen on the policy agenda in the past few years, but how effective are the measures introduced and what are the downsides of the policy approaches adopted?

Low-qualified workforce

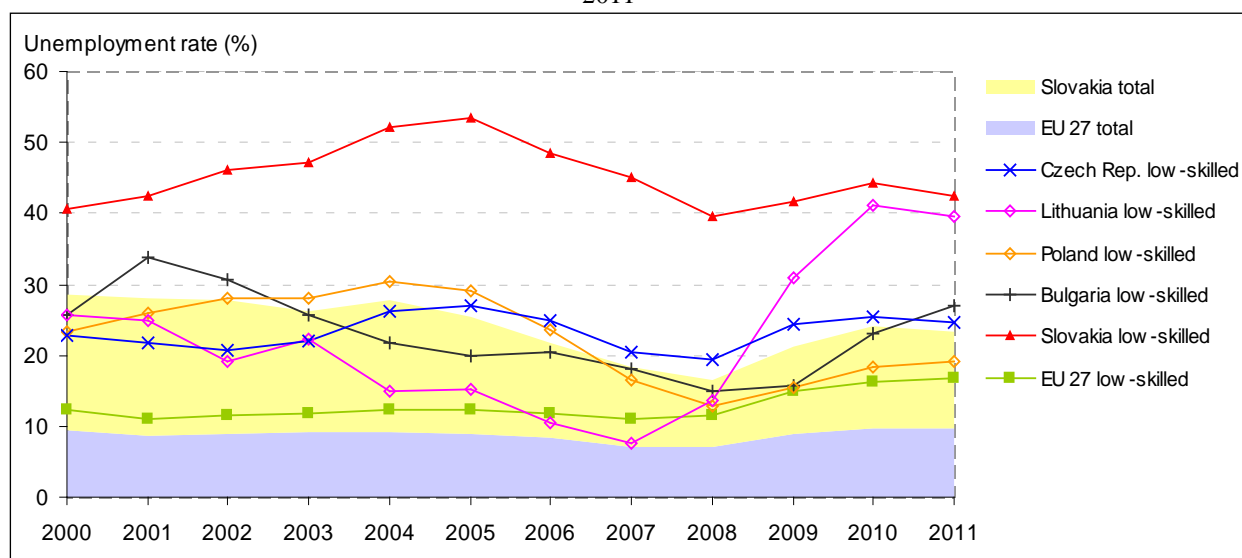
Low-qualified persons participating in active labour market policy programs represented 93 % of all public work program participants (data from 2011) so we will focus on this group of unemployed a little more in detail. The issue of low-qualified constitutes a very specific problem of the Slovak labour market that can be demonstrated by international statistics. Over the majority of the last decade, the unemployment rate of low-educated persons in Slovakia has been exceeding the EU average by more than 30 percentage points (p. p.) (compare red and green line in figure 1). In 2005, when the unemployment of the low-skilled workforce in the SR was at its highest, its value in Slovakia surpassed the EU average

by 41.2 percentage points (53.4 % of active population unemployed in Slovakia as opposed to 12.2 % in today's EU countries on average; when "low-educated" or "low-qualified" refers to pre-primary, primary and lower secondary education). As shown in figure 1, the difference between the rates of total unemployment was only 7.3 p. p. After 2005, we can see a notable improvement in terms of a continual decrease in the unemployment rate for the low-qualified that stopped in 2008 when the crisis hit the Slovak economy; however, as the unemployment in this segment rose in other labour markets also affected by the crisis, gradual convergence to the EU average continued to 2010.

The unemployment rate for people with the lowest (primary) education remained fairly constant during the crisis, the biggest increases in unemployment were recorded in the lower secondary education segment, the largest group of unemployed in Slovakia (especially those with vocational education without school-leaving exam).

Despite a notable improvement in the employment of the low-qualified workforce in Slovakia after 2005 as well as more serious post-crisis effects in some other EU countries, Slovakia has retained its negative leadership position among the EU states since 1998 (the beginning of the series when data for most of today's EU 27 countries became available). Figure 1 also tracks the difference between the rates of unemployment of low-skilled persons in Slovakia as the first-ranked country over the whole period and between the second-ranked countries (the second place was occupied by Bulgaria until 2002, then by Poland, until Czech Republic surpassed the Polish unemployment rate of low-qualified, and finally replaced by Lithuania, where unemployment of low-educated rose steeply during the crisis). The figure demonstrates that over most of the examined series the difference between first-ranked Slovakia and the country with the second highest level of unemployment for this workforce segment remained abysmal.

Figure 1 EU countries with the highest unemployment rate of low-qualified workforce over the period 2000 - 2011

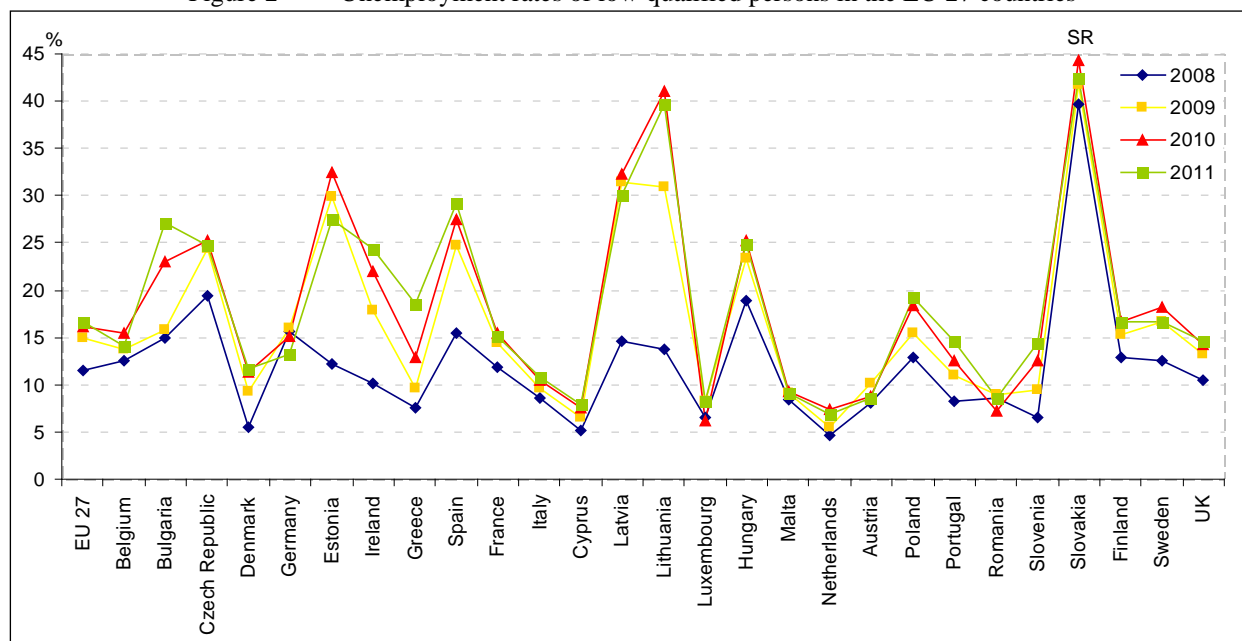


Note: Low-qualified = pre-primary, primary and lower secondary education. Graph also compares the levels of EU and SK overall unemployment rates (area charts).

Source of data: Eurostat database (2013).

The direct impact of the crisis varying across Europe can be illustrated by a detailed view of the four years in figure 2 (we can consider 2008 values as an initial pre-crisis level). In this context, the crisis has brought little change in the unemployment rates of the low-educated in Slovakia when compared to some other European countries; simply because the initial level of unemployment of this segment was higher than any other EU member state.

Figure 2 Unemployment rates of low-qualified persons in the EU 27 countries



Note: Education level 0 – 2 by Eurostat methodology = pre-primary, primary and lower secondary education.
Source of data: Eurostat database (2013).

Obviously, with lower skills and qualifications it is more difficult to obtain employment, even in a favourable economic situation; low-qualified persons face barriers to entering as well as remaining in employment – in economic turbulence, employability of this disadvantaged group slumps. Boosting employment of low-educated persons by better targeted vocational training or tailoring education to the labour market's needs remains a top priority of today's policies.

Participation in active labour market policy programs in the SR with special focus on public works programs³¹

The largest group of those activated by the public work programs consists of job seekers with primary education as the highest attained level of education. In 2005 they represented approximately one half of the total number of persons involved in this type of program. The second largest group was formed by job seekers with vocational education without school-leaving exam (25 % to 31 %) and job seekers without education (8 % to 15 %). Based on the statistics of program participation by the job seekers' highest education attained it is clear that the public work programs are used predominantly (in the long-term) by those persons with the lowest levels of education (or without education) – during 2005 – 2011 their share in the total number of participants ranged from 88 % in 2005 to 93 % in 2011. The participation of persons with higher education levels is very rare. Detailed statistics on the public works programs is presented in Table 1.

³¹ In the cost-benefit analysis we include only the Activation activity allowance by the form of smaller community services for a community or smaller services for self-governing regions (§52) among the public works programs.

Table 1 Statistical data related to public works programs

	2005	2008	2011
Number of jobs created by public work programs	156,686	171,739	21,849
Number of job seekers on public work programs out of 100 unemployed persons	46	74.5	5.6
Number of job seekers on public work programs out of 100 long-term unemployed persons	87.8	152.7	11.7
Total number of unemployed persons activated by ALMP program	260,270	253,459	101,783
Proportion (%) of job seekers activated by public work programs out of total number of activated unemployed persons	60.2	67.8	21.5
Total number of unemployed persons	340,401	230,433	389,264
Total number of long term unemployed persons	178,520	112,452	187,028

Note: The drop in the number of jobs created by the public work programs after 2008 was due to restrictions of the target group persons entitled for program participation and limitations on repeated placement into the program scheme.

Source: Barošová et al. (2012).

Table 2 presents the expenditure aspect of the public work programs. As illustrated by the table, the expenditure on such type of the programs decreased considerably between 2009 and 2013; the share of the public work programs in total expenditures on the active labour market programs (ALMP; categories 2-7) dropped from 5.4 % in 2009 to 2.2 % in 2013.

Table 2 Expenditures on public works programs (2009-2013)³²

	2009	2010	2011	2012	2013
Expenditure on public works programs	5,116,507	5,162,078	3,811,079	2,720,817	2,185,422
Total expenditure on ALMP (categories 2-7)	94,388,159	152,660,998	154,190,066	135,714,790	100,947,471
Proportion (%) on public work programs	5.4 %	3.4 %	2.5 %	2.0 %	2.2 %

Source: Central Office of Labour, Social Affairs and Family.

Methodology

In the evaluation process of the economic return of costs spent on the public works programs of active labour market policy (ALMP) we used cost benefit analysis (CBA). CBA is a useful tool for decision making, whereby it serves to assess whether the costs of a particular program which are related to its implementation are less than its benefits. The advantage of this method is the ability to assess the overall effectiveness of the program of ALMP, which means that in practice there may be a case in which the program can be effective in relation to the increasing of the program participants' employment but it can be also very expensive. However, analysis itself does not guarantee that the funds will be invested effectively but it helps to reduce the risk that these funds will be invested incorrectly. Here it should be noted that in the public sector the economic aspect is not in all cases the main criteria for allocation of funds, as well as the fact that nowadays we do not have a definition of "disproportionate costs" and therefore decisions on the adequacy or

³² Expenditures in Table 2 do not include expenditures on activation allowances, which are paid to unemployed people during participation in the public works programs. For an estimate of the activation allowances (around 9.5 mil Euros) for 2011 only for participants who were included in the analysis we took into account the number of program participants, the amount of activation allowance and the average duration of program participation, which is around 5.75 months.

inadequacy of the consequences of ALMP programs related to some extent with what Slovakia can and also what is willing to give for the realization of the goals in the field of solving problems on the labour market with regard to its economic possibilities. The advantage of the cost benefit analysis is also the fact that it allows the description of the wider social impacts of particular ALMP programs, which is important for evaluating the results which have already been achieved. When using this method, all costs and benefits are measured in monetary terms, whereby it is necessary to take into account only the effects of the particular program which is being evaluated at that moment. From the perspective of realizing programs of active labour market policy, the effects could be measured from the program participants', government or the economy as a whole, point of view (table 3).

Table 3 Overview of the quantifiable costs and benefits arising from the implementation of active labour market policy programs

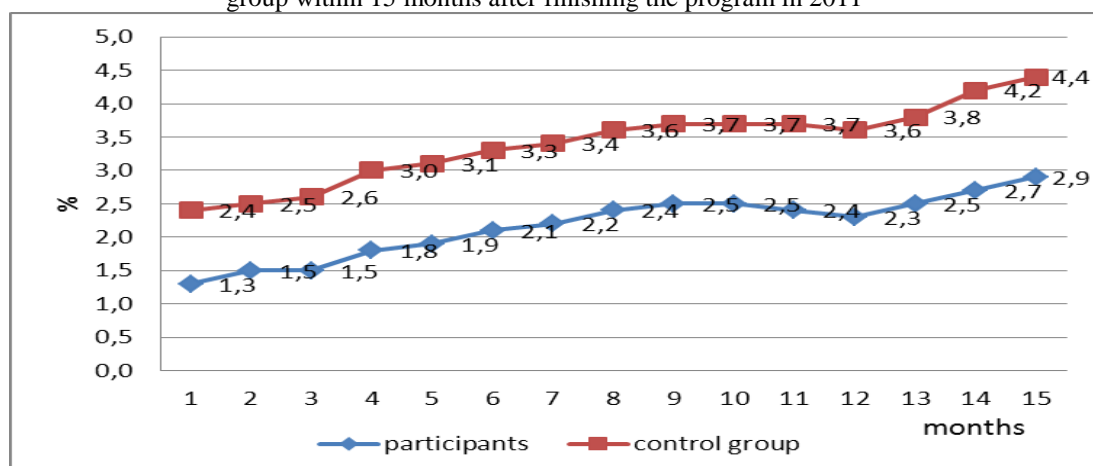
	Benefits	Costs
Economy as a whole	Value of new jobs created	Total cost of the program
	Potential multiplication effects	
Government	Increased taxation	Total cost of the program
	Social security/health contributions paid on employees	
	Reduction in health and social benefit payments	
Program participants	Increase of disposable income	Decrease/loss of state social benefit payments

Source: O'Higgins, N. (2009).

Problems associated with the quantification of the costs and benefits which are difficult to convert to cash flows present the significant limitation of this method. In this case, it is possible to express effects only in a qualitative way. Due to the unavailability of data for a comprehensive assessment of all aspects of this issue, we will in the next part of this article pay closer attention only to the analysis of the costs and benefits for the public works programs from the government's point of view, which means from the public finance's point of view according to the prof. O'Higgins, N. (2009) methodology. We evaluate only the direct effects; indirect effects are not rated. Technically, our approach means that for the chosen programs of active labour market policy we will compare the current value of all benefits with the current value of all costs related to the realization of the particular programs of ALMP in terms of public finances (table 3). In calculating the benefits for the government we come out from the analysis of the programs' impact on employment within 15 months after ending participation in the programs (figure 3).³³ The analysis of the public works programs' impact on the employment of the programs' participants within 15 months after its ending showed that participation in these kind of programs slightly reduced the possibility for the job seekers to find a working place on the open labour market, which may to some extent be related to the lock-in effect or even because of persistence of stigmatization of individuals participating in this type of work and these people are in many cases automatically considered as less productive which, in the long run, can reduce their likelihood of placement on the open labour market.

³³ This analysis was performed by Štefánik, M., Lubyová, M., Dovál'ová, G., Karasová, K. (2014).

Figure 3 Employment rates for participants of public works programs and for the participants of the control group within 15 months after finishing the program in 2011³⁴



Note: Calculated from the individual data of the Centre Office of Labour, Social Affairs and Family of SR using contrafactual impact analysis.

Source: Štefánik, M., Lubyová, M., Dovál'ová, G., Karasová, K. (2014).

The calculation of benefits for the government over the next five years is based on the approximation of the present value of all future flows arising from the realization of the particular program. Conversion to the present value is realized by discounting future flows³⁵.

Benefits for the state can be expressed as:

$$GB = \sum_{n=1}^5 \sum_i^m \left(\frac{HB_{n,i} + SB_{n,i} + IB_{n,i} + T_{n,i}}{rn} \right) / m, \text{ while}$$

GB presents government benefits, HB saving in contributions from the health insurance company, SB savings on state social benefits, IB contribution to the social insurance company and T benefits from direct and indirect taxes (VAT).

Two variants have been analyzed.

In variant 1 (gross effect) we analysed the impact of the public works programs' realization on public finances, thus we compare the costs of the programs with the gross benefits of the programs participants in the short term as well as in the mid-term, which means within 5 years after finishing participation in the program.

In variant 2 (net effect) we analysed the net effect of public works programs, which means the gross benefit of the programs' participants reduced by the gross benefit of the control group is compared with costs spent for these programs.

Gross benefit means only the benefit accruing from the placement of job seekers supported under the ALMP program.

By net benefit we mean the benefit accruing from the placement of job seekers supported under the ALMP program reduced by benefit accruing from the control group.

The gross effect means benefits from the ALMP program participants reduced by the costs of the particular program. Thus, when calculating the gross effect, we only considered whether the costs for the program were returned to the government during the reporting period via benefits "derived" from the participants of public works programs.

The net effect of ALMP programs on public finances represents the difference between net benefits and initial costs for the ALMP programs. In calculating the net effect we compared initial costs for the programs with net benefits (gross benefits from program

³⁴ It takes into the account the removing from the database of the Central Office of Labour, Social Affairs and Family of the SR due to placement in the labour market.

³⁵ According to the communication of the European Commission, the reference (discount) rate for the Slovak Republic was from January 2011 set at the level of 1.45 % (http://ec.europa.eu/competition/state_aid/legislation/base_rates_eu27_en.pdf).

participants accruing to the government reduced by the benefits from the control group). When evaluating the net effect of the program it should be taken into account that the control group considers only some common characteristics with the program participants (e. g. age, education, sex, region, length of unemployment etc. but some characteristics such as criminal records of job applicants etc. could be not considered for objective reasons). So we are aware of the fact that there is some disproportion in expressing the situation that would occur in the case that the program would not be implemented.

Due to the complexity of the issue and the unavailability of necessary data at the time of producing the analysis, the authors considered several simplifications:

- in the cost-benefit analysis we consider only direct costs for the selected ALMP program, while abstracting any additional costs in human and material resources needed to implement the program;
- we abstract from the costs associated with the various effects, such as the effect of displacement etc.;
- due to the absence of data on income of job seekers on an individual basis from the social insurance company, there were created two scenarios: in scenario 1 we consider that job seekers are employed on the open labour market only for the minimum wage and in scenario 2 we consider that they are employed for the median wage (according to age, region and education)
- when calculating the tax levy, we have only taken into account a tax allowance for the taxpayer on a monthly basis;
- we abstract from the unemployment benefits;
- we abstract from the value of leisure time (i.e. from all activities conducted outside the labour market, whereby many of these activities can increase social benefits, for example childcare, various forms of domestic production etc.)³⁶;
- we abstract the opportunity costs, representing the value of goods from the kind of activities that must be sacrificed in favour of the selected action (in this case, implementing ALMP programs)
- we abstract additional expenses, which could arise for the job seeker during the realization of the ALMP program, for example, transportation costs etc.
- the forecast of benefits for the government for 5 years is based on the assumption that the probability of job seekers finding places on the open labour market after 15 months of the ALMP program completion is constant.

Financing of ALMP programs in the Slovak Republic

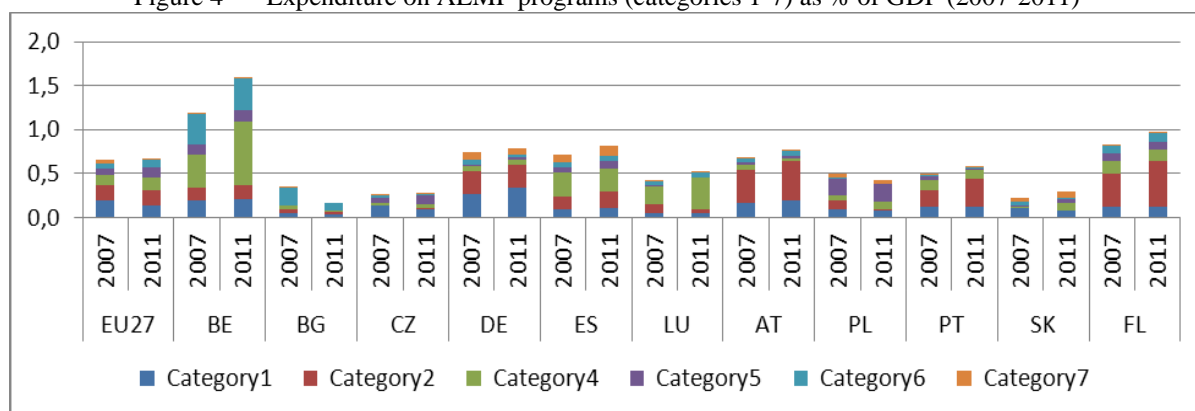
Active labour market policy as a tool to combat unemployment is gaining importance in many EU countries, as evidenced by the fact that many countries have increased the percentage of GDP which is spent on the implementation of particular ALMP programs. Some countries, for example Belgium, Austria, Spain and Luxembourg, have increased expenditure on ALMP programs (categories 2-7)³⁷ expressed by percentage of GDP as well as expenditure on ALMP programs (category 1), which means for labour market services. Finland increased spending on ALMP programs (categories 2-7) during the monitored period from 0.705 % to 0.857 % of GDP (the largest increase in spending was in category 2 – training), however expenditure on labour market services remained relatively small, at 0.124 % of GDP. In Germany we can observe the slight decrease in expenditure on ALMP programs (categories 2-7) from 0.469 % to 0.446 % of GDP, however expenditure on labour market services increased from 0.27 % to 0.34 % of GDP. In Slovakia we can see that during

³⁶ See for example D.H. Greenberg (1997).

³⁷ Category 1 – labour market policy, category 2 – training, category 4 – employment incentives, category 5 – supported employment and rehabilitation, category 6 – direct job creation, category 7 – start-up incentives.

the analysed period expenditure on labour market services slightly decreased from 0.11 to 0.07% of GDP, while expenditure on ALMP programs (categories 2-7) slightly increased from 0.12 % to 0.22 % of GDP, but when compared with the average of EU countries they still remain at a relatively low level (figure 4).

Figure 4 Expenditure on ALMP programs (categories 1-7) as % of GDP (2007-2011)



Source: Based on Eurostat databases.

Cost-benefit analysis of public works programs

Public works were originally a tool for direct job creation which stimulated growth of labour demand. The effort of their implementers was to prevent deterioration of human capital by supporting the returning process of job seekers to the labour market. Nowadays, many foreign authors (e.g. Kuddo, 2009) point to the fact that, due to lack of effectiveness, this tool is mainly used as a “safety net” which supports an individual's income and as a tool for decreasing the poverty rate of disadvantaged individuals on the labour market (in many cases these individuals are long-term unemployed people with low qualification).

OECD recommends that these types of ALMP programs should be focused primarily on the long-term unemployed with low qualification and that the greater effectiveness of these programs can be achieved by combining them with the education process. For achieving greater efficiency, the proper targeting of these programs is also very important. The international experience shows that public works programs are more suitable for long-term unemployed people in old age, whose mobility is significantly lower and who have little chance of being employed in the private sector, especially in areas with high unemployment rate (Kuddo, A., 2009).

Qualitative analysis of the public works programs' costs and benefits from the participants' point of view

According to the monitoring report (Barošová, M. et al., 2012)³⁸, the main qualitative benefits for program participants resulting from the nature of this ALMP program, which performs several functions (especially activation, socialization and redistribution functions). Currently there are mainly low-skilled job seekers activated through this program who are very often in material need from the long term perspective and they usually come from regions with a high unemployment rate and low employment opportunities. These problems are often compounded by the low labour mobility, thus this tool helps to a certain extent involve disadvantaged job seekers into work, to get/keep their work habits as well as a form of social contact.

The redistribution function is related to the income support of program participants, who receive an activation allowance amounting to 63.07 Euros during participation in the

³⁸ The monitor report was based on a questionnaire which was answered by 62 employees from different regional Offices of Labour, Social Affairs and Family.

program, and this contribution is a contribution to the benefit in material need. According to conducted monitoring (Barošová, M. et al., 2012), approximately 62 % of respondents claimed that these programs are important either to acquire work habits or for the elimination of social exclusion of job seekers, or for both of these reasons.

Only about 1% of respondents said that these programs are tools for improving the financial situation of job seekers and only 2 % of respondents agreed that public works programs help the long-term unemployed to find jobs on the open labour market. Clear consensus among respondents was not achieved in responses regarding whether these tools intensified job searching by job seekers or not (47 % of respondents answered yes and 47 % of respondents answered no, while 6 % of respondents did not respond).

Among the costs of ALMP program participants we can include especially costs associated with the risk of locking job seekers to subsidized job positions, which is connected with a reluctance to seek employment in the open labour market (60 % of respondents), as well as opportunity costs.

Gross effect of public works programs on public finance

The calculation of the gross effect of public works programs is based on the fact that in 2011 around 3,811,079 Euros were spent on these programs and about 85 % of expenditure came from the European Social Fund (ESF). Taking into account that activation benefits paid to the program participants are not included in this amount of money, their calculation is based on the average duration of one subsidized working place, which is around 5.75 months and on the number of program participants, i.e. 26,095 persons, who were included in this analysis (these contributions are paid from the state budget, their total amount is presented in Table 1 in brackets, whereby in parentheses we also present the calculations of gross revenues reflecting the total amount paid for activation benefits to participants of these programs).

In Table 5 we can see the effects of providing public works programs on public finance in the short (within 1 year) and medium terms (within 5 years). Taking into account that participants of these programs are mainly long-term unemployed people with low qualification, we consider Scenario 1 as more realistic, which means that participants will be employed after completing the program on the open labour market for the minimum wage. In regard to the relatively low probabilities of job seeker placement in the open labour market within one year after finishing the program, and with respect to the qualification structure of program participants, it is not possible to assume that the financial expenses spent in the program could be returned to the government in short period, although this should also be not expected for this type of ALMP program.

Under the certain assumptions which we assumed for the estimation of the gross effects (see Methodology), it could be expected that the return period of the expenses for public works programs would be in the medium term (within 5 years after completion of the program). In the case that we consider only the resources expended from the state budget, it is possible to expect a shorter payback period, approximately by one year.

Table 5 Gross effect of the public works programs (in Euros)

Year	Costs of the programs		scenario 1			scenario 2		
	State budget	ESF	Gross benefits	Net benefits	Net benefits (state budget)	Gross benefits	Net benefits	Net benefits (state budget)
0	571,662 (9,463,417)	3,239,417	x	x		x	x	x
1. year	x	x	2,102,686	-1,708,393 (-11,171,810)	1,531,023 (-7,932,393)	3,265,975	-545,104 (-10,008,521)	2,694,312 (-6,769,104)
2. year	x	x	4,959,057	1,147,977 (-8,315,439)	4,387,394 (-5,076,022)	7,717,257	3,906,177 (-5,557,239)	7,145,594 (-2,317,822)
3. year	x	x	7,823,627	4,012,547 (-5,450,869)	7,251,964 (-2,211,452)	12,181,655	8,370,576 (-1,092,841)	11,609,993 (2,146,576)
4. year	x	x	10,647,254	6,836,174 (-2,627,242)	10,075,591 (612,175)	16,582,246	12,771,166 (3,307,750)	16,010,583 (6,547,167)
5. year	x	x	13,430,524	9,619,444 (156,028)	12,858,861 (3,395,445)	20,919,939	17,108,860 (7,645,443)	20,348,277 (10,884,960)

Note: The estimation of the expenses for the activation allowances is shown in brackets.

Source: Own calculations.

Net effect of public works programs on public finance

Table 6 shows the net effect of the public works programs. The costs of the programs are compared with the net benefits (gross benefits of the programs' participants are lowered by the benefits for the government from the control group). The estimation of net benefits is based on the probability rates of program participants' placement in the open labour market after finishing the programs and those of control group, which were calculated in the previous work (Štefánik, M., Lubyová, M., Dovál'ová, G., Karasová, K., 2014) and which we have shown in the Methodology section. Because of the higher probability rate of placement in the open labour market for a control group than for program participants, net benefits have negative values in the case of both scenarios.

Table 6 Net effects of the public works programs (in Euros)

Year	Costs of the programs		scenario 1			scenario 2		
	State budget	ESF	Net benefits (participants)	Net benefits (all)	Net benefits (state budget)	Net benefits (participants)	Net benefits (all)	Net benefits (state budget)
0	571,662 (9,463,417)	3,239,417	x	x	x	x	x	x
1. year	x	x	-1,308,572	-5,119,651 (-14,583,068)	-1,880,234 (-11,343,51)	-2,098,220	-5,909,299 (-15,372,716)	-2,669,882 (-12,133,299)

Note: The estimation of the expenses for the activation allowances is shown in brackets.

Source: Own calculations.

The results of the analysis as well as those of the monitoring suggest that after completing the public works programs the chance to find a job in the open labour market for the program participants does not increase markedly (e.g. participation in these programs is not connected with the education process, which means the discrepancy risk of the necessary skills and qualification of job seekers is not reduced), even more on the contrary in some cases the chance of participants may decrease (e. g. there is a risk of being trapped in a subsidized job, the risk of stigmatization of program participants, who are very often seen as

less productive). For this reason we do not expect that the expenses for the public works programs could be returned through net effects in the short or medium term.

Conclusion

Slovakia is one of the countries with a relatively high unemployment rate and low expenditures on active labour market policy. In the past, public works programs were very often used as active labour market policy programs, but nowadays the trend is reversed and these kinds of programs are mainly used for long term unemployed people with low levels of education. International experience shows that if these programs were linked with the education process, the job seekers have, after finishing them, a higher chance to be placed on the open labour market. This educational element is largely absent in the implementation process of public works programs in Slovakia. This is also one of the reasons why, after finishing these kind of programs, the chance for their participants to be placed on the open labour market does not significantly increase; even the previous analysis carried out from individual data from the Central Office of Labour, Social Affairs and Family showed that their chances within 15 months after finishing the program were even lower than for the control group. This fact may be related to factors such as lock-in effect, also with the reduced job seeking intensity during the participation in the program as well as with the persistent stigmatization of public works programs, while those job seekers who participated in such programs may be seen as less productive.

The selection effect has a very important role in the evaluation process of public works programs. Job seekers have to meet certain criteria when they want to participate in these programs, they have to be long term unemployed and they have to receive benefits in material need. These people often have to face several problems at the same time (lack of skills, health and social problems etc.), while actually regional Offices of Labour, Social Affairs and Family do not have sufficient staff capacity to help them to solve all their problems enough to be able to be placed on the open labour market.

From our cost-benefit analysis it can be seen that, from the perspective of program participants, these programs are very important tools that support low-income job seekers and, in many cases, these programs have a very important socialization and activation role (i.e. improving of work habits) mainly in those regions where the jobs offer is very low. In gross effect, in regard to the relatively low level of probability for program participants to be placed on the open labour market after finishing public works programs and with respect to their low qualification level, it is not possible to expect that financial expenditure spent on these programs could be paid back in a short time period. Under the certain assumptions underlying the estimation of gross effects, we can expect a return of expenditure on these programs in the medium term, which means within five years. In case that we consider only the expenditures from the state budget, we can expect about a one year shorter return period. However, on the net effect we do not expect the expenditure return either in the short or medium term period.

Note:

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EVOLUTION OF THE CURRENCY HEDGING INSTRUMENTS IN EMERGING MARKETS, CASE OF MOROCCO: ARE EXOTIC OPTIONS SUITABLE IN TERMS OF PRICE AND RISK COVERAGE?

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Abstract

In this report, we will answer the problematic “how the currency hedging instruments have evolved in Morocco, and how the implementation of exotic options would be beneficial and advantageous in terms of price and risk coverage”. We will first analyze the different traditional financial instruments used in the Moroccan context. Afterwards, we will introduce the classical options present in Morocco from 2003. Subsequently, we will talk about the options of “second generation” also called exotic options. Thereafter, we will compare the classical options with the exotic ones thanks to the results of a simulation. The simulation consists of two cases, the import and export case. Then, we will conclude by showing why exotic options should be implemented in Morocco.

Keywords: Emerging markets, Morocco, currency hedging instruments

Introduction

The establishment of a foreign currency market in 1996 was indisputably a concrete demonstration of the integration of the Moroccan economy in the path of a financial globalization. The time when banks were limited to play a role of a “mailbox” between clients and central bank, by buying and selling currencies on the basis of an undifferentiated currency rate, is over.

Today, the Moroccan banks are equipped with trading rooms, authorized to carry out transactions for the purchase and sale of currencies, whose rates are now freely negotiable between parties.

In this new market, Moroccan exporters and importers are now able to negotiate preferential currency rate, and avoid the exchange risk by using new tools such as: the purchase/sale “spot” price, the purchase/sale on term known as “Forward”, as well as the options of first generation called “Vanilla”, introduced to the market in 2003. First designed as financial products for risk hedging, these options were finally reconverted into products of speculation, and seduced a large majority of customers.

However, classical options may be too costly regarding the specific needs of investors, and may even have an insignificant gain profiles compared to the expectations.

Thus, in order to limit the disadvantages of classical options, a new category of options, known as “options of second generation” or even “exotic options”, has emerged.

The aim of this study is to explain how the currency hedging instruments have evolved in Morocco, and how the implementation of exotic options would be beneficial and advantageous in terms of price and risk coverage.

Part I

Presentation of the currency market

Today, Morocco is more familiarized with the financial instruments present abroad. Indeed, in June 1996, the Exchange Office has liberalized the foreign exchange market in Morocco. Since, the national banks have the possibility to negotiate with their customers the transactions of import/export.

Bank Al Maghrib has opened this market by obliging banks to pay a commission of 2/1000, which has been negotiated to 1/1000 in 2007. This liberalization has facilitated the transactions and has allowed the banks to operate on the market. Regarding the risk coverage, two products or financial tools were available on the foreign exchange market. The first tool is the operation of exchange called the spot.

This means that the client prefer to buy or sell foreign currencies at the current value of the market without having any coverage regarding the risk. The second is the operation of change in the long term. This means that the customer prefers to avoid the risk by buying or selling a currency amount at a predetermined price fixed by the bank.

Exchange Products

The spot exchange

The spot exchange is a classical exchange product used for several years by the Moroccan operators. It consists of the purchase or sale of foreign currency against the Moroccan dirham at a price called "spot", defined by the current price on the international exchange market. Based on market conditions, a spot transaction allows to directly fixing the sale or the purchase of a currency for a regulation or a delivery in two business days after the conclusion of the operation. In effect, the purchase of a currency on spot on day "J" will be concluded on day "J+2" following the transaction. These two business days allow the operator, which plays the role of intermediary between the Moroccan customer and the foreign customer, to send the ticket validation to the Back Office. Its role is to check if the change has been carried out at the appropriate rate and if the client has the necessary monetary resources to perform the transaction.

When these conditions are met, the transaction is carried out.

The spot exchange has several advantages:

- Take advantage of fluctuating market prices in real time through the trading Room.
- Benefit from listings, on request, of significant transactions.
- Reduce the level of risk in relation to potential adverse rate fluctuations.
- No disbursement on the initiation of the transaction.

However, a foreign spot exchange transaction has also some disadvantages:

- It does not allow you to benefit from a favorable evolution of the market.
- Oblige to fully undergo the market in case of favorable or unfavorable course evolution.

The forward exchange

The forward exchange is a classical exchange product more sophisticated than the spot exchange. It can set the purchase price or sale price of a currency for a transaction to be made in a future date. Thus, it is a way of hedging the foreign exchange risk by eliminating the uncertainty of the evolution of a currency compared to another.

Regarding the import, the forward exchange consists of buying a foreign currency amount at a specific date and price defined in day "J" to avoid a future appreciation of the foreign currency. The forward exchange rate is calculated as follow:

$$CT = CC * ((1 + t1 * n / 360) / (1 + t2 * n / 360))$$

CC: Spot price

t1: Interest rates of the base currency

t2: Rate of interest of listed currency

n: Number of days

The trading room borrows the amount in local currency from the Monetary Desk at a specified rate, and sells the spot against a foreign currency at the interbank rate in a local or international bank under the most appropriate conditions. At maturity, the customer buys the currency at forward price, and the bank reimburses the amount previously borrowed. Thus, the bank benefits from foreign exchange gain as the difference between the spot price at which it sold, and the forward price at which the customer buys as well as the gain resulting from the difference between the rate of investment it collects and the borrowing rates it must pay.

In the case of export, the client wishes to sell currency on a date T at a price set on the D day, fearing a devaluation of the foreign currency. The bank borrows the foreign currency amount on the D day, and sells it against the local currency at spot price and at a specified rate. At maturity, the customer sells its currency to the bank; the bank pays the customer in local currency and repays the currency amount borrowed on D day. It, therefore, benefits from foreign exchange gain between the spot price at which it sold the currency and the forward price at which it bought the currency from the customer on date T.

Part II

Classical Options

Since 2005, classical options have been present in Morocco and investors are allowed to use them to treat their import/export transactions. However, only a minority of Moroccan companies uses these kinds of options and that's why a low transaction volume is recorded. Even if banks use them in order to hedge their currency risk, the most important operators are private Moroccan companies. In fact, they are the ones who mainly contribute to the economic development of the country. From 2005, these companies did not show a strong attraction toward classical options. Some of the companies know about them and use them, some know about them but are afraid of using them, and other don't even know about them. Personally, I think the problem is that companies that do not know about classical options are traditional ones that do not want to change their way of doing business. Another cause of the non-use of classical options may be the fact that with the 2008 financial crisis which is still present today, Moroccan investors don't want to take the risk and want to use what they call "traditional tools" to perform their import/export transactions while neglecting the potential profit they can make by using options. As a result, the Office des changes should maybe provide Moroccan investors with seminars about currency options in order to make them familiar with them and push the investors to show some risk-taking profile. However, if they still do not use them extensively, this could mean that they are waiting for the Moroccan economy to recover which is obviously linked with many other economies in the world.

Strategies for Classical Options

Participatory Call

A participatory call is a mixture between plain vanilla call and forward exchange contracts. There are two possible scenarios in case of purchase of this option. The first scenario results in a spot price lower than the strike. The percentage of participatory call represents the share of the amount covered by the option. If this percentage is 60%, the holder of participatory call will be able to buy 60% of the global amount at the spot price, the remaining 40% to be purchased at strike price (above the spot for this scenario). The second

scenario is characterized by an unfavorable evolution of the market (spot price higher than strike). In this case, the operator is fully covered against a rise of the underlying. Thus, the option allows the user to purchase the full amount at the strike price and to take full advantage of the unfavorable market.

This strategy has several advantages but also disadvantages.

- **Advantages:**

- The percentage of participatory call allows you to profit in part from favorable market conditions, thereby reducing losses compared to Strike.
- Full coverage in the event of adverse market evolution.
- Level of premium reduced.

- **Disadvantages:**

- In case of a favorable market evolution (declining currency), the percentage of the total amount purchased at the strike represents an opportunity cost.

Call Spread

The call spread is a strategy that is characterized by the purchase of a call option at the money and the sale of a call option out of the money; the two options have the same maturity. This allows reducing the losses and the gains of the operator, allowing him to establish a certain level of risk coverage.

- **Advantages:**

- Limited losses.
- Level of premium reduced.
- Allows you to profit from a favorable evolution of the underlying

- **Disadvantages:**

- Limited gains

PUT Spread

The PUT spread is a strategy that is characterized by the purchase of a PUT option at the money and the sale of a PUT option out of the money, the two options having the same maturity. It allows a reduction of the losses as well as the gains of the operator, allowing him to establish a certain level of risk coverage.

The advantage of this strategy is to reduce the amount of the premium while enjoying the same gain realized with the dry purchase of a PUT option, this happening if the price of the underlying does not exceed the strike price of the sold PUT.

- **Advantages:**

- Limited losses.
- Reduced level of premium
- Enables profiting from a favorable evolution of the underlying.

- **Disadvantages:**

- Limited gains.

Tunnel (collar)

The Tunnel is a strategy that concerns classical options. It consists of buying a currency option at the money while selling simultaneously another of the opposite sense out of the money. It allows total immunity from an unfavorable evolution all while relatively gaining from a profitable evolution. The profitability is limited by the intervals, also known as tunnels, in exchange for a reduced premium tending towards zero.

There exist two situations, the investor can buy a Call and sell a PUT out of the money, which corresponds to the import position. Thanks to this strategy, the investor benefits from a warranty on the highest rates at which he will eventually buy his currency

thanks to the acquisition of the Call option, but the minimum rate at which he will be able to purchase the latter via the sale of the PUT option is well defined.

If not, the investor can buy a PUT and sell a Call. In this case, the investor is an exporter.

Example: The case of importation - Tunnel on Dollar

Currency Pair: EUR/USD

Floor price (PUT): 1.35

Ceiling price (Call): 1.55

- If the price at maturity is 1.57, higher than the price ceiling, the importer exercise the Call and buys at the ceiling price of 1.55.
- If the price at maturity is 1.45, between the ceiling and floor price, the investor buys at the spot of 1.45.
- If the price at maturity is 1.32, lower than the floor price, the importer does not benefit from the favorable rate and must buy the currency at the strike price of the PUT that is at 1.35.
- **Advantages:**
 - Total assurance against an anticipated rise or fall of the currency.
 - Positive net revenue from a rise or fall of the currency up to the set limit.
 - A limited maximum rate of purchase.
 - Negligible premiums.
 - The ability to determine the level of the exercise price as well as the span of the Call.
- **Disadvantages:**
 - The opportunity cost in case of a fall of the currency below the strike of the PUT, or in case of a rise of the currency above the strike of the call.
 - The enterprise only gains partially from the favorable evolution of the currency.

Exotic options

Recording a strong growth since the early eighties, the currency options market got enriched. In the early nineties, new products grouped under the generic term options of "second generation" or "exotic" options. Created specifically in order to meet the needs of end customers, these instruments developed rather slowly because they have little appeal as trading products (low standardization and thus reduced liquidity) and evaluation (pricing) and management (risk management) are complex. Despite this difficult start, some "Exotic" products - such as barrier options – recorded a growing success. The outstanding in portfolios of market makers are now important and coverage may, from time to time, have a significant impact on exchange markets, and subsequently, the level of premiums. The exotic options can be classified into two categories: Path Dependent and Non-Path Dependent.

Path Dependent Options

As their name indicates, the path dependent options are options for which the payoff on maturity depends on the path taken by the rate of the underlying during the whole life of the option. This dependence can be strong as it is the case for Asian options, or weak for barrier options as an example. A strong "path dependence" is brought to fruition by the addition of a parameter that we must consider in addition to the price of the underlying at each instant T before maturity. For the case of Asian options, this parameter is the mean of the rates of the underlying up to maturity.

Barrier Options

A barrier option is an exotic option that differs from a classical option by the addition of a parameter, which is the barrier. Once equaled or surpassed during the span of the option,

it can be activated or deactivated. In fact there exist two types of barriers, activating and deactivating. An option with an activating barrier is only exercised if during its life span the barrier is attained or surpassed by the underlying. An option with a deactivating barrier deactivates (the owner will no longer have the right to exercise it) once the rate of the underlying attains or surpasses a certain level before maturity. In both cases, the barrier is chosen by the buyer of the option in agreement with the seller. Different types of barrier options can be distinguished, each associated with a type of barrier: In or Out.

Knock Option

Knock-In Option: this option has the particularity of having an activating barrier out of the money. For the case of a call for example, the barrier activates when the underlying price rises to a certain level, the inverse for a PUT.

Knock-Out Option: this option is identical to the knock-in option, the only difference being the nature of the barrier. The barrier is a deactivating one. As well for a Call the barrier deactivates when the underlying price falls to a certain level, the inverse for a PUT.

Kick Option

Kick in option: This option is characterized by having an activating barrier in the money. For the Call, the activating barrier is situated above the spot and the strike. For the PUT, it will be located below the latter.

Kick-out Option: This option is identical to the kick-in option, the only difference being the nature of the barrier. It is a deactivating barrier. For the Kick-out Call, the deactivating barrier will be at the rise and the inverse for the PUT.

Double barrier options

This kind of option is characterized by the presence of two barriers, an activating a deactivating barrier. As a result, the premium is strongly reduced. The advantage is that the owner can, if the activating barrier is attained, earn profit from the option while having paid an almost null premium. If the option is deactivated or if the activating barrier has not been attained, the owner will have lost the meager premium (almost zero) paid initially.

Thus, barrier options are less expensive than classical options without barriers. They were created to provide insurance without having the buyer paying a high premium. Thus, if the option is not activated, or if it is deactivated, the holder will lose the low initial premium paid. For the seller of the option, there's less risk that the holder exercises the option and therefore less risk of incurring losses, the barrier being a constraint.

Specific case of the purchase of a Call Kick-In option EUR USD:

Nominal: EUR 1 million

Maturity: 3 months

Spot at maturity: 1.0400

Exercise Price: 1.0600

Activating barrier: 1.0900

Premium: 1.25% of the nominal

→ If at maturity the spot is greater than 1.0600 and if the spot hit 1.0900 during the life of the option, then the holder exercises the Call and buys EURs against USD at 1.0600. In all the opposite cases, the Call Kick-In option is not exercised at maturity.

Strategies using barrier options:

Several strategies are derived from barrier options. An example is the Forward Plus. The Forward Plus is a synthetic forward adjusted at zero cost. The Forward Plus is the

purchase of a classical option, financed by the sale of a Kick-In option of the same exercise price:

- A buyer of foreign currency buys a Call and sells a PUT Kick-In.
- A seller of foreign currency buys a PUT and sells a Call Kick-In.

The rate proposed in the Forward Plus is slightly degraded compared to the purchase or sale price of a classical forward, but in return, the Forward Plus allows you to enjoy the upswing of the underlying exchange rate, provided that the barrier of the Kick-In option is not hit.

Example: Parameters of the Forward Plus:

Nominal value for both options: 1M EUR

Maturity rate common to both options: 3 months

Purchase of a EUR / USD Call

Exercise Price: 1.0460

Sale of a EUR / USD PUT:

Exercise Price: 1.0460

Activating Barrier: 0.9875

Spot: 1.0370 - term: 1.0370

- No premium paid, because the premium received on the sale of the Kick-In PUT finances the purchase of the Call
- If the barrier is touched during the life of the PUT Kick-In option, the client becomes the holder of a synthetic forward purchase at the price of 1.0460. So the client will buy at maturity 1M EUR at 1.0460
- If the barrier is never touched, the client is simply holder at maturity of a Call option with an exercise price of 1.0460, and will be free to deal at spot price otherwise.

Summary of the situation at maturity

Exchange price at maturity	Spot < 1.046	Spot > 1.046
Barrier reached	1.04600	1.04600
Barrier never reached	Spot at maturity 0.9876	1.04600

- Advantages:

- No premium to be paid.
- Clients benefit from a portion of the improvement in the exchange rate, while ensuring a maximum ceiling price (purchase)/floor price (sale).

- Risks:

- The guaranteed price is slightly degraded compared to the classical forward rate.
- Lost profits from the difference between the spot at maturity and the guaranteed price.

Asian Options

Asian options are characterized by a profit that depends on the average price of the underlying over a period of time before maturity. The profit is the difference between this average and the Strike.

There are also Asian options whose strike is nothing more than the average price of the underlying before maturity. Gains are represented by the difference between the closing price at maturity of the underlying and the strike price.

We also distinguish the flexible Asian options that allocate different weights to the observed prices and are widely used nowadays.

Asian options are mainly used in the commodities and exchange markets as they are considered as an alternative to hedging at a reduced price compared to classical options.

Non-Path-Dependent Options

The price of these options does not depend on the path followed by the price of the underlying during the life of the option. We can distinguish several *Non-path-dependent options*, but we will focus on two of them: the binary options, and basket options.

Binary Options

The binary option allows the buyer to receive a fixed amount of money if the price of the underlying reaches or surpasses the exercise price fixed beforehand. This is the type of option where the payoff is either a sum fixed in advance or nothing at all. Thus, it is called "binary option" because only two situations are possible: either the option ends in the money and the holder receives the amount fixed in advance, or the option ends out of the money and the holder gets nothing. A trader who thinks that the EUR / USD will close at a level above the current price of 1.3250 can buy a binary option (Call) to enjoy this rise. In contrast, if he thinks that the EUR / USD will finish below the level of 1.3250, he can buy a binary option (PUT) to enjoy the fall.

Example:

At 2 pm, the EUR / USD is at 1.3250. Therefore, the trader buys a binary option (call) for 100 €. The option expires at 15 pm and provides a yield of 80% if the price ends above the exercise price. Therefore at 3pm, if the EUR / USD is above 1.3250 the holder receives the amount invested (€100) plus the 80% premium- €80. The profit is 80 €. Conversely, if the price ends below 1.3250 then the trader loses his initial investment.

There are several types of binary options; the most important are listed below:

- The "High / Low" option:

The "High / Low" or "Up / Down" is the most popular option. This type of contract decides whether the underlying's price is above or below the original price when the option expires.

Example: An investor buys a "High / Low" option on the EUR / USD (predict a rise). The original price is 1.2550. The investor wins the contract if the closing price is above 1.2550.

- The one touch option:

The "One Touch" option is an option increasingly democratized in the industry of the binary option. This type of contract involves deciding whether the underlying price will reach a predefined value or not throughout the lifetime of the contract.

Example:

The investor buys a "one touch" option on the price of Gold. The original price is 1725. The targeted value is 1735. The investor wins the contract if the price hits the value 1735 throughout the lifetime of the option.

- The "all or nothing" option:

Also called "Cash or nothing", it entitles the holder to receive a fixed coupon determined in advance, if the option reaches maturity "in the money". Otherwise, the option premium is lost.

- Advantages:

- Certainty of the "pay-off": Unlike standard options for which the "pay-off" is random (since it is based on the final value of the underlying), the purchaser of a binary option is certain to receive an amount M (in case of favorable price evolution) or zero.
- Flexibility for the customer: In addition to the ability to choose the exercise price, the customer is free to determine the amount they wish to receive in the event of favorable evolution.

Binary options strategy

Corridor option

The corridor options consists of a series of binary options including, for each day between the transaction date and the maturity date, the purchase of a binary call and the selling of a binary call of a higher strike. This combination allows you to receive an amount proportional to the number of days during which the underlying will remain in the selected terminals. The purchaser of corridor options anticipates that the underlying will remain as long as possible within a "trading interval" during the life of the option.

Example

The index is at 3000 points; a treasurer anticipates it will stay between 2750 and 3250 during the coming year. He buys a corridor option that will pay him an amount proportional to a 8.25% coupon, depending on the number of days during which the index will remain in the trading interval. The corridor option costs 3.87%. At the expiration of the option, we note that the index was quoted 300 times between 2750 and 3250. The treasurer of the option therefore receives a coupon of 6.78% ($= 300/365 * 8.25\%$).

NB: When a customer decides to sell a standard binary option, he immediately receives a premium, but is exposed to unlimited losses if the evolution of the underlying is unfavorable. The sale of these options allows receiving instant bonuses while perfectly knowing the maximum loss.

Current status of exotic options in Morocco

"In Morocco, the introduction of currency options does not require a special euphoria. To start, their use is likely to remain limited to two local banks and some large groups. The predominance of foreign exchange transactions in euro (about 80% of transactions) is one of the reasons given by the bankers. In addition, the composition of the basket explains the relative stability of the dirham against the euro. The volatility of the EURO / MAD is relatively small comparing to that of the USD/MAD. Furthermore, the treatment of the options by banks requires a good organization of the activities and a control of processing operations. In addition, options require extensive preparation in terms of human resources, risk management and information systems. These products should be urgently developed because in the long term they will no longer be able to satisfy all customer needs" (M.Kably, L'Economiste). The development of these options will certainly lead to the implementation of exotic options in Morocco, which are products that protect from currency risk and which are more sophisticated than the classical options on currency. These exotic options are already present in several countries such as the United States, France ... Being more sophisticated than conventional options; they offer the possibility to make the client enjoy a favorable or unfavorable evolution by paying a small premium compared to that of the vanilla options. In Morocco, exotic options are still not present, but significant efforts are being made to learn and implement this kind of options. These options must first be understood by Moroccan operators. Since a minority of Moroccan companies use conventional options to hedge against currency risk, they will show no appetite for options to become familiar with the exotic. But this is not a problem; seminars will be held to show the mechanism of this kind of options.

Simulation

Case of import

Nominal: 1M Euro

Deal Date: 05/15/13

Maturity: 07/15/13

Spot Price at 05/15/13: 11.0786 - 11.1550

Spot at maturity at 07/15/13: 11.1600

Adaptable Currency exchange instruments:

- **Purchase at spot:**

The spot at purchase is the standard way to buy currency for an importer. Indeed, the Moroccan operator completely undergoes the market and does not want to hedge against the risk of appreciation of the foreign currency to buy. Thus, he will buy two days before the deadline the amount in euro at the market price called spot at 11.16. The client will thus pay $1,000,000 * 11.16 = 11,160,000$ MAD.

- **Forward Purchase:**

The forward purchase is a simple technique to hedge against the risk of appreciation of the foreign currency for the Moroccan operator. The latter make a forward purchase when it predicts an upward anticipation of the foreign currency to buy.

The bank borrows the equivalent amount in dirham from the money Desk at an "Ask" rate of 3.25%, and sells it against the euro at a Bid rate of 0.02%. The formula for calculating the forward price is as follows:

Spot * $(1 + (\text{Rate MAD} * \text{NbD}) / 360) / (1 + (\text{Rate Eur} * \text{NbD}) / 360)$. The forward rate is thus equal to: $11.155 * (1.005417 / 1.000033) = 11.2151$.

At maturity, the customer pays 11,215,100 MAD.

→ On July 15, the spot EURMAD course is 11.16. It is better than the forward price which is 11.2151. Thus, it would have been preferable for the importer to buy euro against the dirham in spot July 15. Therefore, the importer suffers from a loss of $(11.2151 - 11.16) * 1,000,000 = 0.0551 * 1,000,000 = 55,100$ MAD.

- **Tunnel:**

The tunnel option is characterized by the purchase of a call and the simultaneous sale of a put. The upper bound represents the exercise price of the call, which is 11.241. The lower bound is the put exercise price which is 11.20.

The tunnel is a financial instrument that gives the user the opportunity to enjoy the favorable evolution of the market between two terminals (maximum price, minimum price). If the price is between these two limits, the operator buys currencies in spot-no option is exercised. If the price is above the exercise price of the call, the operator exercises its Call. If the price is below the exercise price of the put, the importer buys the strike of the put.

→ On July 15, the spot price is 11.16 EURMAD. Thus, the importer does not exercise his call. However, it will buy the currency at the exercise price of the put of 11.20. The importer will suffer a loss of $(11.20 - 11.16) * 1,000,000 = 0.04 * 1,000,000 = 40,000$ MAD.

- **Classical option: buy a call EURUSD**

This option is characterized by the sale of a call EURMAD in the Moroccan operator. In our case, 0.74% is the price of this option compared to the initial amount. The amount in question is 1 million euro, so that the customer will pay the bank the equivalent MAD 7400 EUR in buying this call. The importer must then pay the premium of $7,400 * 11.155 = 82,547$ MAD

- **Exotic option: buy a call to Knock → Kick-In**

A barrier option is an exotic option that differs from classical options. Indeed, one knock option is an option that activates when the price of the underlying reaches or exceeds a certain level called barrier before maturity. As soon as it touches this level, the option is activated and gives the right to the holder to exercise it. If the underlying does not touch the barrier, the operator is losing the premium initially paid. For the call to knock if the spot at maturity is greater than the strike and whether the spot hit the knock during the life of the option, then the holder exercises the Call and buys EUR against MAD during strike. In all cases the contrary, the Call is not exercised at maturity.

Strike = Spot = 11.155

Activating barrier = 11.20

Premium to pay = 61001.77 MAD

→ Throughout the maturity of the option, the current EURMAD hit and exceeded the knock. Thus, the option is enabled and gives the importer the right to exercise it.

→ On July 15, the EURMAD spot price is 11.16. The exercise price of the call is better than the spot on July 15. Therefore, the importer exercises the call and has a gain of $11.16 - 11.155 = 0,005 * 1,000,000 = 5000$ MAD. However, its net profit is negative given the amount of the premium paid: $5000 - 61001.77 = -56001.77$ MAD

Interpretation of results

The best risk coverage here is to purchase the currency at the spot price at maturity. Other risk coverage instruments are also very interesting, but for this example, the currency prices are made in a way they cannot be beneficial for the operator. The instrument through which the loss is at its minimum is the tunnel followed by forward exchange contracts and by the exotic option and finally the classical option.

Case of Export

The exporter receives in 2 months \$ 1,000,000. This means that he is selling dollars against the MAD in 2 months. Then, the bank buys dollars spot on Bid.

Amount to cover: USD 1M

Deal Date: 05/15/13

Maturity: 07/15/13

Spot price of 05/15/13: 8.51 - 8.56

Spot price at Maturity of 07/15/13: 8.54

Case of Sale on Spot

In our situation, the sale at spot price corresponds to the case where the exporter sells for cash, two days before the deadline date of 15/07, an amount of \$ 1,000,000. The bank then buys the \$ at 8.54, and the exporter receives an amount of 8,540,000 MAD.

Case of Forward Sale

The forward sale is for the exporter to receive at maturity on July 15, an amount of \$ 1,000,000, and simultaneously sell it to the bank against the Dirham. In time T, the bank borrows \$ at a rate of (ask) USD 1.25 and sells it up against the MAD at a rate (bid) MAD 3%. The forward rate is then: 8.5348.

At maturity, the exporter receives an amount of 8,534,800 MAD. When the forward price is higher than the spot due price the exporter benefits from it. However, when the forward price is less than the spot due price, the bank benefits.

CAT = SPOT * (1 + ((Tx MAD * Nb Days)/36000)) / 1 + ((Tx Currency * Nb Days)/36000))

→ On July 15, the price of 8.54 is slightly higher than the forward price. Thus, the exporter suffers from a loss because the forward price at which the transaction is carried out is lower and less advantageous than the spot during July 15. The value of the loss to the exporter is: $(8.54 - 8.5348) * 1,000,000 = 5,200$ MAD

Case of a Plain PUT Vanilla Option USD/MAD:

The bank sells a PUT to the exporter whose premium is 1.80% for an amount in foreign currency of: \$ 1,000,000 to convert to MAD.

Premium to pay by the exporter = $1,000,000 * 1.80\% * 8.51 = 153\,180$ MAD

Spot of 05/15/13: 8.51

Strike of PUT: 8.51

Spot of 07/15/13: 8.54

→ The strike is below than the spot of July 15. Therefore, the exporter abandons his PUT and sells it at spot price. Thus, he received a total of 8.54 million.

The situation is not good for the exporter even if he sells his currencies at 8.54 because he loses the paid premium. The amount of the loss is measured by calculating the difference between the prices minus the premium paid. $((8.54 - 8.51) * 1,000,000) - 153,180 = 123,180$ MAD

Case of a Tunnel

For an exporter, the tunnel is to buy a PUT and sell a call.

The lower bound is: 8.5100 and corresponds to the exercise price of the PUT guaranteeing to the exporter a price floor. The upper bound is: 8.5500 and corresponds to the exercise price of the Call limiting the profitability of the exporter at the rise.

At maturity, if the price is between 8.51 and 8.55, the transaction is made at the spot price and no option is exercised. If the price is below 8.51, the exporter exercises his PUT, and the transaction is made at the exercise price 8.51. If the price is higher than 8.55, the bank exercises its Call and the transaction is performed at the exercise price at 8.55.

→ On July 15, at maturity, the course is 8.54 and is between the two boundaries 8.51 and 8.55. Therefore, no option is exercised and the transaction is made at a price of 8.54. The exporter sells his currency and receives an amount of 8,540,000 MAD.

Case of an exotic option: a PUT deactivating barrier in the money → PUT kick out

An option PUT with a barrier differs slightly from a classical PUT option. Indeed, a PUT deactivating barrier option, as an example, has the same characteristics as a classical PUT, added to it a parameter that makes the option no longer valid if it affects a specific price. This price represents a deactivating barrier which, once reached, cancel the option. When the spot level of the underlying - USDMAD - reaches or crosses the barrier at any time during the life of the option, the PUT is automatically disabled and causes irretrievable loss of the amount invested in the PUT, whatever the future development of the underlying will be.

→ Premium to pay by the exporter = $1,000,000 * 1.80\% * 8.51 = 29276.41$ MAD

Spot of 05/15/13: 8.51

Strike of PUT: 8.51

Spot at 07/15/13: 8.54

Deactivating barrier: $8.51 * (1 - 0003) = 8.30$

→ The spot of July 15 did not reach the deactivating barrier of 8.30. Therefore, the option is available but will not be exercised by its holder (exporter) because the spot of July 15 is better than the strike of the PUT. Thus, the transaction will be carried out spot price of July 15: 8.54.

→ The exporter is winning in this situation since he could sell his currency at a higher price of 8.54 instead of 8.51. The amount of the gain is $(8.54 - 8.51) * 1,000,000 = 30,000$. He is, however, losing the premium: 29,276.41 MAD. The net gain is $30,000 - 29,276.41 = 723.59$ MAD.

Interpretation of Results

Using the analysis of simulation results of the case study above, we cannot draw any major conclusions because the situations and the results vary depending on economic

conditions and the price trend. However, we can deduce that from the point of view of options as a hedging instruments for exchange risk, these are quite expensive but exotic options are much more affordable and more attractive given the relatively low level of the premium they require to be paid compared to conventional options. In both cases, we opted for a barrier option (Call Kick-In to import, Put Out Kick-export), which are among the most commonly used options in international markets. Thanks to the pricer, we could price these two options by typing the actual data in the database. Therefore, we could get the option price with respect to strikes and barriers set. In this situation, the Put Kick-Out has been successful as it has achieved a positive gain in spite of the lost premium due to the option not being exercised. Unfortunately, the Kick-In Call has not allowed its holder to make gains. That being said, even if the exotic options are theoretically very attractive, they can be very risky. This explains why they are still not present in Morocco to be used by operators due to the risk-aversion philosophy of Moroccan investors.

Future of exotic options in Morocco

This being said, the exotic options have a promising future in Morocco. Since conventional exchange options are no longer sufficient to meet the hedging of several Moroccan operators; moving towards exotic options remains the best solution. Although a minority of Moroccan companies still use traditional exchange options in their import-export financing, their volumes are still significant. Exotic options should therefore be liquid on the Moroccan exchange market because they offer important advantages for the operator. In favor of the operator of course, but the bank, the issuer of options, also benefits. Indeed, it receives a relatively low premium by issuing an option and can also benefit if the price of the underlying at maturity are in its favor. Thus, both parties can benefit. The only obstacle now is to show to the Exchange Office that the implementation of exotic options in Morocco would be a success. It is obvious that the development of currency options as a hedging tool is crucial for the expansion of our capital market and our financial solidity, and for the reinforcement of our local currency. However, since the Moroccan currency is characterized by a fixed regime (basket EURUSD), the Exchange Office believes that exotic options should be in the heart of a floating regime to ensure their liquidity and demand. However, a strong and stable economy is required for the adoption of a floating regime which is not really the case for Morocco. Thus, it is important to avoid high volatility of the national currency and to ensure economic stability. This is why the implementation of exotic options is time-consuming, and the Exchange Office does not want to rush. The benefits of exotic options are obvious but their adoption requires a certain economic stability and an appetite for risk-taking.

Conclusion

At a time when competition is at its peak, the investor needs diversify increasingly contributing to the enrichment of the range of exotic options. However, if the benefits of these products are undeniable, their valuation and coverage is a real challenge.

The purpose of this project was to show how the implementation of exotic options in Morocco is advantageous to guarantee to investors a customized hedging. Indeed, throughout this report, I was able to distinguish between different hedging instruments, and it turned out that exotic options, compared to conventional options, are highly advantageous in terms of premium paid and received pay-off. However, buying these exotic options requires taking large risks. As we have seen in the simulation I performed, there must be some difference between the strike of the option and the underlying spot price to offset the premium and enjoy the option. Otherwise, a loss can be generated.

This being said, the implementation project of exotic options in Morocco should not be sidelined. Certainly, it requires time and a multitude of efforts since the exchange rate regime must move from a basket regime to a floating regime, which in turn requires a stable and a stronger economy. However, the benefits of its implementation are interesting.

A logical continuation of this work would be to focus on the analysis of the change from an exchange regime in Morocco into a floating regime.

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EAST AFRICAN COMMUNITY'S TRADE POTENTIAL AND PERFORMANCE WITH EUROPEAN UNION: A PERSPECTIVE OF SELECTED FRUIT AND VEGETABLE COMMODITIES

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Abstract

Based on the impressive growth trend within the export-driven horticulture sector over the past 2-3 decades among the East African Community (EAC) member states, this paper aims at predicting the trade potential and performance of a selected fruits and Vegetables (FVs) within the European market. Within the gravity model framework, based on the Zero Inflated Poisson (ZIP) estimator, we use the *out-of sample* approach to predict potential trade flows of FVs by using highly disaggregated panel data. In light of ascertaining trade performance of EAC member states' FV commodities within the EU market, we use the Relative Difference index. Empirical results reveal that Asparagus from Kenya has room for trade expansion across all the EU-member states while Beans and pepper from Uganda also have a large un-exploited market within the EU market. Similarly, Beans from Tanzania also have room for trade expansion across many EU member states. Results further revealed that EAC member states exhibit poor trade performance within the EU-market in the various FV commodities, which suggests that there exists some barriers to trade between the EAC and EU. Thus, it is incumbent upon EAC member states to foster trade cooperation in horticultural commodities with the EU member states.

Keywords: Fruits and vegetables, Trade potential, Trade performance, East African Community, European Union

Introduction

Over the past 2-3 decades, the East African Community (EAC) has registered a drastic increase in the volume of horticultural exports, particularly Fruits and Vegetables (FV) to the European Union (EU). To this effect, UNCTAD (2008) postulates that this impressive trend has led to the involvement of many small-scale farmers in the production of FVs, hence, contributing towards poverty alleviation and rural development. During the same period, FAO (2005) reckons that the FV exports have experienced high growth rates and better prices relative to the region's traditional Agricultural exports, such as coffee and cotton, among others. Considerably, the FV sub-sector has attracted a large number of smallholder farmers in the production of FVs, with the sole aim of exporting to Europe. The EU is the key destination market for FVs from East African countries. For instance, the value of Uganda's exports to the EU increased by more than fivefold from \$1.5 million in 1996 to over \$8 million in 2006.

Within the EU, FV exports are mainly destined for wholesale markets in the United Kingdom and to small supermarkets in the Netherlands. The commonly exported FVs from

the EAC include; off-season fruits (citrus fruit, pears), tropical fruits (bananas, pineapples, avocados, mangoes and papayas), an assortment of vegetables, such as asparagus, beans, peas, green chilies, sweet and hot peppers, mixed vegetables, okra snow peas and Asian vegetables (UNCTAD, 2008), among others.

With due acknowledgement, some studies (Shinyekwa and Othieno, 2013; Ebaidalla and Yahia, 2013; Rojid, 2006) analysed the trade potential of some EAC's states in one way or another. However, such studies did not focus on the EU market to which the largest proportion of EAC's FVs are destined. For instance, the study by Shinyekwa and Othieno (2013) focused on Intra-East African Community trade while Ebaidalla and Yahia (2013) and Rojid (2006) assessed the Common Market for Eastern and Southern Africa (COMESA).

Furthermore, these studies were based on either aggregated data across sectors or cross sectional data (*see* Rahman, 2009; Rojid, 2006; Shinyekwa and Othieno, 2013). Implicitly, general results founded on aggregated data may be misleading, given that they do not give the actual insight into potential markets for trade expansion for highly disaggregated commodities. Moreover, Egger (2000) argues that analysis based on cross-sectional data leads to inconsistent estimates. Thus, simulated trade potentials based on inconsistent estimates may also be misleading. The misleading aspect is attributable to the fact that cross sectional data is highly susceptible to severe model misspecification problems, given that it omits the time dimension which is vital in capturing variations over time (Egger, 2000; Matyas, 1997).

Worse still, the few studies (Ebaidalla and Yahia, 2013; Shinyekwa and Othieno, 2013; Rojid, 2006) that include at least one of the EAC states do not take into account of the zero trade flows within matrix. However, omission of the zero trade flows is associated with loss of important information that could influence the estimated results. Lastly, no study has been come across deliberating to predict EAC's trade potentials at sector level. Therefore, there exists a general knowledge gap about the trade potential of EAC member states with their EU trade partners. This void presents a key for policy makers in designing informed trade-related policies. Similarly, inexistence of such vital information for the business community increases the burden of identifying apt trade partners so as to maximize returns to their investments.

Hence, this study aims at predicting the trade potential and performance of EAC member states in FVs within the EU-15 market³⁹, by using highly disaggregated panel data. Achievement of this objective will provide an insight into the specific FV commodities that exhibit room for trade expansion within the EU, as well as an indication of EU member states with which the EAC member states can expand their trade.

The rest of the paper is organised in five sections as follows: Section two outlines stylized facts about the East African community. Section three provides a brief overview of trends in FVs trade with different destination markets. Section 4 presents a critical review of the relevant literature regarding estimation of potential trade and performance while the research methodology is outlined in section five. In section six, we provide the empirical results as section 7 is devoted to conclusion and policy implications.

Stylized facts about the East African community

East African Community (EAC) is a regional intergovernmental organisation, comprising of five countries, *viz*: Burundi, Kenya, Rwanda, Tanzania and Uganda. EAC's secretariat based in Arusha, Tanzania. The EAC was established upon signing a treaty on 30 November 1999 but it was enacted into force on 7 July 2000. Originally, establishment of the

³⁹Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom,

community was ratified by only three states (Kenya, Tanzania and Uganda). However, on the 18th day of June 2007, Rwanda and Burundi acceded to the EAC Treaty and became full members of the Community with effect from 1 July 2007 (EAC, 2014).

The EAC was established as a Customs Union in 2005 but became a fully fledged union, characterized of with zero internal tariffs with effect from 2010. Notably, all EAC states are members of the WTO. Exports from the EAC to the EU are skewed towards agricultural commodities. Such traditional cash crops include; coffee, tobacco and tea while non-traditional cash crops include: cut flowers, fish, fruits and vegetables, among others. On the other hand, EAC imports from the EU are mainly dominated by machinery and mechanical appliances, equipment and parts, vehicles and pharmaceutical products.

An overview of trends in FVs trade with different destination markets

The past two decades registered an increasing volume of global agricultural trade from the EAC, with a rise in high-value non-traditional cash agricultural commodities like fruits and vegetables, among the traditional cash crops. Figure 1 shows trends of fruit and vegetable exports against the traditional agricultural commodities coffee, tea, tobacco, cashew nuts and cotton from Uganda, Kenya and from Tanzania. Ardently, the figure depicts that whereas exportation of the traditional cash crops is on a declining trend, exportation of fruits and vegetables from the EAC is on a gradual but steady rise.

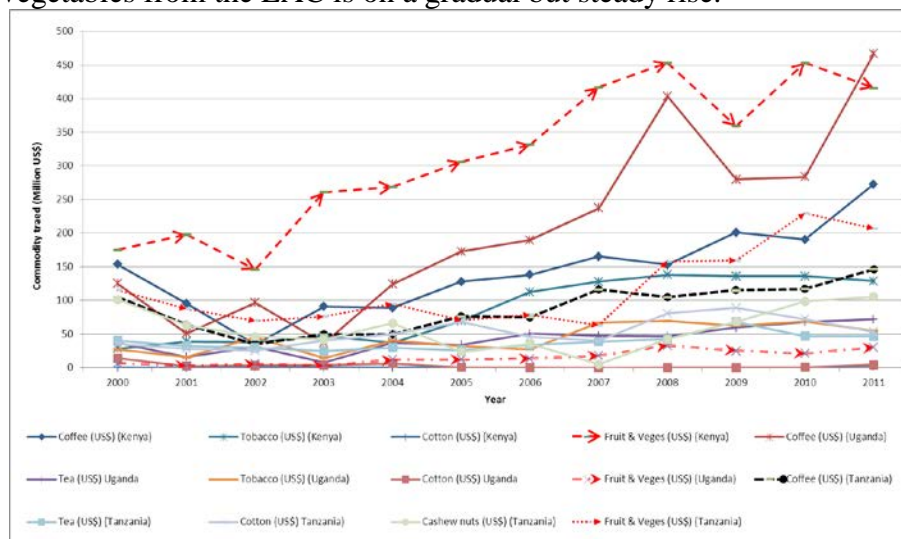


Figure 1: Fruits and vegetable export trends against selected traditional cash crops at country level
Source: FAO database (2013)

A critical analysis shows that fruit and vegetable exports in Kenya generally surpass coffee, tobacco and cotton by approximately 30, 76 and 99 times, respectively. In Uganda, exportation of fruits and vegetables only out-weighs cotton exports (by 55 times). In the case of Tanzania, it is also evident that since the early 2000s, fruit and vegetable exports have dominated the traditional cash crops. Statistics reveal that the fruits and vegetable sector realized a drastic increase in exports between 2007 and 2011, accounting for more than 200% rise (from 62,857 million US\$ in 2007 to 206,402 million US\$ 2011) (FAO database, 2013).

According to Agribusiness East Africa (2013) the European Union (EU) remains the key export market for FVs from the EAC member states. Fresh fruit and vegetable exports are mainly destined to specific ethnic buyers within the EU. The Common Market Eastern and Southern Africa (COMESA), the Middle East, and East Asia Community countries are the other major destination markets of FV commodities from EAC member states. Table 1 shows the main FV export destination markets, disaggregated by the monetary value of imports by the leading trade partners as by the end of 2011.

On the other hand, EAC member states also import some FV commodities from other countries. For instance, the International Trade Center (ITC) database (2013) shows that during 2012, Uganda imported FVs amounting to about 73, 63 and 24 thousand US dollars from France, Netherlands and Italy, respectively. Kenya also imported FVs estimated at 2.4 million US dollars, from France, Netherlands, Italy and the United Kingdom among other European Union (EU) countries. Similarly, an estimated 0.41 million US dollar worth of horticultural commodities were imported by Tanzania from the EU, mainly from Belgium, Netherlands, United Kingdom and Italy.

Table 1: Major export destinations of EAC member states' FV commodities as at December 2011

Export market	Exporter	Top 2 partners in the market	Value of trade ('000 US\$)		Total value ('000 US\$)
			HS-07	HS-08	
EU-27*	Kenya	United Kingdom	150,384	5,107	155,491
		Netherlands	32,752	5,559	38,311
		France	15,409	10,166	25,575
	Tanzania	Netherlands	4,139	7,396	11,535
		United Kingdom	661	1,715	2,376
	Uganda	United Kingdom	3,644	121	3,765
		Netherlands	859	1	860
Middle East	Kenya	UAE	5,429	14,124	19,553
		Saudi Arabia	203	4,198	4,401
	Tanzania	UAE	5,119	1,507	6,626
		Saudi Arabia	62	689	751
	Uganda	Oman	115	2	117
		Bahrain	13	46	59
COMESA	Kenya	Uganda	651	293	944
		Sudan	409	104	513
	Tanzania	Kenya	24,469	25,735	50,204
		Rwanda	1,179	115	1,294
	Uganda	Kenya	10,473	654	11,127
		Sudan	2,676	29	2,705

EU-27* denotes the 27 members of the European Union. UAE denotes United Arab Emirates

Source: International Trade Center (ITC) database (2013)

Generally, statistics divulge that EAC member states trade balances are not in a deficit, *that is*, countries actually import less FVs as compared to the exports from the same sector. As illustrated in Figure 2 below, since the year 2000, Kenya and Tanzania have had an increasing positive trend of trade balance in fruits and vegetables. Kenya's lowest positive trade balance, estimated at about 150 million US dollars was observed in 2000 while the maximum of 408 million US dollars was registered in 2008. Between 2007 and 2010, Tanzania recorded the most drastic rise in trade balance (77%) from 49 million US\$ to 213 million US\$.

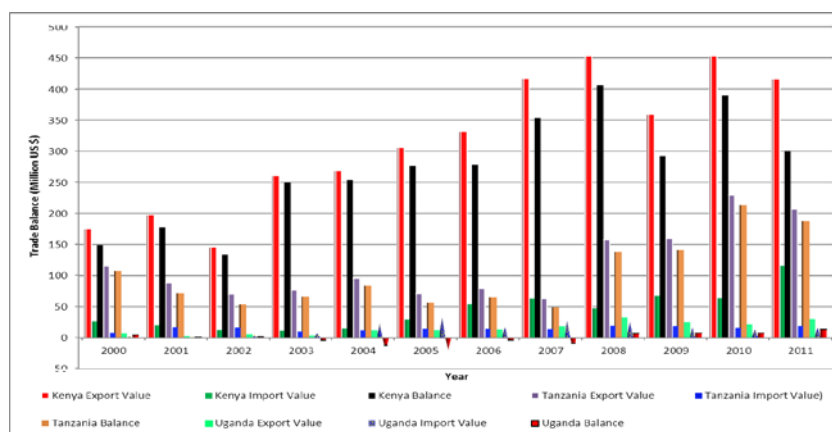


Figure 2: East Africa's trade balance in fruits and vegetables at country level

Source: International Trade Center (ITC) database (2013)

Of the three EAC member states, it is only Uganda which registered a deficit in fruits and vegetable trade balance from 2003 until 2007 but a positive trend was restored in the subsequent years thereafter. Uganda's largest trade balance deficit of about 21 million US\$ was experienced in 2005.

Brief literature review

The term trade potential refers to the maximum possible trade that can be achieved (Armstrong, 2007). It is used to predict the hypothetical level of trade, in assumption of frictionless and free trade under given conditions at a certain time. Within the gravity flow model framework, existing literature reveals that there are two methods (*In-Sample* and *Out-of sample*) used to simulate trade potential. However, most scholarly work (Gul and Yasin, 2011; Karagoz and Saray, 2010; Batra, 2006; Rojid, 2006; Rahman, 2009) employ the *Out-of-Sample approach*. The Out-of-sample approach entails two steps in simulating potential trade flows. Firstly, a specified model of determinants of trade flows with particular trade partners are ascertained. In the second step, the estimated coefficients are then used to predict trade flows.

Thereafter, the predicted trade volumes are compared with the actual trade flows so as to deduce trade performance. The trade performance may also be ascertained as a proportion of predicted trade to actual trade. A country's trade performance can be inferred by using either absolute or relative indicators. The absolute indicator is defined as the absolute difference between the predicted potential and actual trade flows. Strikingly, positive values suggest there exists untapped trade that could be harnessed (trade expansion) while negative values imply that actual trade flows exceed the predicted trade potential. On the other hand, the relative indicator is defined as the ratio of predicted trade potential to the actual trade flows. Relative values of greater than one imply that a country under consideration has a good trade performance with the partners, while the opposite is also true (Gul and Yasin, 2011).

For instance, with the aim of estimating trade potentials of COMESA member countries within the COMESA region, Rojid (2006), used panel data of 21 years to estimate unilateral trade flows from 147 exporting countries. Empirical results reveal that there was limited trade potential within the region but Angola and Uganda still exhibited more room for trade expansion within the region. Similarly, Karagoz and Saray (2010) employed a sample of 23 APEC countries to determine Turkey's trade potential. Study findings divulge that Turkey had a high potential of expanding her trade with countries like Papua New Guinea, Peru, Mexico and Brunei, among others.

Methodology

The study was based on the three EAC member states (Kenya, Tanzania and Uganda) who originally ratified the establishment of the community. Furthermore, the study focusses on two FV commodities (*at HS-6 Digit level*) from each country, with the exception of Uganda for whom three commodities are considered. Choice of the selected commodities was based on Lubinga's (2014) empirical results of export competitiveness of East Africa's FV commodities within the EU market. By making use of Lubinga's results, two basic principles were employed to select commodities for each country. (i) If the commodity exhibited an average export competitiveness index (*Revealed Comparative Advantage (RCA)*) of greater than one across all the three EAC member states, and (ii) if the commodity revealed the highest RCA amongst all commodities exported from a given country. Thus, Table 2 presents the selected FV commodities at country level. Other data sources included:- the ITC-Market Access Map (MAcMap) database, the World Bank Development Indicators (WBDI) database, and the worldatlas.

Table 2: Selected FV commodities with high export competitiveness in the EU market

Country	HS 6- Digit code	Commodity description	Mean RCA
Kenya	070920	Asparagus, fresh/chilled	8,504.32
	070820	Beans (Vigna spp., Phaseolus spp.)	3.70
Tanzania	070990	Vegetables, n.e.s. in 07.01-07.09 fresh/chilled	24.60
	070820	Beans (Vigna spp., Phaseolus spp.)	2.23
Uganda	070960	Fruits of the genus Capsicum/ Pimen	27,668.87
	080300	Bananas, including plantains, fresh/dried.	25.98
	070820	Beans (Vigna spp., Phaseolus spp.)	1.23

Adapted from Lubinga (2014)

Diagnostic tests

Given that the analysis was based on highly disaggregated (HS-6 Digit level) data, four tests (Normality test, over-dispersion test, Pearson's correlation and Levin-Lin-Chu (2002)) were used to ascertain data properties prior to estimating the gravity model. The normality test and the over-dispersion tests were used to examine if the data abrogated the normal distribution and equidispersion assumptions, respectively. On the other hand, the Pearson's correlation test was used to examine if the variables are susceptible to multi-collinearity while the Levin-Lin-Chu (2002) test (hereafter, **LLC-test**) was to test for unit roots of panel datasets. Walker and Madden (2008) argue that multi-collinearity between any two different variables ranges between -1 and +1 while the relationship between a variable with itself is +1. Correlation values equating to zero imply that there is no linear relationship between those variables. As a rule of thumb, scholars (Anderson *et al.*, 2008, Griffiths *et al.*, 1993) note that if the value is not greater than the threshold value of 0.7, then the available data does not pose statistical estimation problems.

The LLC-test, proposed by Levin, Lin, and Chu, (2002) allows for heterogeneity of the intercepts across members of the panel. The test is computed basing on the average individual augmented Dickey-Fuller (ADF) t-statistics across cross-section units (Dickey & Fuller, 1979). The LLC-test examines the null hypothesis that each individual time series in the panel is integrated. On the other hand, the alternative hypothesis is that all individual time series are stationary. Notably, variable is said to be integrated of order I(1) if it must be differenced once to become stationary. The integration test is based on the following supporting equation:

$$\Delta y_t = \beta + \delta t + \psi y_{t-1} + \sum \zeta_i \Delta y_{t-1} + \eta_t \dots \dots \dots (1)$$

Where (y_t) is the relevant time series variable, (t) is a linear deterministic trend and (η_t) is an error term with zero mean and constant variance. The general regressions are based on Ordinary Least Squares (OLS) estimator. Thereafter, the estimated error terms from the final co-integration regressions are tested for unit roots using the tests. The lagged term (Δy_{t-1}) is included to make certain that the residuals are white noise.

Predicting trade potential

For each commodity, prediction of trade potential of EAC member states within the EU market was explored using the gravity model, which researchers (Linder, 1961; Linnemann, 1966; Anderson and van Wincoop, 2003) commend to be advantageous in assessing various variables on trade flows over other approaches. We used a two-step, *out of sample* approach to calculate each EAC member's trade potential in exporting a selected commodity to the EU market.

Firstly, we estimated the specified model below, based on panel data for a period of seven years.

$$M_{ijt} = \beta X + \mu_{ij} + \lambda_{ijt} \quad (i = \text{Kenya, Tanzania \& Uganda}; j = 15 \text{ EU-member states}; t = 2005-2011) \dots \dots \dots (2)$$

Where M_{ijlt} denotes the monetary value of commodity l from the i th EAC member state to j th EU member state in year t in thousand US Dollars. This dependent variable is in a semi-log form so as to take into account of zero trade flows, given that the natural logarithm of zero is undefined. β represents a vector of parameter estimates.

X is a vector of explanatory variables which include:- the natural logarithm of current Gross Domestic Product (GDP) of each i th EA state and j th EU member state in US Dollars; distance between the economic centres of EAC member states (Nairobi for Kenya, Dodoma for Tanzania and Kampala for Uganda) and their j^{th} trading partner's commercial centre in Miles; preferential treatment granted under the EU-Generalised System of Preferences; annual inflation rate of each EAC member state; trade facilitation for each EAC member state; governance in each of the EAC member state; foreign direct investment of each EAC member state in current US Dollars; a dummy variable ($D_{Lang_{ij}}$) represents having the same official language between any pair of trading partners between EAC member states and EU-15 member states.

To control for heterogeneity across countries, both a dummy variable and country time-invariant effects (μ_{ij}) were used. Other than estimating the effects of having a common official language on trade flows between a country pair, the dummy variable (D_{Lang}) was also used to overcome heterogeneity due to observable factors. The unobservable heterogeneity is overcome through the inclusion of country fixed effects (μ_{ij}). λ_{ijlt} is an idiosyncratic error term. In the second step, the obtained parameter estimates for each commodity at country level were used to simulate trade potential (Wang and Winters, 1992; Hamilton and Winters, 1992; and Brulhart and Kelly, 1999). A negative value implies that there exists un-exhausted export potential, hence suggesting existence of supportive evidence that there is room for trade expansion. On the contrary, a positive value implies that there is hardly any room for expansion of trade.

Predicting trade performance

In light of measuring the trade performance of EAC member states in exporting FVs into the EU market, the analysis employed is similar to that of Chen *et al.* (2007) and Amita (2004). Trade performance was evaluated using the *Relative difference (Rd)* Index. The index was computed as expressed in equation (3), while using the mean predicted trade value together and the mean actual trade value.

$$Rd_{ijlt} = \left(\frac{\psi_{ijlt} - \phi_{ijlt}}{\psi_{ijlt} + \phi_{ijlt}} \right) * 100 \dots\dots\dots (3)$$

Where Rd_{ijlt} denotes relative difference of each EAC state's trade flows with trade partner j . ψ_{ijlt} refers to the mean actual trade and ϕ_{ijlt} is the mean predicted trade. The index varies between -1 and 1, and it gives an insight into the future direction of trade (Chen *et al.*, 2007). Positive values imply that there exists good trade performance, an indication of cooperation between the trading parties.

Empirical results

Diagnostic test results

Tests results for normal distribution⁴⁰ and equidispersion⁴¹ assumptions indicate that FV import data series of the three EAC states abrogated the two assumptions. This implies that the existence of over-dispersion, coupled with distribution asymmetry problems rendered

⁴⁰See Appendix A (Normality test results)

⁴¹See Appendix B (Over-dispersion test results)

the use of ordinary econometric estimation inapt. On the contrary, Pearson's correlation⁴² test results show no supportive evidence for the existence of serial correlation problems, given that the correlation matrix values were not greater than the threshold value of 0.7. However, diagnostic test results for unit roots presented in Table 3 divulge that all commodity series were integrated of first order, with the exception of Beans (070820) from Uganda, Asparagus (070920) from Kenya and Vegetables (070990) from Tanzania. Series of these commodities were inherently stationary. All the other variables specified within the model were also found to be significantly stationary. Hence, the the null hypothesis of a unit root in the series was reject in favour of the alternative hypothesis that all the series are stationary.

Table 3: Panel Unit Root test results by commodity and country

Variable (^{'000 US\$})	Kenya	Tanzania		Uganda	
	Levels	Levels	I(1)	Levels	I(1)
070820 Beans (M_{ijt})	-11.20***	2.95	-6.41***	0.22***	
070920 Asparagus (M_{ijt})	0.25***	-	-	-	-
070990 Vegetables (M_{ijt})	-	0.24***		-	-
070960 Peppers (M_{ijt})	-	-	-		-2.99***
080300 Bananas (M_{ijt})	-	-	-		-5.0743***

***, **, * denote significance at 1%, 5% and 10% level respectively.

Source: Author's own calculations

Having ascertained the properties of the various data series at country level, we proceeded to predict potential trade by commodity for each EAC member state.

Predicted Trade potential

Given the fact that our analysis was based on highly disaggregated (HS-6 digit level) datasets at country level, which were characterised of excessive zero trade flows, over-dispersion as well as failure to meet the normal distribution assumption, we employed the Zero-Inflated Poisson (ZIP) model to generate the parameter estimates. ZIP is a modified version of the Poisson model, renown to deal with an excessive number of zero trade flows as well as over-dispersion within the data set. Furthermore, the model is not susceptible to heteroskedasticity (Wooldridge, 2002). With the exception of asparagus (-0.45 million US\$) from Kenya and beans (-4,100 US\$) from Uganda, results presented in Table 4 generally depict that there exists no un-exhausted trade between EAC states and the EU-15 market for the selected FV commodities. In the case of Kenya', results imply that the current asparagus imports into the EU-market is still way too little by approximately 0.45 million US dollars while Uganda's bean imports are also still less by about 4,100 US dollars than the quantities should be traded.

Table 4: Mean Trade potential of selected FV commodities for EAC member states with the EU-15 states

EU-15 states	Kenya (^{'000 US\$})		Tanzania (^{'000US\$})		Uganda (^{'000 US\$})		
	Beans	Asparagus	Beans	Vegetables	Beans	Bananas	Pepper
Austria	127.5	-467.4	-5.7	0.9	15.9	7.8	1.1
Belgium	8,043.7	-466.9	423.6	1.4	15.6	514.9	425.7
Denmark	3.4	-474.6	-5.2	-3.1	6.3	28.0	1.9
Finland	66.8	-469.6	10.2	-4.5	16.2	1.3	-0.6
France	17,981	-459.5	64.4	2.9	-14.9	5.6	169.4
Germany	9172.0	-455.6	-2.2	3.8	-19.3	114.4	178.5
Greece	-7.9	-458.5	-7.9	6.9	-72.5	-7.0	-2.4
Ireland	363.9	-473.2	-7.7	-11.6	25.5	2.4	15.2
Italy	121.6	-466.2	-6.3	7.3	-53.5	-7.3	0.3
Luxembourg	857.1	-469.6	-9.0	-11.8	9.8	-2.4	-3.5

⁴²Available on request

Netherlands	20,331	-463.2	550.2	-0.1	-0.3	29.7	731.3
Portugal	6.4	-468.2	-5.6	-2.8	-4.2	-0.5	-3.1
Spain	11.4	-469.4	-5.4	2.7	-24.7	6.2	8.8
Sweden	8.4	-470.8	-4.9	-3.1	21.7	30	-1.2
UK	85,164	-184.2	2,071	199.5	16.8	2,233.2	2,284.6
Mean EU-15	9,483.4	-447.8	204.0	12.5	-4.1	197.1	253.7

Source: Author's own calculation

Implicitly, this means that Kenya's asparagus and Uganda's beans have a high trade potential within the EU-market. That is, there exists room for further trade expansion within the EU-market for asparagus and beans. This observation may be attributed to the fact Asparagus is among the few speciality vegetables enjoyed by consumers in the EU while Uganda's beans are renown for being organically produced. Conversely, results further reveal that actual EU imports of the other commodities exceeded the ideal tradable quantities. Kenya's beans registered the highest level of trade flows (*US\$9.5 million*) that surpassed the optimum level, followed by Uganda's pepper (*US\$ 0.25 million*) while vegetables from Tanzania ranked last (*US\$ 12,500*). Results imply that there is hardly any room for further trade expansion for these commodities, *viz:* beans (*for Kenya and Tanzania*); Vegetables (*for Tanzania*); Bananas and Pepper (*for Uganda*) with the EU-market.

At country level, study findings indicate that Kenya has un-exhausted trade potential in bean imports with Greece (*US\$ 7,900*) while un-exhausted trade potential in asparagus imports exists across all the EU-15 member states considered in this study. This suggests that there is supportive evidence for Kenya's trade expansion with Greece for bean imports and in all EU-15 member states for asparagus imports. For Tanzania, room for trade expansion in bean imports exists with Luxembourg, Greece, Ireland, Italy, Austria, Portugal, Spain, Denmark, Sweden and Germany. Similarly, provision for more vegetable imports from Tanzania still exists with Luxembourg (*US\$ 118,000*), Ireland (*US\$ 116,000*), Finland (*US\$ 4,500*), Portugal (*US\$ 2,800*), Netherlands (*US\$ 100*), as well as an estimated trade worth of 3,100 US dollars for Denmark and Sweden. This also implies that Tanzania has room for trade expansion with the above mentioned EU-member states in bean and vegetable commodities.

Results show that FV imports from Uganda (Beans, bananas and pepper), there exists un-exhausted trade potential with Greece and Portugal. Thus, trade in these commodities has the capacity to grow further. Findings may be attributed to the fact that the EU-15 market registered no beans and banana imports from Uganda during the 2005-2011 period. In the case of beans, other EU states that exhibited un exploited trade potential, hence existence of room for trade expansion include: Italy (*US\$ 53,500*), Spain (*US\$ 24,700*), Germany (*US\$ 19,300*), France (*US\$ 14,900*) and Netherlands (*US\$ 300*). In the case of bananas, Italy and Luxembourg presented a market of un-exhausted trade potential, estimated at 7,300 and 2,400 US dollars, correspondingly. Other than Greece and Portugal, Luxembourg (*US\$ 3,500*), Sweden (*US\$ 1,200*) and Finland (*US\$ 600*) also provide a ground for more trade expansion in pepper imports from Uganda.

Predicted Trade performance

We used the Relative difference index to determine the trade performance of the selected FV imports in the EU market from EAC member states. Results presented in Figure 3 depict that Kenya exhibits poor trade performance in asparagus within the EU-market, given that the estimated index is negative across all the EU-15 member states. However, Kenya generally exhibits good trade performance (38%) in her bean imports into the EU-15 market.

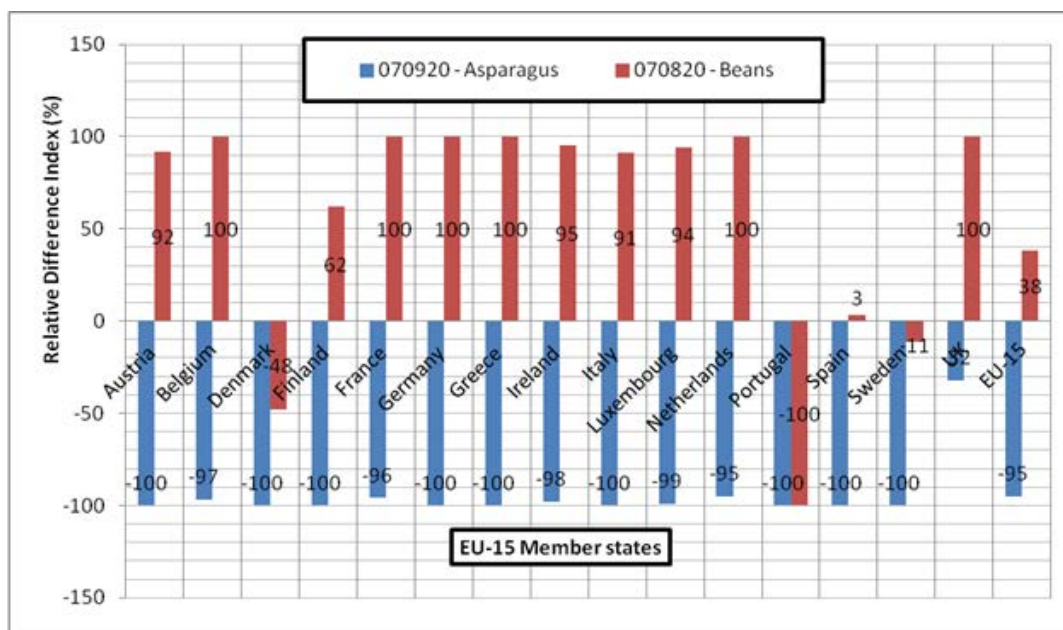


Figure 3: The Relative Difference Index for Kenya's beans and asparagus exports with the EU-15 member states
 Source: Author's own calculation

Detailed results also show that Kenya has a poor trade performance with Portugal (100%), Denmark (48%) and Sweden (11%) in bean imports. This poor performance may be associated with language barriers, among other factors. Findings further show that Kenya has very good trade performance with all the other EU-15.

Generally, findings show that Tanzania has a poor trade performance with the EU-15 market for both vegetable (83%) and bean (45%). This may be due to the very few countries with which Tanzania trades within the European Union. Figure 4 illustrates that Tanzania has good trade performance in exporting of beans to Belgium (96%), Netherlands (97%), United Kingdom (UK) (99%) and Finland (14%). Worthwhile to note, UK is the only EU-15 member state with which Tanzania has good trade performance for both commodities. This observation may be associated with the fact that Tanzania was once a British protectorate, thus there exists long term trade relations between the two countries.

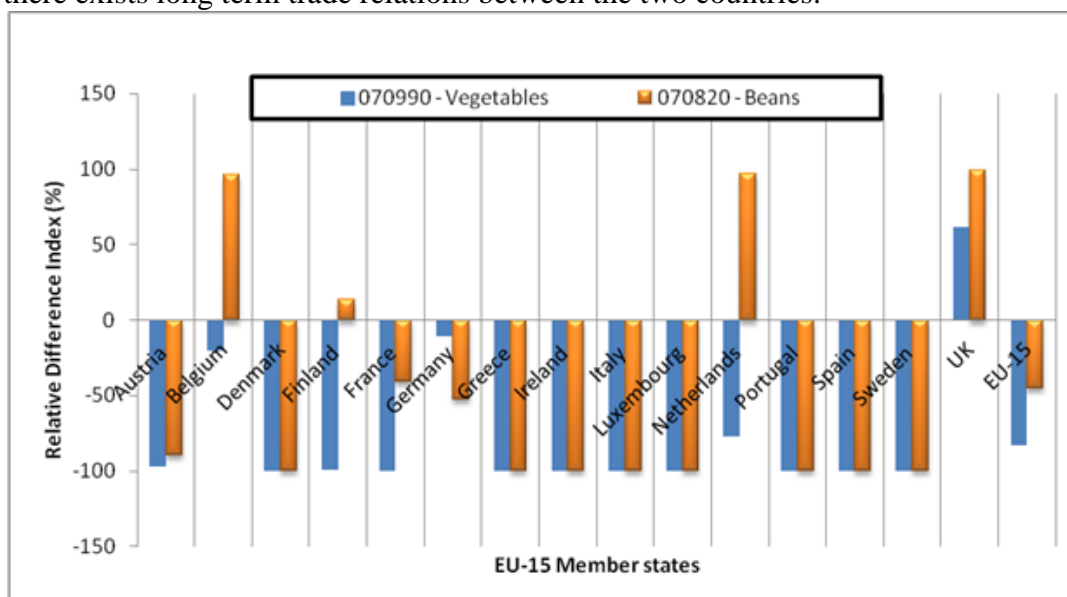


Figure 4: The Relative Difference Index for Tanzania's beans and vegetable exports with the EU-15 member states
 Source: Author's own calculation

Uganda's trade performance analytical findings depict that the country has a poor trade performance in all the three commodities with the EU in general. Worst trade performance was observed in imports of bean (74%), followed by pepper (11%) and then bananas at 6%. At commodity level, Uganda exhibited good trade performance trade in all the three horticultural commodities with Belgium and UK only. This may be attributable to the long-term colonial ties with Britain and similarity in language. Although English is not one of the three official languages in Belgium, it is widely spoken country wide as the second native language by the Belgians (Wikipedia, 2014). Conversely, results (Figure 5) indicate that Uganda has poor trade performance with Finland, Greece, Italy, Portugal and Spain in all the three commodities. The results thus imply that Uganda has more room to trade with these EU-15 member states in all the three commodities.

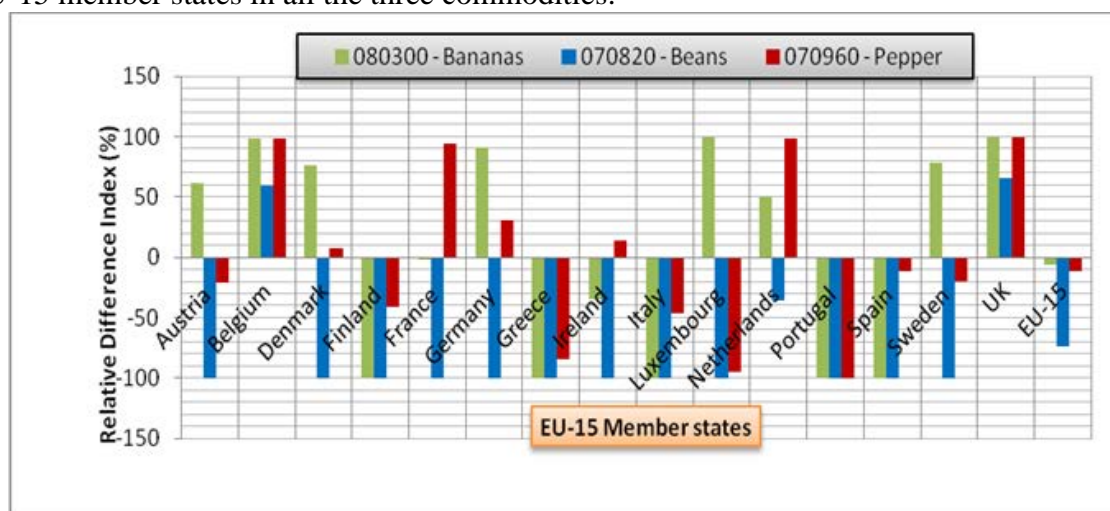


Figure 5: The Relative Difference Index for Uganda's beans, bananas and pepper exports with the EU-15 member states

Source: Author's own calculation

Conclusion and policy implications

In this paper, we aimed at predicting trade potential and performance of EAC member states within the EU-15 market. Generally, Kenya and Uganda exhibit supportive evidence for the existence of un realised trade potential. This implies that these countries can further expand their trade in the selected FVs within the EU-market. For Kenya, asparagus is a key commodity for further market expansion across all EU-member states while Uganda's opportunity in market expansion for beans and pepper lies in establishing stronger trade partnerships with EU states like France, Germany, Luxembourg, Portugal and Greece, among others.

Other than Belgium, Finland, France, Netherlands and the United Kingdom, all the other EU member states have room for trade expansion for bean imports from Tanzania. In light of trade performance, results divulge that all the three EAC member states have poor trade performance with the EU-market in the various FV commodities. This suggests a possibility that there exists an array of trade barriers which curtail EAC member states' imports into the EU-market. As a policy implication, it is incumbent upon the governments of the various states within the EAC and EU to foster trade cooperation in FV commodities.

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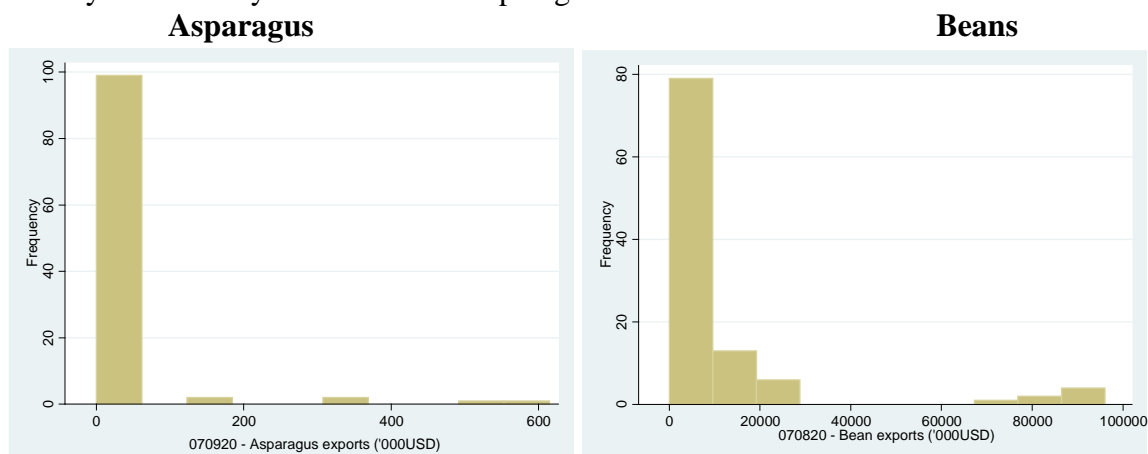
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Wang, Z., and Winters, A.L. 1992. The Trading Potential of Eastern Europe, *Journal of Economic Integration*, 7: 113-136.

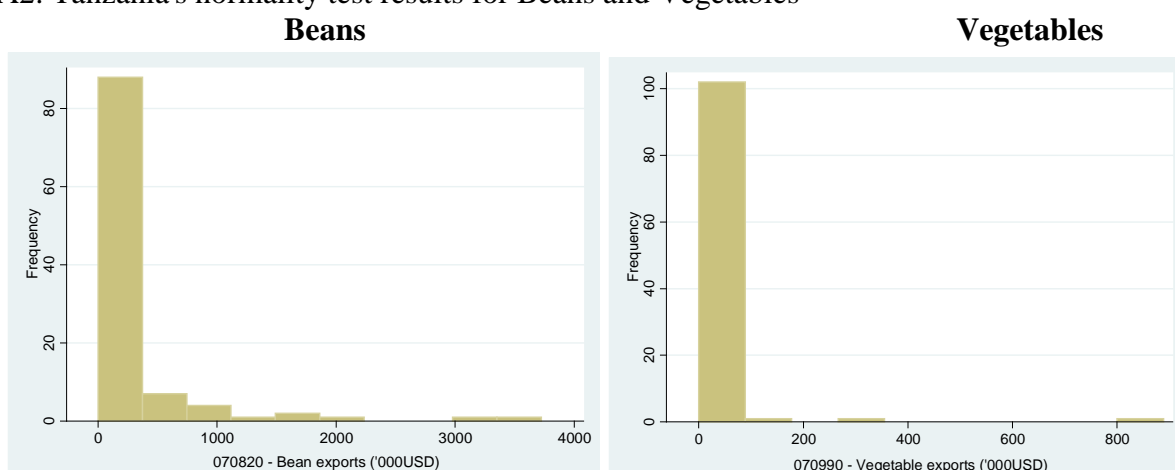
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Appendix A: Normality test results for FV commodities for each EAC member states

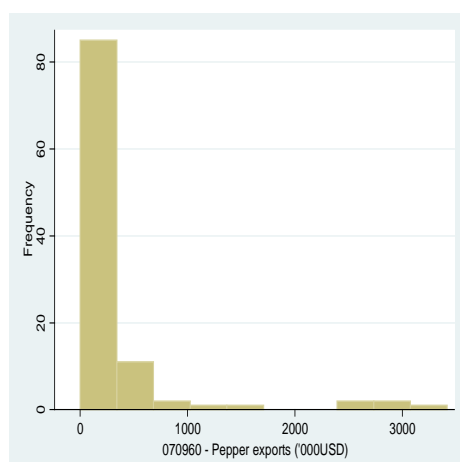
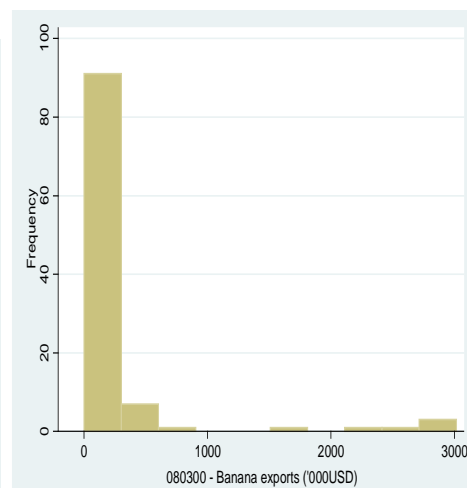
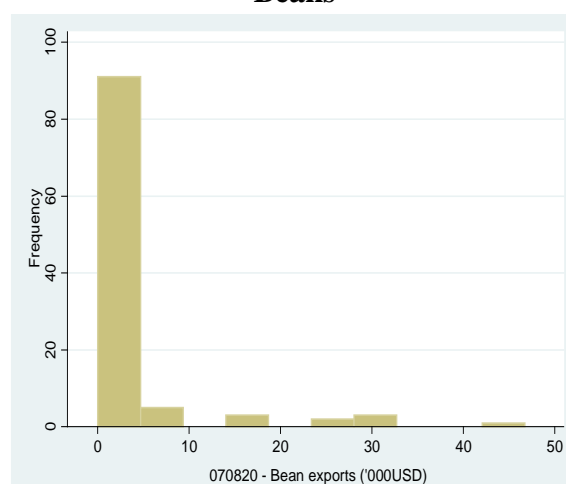
A1: Kenya's normality test results for Asparagus and Beans



A2: Tanzania's normality test results for Beans and Vegetables



A3: Uganda's normality test results for Pepper, Bananas and Beans

Pepper**Bananas****Beans****Appendix B: Over-dispersion test- results for the FV commodities**

Country	HS 6- Digit code	Description	Mean ('000 US\$) (n=105)	Variance
Kenya	070820	Asparagus, fresh/chilled	9,488.14	4.68e+08
	070920	Beans (Vigna spp.)	22.10	8,017.33
Tanzania	070820	Vegetables, fresh/chilled	210.14	353,270.4
	070990	Beans (Vigna spp.)	13.88	8,393.40
Uganda	070820	Peppers	2.67	64.85
	070960	Bananas	257.82	422,124
	080300	Beans (Vigna spp.)	200.11	373,606

POST-COLD WAR STATE INDUSTRIALIZATION AS A MEANS OF ECONOMIC GROWTH IN EAST ASIA VERSUS EASTERN EUROPE

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Abstract

The process of industrialization is often associated with an important time period in a nation's economic development as it shifts from small-scale agriculture to prosperity. Historically, the rise of the manufacturing sector in a country has foreshadowed subsequent growth and power, and many countries in Eastern Europe have seen these newfound opportunities to progress economically since the Cold War ended. Asian countries have similarly experienced newfound economic development because of the shift of production to underdeveloped areas along with the rise of outsourcing and offshoring in international manufacturing. While many studies have been conducted assessing the rise of industry as it relates to state and regional growth, comparative assessments of the contributions of the manufacturing sector to the economic rise among underdeveloped Asian nations as compared to Eastern European countries as a region have not been quantified. This study will analyze these two economically evolving areas in an effort to compare the overall economic growth since the fall of the Soviet empire as well as the extent to which that economic growth that can be attributed to the manufacturing sector. Trends in domestic manufacturing labor rates in these areas will also be assessed for this time period.

Keywords: International manufacturing, industrialization, development, culture, global economics

Introduction

The process of industrialization is often an important time period in a nation's economic development as it shifts from small-scale agriculture to prosperity. While many studies have been conducted assessing the rise of industry as it relates to state and regional growth, particularly in Western nations, comparative assessments of the contributions of the manufacturing sector to the economic rise among underdeveloped Asian nations as compared to Eastern European countries as regions have not been quantified. Because of changes in the political environments of many nations since the end of the Cold War, countries in these areas have found themselves in position to develop a healthy industrial sector to drive their economies forward. This study will analyze these two economically evolving regions in an effort to compare the overall economic growth since the fall of the Soviet empire as well as the extent to which that economic growth can be attributed to the manufacturing sector.

Background

Industrial development, an important milestone for a country as it achieves prosperity, tends to be preceded by a healthy agricultural sector. Without successful farming, the prospects for a subsequent manufacturing boom and economic prosperity may remain limited (Sergi et al., 2007; Naude & Szirmai, 2012). The rise of the manufacturing sector and of industrial capabilities in a country generally has foreshadowed subsequent growth and power,

and throughout history, industrial capabilities and exports precipitate economic power and influence (Grotewold, 1971; Mountjoy, 2009).

The term “industrialized” has come to be synonymous for a country with economic development. Coined in the mid-1970s by Western countries which previously advanced in industry, the term “newly industrializing country” (NIC) was used to classify countries that were rapidly expanding their manufacturing output (Gereffi, 1989, p. 507). More recently, industrial development has been a defining feature of what has been dubbed the ‘great takeoff’ (Naude & Szirmai, 2012, p. 2) of formerly underdeveloped nations as they move from underdeveloped to industrialized.

This process of industrialization continues to be an important component of the rise in power of a nation in the modern globalized world. Today, it is more common that an underdeveloped region may achieve this economic progress through industrialization (Chanda & Putterman, 2007). Since the 1950s, the gap between developed and developing countries in terms of industrialization has been narrowing. Manufacturing as a share of GDP has increased sharply in the “vast majority” of underdeveloped countries (Gereffi, 1989, p. 523). The World Economic Forum (2012) indicated that the “globalization of manufacturing has been a key driver” of a rising standard of living for the growing middle class in emerging nations (p. 3) and reported that industrialization has been “immensely important” in a country’s economic development, with “over 70% of the income variations of 128 nations” (p. 3) explained by their manufacturing output alone.

Hudson (2002) observed the relocation of international production locations today due to manufacturing decentralization. Industrialization has spread to underdeveloped regions because of the globalization of production. Multinationals build factories in areas of the world in which the parent company may not be based, resulting in the emergence of a decentralized global manufacturing system in which production operations today can be “dispersed to an unprecedented number of developing as well as industrialized” areas (Gereffi, 1989, p. 509; Sergi et al., 2007).

In addition, movements of capital have become increasingly mobile in today’s decentralized industrial world, and as a result, competition to attract industry from outside sources has risen in salience. Today, it is commonplace for multinational companies to pit various sites against each other in order to receive the best possible bid for land and factory locations (Sun, 2004; Kuchiki & Tsuji, 2011). The World Economic Forum (2012) indicated that “competition between nations to attract foreign direct investment will increase dramatically” (p. 4). As Jensen (2006) noted, “Multinationals search the world for investment opportunities, playing governments against one another ... in an attempt to obtain higher returns” (p. 69). This trade and Foreign Direct Investment (FDI) result in positive spillover effects on the host economy, or a common policy of a “high and rising standard of living” (Richardson, 1990, p. 112). Murrell (1992) also noted the positive spillover effects that ensue when multinationals are allowed to operate and make profits, as the health of the economy has increasingly been linked to this international capital, as FDI is a way of compensating for the lack of domestic investment, which often helps ‘kick-start’ the process of economic development in an underdeveloped area (Economics, 2013).

In recent decades, some regions around the world have followed the traditional path of raising their standards of living through industrial development (Chandra, 2004). Government policy and other strategic initiatives have had a direct impact on this process. Murrell (1992) reported that that economic activities being highly dependent upon politics have been the norm. This economic liberalization through government policies has been adopted concurrently by countries in both East Asia and Eastern Europe, to various extents.

Eastern European and East Asian countries have been rising rapidly in industrialization. While countries in Eastern Europe have seen these newfound opportunities

to progress economically since the Cold War ended, East Asian countries have experienced similar economic development because of the shift of production to underdeveloped areas along with the rise of outsourcing and offshoring in multinational manufacturing. High-producing manufacturing activities in industrial sectors from both of these areas have allowed them to progress in modern day industrialization as a “defining feature” of their economic advancement (Naude & Szirmai, 2012, p. 1).

East Asia

East and Southeast Asia (referred to in this paper as East Asia) has seen infusions of IFDI related to industry during recent decades. In 1989, Gereffi reported that growth in East Asia sparked a rejuvenation of “cross-regional research on development issues” (p. 506). This area has experienced the fastest rate of manufacturing value added (MVA) per capita since 1990 (UN, 2006). Since around that time, East Asia has been at the “receiving end” of outsourcing and deindustrialization from developing areas (Masuyama et al., 2001; Fan & Scott, 2003). Kelly (2002) noted the modern “rapid and recent” manufacturing process of East Asia (p. 395). Economists and development specialists have been intrigued by the East Asian experience as they attempt to understand how these high-growth economies have risen in economic strength (Gereffi, 1989).

This new manufacturing presence in East Asia has prompted sharp economic development and rapid overall economic growth in recent years (Fan & Scott, 2003; Chowdury & Islam, 2012). Heavy involvement by Asian federal governments (Kelly, 2002), which are “engaged actively” in the development of manufacturing (Akkemik, 2009, p. 1), have facilitated this trend. Fan and Scott (2003) noted this government-facilitated industrialization and attributed it to the rise of economic development in East Asia to “dense industrial regions as conduits of productivity” (p. 315). Fox et al. (2009) cited political and economic environments prompting massive changes that have been and are occurring. For example, Singapore has been especially aggressive in its state-created industrial policy and reliance on multinational corporations for the health of the economy (Jomo, 2003).

National governments in the East Asian region have gone to great lengths to establish macroeconomic stability in these economies in an effort to enhance the overall welfare of the nations (Akkemik, 2009; Racine, 2011). While federal governments generally make the important initial decisions to establish liberalization and economic openness and to provide laws enticing manufacturing development (Jomo, 2003; Kuchiki & Tsuji, 2011), local governments in most East Asian countries have had a major hand in facilitating industry and assigning investments to the best possible locales within the countries (Fan & Scott, 2003; Rajagopal, 2007).

Common characteristics of industrial strength in this area of the world include liberalization of markets, communications improvements, and decreased transportation costs (Masuyama et al., 2001; UN, 2006). Akkemik (2009) added that shared features that facilitate manufacturing development in East Asia include infrastructure, incentives, and government reform.

This rise in East Asian industrialization has also been characterized by a feminine workforce, including a controlled hostel-style of accommodations for workers (Kelly, 2002; Suehiro, 2008). Another defining feature of East Asian productivity growth includes the “absence of viable organized labor movements” (Kelly, 2002, p. 395). Kelly (2002) also indicated that these industries were characterized by light assembly, concentrated in garments and electronics, and were driven by FDI. By contrast, in the “more developed North (East) Asian economies, high end consumer electronics and IT product lines” have been the driver for industrial growth (Drysdale, 2012).

Fan and Scott (2003) noted that East Asian industrial growth can be partially attributed to “high levels of mutual proximity” (p. 297) with similar neighboring countries. This has made it easier to “acquire, process and act on information” regarding potential opportunities for development. Proximity to previously industrialized areas has also been a staple of industrial development, since exports can more efficiently be sent to nearby locals with the purchasing power to buy goods (Hiratsuka & Uchida, 2010). For example, the nearby Japanese and Australian markets have helped underdeveloped East Asian countries’ industrial development.

Drysdale (2012) predicts that in the future, competition across East Asia in higher-end production will intensify as the whole region lifts itself close to industrial-country income levels, and also will face the challenge of constantly innovating and becoming more efficient. The dynamics of East Asian productivity will continue to change into the future.

Eastern Europe

This paper will refer to those Central European and Eastern European countries formerly under Communist control as Eastern Europe. The collapse of the Soviet empire and the end of the Cold War initially prompted the newfound economic openness of these countries, and the transformation from centrally-planned to market-based systems of government has been the key component of this sudden rise (Sharma, 1997; Radosevic & Sadowski, 2004). Murrell (1992) identified the insignificance of activities in Eastern European multinational corporations in operations during the Cold-War era. These anti-capitalistic attitudes and policies of the past toward FDI have prompted Eastern European multinationals to lag decades behind their economic competitors in receiving ultimate benefits from its multinational organizations (Murrell, 1992; House of Commons, 2007).

Benkovskis et al. (2012) noted that Eastern European countries engaged in a catch-up process in export prices in the 1990s which was signaled by better product quality from their factories. However, stark differences remain in production capabilities between Western and Eastern European economies because overall competitiveness is still not sufficiently developed in Eastern Europe due to the many years of Communist philosophies (Lorentzen, Laki, & Widmaier, 1999; Sergi et al., 2007).

Since the end of the Cold War and the implementation of economic liberalization policies, some Eastern European countries have been more successful in the transition to modern economies and have industrialized faster (Good, 2004; Hamilton et al., 2005; Geddes et al., 2013). Lemoine (1998) noted that clothing was the engine that drove Eastern European industry when its production first started to take off in the early 1990s. In this model, fashion labels whose parent companies were based in Western Europe outsourced their production to Eastern Europe and then exported the products to Western Europe, as Eastern Europe, like East Asian industries, have had the advantage of being near industrialized areas with high disposable incomes. The “collapse of state socialism” has been cited as the critical phase “in redefining the spaces open to companies in Europe” (Hudson, 2002, p. 263). Eastern European governments that have reformed and restructured quickly and efficiently have been the most successful in industrial output and exports (Hotopp, et al., 2005; Hamilton et al., 2005). By 2001, The World Investment Report (UNCTAD, 2001) reported that Eastern European countries were on the verge of “establishing themselves as prominent players” in multinational industry. Eastern European governments have been continuing to liberalize their economies and provide more conducive environments for development and growth, as the “evolving map offers new opportunities to both companies and region” (Hudson, 2002, p. 263). Nevertheless, Hudson (2002) also noted the “sharper forms of regional uneven development” that exist in Eastern Europe today due to different stages of industrialization.

More recently, local content laws imposed by the EU which mandate that a certain percentage of components of a product be manufactured within Europe. This has prompted more production outsourced to Eastern Europe because Western European countries want low-cost production but still need assembly to occur in Europe (Jovanovic, 2007; Geddes et al., 2013). Furthermore, many multinationals outside of Europe have decided to establish operations in Eastern Europe in order to secure long-term partnerships within the EU and to gain a foothold in the European market (Hudson, 2002; Genov, 2013). Today, Eastern European industry is shifting from producing mostly commodities to making more technology-based and labor-intensive products (Hotopp et al., 2005; Hamilton et al., 2005). As in East Asia, Eastern European countries need to constantly become more efficient and innovate in order to compete globally. Consequently, philosophies of organizational leadership such as strategic management and six sigma that evolved over long stretches of time in Western countries are more likely to be quickly adopted and practiced today in Eastern European industrial organizations (Radosevic, & Sadowski, 2004; Leibo, 2012).

Similarities between the rise of Eastern European and East Asian industrialization, including government reform and decentralization of production operations, have prompted both regions to become key players in modern globalization. The amount of industry that can be attributed to this newfound economic prominence would be a worthwhile inquiry, particularly for those up-and-coming regional economies that hope to be key actors on the global stage in the future.

Methods/Results

United Nations (2013) classifications of regionalization were utilized to group countries in East Asia and Eastern Europe. Six countries were clustered in Eastern Asia, including China, Hong Kong Special Administrative Region, China-Macao Special Administrative Region, Democratic People's Republic of Korea, Mongolia, and the Republic of Korea. Eleven countries categorized in South-Eastern Asia, including Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste, and Vietnam. According to this database, only countries or areas with a population of at least 100,000 in 2010 were included. For this study, these Eastern Asian and Southeastern Asian lists were combined into one list for a total of seventeen countries.

Based on the same United Nations (2013) regional classification, 21 countries were listed for Eastern Europe, including Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Montenegro, Poland, Republic of Moldova, Romania, Russian Federation, Serbia, Slovakia, Slovenia, the former Yugoslav Republic of Macedonia, and Ukraine.

Table 1 shows the countries from East Asia and Eastern Europe utilized for economic assessment, utilizing the World Bank's (2013) Gross National Income (GNI) measures. The first year the countries were measured for GNI in our reference is included in the table. A disparity existed in the first years of the World Bank's reported income. This may be because they are more underdeveloped, less transparent in their economic dealings, recently shifting to a market-based system, or a combination of these issues.

Table 1. First Year of Gross National Income Reporting

Country Name	First Year of Measurement
Albania	'86
Belarus	'92
Bosnia and Herzegovina	'96
Brunei Darussalam	'06
Bulgaria	'82
Cambodia	'95
China	'62
Croatia	'92
Czech Republic	'92
Estonia	'89
Greece	'62
Hungary	'70
Indonesia	'69
Korea, South	'62
Laos	'86
Latvia	'89
Lithuania	'92
Macao SAR, China	'84
Malaysia	'62
Mongolia	'83
Montenegro	'02
Philippines	'62
Poland	'92
Romania	'89
Russia	'91
Serbia	'99
Singapore	'62
Slovakia	'86
Slovenia	'92
Thailand	'62
Timor-Leste	'02
Ukraine	'89
Vietnam	'89

Source: World Bank

The GNI of these countries from the most current year, 2009, "Atlas method" (current US dollars) was utilized. The World Bank utilizes the Atlas method to best assess economies of international countries in terms of US dollars. The 2009 GNI list was utilized for this study, as it provides the most recent calculation available for all countries. Only countries with \$10 billion current US dollars or more in GNI were utilized for purposes of this study, which meant that several were excluded from the list. These included eight from East Asia, including Brunei Darussalam (NA), Cambodia (\$9,661,123,094), Hong Kong (NA), China-Macao Special Administrative Region (NA), Laos (\$5,550,280,065), Myanmar (NA), Timor-Leste (NA), and Mongolia (\$4,361,085,320), and three from Eastern Europe- Moldova (\$5,567,601,226), Macedonia (\$8,982,962,269), and Montenegro, (\$4,149,281,952). As such, eight countries were left as the sample size from East Asia and 18 from Eastern Europe.

Table 2. Countries earning >\$10,000,000,000 current US dollars in Gross National Income, 2009

Country Name	2009 Gross National Income (current \$US)
Albania	12,633,829,791
Belarus	53,706,847,501
Bosnia and Herzegovina	17,704,249,761
Bulgaria	45,961,438,266
China	4,856,148,305,642
Croatia	61,027,008,531
Czech Republic	181,547,213,944
Estonia	18,846,451,681
Greece	327,702,840,996
Hungary	130,113,817,089
Indonesia	470,980,375,934
Korea, South	966,600,085,343
Latvia	27,936,465,203
Lithuania	38,095,192,460
Malaysia	201,838,702,030
Philippines	164,612,990,256
Poland	467,545,046,412
Romania	178,899,500,508
Russia	1,324,416,302,508
Serbia	43,939,315,833
Singapore	185,654,642,994
Slovakia	87,401,544,857
Slovenia	48,063,274,682
Thailand	254,743,101,251
Ukraine	128,920,179,469
Vietnam	87,665,684,763

As a means to assess economic growth rates, the year 1991 or the first tabulation reported thereafter was extracted. 1991 was utilized as a basis for the start of growth since it is considered to be the year that Communist regimes from the old USSR had the ability to fully liberalize their economies; this was also the year of analysis from the seminal Murrell (1992) study highlighting the processes of politics associated with positive spillover effects and FDI and the newfound economic openness of Eastern Europe to FDI.

Table 3 presents the increase in GNI from 1991 (or the earliest year the World Bank has measured and published economic information) as compared to 2009 GNI. China's income has gone up the most by far, over twelve times its GNI from 1991.

Table 3. Change in Gross National Income, 2009, from 1991 or Earliest Reported Year

Country Name	Increase in GNI since 1991 or earliest entry
Albania	9.209
Belarus	3.155
Bosnia and Herzegovina	6.156
Bulgaria	3.287
Cambodia	3.036
China	12.043
Croatia	4.332
Czech Republic	6.067
Estonia	3.940
Greece	3.355
Hungary	4.517

Indonesia	4.193
Korea, South	3.199
Latvia	4.136
Lithuania	4.440
Malaysia	4.256
Philippines	3.577
Poland	6.377
Romania	5.389
Russia	2.607
Serbia	2.656
Singapore	4.433
Slovakia	8.336
Slovenia	3.545
Thailand	2.679
Ukraine	1.631
Vietnam	11.581

Tables 4 and 5 present the total GNI increase since 1991 or earliest entry by clustering of countries by region.

Table 4. Change in Gross National Income from 1991 or Earliest Reported Year to 2009, East Asia

East Asia	Increase in GNI since 1991 or earliest entry
China	12.043
Indonesia	4.193
Korea, South	3.199
Malaysia	4.256
Philippines	3.577
Singapore	4.433
Thailand	2.679
Timor-Leste	9.351
Vietnam	11.581
average	5.48

Table 5. Change in Gross National Income from 1991 or Earliest Reported Year to 2009, Eastern Europe

Eastern Europe	Increase in GNI since 1991 or earliest entry
Albania	9.209
Belarus	3.155
Bosnia and Herzegovina	6.156
Bulgaria	3.287
Croatia	4.332
Czech Republic	6.067
Estonia	3.94
Greece	3.355
Hungary	4.517
Latvia	4.136
Lithuania	4.440
Poland	6.377
Romania	5.389
Russia	2.607
Serbia	2.656
Slovakia	8.336
Slovenia	3.545
Ukraine	1.631
average	4.69

Table 6 below shows the total change in GNI for Eastern Europe versus East Asia. East Asian countries have seen higher increases in overall GNIs compared to Eastern

Europe. As seen, Eastern European countries increased by over four-fold, and East Asian countries increased by over five-fold.

Table 6. Change in Gross National Income from 1991 or Earliest Reported Year to 2009, average by region

<i>Eastern Europe</i> - increase in GNP since 1991 or earliest entry	4.69
<i>East Asia</i> - increase in GNP since 1991 or earliest entry	5.48

This increase in total economic progress should be assessed vis-à-vis the economic development attributable to the industrial sector. As such, the World Bank list of “manufacturing value added” was utilized. This calculates the percentage of economic power attributed to the manufacturing sector. The most recent publishing, the manufacturing value added from 2010 (as a percentage of GDP) was used to assess the amount of economic activity dedicated to industry. There was no data for Greece and as such this country was left out (see Table 7).

Table 7. Manufacturing Value Added to Economy

Country Name	manufacturing value added (% of GDP, 2010)
Albania	16
Belarus	30
Bosnia and Herzegovina	14
Bulgaria	16
China	30
Croatia	16
Czech Republic	24
Estonia	17
Greece	n/a
Hungary	23
Indonesia	25
Korea, South	30
Latvia	12
Lithuania	16
Malaysia	25
Philippines	21
Poland	18
Romania	15
Russia	15
Serbia	16
Singapore	22
Slovakia	21
Slovenia	21
Thailand	36
Ukraine	18
Vietnam	20

Source: World Bank

Table 8 shows the average value added from manufacturing as a percentage of GDP by region based on the World Bank (2013) report. East Asian countries had a higher percentage of their economic progress attributed to industry than the countries of Eastern Europe.

Table 8. Manufacturing Value Added to Economy, by region

Eastern Europe- total value added from manufacturing	18.12%
East Asia- total value added from manufacturing	26.13%

In order to assess the economic advancement attributed to industry, this study multiplied the change in economy with the manufacturing value added to find a calculator. This calculator column measures the amount of overall economic gain attributed to the manufacturing sector (see Table 9 below). This column was averaged to find the overall regional economic growth attributed to industry. The data confirm that East Asia has a higher overall score.

Table 9. Economic Growth Attributed to Industry, by country and by region

Eastern Europe	change since 1991 or earliest entry	manufacturing value added (% of GDP, 2010)	calculator	East Asia	change since 1991 or earliest entry	manufacturing value added (% of GDP, 2010)	calculator
Albania	9.2085	16	1.4734	China	12.0430	30	3.6129
Belarus	3.1548	30	0.9464	Indonesia	4.1927	25	1.0482
Bosnia and Herzegovina	6.1560	14	0.8618	Korea, South	3.1985	30	0.9596
Bulgaria	3.2870	16	0.5259	Malaysia	4.2559	25	1.0640
Croatia	4.3323	16	0.6932	Philippines	3.5768	21	0.7511
Czech Republic	6.0670	24	1.4561	Singapore	4.4327	22	0.9752
Estonia	3.9396	17	0.6697	Thailand	2.6789	36	0.9644
Greece	3.3551	N/A	N/A	Vietnam	11.5813	20	2.3163
Hungary	4.5172	23	1.0390				
Latvia	4.1356	12	0.4963				
Lithuania	4.4404	16	0.7105				
Poland	6.3768	18	1.1478				
Romania	5.3894	15	0.8084				
Russia	2.6073	15	0.3911				
Serbia	2.6564	16	0.4250				
Slovakia	8.3361	21	1.7506				
Slovenia	3.5453	21	0.7445				
Ukraine	1.6308	18	0.2935				
Average	4.62	18.12	.849	Average	5.74	26.13	1.46

Table 10. Economic Growth Attributed to Industry, by region

EE- calculator	.849
EA- calculator	1.46

The comparably higher GNI as well as the higher manufacturing value added helped contribute to this higher calculator for East Asia compared to Eastern Europe.

Conculsion

While both regions can attribute their economic growth to industry, East Asia has achieved more economic success as a result of their manufacturing sector, presumably because of low-cost labor.

The rapid economic growth and reliance on the manufacturing sector of several East Asian countries such as China, Indonesia, Malaysia, and Vietnam propelled their region to a higher industrial growth score than Eastern Europe.

Subsequent studies might assess the extent of income variation and standard of living based on manufacturing output. These rapid increases in national economic power might be copied by other regions hoping to achieve similar growth in the future.

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FINANCIAL EVALUATION OF LONG TERM INVESTMENTS: THE ROLE OF EXPLICIT PRODUCTION FUNCTIONS

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Abstract

In the practice of evaluation of investment projects, the technique of discounted cash flows applies on income with functions such as logistic or neoclassical functions, which tend to be adverse on remote-time flows. However, these functions are not necessarily representative of the long term pathway of projects which are part of portfolios closely related to innovation or events with long-run externalities, such as education or environment. This paper concludes that production functions with human capital and externalities may cause distant flows to take values other than zero and produce relevant alterations of investment decisions.

Keywords: Financial evaluation of investment projects, innovation, externalities, environment, growth models

Introduction

This paper offers to reconsider an aspect of the methodology of investment projects and project portfolios financial evaluation, by using explicit production functions adequate to phenomena dominated, for instance, by innovation.

Investment project financial evaluation has been criticized for many reasons. Firstly, projects providing out-of-market goods (public or quasi-public goods) lead to certain problems such as the absence of selling prices which hinders the estimation of monetary benefit and, therefore, a return pathway which can be discounted. This promoted the evolution of non-corporate project evaluation methodologies, such as the cost-benefit method, cost-effectiveness method and multicriteria methodologies (Aliberti, 2012; Grassetti and García Fronti, 2012; Pacheco and Contreras, 2008).

Secondly, project financial evaluation has been criticized for being biased towards flows originated in the short run and, therefore, for affecting both projects organization and the composition of investment projects portfolios (Dumrauf, 2010; Aliberti, 2012; Grassetti and García Fronti, 2012). If investment projects or project portfolios have long-run and very long-run returns (for example those in the field of science and technology, health, education, institutional quality, environment), then they are excessively adverse on discounted returns of these projects, which may bring about suboptimal levels of investment in these sectors and affect long term growth and economic and social development (Smith and Parr, 2005 : 297; Hernández, 2005 : 159 and ss.; Romer, 2006 : 102 and ss.; Keifman, 2012).

Thirdly, financial evaluation models are rigid, in the sense that they assume the investment decision is made only once on the whole project at the time of evaluation, giving the decision maker a passive nature when facing the changes in context or during the progress of the project implementation. It is more reasonable to assume that the agent is able to make decisions about delaying the beginning of an investment, modifying the rhythm, increasing or reducing the amount of investment during the implementation period. This lack of flexibility

reduces its effectiveness as a methodology of evaluation, especially, in most complex and long term projects (Grasseti and García Fronti, 2012).

Finally, it is difficult to accept certain usual theoretical assumptions which underlie the financial evaluation models, such as the functions of logistic production or the neoclassical functions which usually support the flow of income in investment projects or projects portfolios related to innovation or to certain public goods such as public health, basic education and pollution, where internal and external economies of scale, externalities, or agglomeration economies may be found (Hernández, 2005 : 289 and ss.; Smith and Parr, 2005: 229 and 234).

In this context, this paper states that a simplified modelling yet more adequate of the production function supporting the income flow, allows for the application of the standard financial approach minimizing or even totally compensating for the bias in the short run, thus modifying the standard conclusions about expected results of the assessments based on financial models.

Reconsideration of discounted cash flow methodology in investment projects: Basic evaluation model

The approach begins with the standard criterion of investment project financial evaluation. In accordance with Branson's presentation of the neoclassical investment model (Branson; 1989: 297 and ss.) capital accumulation may follow the maximization of a function of benefits (RN) as follows:

$$\max_{N_t, K_t, i_t} \sum_0^{\alpha} \frac{1}{(1+r)^t} [P_t y(N_t, K_t) - W_t N_t - P_t^I i_t] \quad (1)$$

Here N_t is the amount of labour in the period t , K_t is capital in period t , i_t is investment in this period, r is interest rate, P_t is price, y is product, W_t is wage and P_t^I is the price of capital goods.

In other words, the criterion is reduced to find the combination of production factors (labour, capital) and maximize the current value of said function of benefit over time, subject to certain restriction $K_{t+1} = (1-\delta) K_t + i_t$, where δ represents the expected capital depreciation rate.

Using Lagrange multipliers, the problem to be solved is the following:

$$\max L_{N_t, K_t, i_t} \sum_0^{\alpha} \frac{1}{(1+r)^t} [P_t y(N_t, K_t) - W_t N_t - P_t^I i_t] + \sum_0^{\alpha} \lambda [i_t + (1-\delta)K_t - K_{t+1}] \quad (2)$$

The lagrangian derivative respect to N results in the fact that the business owner hires labour until the marginal product of labour is equal to real wage:

$$y_N(N_t, K_t) = \frac{W_t}{P_t} \quad (3)$$

This means that the business owner hires capital until his marginal product is equal to the cost of opportunity:

$$y_K = \frac{\delta P_t^I + rP_{t-1}^I - (P_t^I - P_{t-1}^I)}{P_t} \quad (4)$$

The numerator on the right side of the equation is the cost of capital, C_t , equivalent to the implicit price of capital lease herein. The first component is depreciation, the second one is the interest paid for stock at the beginning of the period, and the last one is any capital gain between the beginning and the end of the period.

In the end, the marginal product of capital turns out to be:

$$y_K(N_t, K_t) = \frac{C_t}{P_t} \equiv c_t \quad (5)$$

Since it is an investment project, it is important to estimate the equilibrium capital stock, which is a function of the production volume Y , the cost of capital c and the price of product P :

$$K^E = K^E(Y, C, P) \quad (6)$$

Thus $\partial K^E/\partial Y, \partial K^E/\partial P > 0$, and $\partial K^E/\partial C < 0$

Within a neoclassical model such as the one presented, the Cobb-Douglas function may be adopted for the equilibrium capital stock function, which has the characteristic of generating constant returns to scale and diminishing returns to a factor. The resulting function is the following:

$$y = \alpha K^\alpha N^{1-\alpha} \quad (7)$$

In practice, it turns out:

$$K^E = \frac{\alpha P y}{C} = \frac{\alpha y}{\frac{C}{P}} \quad (8)$$

Where, K^E is the stock of equilibrium capital of the project which increases as the value of production increases and it is reduced when the cost of capital use increases.

Besides the importance of a “selling price” or the discount rate –aspects which are considered by other reviews to the financial approaches on project evaluation–, from equations (1), (7) and (8) we can infer the importance of the explicit production function whose accurate formulation determines the temporary pathway of returns. Equations (7) and (8) present the result of a Cobb-Douglas function which has particular conditions which adapt to the case under study.

In order to see these differences, this paper resorts to four function models: logistic model and Bass model, both used in the innovation theory, and neoclassical model and human capital model, used in the economic growth theory.

Logistic model

This type fulfils the conditions of logistic deterministic growth models based on technological diffusion models that take the time variable as the main determinant, such as Foster and Wild, 1999 (see Hernández, 2004: 272 – 274). In this model, a process of production growth is generated; it depends on historic time (t), a production maximum (y_{max}) and a diffusion or growth parameter (β).

$$y_{t-1} = \beta y_t (y_{max} - y_t) \quad (9)$$

If a period is accumulated, the difference between both periods will be:

$$y_t - y_{t-1} = y_{t-1} \beta \left[1 - \left(\frac{y_{t-1}}{y_{max}} \right) \right] \quad (10)$$

The time necessary to reach y_{max} depends on parameter β . When parameter β has a higher value, the curve grows, increasing the current value of income for equal values of interest rate r and variable y .

Focus is placed on the time variable (t) and the growth parameter β . The model does not depend on economic variables such as capital stock or human capital, as explained in the equation (1). In the model, y_{max} is exogenously determined, as well as the value of β .

The incorporation of production functions according to a deterministic process based on variable (t), on an exogenously adopted parameter β and on variable y_{max} arising from market research (determination by demand) or from engineering studies (determination by technological restriction or rigidity, or determination by offer) are common both in literature and in the practice of investment project evaluation. Besides the simplicity of the calculation,

the pathways are not objected by the management of the investment project evaluation, which tends to accept the existence of product cycles as a central component of the theoretical and empirical corpus.

Finally, the temporal pathway of the production of a logistic model corresponds quite well with that of the neoclassical production functions previously discussed, even when, as previously mentioned, one of them has its centerpiece in economic variables such as capital and labour, and the other one, only in the time variable. Therefore, according to the context and objectives of the investment project analysis (amounts involved, available information, uncertainty about certain variables, technical ability of the team of evaluators to perform a prospective study, among other factors), the selection of different functions may lead to equivalent results and, depending on the value of the parameters, to similar decisions based on more complex quantitative methods.

Bass Model

The Bass model belongs to the family of S-Curve or sigmoidal models widely used in the analysis of the economic evaluation of innovation projects. It is basically supported by the product cycle theory with four stages (introduction, growth, maturity and decline) which is reduced to three stages (invention, innovation, and standardization; decline is not included), once adapted to technology. Even when its mathematical presentation varies if compared to the logistic model previously stated, in a broad sense there is no difference. The model, which combines an innovation model and an imitation model, counts on the existence of a maximum quantity of sales and two parameters, coefficient of innovation (or market penetration) and coefficient of imitation. The quantity increases inasmuch as the former is higher and diminishes inasmuch as the latter is higher.

According to Smith and Parr (2005: 214) the production equation of the period is the following:

$$y_t = y_{t-1} + \left(g + \left(q * \left(\frac{y_{t-1}}{y_{max}} \right) * (y_{max} - y_{t-1}) \right) \right) \quad (11)$$

Where g is the coefficient of innovation and q is the coefficient of imitation, having a range of variation between 0 and 1 for both parameters.

As well as in the logistic model, parameters are exogenously determined (by market researches, engineering studies, etc.) therefore the function is not associated to the production functions depending on economic variables, as it commonly happens in microeconomics. Again, depending on the context, it is a very useful function and, in the practice, it is widely used in empirical works on introduction of new goods in the market (Smith and Parr, 2005: 234).

A feature that should be highlighted again is that, neither the Bass model nor the logistic model, assume a decline in production as from a certain date, which does occur in the model of the product cycle. Likewise, as it will be observed later on, said maximum level of production may grow at a positive rate if the parameter Y_{max} is transformed into a function that depends on time or on any other variable, for example, economic or demographic variables.

The effects of a maximum level of production differ substantively in the case under study, if such level is stable or if it grows at a certain rate over the time span relevant to the analysis. In the first case, whenever the production stabilizes, sooner or later its present value will be close to zero; in the second case, this is not necessarily true, since it depends on the difference between the growth rate in the steady state and the discount rate; besides, for the same discount rate, the value of the product which turns to be zero at the time of evaluation is located ahead in time for any growth rate higher than zero.

As it can be clearly seen, these observations are actually relevant for the purpose of this paper, since they imply a change of a key variable such as the maximum production in the long run.

In short, both logistic and Bass models may be explicit models of the income function, which may be the relevant economical-technological context; this may strongly affect the evaluation of a project. This will ultimately depend upon the specific parameters adopted for modelling and more specifically if Y_{max} is a parameter or a function growing over time or over other (economic, demographic, etc.) variables.

Neoclassical model with exogenous technological progress

The work by Robert Solow (1956, 1957) on the theory of growth, commonly called neoclassical growth model or model with exogenous technological progress, sets forth a growth of product per capita equation compatible with the function expressed in equation (1).

The basic equation for the total product is as follows:

$$Q \equiv Y = F(K, L) \quad (12)$$

Where total production is function of the capital stock and the applied labour. The production function is regarded as an homogeneous function of degree 1, with constant returns to scale, and decreasing returns to a factor, which makes it compatible with the Cobb-Douglas function, as shown in equations (7) and (8). Hence, implicit function (12) of total production turns out to be:

$$Y = A K^\alpha L^{1-\alpha} \quad (13)$$

Where A is total productivity of the factors, and α is both the partial elasticity of production to capital, as well as the proportion of the use of this factor in the production.

In per capita terms, it translates as:

$$y = a k^\alpha \quad (14)$$

Where a is the total productivity of the per capita factors, and k is the per capita capital.

Deriving the per capita production from the per capita capital, it results in:

$$y_k = a \alpha k^{1-\alpha} \quad (15)$$

$$y_{kk} = a \alpha (\alpha - 1) k^{\alpha-2} \quad (16)$$

As the first derivative (15) is positive, and the second (16) is negative, the function grows at a decreasing rate; that is to say, capital productivity grows yet it does so at a decreasing rate.

When comparing the results obtained in the neoclassical model and in the logistic model, both functions show growing trends but at a decreasing growth rate. The neoclassical model also allows one to know the growth rate of total production as well as the per capital production.

The labour accumulation function is:

$$L_t = L_0 e^{nt} \quad (17)$$

Where n is the labour accumulation rate over time. Conversely, capital accumulation function is as follows:

$$\frac{dK}{dt} \equiv I_t = S_t = sY_t \quad (18)$$

Where I_t is investment, and S_t saving. Writing the equation (18), it results in:

$$\dot{k} = \frac{sy}{k} - n = \frac{s f(k)}{k} - n \quad (19)$$

From this equation it turns out that per capita capital accumulation over time is the function of saving rate s , and labour growth rate n .

Using this model it can be obtained the per capita capital level in the steady-state, k^* , by equalising equation (18) to zero, which results in the equality below:

$$\frac{s f(k^*)}{k^*} = n \quad (20)$$

Such equality can be rewritten as a function, and thus obtain the per capita production function in the steady-state y^* :

$$y^* = f(k^*) = \frac{n}{s} k^* \quad (21)$$

In the model with no technological progress, total production, capital, and labour increase in the long run at the same n rate, which is the labour growth rate. Hence, in the steady-state, per capita production growth comes to a halt when the situation shown in (21) occurs.

The introduction of the exogenous technological progress, which modifies labour efficiency and, consequently augments its productivity in the long run, changes the steady state condition previously mentioned. Exogenous technological progress is carried out by introducing the variable effective labour per capita, that is to say, labour which is modified by technological progress and which augments its efficiency:

$$E_t = L_t e^{\lambda t} = L_0 e^{nt} e^{\lambda t} = L_0 e^{(\lambda+n)t} \quad (22)$$

Here λ is the growth rate of the effective labour per capita.

Once technological progress is introduced in this manner, the result is that growth of the total variables in the long run will be:

$$\dot{K} = \dot{E} = n + \lambda \quad (23)$$

And, consequently, growth of per capita production in the long run is equal to λ .

The model can be widened if capital depreciation is taken into account, in a magnitude equal to δK , which reduces the growth rate shown in (22) to $n + \lambda - \delta$.

Assuming the production function associated to an investment project has a formula as the one expressed between equations (12) to (23), and that n , λ and δ are constant, then if $r > n + \lambda - \delta$, it is possible to find a current flow value compatible with what is pointed out in the literature of financial evaluation of projects. If this is the case, then, there would be an economic model for the flow function compatible with most literature and praxis in the financial project evaluation field.

Unlike the logistic model (2.2.1.) and Bass model (2.2.2.), in the neoclassical model, function depends on economic variables. The major relative difficulty of the latter is that it can only be used in cases where information allows for correct mathematical modelling of the flow. For this reason, in the other cases, the former models are chosen, since they are enriched by data derived from market research (demand) and from experts in technology (offer conditions).

A variant of the presented case is that of a growth model with exogenous technological progress but with growing returns within a range of capital accumulation. Provided such modifications were made, production could become even more similar to the functions which are more usual in the product cycle theory, since it would be made up of three phases. The first one, in which it would grow at increasing rates; the second, in which it would grow but at decreasing rates; and the final phase, in which the product would finally decline.

In this case, production function $f(k)$ has two intersections with function $[(n+\delta)/s] k$, where the former is unstable (k^{**}) and the latter is stable (k^*). In the former, capital productivity per each additional factor unit is higher than $[(n+\delta)/s] k$, which is the reason why it is decided to keep increasing production. In the latter, the opposite happens, thus reaching the steady-state.

The variant introduced in the production function helps understand the possible implications of increasing returns to scale. Nonetheless, the restriction imposed by the very product cycle theory (y_{kk} is in the second negative phase), necessarily leads to the steady-state

k^* , which does not alter substantially the before mentioned conclusions, unless the production range relevant to the project being analysed falls below k^* .

In this final case, there is an efficiency problem which, although it exceeds the aim of this paper, must be considered as a marginal factor in cases of private project evaluation (unless there are marginal benefits of increasing production in the future, provided the other conditions remain invariable). In non-private cases, such as the ones shown, they are included in some of the observations to be made as a consequence of the following model.

Human capital model

The above explained concept regarding the production function in Solow's model but with increasing returns for a given function range –which matches the product cycle theory– allows for speculation on what might happen if phase I of the cycle (increasing returns) were always true, i.e. that neither phase II or III existed where the law of decreasing returns were present.

If as it does happen in production dominated by innovation, production functions introduced to the fund flow of the projects included in an investment project portfolio were characterized, for example, by externalities, human capital as a production factor, clustering effects, and *learning by doing*, then the production function should adapt to possess such characteristics.

Based on an *ad hoc* adaptation of the contributions by Jones and Manuelli (1992) and by Lucas (1988), the production function proposed is the one below:

$$Y = A\bar{H} + B K^{1-\alpha} L^\alpha \quad (24)$$

Where Y is the product, \bar{H} is the applied human capital, K is the physical capital, and L is the workforce. Accumulation functions of production factors L and K match equations (17) and (19), and applied human capital increases according to the following function:

$$\dot{h} = \gamma (\varnothing u h) - \delta_h h \quad (25)$$

Where \varnothing is the efficiency of human capital, u is the fraction of time of the people in charge of accumulating human capital (the rest is meant for working), δ_h is the depreciation of human capital, and γ is the degree of the portfolio internalization of the trickle down effects of each project. Human capital is accumulated based on the amount of time devoted to that task, but subject to correction due to its efficiency and to the depreciation it undergoes.

This model is especially interesting to project portfolios which encompass externalities, clustering effects, and *learning by doing* generated in the system as a consequence of its organization as such. These effects of the portfolio organisation are shown by parameter γ , which shows the degree of appropriation that the projects have regarding the effects generated by the whole group of the portfolio projects. The trickle down effects generated towards the inside of the very system and which are derived from the main production factor applied to innovation, which is the human capital, will depend on the quality of the coordination of activities over time and space.

A production function like (24) may grow indefinitely over time, depending on the values taken by the parameters. In order for all the relevant range to be $h > 0$, in equation (25) the first term must be higher than the second one, which forces all γ , \varnothing , u to be positive and that $(\gamma \varnothing u) > \delta_h$. Provided this condition is met, human capital accumulation per capita as defined herein will not come to a halt for all the range of relevant time.

In the case being studied, for equal values of parameters \varnothing , u , and δ_h , higher levels of γ appropriation involve higher growth rates. At the limit, when the model tends to 0, it resembles the neoclassical model; when the model tends to 1, the role of non-decreasing returns from human capital is at its highest expression. Ultimately, the values the latter rate might hold are key in the premise of this approach, and as it can be observed in graph 3, they are not trivial in the growth pathway.

Finally, the second part of the right term of the equation (24) is to be analysed. Even though applied human capital (\bar{H}) is not subject to the decreasing returns, to a factor as in the neoclassical function, term $B K^{(1-\alpha)} L^\alpha$ is indeed subject to it, as it was shown in the neoclassical model (2.2.3.)

From previous paragraphs it can be deduced that the production function with human capital (24) can display various pathways depending on the parameters adopted by the accumulation of \bar{H} and its participation in the total product, given that the rest of the function grows at a decreasing rate, thus affecting maximization of benefit associated to the financial evaluation criterion of a project.

Comparison of the four models

In this title the maximization problem associated with the financial evaluation of projects but applied to the four types of production functions given above is taken up; i.e. logistic models, Bass, neoclassical and human capital.

Since going back to equation (1):

$$\max_{N_t, K_t, i_t} \sum_0^\alpha \frac{1}{(1+r)^t} [P_t y(N_t, K_t) - W_t N_t - P_t^I i_t] \quad (1)$$

Production function may adopt various functional forms, which translates into four maximisation problems:

a. Logistic model:

$$\max_{N_t, K_t, i_t} \sum_0^\alpha \frac{1}{(1+r)^t} \left\{ P_t y_{t-1} \left[1 + \beta \left(1 - \frac{y_{t-1}}{y_{max}} \right) \right] - W_t N_t - P_t^I i_t \right\} \quad (26)$$

b. Bass model:

$$\max_{N_t, K_t, i_t} \sum_0^\alpha \frac{1}{(1+r)^t} \left\{ P_t y_{t-1} \left(g + \left(q * \left(\frac{y_{t-1}}{y_{max}} \right) * (Y_{max} - Y_{t-1}) \right) \right) - W_t N_t - P_t^I i_t \right\} \quad (27)$$

c. Neoclassical model:

$$\max_{L_t, K_t, i_t} \sum_0^\alpha \frac{1}{(1+r)^t} \{ P_t [A K^\alpha L^{1-\alpha}] - W_t N_t - P_t^I i_t \} \quad (28)$$

d. Human capital model:

$$\max_{L_t, K_t, \bar{H}_t, i_t} \sum_0^\alpha \frac{1}{(1+r)^t} \{ P_t [A \bar{H} + B K^{1-\alpha} L^\alpha] - W_t N_t - P_t^I i_t \} \quad (29)$$

Provided all projects have the same factor ($W_t N_t - P_t^I i_t$) regarding costs, and P_t remains invariable over time, then the relevance of the flows which are more distant from the evaluation moment will depend on the ratio between the interest rate r of the discount factor, and the evolution over time of total productivity of each function.

In other words, if production growth depends on accumulation of production factors (capital, labour and applied human capital, as the case may be), it will be critical for the flow evaluation the ratio between total productivity of factors over time of each specific production function and the interest rate. While in equations (26), (27) and (28) productivity grows at a decreasing rate, in equation (29), the growth rate depends on the values taken by

the parameters, which can show non-decreasing growth rates over time, or for a relevant period of time. This means that, depending on the organisation of productive units, the increase in human capital stock, and that of the productive fabric which uses it, there could exist a growing production pathway over time, without it necessarily being subject to the decreasing returns to all factors.

Likewise, if in equations (26) and (27) y_{max} is a growing function over time – depending either on the time variable, or on any other variables, such as economic or demographic ones–, both the logistic and Bass models tend to resemble the human capital model regarding the evolution over time the net flow may have.

From what has been pointed out, it can then be deduced that in equation (29) as well as in both equations (26) and (27), provided the maximum production level increases for all the relevant range, if the growth rate of the function in the long run were to be higher than the applied discount rate, *ceteris paribus*, the current value of the future flows will never be zero, and, thus, even under the implementation of the discounted flow method, flows from each period will contribute –positively or negatively– to establishing the current value of the project at issue.

However, as it has been previously mentioned, if in the long run $(\partial P_t)/(\partial t) < 0$, then there is a more complex ratio which involves the interest rate, and the growth of both the product and the price in the long run. Assuming that the rest of the elements in the function remain constant, the fundamental comparison is between the net flow growth over time $(\partial RN_t / \partial t)$ and r . When $(\partial RN_t / \partial t) < r$, there will come a moment in time as from which the current value of the flows to come will tend to zero. Otherwise, subsequent flows will still keep economic relevance at the time of decision making.

Numeric simulation of the presented production function models

In this section, comparative results of numeric simulations of the four models previously presented are shown. Results refer to the growth rate between periods for a total of 30 periods of total income. Results of three logistic model cases, and results of three Bass model cases corresponding to various values of their parameters are simulated, as well as results of a neoclassical model case, and two human capital model cases with different parameter values. For the simulation purposes, the price is supposed to be constant and equal to 1.

The variation rate between periods in percentage of the total income provides a first look to the question treated in this paper, that is to say, whether the time pathway of the discounted flow may not be zero after a certain number of periods. If the function grows at a decreasing rate, or even if it does not grow at all, or falls as from a given period, the desired scenario cannot be met. Consequently, the fact that the function grows at a non-decreasing rate, or if it does, that it is at a slightly decreasing rate, must then be a necessary condition, though still not sufficient enough, to solve the problem. In other words, the growth pathway of total income is a necessary condition but still not sufficient enough for the current value of the distant flows to be different from zero, given that in order for the necessary and sufficient condition to be met, it is necessary to know exactly the time pathway of the total cost and the discount factor to be applied. In this case, as it was initially pointed out, the aim of this paper is focused on the condition of the total income pathway as being *conditio sine qua non* (or necessary condition).

The (arbitrary) parameters of each of the functions are the following:

Logistic function L 1: $\beta = 0.78$

Logistic function L 2: $\beta = 0.88$

Logistic function L 3: $\beta = 0.93$

Bass function B 1: $g=0.005$ and $p = 0.8$

Bass function B 1: $g=0.05$ and $p=0.5$

Bass function B 3: $g=0.5$ and $p=0.3$

Neoclassical function NC: $L_0=120$; $K_0=120$; $n=0.03$; $s=0.20$; $\alpha=0.5$

Human capital function HK 1: $H_0=120$; other neoclassical parameters when appropriate, $\gamma=0.9$; $\phi=0.5$; $u=0.3$; $\delta=0.01$; and $A=0.5$ and $B=(1-A)$

Human capital function HK 1: $H_0=120$; other neoclassical parameters when appropriate, $\gamma=0.5$; $\phi=0.5$; $u=0.3$; $\delta=0.01$; and $A=0.5$ and $B=(1-A)$

Even though they are arbitrary, the selected parameters provide the growth pathways of the total income corresponding to each production function, and thus the growth rates between periods for each model. Growth rates can be seen in chart 1.

As it can be observed, total income in logistic functions and in Bass model increase at high rates in the first sections, yet once maturity of the productive cycle is reached, growth rates tend to zero. By contrast, in the neoclassical model, total income grows at a decreasing rate all along the selected range (30 periods). In human capital models, which differ between themselves depending on their level of appropriation (high and low), even though growth rates differ at certain levels, in both cases, rates do not decrease significantly all over the range.

Chart 1 Growth rate between periods of the total income per function type

	L1	L2	L3	B1	B2	B3	NC	HK1	HK2
1									
2	78%	88%	93%	90%	55%	80%	15%	12%	9%
3	78%	88%	93%	90%	53%	58%	13%	12%	8%
4	78%	88%	93%	90%	52%	48%	12%	11%	8%
5	78%	87%	92%	89%	51%	42%	11%	11%	8%
6	77%	87%	92%	89%	51%	38%	10%	11%	8%
7	77%	86%	91%	88%	50%	36%	10%	11%	8%
8	76%	84%	88%	86%	50%	34%	9%	11%	8%
9	74%	81%	84%	82%	49%	33%	9%	11%	8%
10	71%	75%	77%	76%	49%	32%	8%	11%	7%
11	65%	66%	64%	65%	48%	31%	8%	11%	7%
12	57%	51%	46%	49%	47%	30%	8%	11%	7%
13	45%	32%	24%	29%	46%	30%	7%	11%	7%
14	30%	14%	8%	11%	44%	29%	7%	10%	7%
15	16%	4%	1%	2%	41%	28%	7%	10%	7%
16	6%	1%	0%	0%	37%	28%	7%	10%	7%
17	2%	0%	0%	0%	32%	27%	6%	10%	7%
18	0%	0%	0%	0%	26%	26%	6%	10%	7%
19	0%	0%	0%	0%	20%	24%	6%	10%	7%
20	0%	0%	0%	0%	14%	23%	6%	10%	7%
21	0%	0%	0%	0%	9%	21%	6%	10%	7%
22	0%	0%	0%	0%	5%	19%	6%	10%	7%
23	0%	0%	0%	0%	3%	17%	5%	11%	7%
24	0%	0%	0%	0%	2%	15%	5%	11%	7%
25	0%	0%	0%	0%	1%	13%	5%	11%	7%
26	0%	0%	0%	0%	0%	10%	5%	11%	7%
27	0%	0%	0%	0%	0%	8%	5%	11%	7%
28	0%	0%	0%	0%	0%	7%	5%	11%	7%
29	0%	0%	0%	0%	0%	5%	5%	11%	7%
30	0%	0%	0%	0%	0%	4%	5%	11%	7%

Source: Own estimates

It can then be concluded that, even if the cost function and the discount factor are not considered, in logistic models, Bass model, and the neoclassical model, the current value of the more distant flows over time tend to zero. By contrast, in the human capital functions herein presented, since income grows constantly depending on the cost functions and the

discount factor, the current value of the net flows distant in time will not be necessarily irrelevant.

Just as a mere pedagogical or illustrative example of what has been mentioned, assuming the case of a constant price equal to 1, with cost functions in which costs are a fixed proportion of the total income (not a usual case in economic theory or praxis, yet useful for pedagogical purposes), a comparison between growth rate of total income (10-11% and 7% in the chart cases) and the interest rate of the discount factor is required. If the interest rate were of 6%, the net flows are relevant for all the selected range. In other words, unlike the other models in which –depending on the case– after periods 10 and 15, the current flow values tend to zero, human capital models still have non-trivial values and different from zero.

Consequently, probability that the flows distant in time are different from zero is higher in the case of production functions with human capital than in the functions traditionally used in the economic and financial evaluation of investment projects. Therefore, it is relevant to appropriately set out such function at the time of exploring, both theoretically and empirically, the importance of distant flows in time, which are as usual in investments in scientific and technology facilities, as in other phenomena closely related to human capital (basic education, primary healthcare, etc.) or as in environment-related matters.

Conclusion

Explicit production functions that cover the phenomenon of growth derived from accumulation of human capital, externalities, the effects of learning, among other questions treated within the modern theory of economic growth, not only represent more appropriately the function applicable to intensive investments in technological innovation, but also avoid the short-term bias affecting all types of flows generated in the very long run and that exceeds the above mentioned cases.

Therefore, what has been concluded regarding the growth pathways resulting from appropriate explicit functions, would allow for:

- a) Making the returns distant in time become relevant, for example, those occurring after twelve or fifteen years;
- b) Appropriately dealing with the growth of net flows of the investment projects belonging to project portfolios that generate externalities among projects and market imperfections, such as the ones dominated by innovation;
- c) Taking into account the impact on future generations of certain phenomena, such as the formation of scientific and technological systems, human capital (education, health, etc.), environment damage/recovery, among other issues, which would provide for a more accurate interpretation of results in the long run.

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WILINESS TO PAY: AZOREAN ETHNOCENTRIC BUYER BEHAVIOR

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Abstract

The increasing emphasis on the disclosure of the national and regional brands contributed in a significant way to the creation of new launch campaigns and stimulation of what the country and region has to offer. Therefore, in the literature it can be found numerous references to the influence of “country-of-origin” in products sales. Less acknowledge is the influence of a specific region. However, when you have regions with financial and political autonomy, it’s expectable that efforts are made to promote in a differentiate mode the local products. And both academic and firms expected that these investments would influence the “region of origin” effect on regional buyers and decreases their price sensibility regarding local products.

This is because understanding the influence of the “Azorean brand” in the imaginations of the consumers, and the ethnocentricity of their behaviors, are directly related with the regional economic expansion. Knowing the clients’ WTP toward Azorean products leads to an increase of new products and further stimulates the development of the local market. In this framework in mind, data was collected covering the CETSCALE dimensions and the WTP elements for grocery products. The results show the existence of three different patterns of ethnocentricity in Azorean consumers, as well as demonstrate that for most products “region of origin” is not a strong influencer of wiliness to pay.

Considering that the current research reflects different categories of Azorean products, the conclusions are general in nature, and conditioned according to the respondents’ answers. This limitation can be seen as an opportunity for a more detailed research of consumers’ behavior regarding different categories of regional products.

Keywords: Ethnocentric buyer behavior; wiliness to pay; CETSCALE; region-of-origin

INTRODUÇÃO

O aumento da concorrência internacional e a procura constante da otimização dos recursos, originaram um aumento do número de marcas existentes nos mercados globais que competem intensamente entre si. Pelo que determinar o que leva um consumidor a consumir um determinado produto em detrimento de outro é odesafio que se coloca a muitas empresas e investigadores. A imagem de marca que é formada na mente do consumidor tem por base os valores transmitidos pela marca, quer sejam estesde natureza tangível (características organoléticas dos produtos, embalagem,...) e intangíveis que derivam do seu próprio quadro cultural.

Neste contexto, compreende-se que o local de origem de um determinado produto, de certa forma, poderá influenciar as decisões de compra dos consumidores. Sem dúvida, a origem geográfica fornece uma pista cognitiva para os julgamentos sobre a qualidade do produto, (Gao e Knight, 2007). Desta forma, depreende-se que o etnocentrismo do

consumidor depende em particular do país de origem e da categoria de produto (Balabanis e Diamantopoulos, 2004).

Quando nos debruçamos sobre o conceito de marca e observamos as marcas açorianas existentes atualmente e o seu percurso, não podemos deixar de nos questionar sobre como é que as marcas regionais se relacionam com os consumidores açorianos?

Com vista a determinar o modo como o consumidor regional interage e valoriza os produtos da sua região, foi adaptado o modelo de Shimp e Sharma (1987), englobando novas dimensões consideradas na literatura como determinantes desse comportamento. Os dados foram recolhidos em 2013 na Região Autónoma dos Açores, por esta ter efetuado um esforço nos últimos anos de valorização intensiva da “marca Açores”, como denominativo de origem dos produtos. Após o tratamento estatístico dos dados constatou-se a existência de três tipologias de consumidores quanto à valorização dos produtos regionais.

Ao longo das próximas duas seções apresenta-se a metodologia e o quadro referencial que esteve na base deste trabalho. Na quarta seção é apresentado de forma sintético o tratamento de dados efetuados e na quinta seção são reiteradas as principais conclusões e considerações.

REVISÃO DA LITERATURA

Para os consumidores de qualquer parte do mundo, a marca é parte vital do processo de decisão de compra. A marca, uma vez reconhecida pelo consumidor, consegue gerar um misto de associações, que tomadas em conjunto constituem a imagem da marca acrescentando valor ao produto, valorizando-o fortemente, tornando-se na quantia adicional que o consumidor está disposto a pagar para obter um produto com marca, em detrimento de um produto fisicamente comparável mas sem marca.

A atração que uma marca causa é a principal garantia da liderança de mercado. Ela causa uma conexão com o consumidor que vai muito além da qualidade do produto. O principal objetivo não só das empresas internacionais, como também das nacionais e regionais, é fomentar uma imagem de marca que faça com que o cliente não crie lealdade para com as marcas brancas. Neste sentido as empresas podem tentar retirar partido da origem dos produtos, enquanto elemento de marca. Esta abordagem tende a fomentar um sentimento de etnocentricidade junto dos clientes, fazendo com que estes tenham orgulho em consumir não só o que a “sua terra” produz, mas também sintam satisfação em promover este tipo de produtos, junto de conhecidos, levando-os além-fronteiras.

GESTÃO DA MARCA

De acordo com Caldas e Godinho (2007), quando o consumidor identifica uma determinada marca como sendo satisfatória, esta tende a tornar-se numa escolha habitual. Essa predileção propicia a lealdade do consumidor à marca, fazendo com que ele volte a adquirir o bem ou serviço.

Conforme Aaker (1991) “o valor de marca respeita a um conjunto de ativos e passivos ligados a uma marca que permitem aumentar ou diminuir o valor dos produtos oferecidos, quer para a empresa quer para o consumidor” (p.6). Segundo o estudo desenvolvido por Lima, Dionísio e Brito (2013) as dimensões do valor da marca fazem com que se criem elos de ligação entre consumidores, entre empresas e até mesmo entre empresas e clientes. Por sua vez, este tipo de relações leva à criação de certos grupos e ou comunidades de marca, nas quais os seus intervenientes se encontram interligados por meio da dimensão de valor que atribuem à marca.

É possível verificar-se a coexistência de diferentes modelos explicativos quanto ao valor da marca na Matriz de avaliação da qualidade percebida a perspectiva do cliente (ver figura 1):

Aaker (1991)	Keller (1993)	Sharp (1995)	Berry (200)	Yoo e Donthu (2001)
<ul style="list-style-type: none"> •Notoriedade da Marca; •Associações à marca; •Lealdade à marca; •Qualidade percebida. 	<ul style="list-style-type: none"> •Notoriedade da Marca; •Imagem de Marca. 	<ul style="list-style-type: none"> •Notoriedade da Marca/ empresa; •Imagem da marca (ou reputação da marca/ empresa); •Relacionamento com os clientes /franchisados. 	<ul style="list-style-type: none"> •Notoriedade da Marca; •Significado da marca. 	<ul style="list-style-type: none"> •Notoriedade/ associações da Marca; •Lealdade à marca; •Qualidade percebida.

Figure 1 – Fontes de
Fonte: Adaptado de Brito (2008)

A imagem de marca, segundo Tavares (2003), evidência o lugar que a marca representa na mente do consumidor. “É uma destilação dos componentes produtos, linguísticos e psicológicos. Entretanto, os componentes podem ser afetados pelo ambiente competitivo e por fatores organizacionais, e podem apresentar um carácter de fluidez, levando o valor patrimonial da marca a oscilar” (p.68).

A lealdade, fator diferente das outras dimensões da marca, necessita da experiência do uso para se consolidar. Segundo Peter e Olson (2009), para que os consumidores sejam leais a uma determinada marca, não devem apenas comprar a mesma marca repetidas vezes; terão sim de assumir um compromisso cognitivo quando o fazem. A marca deve assumir um significado especial para que o consumidor compre os produtos não pela conveniência de possíveis ofertas, mas sim por proporcionarem benefícios e valores importantes, aos quais os clientes dão importância. Ainda, Aaker (1991) defende que “a lealdade à marca fragiliza a clientela face a ações competitivas, isto é, torna esta ação reduzida por parte do consumidor”. Porém, para se compreender o modo como os consumidores se relacionam com as marcas é necessário numa primeira fase compreender o seu comportamento de compra. Dado que o processo de compra do consumidor é concluído quando este satisfaz as suas necessidades, é importante compreender a forma como todo este processo se desencadeia.

Existem um vasto conjunto de estudos que abordem esta problemática, contudo será o modelo apresentado por Schiffman e Kanuk (2005) que será a base do presente trabalho. De acordo com as pesquisas efetuadas, estes autores definem que o modelo de tomada de decisão do consumidor assenta em três momentos essenciais:

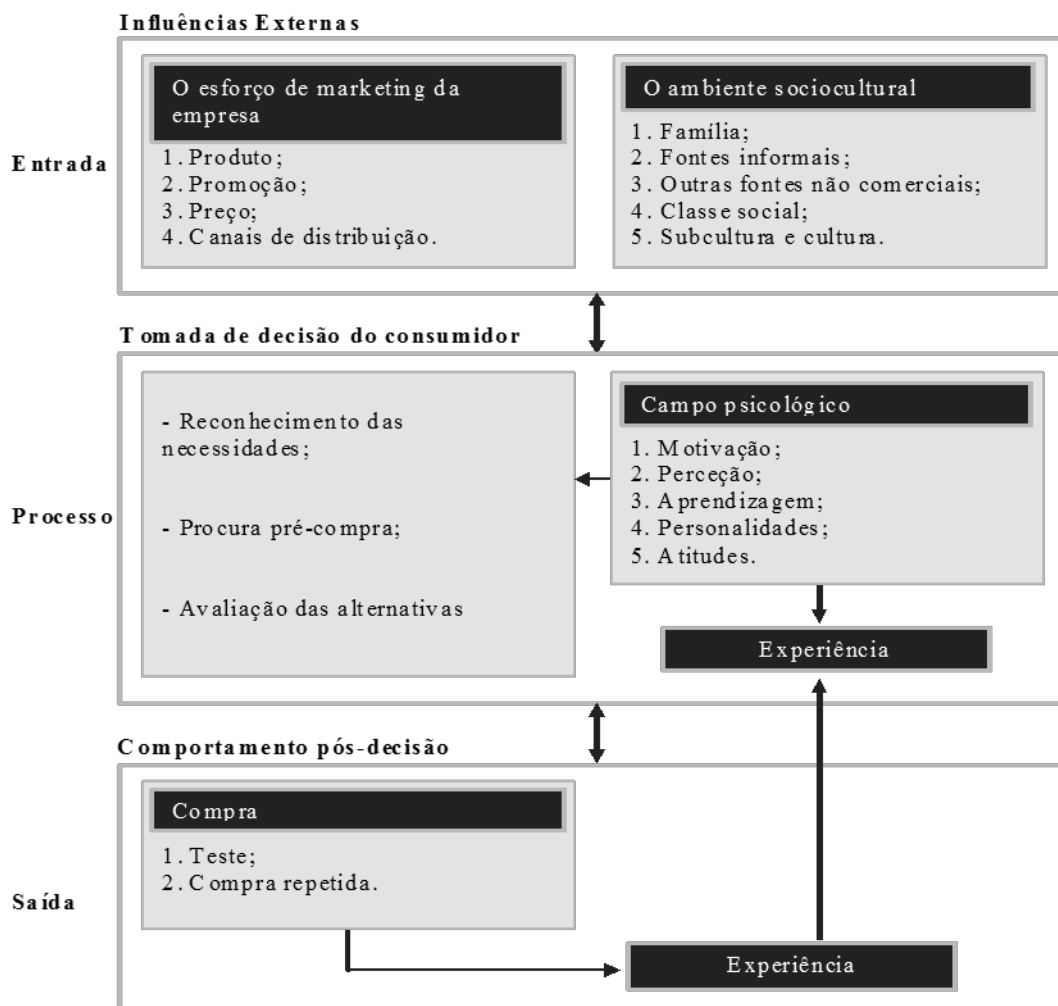


Figure 2 – Modelo simplificado de tomada de decisão do consumidor
 Fonte: Adaptado de Schiffman e Kanuk (2005)

Assim sendo, considera-se que o comportamento assumido pelos consumidores é condicionado por diversos fatores de origem interna e externa e, como tal, varia muito de indivíduo para indivíduo.

WILINGNESS TO PAY

Por vezes, o consumidor não demonstra interesse em comprar um produto pela sua qualidade, mas sim pelo valor ao qual está sendo vendido. Embora se verifique o crescimento desta atitude no mercado atual, ainda existem consumidores que se encontram dispostos em pagar mais por um produto de maior qualidade e ou de origem específica. Esta disposição em pagar mais é condicionada pelo tipo de produto em questão, bem como outras características intrínsecas do indivíduo.

O estudo da temática do willingness to pay (WTP) ganhou importância nos últimos anos, sobretudo ao nível dos estudos de mercado desenvolvidos. É imprescindível desenvolver estudos desta natureza, sobretudo quando se tem em vista o lançamento de um novo produto, de forma a definir o preço mais adequado ao seu lançamento (Chen, Huang e Zhou, 2012).

Uma vez que nem todos os consumidores apresentam as mesmas necessidades, Chen, Huang e Zhou (2012) defendem que a disposição dos indivíduos em pagar mais para consumir um mesmo produto varia de acordo com as preferências, o conhecimento e a

capacidade de pagamento. Esta disposição por parte do cliente tem por base um conjunto de fatores de natureza intrínseca e extrínseca.

COMPORTEAMENTO DE COMPRA ETNOCÊNTRICO

No seguimento do estudo do comportamento de compra dos consumidores, muitos trabalhos de pesquisa centraram-se na temática do etnocentrismo verificado nos indivíduos. Como exemplo destes estudos, é possível verificar-se a presença assídua de Shimp e Sharma (1987), Josiassen, Assaf e Karpen (2011), Balabanis, Mueller e Melewar (2003), Dalmoro e Rossi (2010), entre outros. Segundo Shimp e Sharma (1987), o conceito de consumidor etnocêntrico surgiu na sequência da adaptação do conceito geral de etnocentrismo, desenvolvido por Sumner, em 1906.

Embora o conceito de etnocentrismo posteriormente se tenha associado ao comportamento de compra dos clientes, inicialmente era associado a questões éticas, religiosas e nacionalistas. Para Sumner (1906), o conceito de etnocentrismo, a nível sociológico, é ilustrado pela situação em que um determinado grupo se considera egocêntrico, sendo que todos os outros são dimensionados e avaliados à luz das suas referências e por sua vez são considerados inferiores.

Segundo Balabanis e Diamantopoulos (2004), referenciado por Dalmoro e Rossi (2010), o consumo etnocêntrico é uma aplicação do conceito geral de etnocentrismo no contexto do comportamento do consumidor. Para Axelrod e Hammond (2003) o etnocentrismo é visto por meio de duas vertentes: a do favoritismo e a da hostilidade. A primeira evidencia-se nos elementos de um determinado grupo, enquanto a segunda manifesta-se nos membros alheios ao grupo.

Segundo o estudo de Shimp, Sharma e Shin (1995) e de Shankarmahesh (2006), as tendências etnocêntricas inerentes aos consumidores não se desenvolvem isoladamente, desenvolvem-se sim por meio de um conjunto de fatores sociais, psicológicos, económicos, políticos e demográficos, os quais se encontram diretamente relacionados.

Pode-se referir, ainda, que a etnocentricidade intrínseca ao comportamento do consumidor resulta da preocupação do indivíduo para com o próprio país, nomeadamente ao nível da perda de controlo dos respetivos interesses económicos que possam ser causados pelo fenómeno do aumento das importações.

No seguimento desta preocupação, para os consumidores fortemente etnocêntricos, a compra de produtos estrangeiros não se restringe apenas a uma questão económica, mas também a uma questão moral. Este envolvimento a nível moral faz com que o consumidor, na falta de produtos regionais, opte pela compra de produtos nacionais, mesmo que estes apresentem uma qualidade inferior à dos produtos importados. Para Dalmoro e Rossi (2010), quando as alternativas nacionais não estão disponíveis, o consumidor cria uma identificação positiva para com os países culturalmente próximos, autovalorizando assim os produtos destes países. Como resultado da empatia criada, dá-se a rejeição da compra de produtos oriundos de países com os quais o cliente não estabelece envolvimento cultural.

Além dos fatores já mencionados, a idade e o sexo, também exercem uma grande influência no grau de etnocentrismo dos indivíduos. De uma forma geral e de acordo com as pesquisas efetuadas por diversos autores (Sharma et al., 1995; Garcia, Gozalez e Mauad, 2010; Josiassen, Assaf e Karpen, 2011), os consumidores mais velhos são mais etnocêntricos do que os mais jovens e os consumidores do sexo feminino tendem a ser mais etnocêntricos do que os consumidores do sexo masculino.

Os modelos apresentados expõem alguns dos fatores que regulam o grau de etnocentricidade dos consumidores, mas Siemieniako et al. (2011), aquando do desenvolvimento da sua pesquisa, criaram um modelo, que não só apresenta os antecedentes

e os fatores que por sua vez podem condicionar o comportamento do consumidor, como também apresentam os efeitos causados pelo etnocentrismo.

A maioria dos estudos efetuados tem como linha de orientação uma escala que analisa a tendência etnocêntrica dos consumidores. Esta escala, criada em 1987 por Shimp e Sharma, denominada de CETSCALE (consumer ethnocentric tendencies scale), tem facilitado a medição do grau de etnocentrismo presente no comportamento dos consumidores. Por sua vez, esta escala já foi validada por outros investigadores e inclusive testada em outros países como por exemplo Alemanha Ocidental, França, Japão e Coreia (Sharma et al., 1995). Posteriormente, segundo o estudo de Chowdhury (2012), esta escala já foi testada na Austrália, Áustria, Grã-Bretanha, República Checa, Polónia, Hong Kong, México, Nova Zelândia, Turquia, Índia, Malásia, Holanda e inclusivamente este autor testou a CETSCALE no Bangladesh. Além das análises já mencionadas, esta escala ainda foi testada em Moçambique por John e Brady (2009), na Rússia e Canadá por Saffu e Walker (2005), em Espanha por Martínez, Zapata e García (2000), no Brasil por Strehlau et al. (2012), entre outros países.

Contudo, apesar da CETSCALE servir de base para inúmeros estudos, necessita sempre de ser modificada e adaptada, consoante o país em análise, na medida em que algumas das questões presentes na escala se adequam a certos países, enquanto outras não.

De acordo com Balabanis e Diamantopoulos (2004), a tendência para o consumo de produtos domésticos não é uniforme, variando de acordo com o produto, o que por sua vez influenciará a tendência para a compra de produtos domésticos, levando a que se questione se dentro de um país se podem encontrar efeitos similares ao nível das regiões.

Dado o contexto económico no qual a sociedade está inserida, cada vez mais o cliente procura satisfazer as suas necessidades, consumindo produtos essenciais ao mais baixo preço. Porém, existem situações em que a escolha do consumidor reflete a influência de outras dimensões, mitigando a preponderância dos preços baixos.

Tendo em consideração que o crescente desenvolvimento do mercado, em muito veio potenciar o surgimento das ditas “marcas brancas”, o cliente procura consumir estes artigos, na medida em que na maioria dos casos vai ao encontro da satisfação das suas necessidades, possibilitando assim uma poupança monetária a nível de consumo. (Garcia, Gonzalez e Mauad, 2010).

Apesar das marcas fazerem parte da vida dos consumidores, em qualquer parte do mundo, o valor da marca reflete-se na forma como os consumidores sentem e agem sobre a marca e o preço. Deste modo, a relação existente entre o cliente e a marca é vital aquando do processo de decisão de compra. Quando o consumidor identifica uma marca como sendo satisfatória, não só cria uma relação de lealdade para com esta, como também cria um instinto de repetição da compra do bem associado à marca (Caldas e Godinho, 2007).

METODOLOGIA

Este estudo procura aferir a relação entre o WTP e o grau de etnocentricidade existente no comportamento dos consumidores, tendo como linha de orientação investigações desenvolvidas nestas áreas por diversos autores, nomeadamente Shimp e Sharma (1987); Garcia, Gonzalez e Mauad (2010); Caldas e Godinho (2007); Josiassen et al. (2011); Gao e Knight (2007); Balabanis e Diamantopoulos (2004); Giglio (2005); Samara e Morsch, (2005), entre outros, mencionados no decorrer da revisão bibliográfica efetuada.

De modo a entender a relação entre os consumidores regionais e os produtos dessa região, é importante observar o tipo de comportamento que os clientes assumem perante este género de produtos, bem como os fatores que o condicionam. Assim sendo foram definidas as seguintes hipóteses com base nas combinações múltiplas de alguns fatores que influenciam a decisão de compra:

H1: Os fatores de decisão de compra de produtos regionais que influenciam o WTP dos consumidores.

H2: As categorias de produtos regionais consumidas influenciam o WTP dos consumidores regionais.

H3: O WTP por consumir produtos regionais influencia o grau de etnocentrismo dos consumidores locais.

Foi escolhida como região alvo do estudo a região autónoma dos Açores, onde se têm verificado diversas utilizações do conceito regional, como elemento de promoção de determinadas marcas e produtos.

Para efetuar a recolha de dados, foi utilizado o método do questionário *online*. Este questionário foi fundamentado com elementos da revisão de literatura e a sua estrutura assentou em quatro grupos de questões principais. O primeiro grupo referia-se ao momento de compra dos consumidores, o segundo incidia na temática do *willingness to pay* (disposição em pagar pelos produtos), o terceiro conjunto de questões abrangia a temática da etnocentricidade do consumidor e, por fim, o último grupo, de carácter mais pessoal, assentava na caracterização sociodemográfica dos indivíduos inquiridos. O tratamento de dados compreendeu a elaboração de um índice sintético com as componentes do CETSCALE, de uma análise de clusters e da análise de diferenças de médias entre os clusters, com vista à validação dos postulados.

PRINCIPAIS RESULTADOS

De acordo com o objetivo do estudo, que pretende aferir o modo como os consumidores de uma região percebem os produtos regionais e tendo em consideração o levantamento efetuado aquando da revisão de literatura, foi definido um modelo de investigação que permitisse retirar conclusões que suportassem a análise da temática em estudo e que se traduziu num inquérito efetuado online a habitantes das nove ilhas dos Açores.

Foram obtidos 345 respostas, sendo 222 sexo feminino e 123 do sexo masculino. Refira-se que no universo questionado, houve um indivíduo do sexo masculino que afirmou não consumir produtos regionais, enquanto que todos os demais afirmam consumir com padrões de frequência díspares. Constata-se, ainda, que as mulheres afirmam consumir diariamente produtos regionais com maior incidência que os homens (67% dos inquiridos masculinos consomem diariamente e 78% das mulheres inquiridas consomem diariamente).

Como forma de verificar qual o grau de etnocentricidade que a amostra em análise apresenta, foi desenvolvido um índice sintético, com base na literatura, nomeadamente no estudo de Shimp e Sharma (1987), os quais criaram um constructo mensurável que permite medir as tendências do consumidor etnocêntrico através da utilização de uma escala, a CETSCALE (Consumer Ethnocentric Tendencies Scale).

De acordo com o Alpha de Cronbach obtido (0,881), é possível verificar-se que o índice sintético apresentado possui uma fiabilidade elevada.

Table 1 – Índicesintético

Índice	Indicadores	Média	Desvio-Padrão	Alpha de Cronbach
Etnocentrismo do Consumidor	Consumidores que compram produtos de fora da região são responsáveis pelo desemprego na região?	1,86	0,739	0,881
	As marcas estrangeiras não deveriam ser comercializadas na região?	1,89	0,672	
	Pessoas residentes nos Açores não deveriam comprar produtos não regionais porque isso prejudica as empresas regionais e origina desemprego?	2,32	0,794	
	Os produtos estrangeiros deveriam sofrer um forte agravamento de impostos/taxas?	2,38	0,798	
	Apenas os produtos que não são produzidos nos Açores deveriam ser importados?	2,4	0,873	
	Só se deveriam comprar produtos estrangeiros das categorias que não fossem possíveis produzir na região?	2,48	0,859	
	Deverá existir reduzida ou nula importação de produtos de outras regiões ou países, salvo necessário?	2,49	0,814	
	Um verdadeiro açoriano deveria comprar sempre marcas regionais?	2,63	0,842	
	Deviam-se colocar limites às importações?	2,65	0,775	
	Quem vive nos Açores deveria comprar sempre produtos açorianos, em vez de produtos importados?	2,87	0,821	
	Devíamos comprar sempre produtos produzidos na região, em vez de deixar outras regiões e países enriquecerem à nossa custa?	2,88	0,854	
	Pode custar um pouco mais, mas prefere consumir produtos regionais?	2,97	0,66	
	É sempre melhor comprar produtos regionais?	3,03	0,72	
	À falta de produtos regionais é sempre melhor comprar produtos nacionais?	3,23	0,61	
	Comprar produtos açorianos, ajuda a economia regional?	3,75	0,487	

Uma vez realizado o índice sintético da etnocentricidade, procedeu-se à realização da análise de *Clusters*, de modo a verificar em que medida o comportamento dos indivíduos inquiridos se aproxima ou se afasta quanto à etnocentricidade que possuem face aos produtos açorianos.

Table 2 – Resultados dos clusters

	Cluster 1(n=104)	Cluster 2(n=89)	Cluster 3(n=146)
Comportamento etnocêntrico	(Pouco Etnocêntrico) 2,1	(Muito Etnocêntrico) 3,3	(Etnocêntrico Moderado) 2,6

Analisando os três agrupamentos encontrados verifica-se que os jovens se encontram maioritariamente no cluster 1 e possuem uma sensibilidade ao preço superior. Muito embora, afirmem não considerar os preços praticados pelas marcas regionais como sendo muito elevados.

Procurou-se, ainda, identificar em que medida as características demográficas influenciam o comportamento dos indivíduos, nomeadamente em termos da etnocentricidade que estes podem apresentar, por meio da análise das tabelas de contingência.

Table 3 – Nível etnocentricidade vs WTP dos clusters

Tukey HSD		Subconjunto para $\alpha = 0.05$	
		1	2
Grau Etnocentricidade	N		
Pouco Etnocêntrico	134	2,82	
Moderado	147	2,93	
Muito Etnocêntrico	56		3,41
Sig.		,487	1,000

Outra das vertentes analisadas neste estudo prende-se com a disposição que os consumidores têm em pagar mais por consumir produtos regionais tendo em consideração os fatores decisores de compra, fatores estes referenciados na literatura.

Desta forma, tendo como base a sensibilidade que os consumidores têm em relação ao valor dos produtos açorianos, utilizou-se o teste de variância multifatorial para identificar em que medida os fatores decisores de compram (qualidade, notoriedade da marca, inovação e benefícios para a saúde) afetam o WTP do cliente, tendo-se constatado que todos estes elementos são determinantes da decisão de compra.

CONSIDERAÇÕES FINAIS

Este trabalho contribui para o reforço da literatura no domínio do comportamento do consumidor e da gestão de marcas, confirmando os resultados obtidos por outros investigadores e aplicando o modelo a uma região, o que reestrutura o conceito inicial de etnocentricidade e testa-o não com relação a um país, mas a uma parcela territorial deste, com características particulares.

No decorrer da presente pesquisa, foi possível verificar-se que as principais conclusões obtidas vão ao encontro das evidenciadas ao longo da revisão bibliográfica, reforçando por sua vez, as pesquisas efetuadas no que concerne à etnocentricidade e o WTP dos consumidores.

No que respeita o comportamento dos consumidores regionais a primeira ilação está associada à existência de uma consciência etnocêntrica. Foi, também, possível verificar-se que os consumidores se podem agrupar de acordo com o grau de etnocentrismo inerente ao seu comportamento de compra em consumidores pouco, muito e moderadamente etnocêntricos. Evidentemente o grau de etnocentrismo inerente varia de acordo com a idade e género dos indivíduos, sendo possível identificar-se que os consumidores mais jovens tendem a assumir um comportamento menos etnocêntrico perante os produtos de açorianos, ao invés dos consumidores mais velhos, ponto este que vai ao encontro da ideologia defendida por alguns autores no decorrer da revisão bibliográfica referenciada, nomeadamente Josiassen et al. (2011), Balabanis et al. (2001); Bom e Huddleston, (1995); Sharma et al. (1995), Strehlau, Ponchio e Loebel (2012) e Tiago (2011). Relativamente ao género, as mulheres residentes na região Açores tendem a assumir um comportamento mais etnocêntrico do que os homens, o que também vai ao encontro dos ideais defendidos pelos autores mencionados anteriormente.

Quando a disponibilidade em pagar mais por consumir um determinado produto é referenciada, muitos dos inquiridos acabam por evidenciar uma atitude mais generalizada, uma vez que independentemente do grau de etnocentrismo associado ao seu comportamento, os consumidores regionais são do acordo que os produtos açorianos apresentam um preço de venda ao público elevado, comparativamente a outras marcas. Contudo, embora se verifique esta similaridade de opiniões, o grupo de consumidores portadores de um comportamento mais etnocêntrico, encontra-se disposto em pagar mais pelo consumo de produtos açorianos.

No que concerne ao tipo de produtos consumidos pelos consumidores regionais, existe uma maior afluência ao consumo de produtos de origem açoriana nas categorias dos frescos, nomeadamente leite e seus derivados, peixe, carne e fruta, na categoria das compotas

e doces e ainda na categoria de bolachas e aperitivos. Em contrapartida a categoria das bebidas não apresentam uma incidência de preferência pelo consumo de marcas açorianas, o que por sua vez poderá significar que os produtores desta categoria de produtos necessitam de proporcionar um maior destaque aos bens que produzem.

Para além das conclusões evidenciadas anteriormente, ao longo desta pesquisa, verificou-se que os fatores influenciadores de decisão de compra cujos consumidores regionais mais consideram são o preço, a qualidade, a notoriedade, a inovação do produto e os benefícios para a saúde que os produtos podem proporcionar. De todos os fatores mencionados anteriormente, aquele que faz com que os consumidores estejam dispostos em pagar mais por consumir um bem de origem açoriana foi o fator benefícios para a saúde, na medida em que por ser açoriano, por vezes os consumidores associam-no como um produto mais natural.

Os resultados obtidos no decorrer desta pesquisa poderão contribuir para uma melhor compreensão do comportamento do consumidor regional, por parte das empresas e organizações locais, de modo a que sejam desenvolvidos novos meios de produção e promoção dos produtos dessa região, através da criação de novas gamas de produtos e expansão das já existentes, visando a adaptação dos produtos aos diferentes tipos de consumidores. Para tal será imprescindível ter em consideração o tipo de consumidor, nomeadamente aqueles que são mais ou menos etnocêntricos e aqueles que estão dispostos em pagar mais por consumirem produtos regionais ao invés daqueles consumidores cujo preço dita as suas escolhas.

Apesar das conclusões apresentadas, verificaram-se algumas limitações sobretudo no que respeita a constituição da amostra utilizada. A dispersão geográfica provocada pelo facto dos Açores serem um arquipélago formado por 9 ilhas, dificultou a recolha de informação, porque embora tenham sido utilizadas as redes sociais como meio de divulgação do inquérito, a ilha com maior afluência foi São Miguel, o que por sua vez condicionou a amostra, uma vez que acabou por não ser representativa de todos os consumidores da região Açores. Este estudo servirá de ponto de partida para pesquisas mais minuciosas, para que assim se possa realmente compreender qual o comportamento do consumidor regional perante as diversas categorias de produtos da região, tendo sido os Açores um ponto de partida para a análise do regionalismo do consumo.

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OUTLIERS AND SOME NON-TRADITIONAL MEASURES OF LOCATION IN ANALYSIS OF WAGES

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Abstract

The paper deals with an analysis of how to use certain measures of location in analysis of wages. One of traditional measures of location – the mean should to offer typical value of variable, representing all its values by the best way. Sometimes the mean is located in the tail of the distribution and gives very biased idea about the location of the distribution. The removing of outliers, if any, or using of different measures of location could be useful in these cases. Outliers are characterized and some robust methods of their detecting are described in the paper. Then the trimmed mean and M-estimators are characterized. Computing of one-step M-estimator and modified one-step M-estimator of location is described. The possibilities of using these tools are illustrated on the analysis of the gross yearly wages of employers of one Slovak firm in the year 2013.

Keywords: Detecting outliers, trimmed mean, one-step M-estimator, modified one-step M-estimator, analysis of wages

Introduction

The distribution of wages is obviously skewed and outliers are present. Then, the interpretation power of the mean is very small⁴³ It will be shown that the removing outliers or alternatively, using of some non-traditional measures of location could be interesting.

Outliers are defined as unusually large or small values. Sometimes introduction of outliers into the investigations can lead to the loss of interpretation power of results, so the methods of their detection are applied. Sometimes the using of some non-traditional measures of location is appropriate. One from these measures is trimmed mean. Trimmed mean refers to a situation where a certain proportion of the largest and smallest values are removed and from the rest, the mean is calculated. M-estimators provide another class of measures of location that have practical value. Their construction requires the detection of outliers. The paper focuses on the analysis of outliers, description of the trimmed mean and M-estimators and on their application in the analysis of wages.

Outliers

In almost every series of observations, some are found, which differ so much from the others as to indicate some abnormal source of error not contemplated in the theoretical discussions and the introduction of which into the investigations can only serve to perplex or mislead the inquirer (Barnett, Lewis, 1994). Such observations are call outliers. We shall define an outlier in a set of data to be an observation (or subset of observations) which appears to be inconsistent with the reminder of that set of data (Barnett, Lewis, 1994).

⁴³More in details in Halley, 2004; Terek, 2008; Terek, Nguyen Dinh He, 2011.

What characterizes the outlier is its impact on the observer – not only it will appear extreme but it will seem, in some sense, surprisingly extreme.

Outlying observations are not necessarily bad or erroneous. There are the situations in which an outlier can indicate for example some unexpectedly useful industrial treatment. Frequently, outliers are very useful in the fraud recognition. In the situations like these, it may not be necessary to adopt either of the extremes: of rejection (with a risk of the loss genuine information) or inclusion (with the risk of contamination). Sometimes the using of the robust methods of inference which employ all the data but minimize the influence of any outliers is useful. The detection of outliers requires the assessing the integrity of a set of data.

Detecting outliers

The first strategy is based on the sample mean and sample standard deviation. If the normal distribution of the population is supposed, it is obvious to consider as outlier a value which is more than 2,24 standard deviations σ from the mean μ :

$$\frac{|x - \mu|}{\sigma} > 2,24$$

Generally μ and σ are not known but they can be estimated from the data using the value of the sample mean \bar{x} and of the sample standard deviation s . Then the following decision rule can be formulated:

The value x is declared to be an outlier if

$$\frac{|x - \bar{x}|}{s} > 2,24 \quad (1)$$

where $s = \sqrt{\frac{1}{n-1} \sum_{j=1}^n (x_j - \bar{x})^2}$

The described method can lead to the problem known as masking. Outliers inflate both the sample mean and the sample standard deviation, which in turn can mask their presence when using equation (1) (Wilcox, 2003).

The rule for detecting outliers that is not itself affected by outliers is needed. Two robust methods of outliers detection will be describe.

The method based on quartile range

This method is based on quartile range R_Q :

$$R_Q = x_{\frac{3}{4}} - x_{\frac{1}{4}}$$

where $x_{\frac{3}{4}}$ is the third quartile,

$x_{\frac{1}{4}}$ – the first quartile

The value is outlier if:

- is greater or equal as $(x_{\frac{3}{4}} + 1,5 R_Q)$,
- is less or equal as $(x_{\frac{1}{4}} - 1,5 R_Q)$.

The method based on MAD

Firstly a measure of dispersion called median absolute deviation – MAD will be described. To compute it, first compute the value $x_{1/2}$ of the sample median $X_{1/2}$, then compute the absolute values of the differences:

$$|x_i - x_{1/2}| \text{ for } i = 1, 2, \dots, n$$

Generally, MAD does not estimate σ , but it can be shown that when sampling from a normal distribution,

$$\text{MADN} = \frac{\text{MAD}}{0,6745}$$

estimates σ as well (Wilcox, 2003).

The robust decision rule for the detection of outliers is following:

The value x is declared to be an outlier if

$$\frac{|x - x_{1/2}|}{\text{MADN}} > 2,24 \tag{2}$$

A trimmed mean

The value of the trimmed mean is calculated from the data, from which a certain proportion of the largest and smallest observations are removed and the remaining observations are averaged. For example 10% trimmed mean is calculated from the data from which 10% of the largest and 10% and smallest observations were removed.

A fundamental issue is deciding how much to trim. When addressing a variety of practical goals, 20% trimming often offers a considerable advantage over not trimming and the median (Wilcox, 2003).

M-estimators

M-estimators are from another class of measures of location. For example, if for any n values X_1, X_2, \dots, X_n we want to choose c so that it minimizes the sum of squared errors,

$$\sum_{i=1}^n (X_i - c)^2 \tag{3}$$

It can be shown that it must be the case that $\sum_{i=1}^n (X_i - c) = 0$. From this last equation $c = \bar{X}$.

So, when we choose a measure of location based on minimizing the sum of the squared errors given by (3), this leads to using the sample mean. But if we measure how close c is to the n values using the sum of absolute differences, the sample median minimizes this sum (Wilcox, 2003).

Generally, there are infinitely many ways of measuring closeness that lead to reasonable measures of location. For example, if we measure the closeness by $\sum_{i=1}^n |X_i - c|^a$, then setting $a = 1$ leads to the median, and $a = 2$ leads to the mean.

Let us have any function Ψ having the property: $\Psi(-x) = -\Psi(x)$, we get a reasonable measure of location, provided the probability curve is symmetric, if we choose c so that it satisfies

$$\Psi(X_1 - c) + \Psi(X_2 - c) + \dots + \Psi(X_n - c) = 0 \tag{4}$$

Measures of location based on (4) are called M-estimators.

The calculation of the M-estimators requires the detection of outliers.

One-step M-estimator

Let n_1 be the number of observations X_i , for which

$$\frac{(X_i - X_{1/2})}{MADN} < -K$$

and let n_2 be the number of observations such that

$$\frac{(X_i - X_{1/2})}{MADN} > K$$

where typically $K = 1,28$ is used. The one-step M-estimator of location (based on Huber's Ψ) is

$$\hat{\mu}_{os} = \frac{K(MADN)(n_2 - n_1) + \sum_{i=n_1+1}^{n-n_2} X_{(i)}}{n - n_1 - n_2} \tag{5}$$

where $X_{(i)}$ is i -th order statistic⁴⁴.

The calculation of the value of M-estimator requires the determination of outliers using the method in 2.1.2, except that (2) is replaced by

$$\frac{|X - X_{1/2}|}{MADN} > K \tag{6}$$

Next, remove the values flagged as outliers and average the values that remain. For technical reasons, the one-step M-estimator makes an adjustment based on MADN, a measure of scale plus the number of outliers above and below the median (Wilcox, 2003).

A modified one-step M-estimator

Sometimes a simple modification of one-step M-estimator is used:

$$\hat{\mu}_{mom} = \frac{\sum_{i=n_1+1}^{n-n_2} X_{(i)}}{n - n_1 - n_2} \tag{7}$$

Here, $K = 2,24$ is used to determine n_1 and n_2 (Wilcox, 2003).

Analysis of wages

The possibilities of application of the described tools will be illustrated on the analysis of the gross yearly wages of 251 employees of the firm Medirex in Slovak republic in the year 2013. Table 1 presents the values of some descriptive measures, computed with aid of the software MS Excel 2007 (Tibenský, 2014).

Tab. 1 Descriptive measures of the gross yearly wage

Count	251
Average	9873,68
Median	9114,43
Standard deviation	5438,019
Minimum	921,36
Maximum	55303,78
Range	54382,42

⁴⁴Order statistic is determined by its ranking in a non-decreasing arrangement of random variables.

The frequency distribution is in the table 2 (Tibenský, 2014).

Tab. 2 Frequency distribution of the gross yearly wage

Gross yearly wage	Frequency
- 5 000	15
5 000 - 10 000	144
10 000 - 15 000	78
15 000 - 20 000	7
20 000 - 25 000	4
25 000 - 30 000	1
30 000 -	2

In figure 1 is the histogram for the gross yearly wages.

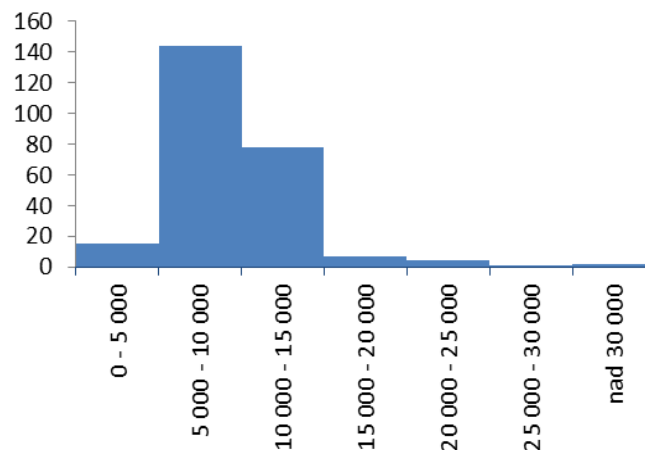


Figure 1 Histogram for the gross yearly wages

It is evident from the histogram, that the distribution of wages is highly skewed on the right. It seems that the mean is not the best measure of the „typical“ wage of employee in the population.

Detecting and removing outliers

The outliers will be detected with aid of the method based on quartile range. 22 outliers were detected by this method. Table 3 presents the values of some descriptive measures after removing these 22 outliers (Tibenský, 2014).

Tab. 3 Descriptive measures of the gross yearly wage after removing of outliers

Count	229
Average	9397,36
Median	9111,95
Standard deviation	2298,947925
Minimum	3398,17
Maximum	15783,95
Range	12385,78

In the table 3 can be seen that the range and standard deviation decreased. The change of median is only small, the change of the mean is important. The distance between median and mean is much smaller. Now, the mean better characterizes the typical yearly wage.

M-estimators in analysis of wages

Firstly, the detection of outliers with aid of the method based on MAD is necessary. The values $MAD = 1606,7$ and $MADN = MAD/0,6745 = 2382,061$ were calculated. Then, detecting outliers based on condition (6) was applied and the values of M-estimators were

computed. The values used in the computing of one-step M-estimator are in table 4 (Tibenský, 2014).

Tab. 4 Values used in computing of one-step M-estimator

Count	251
MADN	2382,061
K	1,28
n_1	23
n_2	44

$$\hat{\mu}_{os} = \frac{K(\text{MADN})(n_2 - n_1) + \sum_{i=n_1+1}^{n-n_2} X_{(i)}}{n - n_1 - n_2} = \frac{1,28 \cdot 2382,061(44 - 23) + 1\,643\,129,64}{251 - 23 - 44} \approx 9\,278,04$$

The values used in the computing of modified M-estimator are in table 5 (Tibenský, 2014).

Tab. 5 Values used in computing of modified one-step M-estimator

Count	251
MADN	2382,061
K	2,24
n_1	13
n_2	15

$$\hat{\mu}_{mom} = \frac{\sum_{i=n_1+1}^{n-n_2} X_{(i)}}{n - n_1 - n_2} = \frac{2\,089\,446,25}{251 - 13 - 15} \approx 9\,369,71$$

Then the 20% trimmed mean was computed. All results are in table 6.

Tab. 6 Descriptive Measures

Mean	9873,68
Median	9114,43
20% Trimmed mean	9 375,36
$\hat{\mu}_{os}$	9 278,04
$\hat{\mu}_{mom}$	9 369,71

Conclusion

It can be seen that the detecting and removing outliers were very useful in the analysis of wages. The mean and median became much closer, the variability of the data was much less as before as well. Then the traditional measures of location – mean and median can better characterize the data. In our opinion this is the first possibility for improving the analysis of wages and making the results more consistent, giving better idea about the typical wage in the population.

The second possibility is the calculation of some non-traditional measures of location. The value of 20% trimmed mean is 9 375,36 EUR, value of one-step M-estimator is 9 278,04 EUR, value of modified one-step M-estimator is 9 369,71 EUR and value of median is 9114,43 EUR in the analysis. The values of measures are only slightly different. Each of these certainly better characterizes typical yearly wage of an employee in analyzed period as mean, equal to 9873,68 EUR, which is evidently highly influenced by a small number unusually high wages.

In our opinion, analysis of outliers followed by calculating of traditional measures of location or alternatively the calculating of some non-traditional measures of location like, trimmed means and M-estimators are efficient tools for obtaining more real and true view to the typical wage.

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THE EFFECT OF PERSONAL AND GENERAL UNEMPLOYMENT ON SUBJECTIVE WELL-BEING

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Abstract

This paper aims to add a multilevel perspective to understanding of self-reported well-being. Not only individual level factors but also country level determinants influence our satisfaction, therefore single level models that prevail in the analysis of subjective well-being are not appropriate. The main focus lies in the analysis of the impact of personal unemployment and country's unemployment rate on life satisfaction of individuals. A two-level regression model is developed. Factors describing individual's characteristics are included at the within level, while gross national income per capita and unemployment rate are between level variables. In order to obtain the moderating effects of unemployment rate on the influence of individual's employment status on subjective well-being, a random intercept random slope model is estimated using the cross-sectional data from the sixth wave of World Values Survey. The results show that the negative effect of personal unemployment increases with the unemployment rate in the economy.

Keywords: Personal unemployment, unemployment rate, subjective well-being, reference groups, multilevel model

Acknowledgment

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Introduction

The idea of using self-assessments of life satisfaction or happiness as a way of evaluating the quality of a society goes back to Aristotle (Helliwell, 2003). In the past 20 or 30 years the economics of happiness and subjective well-being (SWB) has made a big breakthrough, which is reflected in the number of articles considering quality of life and its determinants in mainstream economic journals.

Subjective well-being can be interpreted similarly as utility, but it incorporates more than just the consequences of our choices. Psychologists use subjective well-being as a term that covers how we think and feel about our lives (Diener et al., 1999).

Studies on the determinants of SWB are usually based on the surveys, where the self-reported SWB is often a response to a single question. Researchers have proved that despite some concerns, these appear to be relatively robust indicators of a person's SWB (Dolan, Peasgood & White, 2008).

The self-reported SWB is modeled as a function of true SWB, which is determined by a number of individual, social and economic factors. Most common this is modeled as an additive function, where the error term captures individual differences in self-evaluation (ibid.):

$$SWB_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \varepsilon_i.$$

The two most important economic factors are unemployment and income and their effects on SWB have been studied by many researchers. In both cases we have to distinguish between the individual and country level (relative income vs. national income and individual unemployment & unemployment rate).

Clark, Frijters, and Shields (2008) provide a review of the evidence on the impact of relative and absolute income from the subjective well-being literature. In most developed countries economic growth does not lead to greater life satisfaction, while for poorer countries there is a positive relationship between the income growth and increases in the subjective well-being. This can be explained by diminishing marginal utility and is known as Easterlin paradox. Easterlin (1974) was namely the first one, who empirically showed that »national comparisons among countries and over time show an association between income and happiness which is so much weaker than, if not inconsistent with, that shown by within-country comparisons«. Many studies have confirmed the Easterlin's findings that relative income dominates the absolute income effect (e.g. Clark & Oswald, 1996, Luttmer, 2005).

In contrast to the view of new classical economists who consider unemployment as voluntary, studies on SWB support the idea that unemployment is burdensome and involuntary (Frey & Stutzer, 2002). Unemployed have around 5-15% lower SWB scores than the employed (Dolan, Peasgood & White, 2008). Winkelmann and Winkelmann (1998) have shown that » the adverse effect of unemployment is much stronger than the effect of nonparticipation«. In other words the effect of unemployment exceeds the effect of related loss of income. Same authors also provide evidence that the selection bias is minimal, which means that unemployed individuals are not those who were dissatisfied even before the job loss.

Alesina, Di Tella and MacCulloch (2004) were able to show the negative correlation between the SWB and the unemployment rates in the US, but failed to do the same on European data. On contrary, Di Tella, MacCulloch and Oswald (2001) have shown that even in Europe there is a negative effect of unemployment rate on SWB.

Non-economic factors are important as well. Empirical studies usually find social contact and health to be strongly correlated with subjective well-being (Fleche, Smith & Sorsa, 2011). Other factors include personal characteristics (e.g. Blanchflower & Oswald, 2004) and many more.

The empirical part of the paper is based on the last available (sixth) wave of the World Values Survey that was conducted between 2010 and 2014. Dataset is combined with the gross national income per capita and unemployment rate from World Bank database. Altogether there are 42 countries in the final sample and the sample size on individual level is 52,637 observations, which means that the average size of each cluster is 1,253 units.

This empirical study is intended to answer the following research questions:

- 1) How strong is the negative effect of personal unemployment on subjective well-being?
- 2) Does the overall unemployment rate in the economy affect life satisfaction of individuals?
- 3) Do people suffer more if they are jobless in a country with high or low unemployment rate?

Empirical analysis

The literature review in the previous chapter showed that the SWB is determined by factors on individual and country level. A problem that concerns the relationships between variables that are measured at a number of different hierarchical levels is a multilevel problem (Hox, 1995) and should therefore also be analyzed as such. Because of this multilevel structure, a single level analysis may be flawed. Another reason for a multilevel model lies in the World Values Survey data, which stem from a two-stage sampling design, where in first stage the primary units (countries) are sampled and then a random sample of

secondary units (individuals) is taken. The third important argument for two-level analysis comes from the previously stated research question number 3. To answer this question we have to choose a model that allows different slopes.

A multilevel modeling approach in the field of economics of happiness is still in its infancy. Despite an obvious multi-level problem most of the researchers still use single level models. Nevertheless, there are some exceptions (Schyns, 2002, Helliwell, 2003, Ballas & Tranmer, 2012).

Model

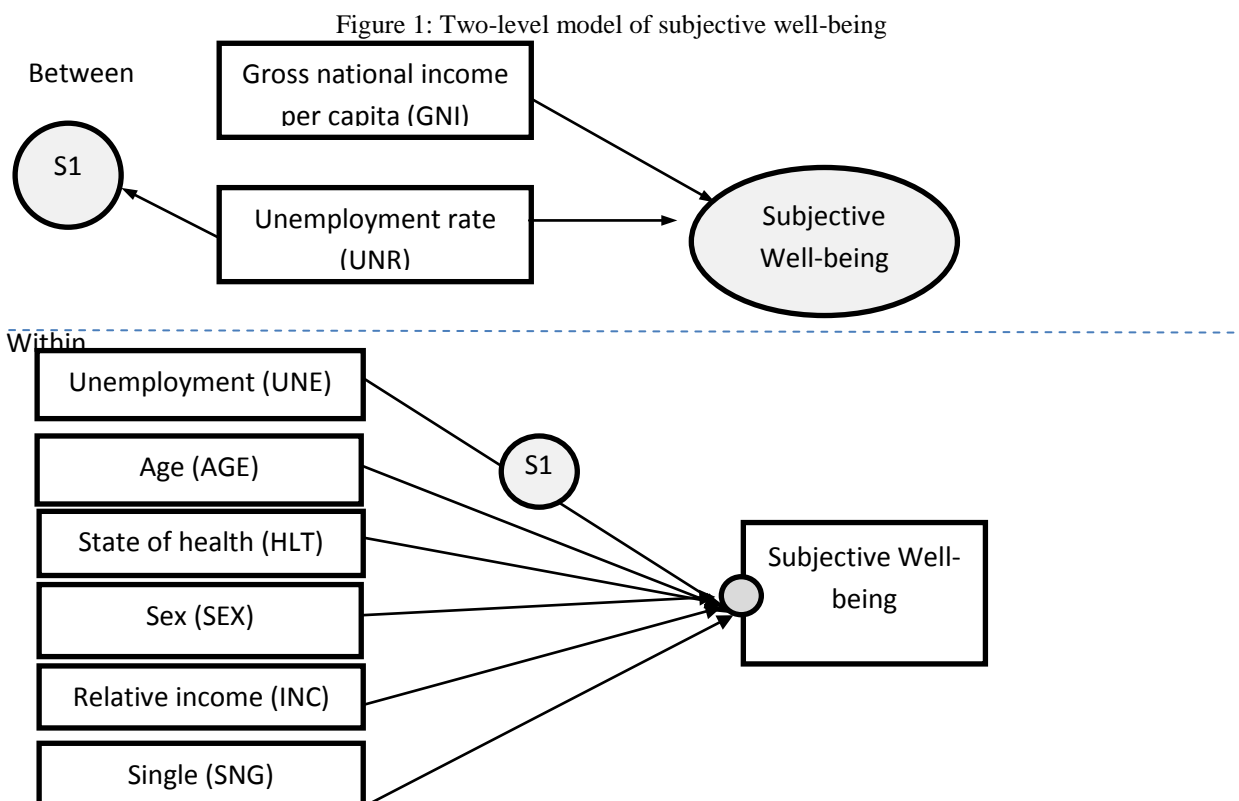
Based on the literature review we decide to include the following factors in our model:

- Age: measured in years
- Sex: male=0, female=1
- Health: very good=1, good=2, fair=3, poor=4
- Single status: married or living as married=0, single, divorced or widowed=1
- Relative income: a decile like group (self-reported)
- Employment status: unemployed=1, all other statuses=0
- Gross national income per capita (logged)
- Unemployment rate (ILO methodology)

The dependent variable in the model is subjective wellbeing. In the survey the respondents were asked to evaluate their satisfaction with life on a scale from 1 (dissatisfied) to 10 (satisfied). The following question was used: "All things considered, how satisfied are you with your life as a whole these days?"

As mentioned earlier in the text, most of the data stem from the sixth wave of World Values Survey. The exception are macroeconomic variables (unemployment and gross national income per capita), which were taken from the World Bank database.

Our two-level model is represented in *Figure 1*.



The same model can also be written as a combination of three equations. β_{g0} ($g = 1, \dots, 6$) are regression coefficients for level-one explanatory variables and γ_{0h} ($h = 1, 2$) are regression parameters for level-two explanatory variables, and e_{ij} and r_{0j} are the level-two and level-one residuals. The subscript j is for countries ($j = 1, \dots, J$) and the subscript i is for individuals ($i = 1, \dots, N_j$).

Within-group regression:

$$SWB_{ij} = \beta_{0j} + \beta_{10}UNE_{ij} + \beta_{20}AGE_{ij} + \beta_{30}HLT_{ij} + \beta_{40}SEX_{ij} + \beta_{50}INC_{ij} + \beta_{60}SNG_{ij} + e_{ij}. \quad (2)$$

Between-group regression:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}GNI_j + \gamma_{02}UNR_j + r_{0j}. \quad (3)$$

The third equation defines the relation between the slope (s_1) and unemployment rate:

$$\beta_{10} = \gamma_{10} + \gamma_{11}UNR_j + r_{1j}. \quad (4)$$

All three equations can easily be combined. By doing this we get an equation that includes two terms that are of special interest for us. One is $\gamma_{11}UNR_jUNE_{ij}$, which is the explained interaction between general and individual unemployment. The second term $r_{1j}UNE_{ij}$ is a random interaction between country and relative income, by which homoscedasticity is actually assumed in our model. In the model there are two random effects (r_{1j}, r_{0j}). For different groups, the pairs of random effects (r_{1j}, r_{0j}) are i.i.d. and they are independent of e_{ij} (Snijders & Bosker, 2012). All e_{ij} are i.i.d. as well.

Results and discussion

We used Mplus software to calculate the estimates. Our findings are in line with previous studies on the determinants of SWB. State of health⁴⁵ and relative income show positive effect on SWB. Women and couples are more satisfied than men and single. SWB increases with age. Higher GNI per capita increases life satisfaction of the citizens, while higher unemployment rates reduce it.

γ_{10} estimate is insignificant, therefore we can not confirm that being unemployed reduces SWB in all conditions. If the unemployment rate is very low, the estimated impact of joblessness is too close to zero to make a conclusion that unemployed persons are less satisfied than the rest. On the other hand the interaction between unemployment rate and individual unemployment is significant and negative, which means that the higher the unemployment rate is, the more obvious and significant is the negative impact of personal unemployment.

⁴⁵ Inverted scale: 1-very good, 5-very poor.

Table 1: Estimates

Fixed effect	Coefficient	S.E.	p
γ_{00} =Intercept	6.597**	0.309	0.000
γ_{10}	-0.097	0.118	0.409
Age	0.005**	0.001	0.000
State of health	-0.718**	0.025	0.000
Gender	0.143**	0.030	0.000
Relative income	0.220**	0.019	0.000
Being single	-0.217**	0.043	0.000
Unemployment rate	-0.039*	0.017	0.025
GNI per capita	0.275**	0.073	0.000
Interaction between personal and general unemployment	-0.029**	0.013	0.020
Random part	Parameters	S.E.	
Level-two random part			
$\tau_0^2 = \text{var}(r_{0i})$	0.358	0.087	
$\tau_1^2 = \text{var}(r_{1i})$	0.105	0.039	
$\tau_{01} = \text{cov}(r_{0i}, r_{1i})$	0.006	0.031	
Level-one variance			
$\sigma^2 = \text{var}(e_{ij})$	3.836	0.178	

The estimated regression coefficient of personal unemployment is:

$$b_{10} = -0.097 - 0.029\text{UNR}_j + r_{1j}. \quad (7)$$

Thereby we have confirmed our hypothesis that it is more burdensome to be unemployed in the countries where the unemployment rate is higher.

Conclusion

With the presented two-level model of SWB we were able to confirm the findings from previous studies on new dataset. In addition to this we have addressed an important and till now still unanswered question. The results of the empirical analysis show that being unemployed in a country with high unemployment rate is clearly worse than being unemployed in a country with low unemployment. This phenomenon can be explained by the difference in causes of personal unemployment in two different economic environments. When the economy is close to the natural rate of unemployment, those who are unemployed have voluntarily chosen to be jobless. There are enough jobs available, so whoever wants to find one, can do so. In such conditions unemployment is not burdensome or frustrating. Contrary, in economies with high unemployment rates, persons are jobless because there are not enough jobs available. In such conditions, unemployment is not a voluntary decision but a result of broader economic situation. Being unemployed is therefore burdensome and its effect on SWB consequently exceeds the effect of lost income.

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A STUDY ON THE ROLE OF FINANCIAL INSTITUTION IN PROMOTING ENTREPRENEURSHIP IN SMALL AND MEDIUM ENTERPRISES WITH REFERENCE TO BANGALORE

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Abstract

Small and Medium Enterprises is defined on the basis of their characteristics, that includes size of the capital, investment, number of employees, turnover, management behavior, location and market share but very commonly used characteristics is number of employees in the enterprise. Since Bangalore is a developing city here Small Scale Enterprise means a firm employing less than 50 workers and medium size enterprise would usually mean those that have 50-99 workers. SME's has also considered as a subject of discussions in many workshops and seminars locally and internationally. Government also plays a major role in various levels like local, state, and federal levels in formulating new policies with an aim of empowering, encouraging, and facilitating growth and development and performance of the SME's, even others institutions also focus on assisting the SME's to grow through soft loans and other fiscal incentives. The financial institution has been developed to support SME's on both theoretical and empirical grounds. It also inherent the weakness of SME's in accessing the financial services. Till today, the role of financial institution in developing SME's has been in satisfactory level and encouraging, but the dynamic of the present SME's focus the institution and banks for its further improvement in their performance. In this direction and attempt has been made to find the areas of improvement in performance and to suggest concrete ideas to this project.

Keywords: Financial Institutions, Small Scale Enterprise, Encouraging, Entrepreneurship, Developing, Facilitating

Introduction

The term micro, small and medium enterprises in India has been defined under section 7 of the Micro Small and Medium Enterprises Development act of 2006, it is an business concern or industrial undertakings or any other establishment engaged in the production or manufacturing of goods in any manner.

According to section 2(E) of Micro Small and Medium Enterprises can thus be a sole proprietorship or a partnership or an association of person.

The Micro Small and Medium Enterprises are of two categories:

1. Manufacturing Enterprises: These enterprises are engaged in the activities of producing or manufacturing of goods relating to any industry specified in first schedule to the industries (Development and regulation) act of 1951. Further these enterprises are classified according to investment made in the plant and machinery of the concern.

2. Service industry: These enterprises are engaged in the activities in providing service. Further these enterprises are classified in terms of the investments made in the equipment's.

Characteristics of SMEs: a) Individual initiatives & skills. b) Greater operational flexibility c) Low cost of production d) High propensity to adapt technology e) High capacity to innovate & export f) High employment orientation g) Utilization of locally available human & material resources and h) Reduction of regional imbalances.

In Bangalore small business are being described as the back bone of Bangalore Economy, the drivers of Bangalore economy and engine to the growth of the industries. Individual small sector and collective small sector in the developing countries emerged as a main player in most of the economy. SMEs also play a crucial role in increasing competitiveness and efficient market system. They limit the large enterprises monopoly and offer complementary services and engage in the fluctuation of modern economy. They enable the diversification of business modes with their flexibility and innovative nature they also help in reduction of poverty line. SMEs create more employment opportunities at higher rates than the large firms. They also create an efficient supply chains for industries and developing well prepared service sector that contribute to the development of GDP through value addition over a large range of activities. A main characteristic of small industrial enterprises is that they produce products mainly for the domestic markets through drawing on the general national resource. An improved quantity of SMEs will bring more flexibility to the economy, facilitate technological innovation and provide major opportunity for the development of new ideas and skills.

The classification of the enterprises as Micro Small and Medium Enterprises is based on investments made in the plant and machinery in case of manufacturing sector and investments made in equipment's in case of service sector as mentioned above, therefore an enterprises can have any business form like proprietorship concern, a partnership firm or association of person or limited liability partnership or a company. Majority of the SMEs can be classified, above 97.3 per cent of sole proprietorship and partnership firm, around 900 partnership firms have registered as limited liability partnership under LLP act of 2008 and very few of SMEs are incorporated as companies.

Financial institutions play an important role in financing and developing Small and Medium enterprises. There are many policies and schemes set up by the institutions in order to help SMEs sector particularly to agricultural sector. Financial institutions not only provide loans but also provide other facilities like management advices, training to employees, managing administration etc. in order to help SMEs. Therefore an overview of financial institutions in this study is important in order to know the roles and performance of financial institutions.

Objectives of the study:

- To evaluate the existing performance of Financial Institutions.
- To evaluate and study the policies and acquisition of new technologies in the growth of SMEs.
- To examine the impact of Financial Institutions on the demand for credit and investment by SMEs.
- To analyze the SMEs existence and financial problems of the SMEs and their dependency on the FIs.

Materials and methods

Tools for data collection

Primary data: This data has been collected by using the questionnaire with multiple choice answers. Personal interview was conducted from managers of financial institutions as well as from Small and Medium Enterprises.

Secondary data: It has been collected from various text books, related websites, related research papers and various magazines.

Research type: This paper is descriptive paper which studies the current scenario of the role of financial institutions in developing and supporting SMEs growth.

Limitation of the study:

- Analysis was based on the assumption that all the respondents information is true.
- Respondents provide data from their memory recall, there may only be rough estimates.
- Survey was restricted to hundred people because of time constraints.
- Survey was limited to geographical boundaries of Bangalore metropolitan city.
- The study is limited to SMEs satisfaction measures prevailing in financial institutions.
- The SMEs data was collected from rural Bangalore and from Kolar.

Observation by other researchers

1. On the research topic “The Role of Finance to Enhance Enterprise Development” (Ruben’s Ricupero Sept 2002) discussed about the number of leading banks have demonstrated in proving financial service to SME’s which can be turned into a highly profitable business.
2. In the research paper of “Report on Support to SME’s in Developing Countries through Financial Intermediaries.” (Dalbery Nov 2011). The author concluded that SME’s in developing countries are often hampered by an inability to obtain financial capital for growth and expansion and develops interventions to close the gap in financing and outlines contribution roles for public and multilateral actors.
3. “Financial Sector Reform Results in increased savings and Lending for the SME’s and the poor.” (Gibson Chigermira and Nicholas Masiyandima March 2003) they concluded that the financial sector liberalization to be successful SME’s should be implemented not in isolation but in conjunction with other matching and appropriate policies in the real, financial external and public sectors.
4. In the research paper “Innovative Approach to SME Financing in Nigeria: A Review of Small and Medium Industries Equity Investment Scheme (SMIEIS)” (OluwajobaAbereiyo, Isaac, and AbimbolaOluwagbengaFayomi 2005). The authors concluded that Nigerian banks should increase equity financing for SMEs by partnering with business development services that will increase the competencies of SMEs, providing training to the banking industry, arranging pre-investment exits, encouraging entrepreneurs to accept external help and ownership, and having a government that can assure a conducive investment and stable political environment.
5. In the research paper “Financing Innovation: How to Build an Efficient Exchange for Small Firms” (Yoo and JaeHoon 2007). They concluded that a market architecture supported by effective institutions and industrial policies is critical to the success of an SME exchange.

Discussion and results

This questionnaire was distributed to the members of the Financial Institutions and Small Scale Enterprises in Bangalore. From the data collected the analysis is carried on.

Analysis and Interpretation

The data has been collected with the help of questionnaire. And it has been analyzed and interpreted with the help of tables with relevant descriptions. Appropriate treatment has been done to the raw data and logical conclusions are drawn based on the findings.

Financial Institutions

Performance of Financial Institutions

i) Savings mobilization

Analysis: Table 4.1 shows that 52.2 per cent of respondents reported that financial institutions are not responsible for SMEs savings mobilization and 47.8 per cent of respondents believed that the financial institutions are responsible for SMEs savings mobilization.

Table 4.1: Responsibility of Financial Institutions in mobilizing Savings

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	24	52.2	52.2	52.2
	Yes	22	47.8	47.8	100.0
	Total	46	100.0	100.0	

Source: Primary data

Interpretation: In order to help the SMEs in savings mobilization financial institutions has to provide variety of services apart from the existing services.

Chi-square test

	Observed N	Expected N	Residual
No	24	23.0	1.0
Yes	22	23.0	-1.0
Total	46		

Test Statistics

Chi-Square(a)	.087
Df	1
Asymp. Sig.	.768

Null Hypothesis: The financial institutions are not responsible for savings mobilization of SMEs.

Alternative Hypothesis: The financial Institutions are responsible for savings mobilization of SMEs.

Result: Accept null Hypothesis.

ii) Sanctioning of loans and Advances

Analysis: From the table 4.2 it is clear that only 15.2 per cent of respondents reported that there is no increase in general lending's and remaining 84.8 per cent of respondents believed that there is increase in general lendings.

Table 4.2: Increase in general lending's

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	7	15.2	15.2	15.2
	Yes	39	84.8	84.8	100.0
	Total	46	100.0	100.0	

Source: Primary data

Interpretation: The survey indicates that most of the financial institutions have increased their general lendings in order to help in developing SMEs in Bangalore and very few financial institutions concluded that there is no increase in general lendings.

Chi-square test

	Observed N	Expected N	Residual
Yes	39	23.0	16.0
No	7	23.0	-16.0
Total	46		

Test Statistics

Chi-Square(a)	22.261
df	1
Asymp. Sig.	.000

Null Hypothesis: There is no significant difference in increasing general lending loans to SMEs by financial institution.

Alternative Hypothesis: There is significant difference in increasing general lending loans to SMEs by financial institution.

Result: Reject null hypothesis as there is significant difference in lending loans to SMEs by financial institutions.

iii) Competition level

Analysis: The table 4.3 shows that the above 97.8 per cent of respondents of financial institutions reported that financial institutions play an important role in increasing the level of competition among SMEs and only 2.2 per cent of respondents said that they don't play an important role in increasing the level of competition among SMEs.

Table 4.3: Plays an important role in increasing the level of competition among SMEs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	1	2.2	2.2	2.2
	Yes	45	97.8	97.8	100.0
	Total	46	100.0	100.0	

Source: Primary data

Interpretation: It is found that most of the respondents are responsible in increasing the level of competition in turn which contributes to the Indian economic development. The current trend economic growth and rapid industrial development has made India as one of the most ongoing economies in the world.

Chi-square test

	Observed N	Expected N	Residual
Yes	45	23.0	22.0
No	1	23.0	-22.0
Total	46		

Test Statistics

Chi-Square(a)	42.087
df	1
Asymp. Sig.	.000

Null Hypothesis: SMEs competition is not due to financial institutions.

Alternative Hypothesis: SMEs competition is due to financial institutions.

Result: Reject null hypothesis as the competition is among SMEs is due to financial institutions.

The policies and acquisition of new technologies in the growth of SMEs.

i) Policies and schemes

Analysis: From the table 4.4 it is said that only 28.3 per cent of respondents of financial institutions does not have any specific policy of lending credits and remaining 71.7 per cent of respondents has reported that they have specific policy of lending credit to the SMEs.

Table: 4.4: Specific policies and schemes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	13	28.3	28.3	28.3
	Yes	33	71.7	71.7	100.0
	Total	46	100.0	100.0	

Source: Primary data

Interpretation: From the above analysis it is found that most of the financial institutions have specific policy of lending credits to different sectors like agriculture, factory, service etc. with less interest rate.

Some of the schemes and policy are as follows as reported: Crop loans for agriculture, term loan for allied agriculture, transport and vehicles loans, cash credit facilities, loans for professionals, overdraft facilities, integrated village development scheme and collateral free loans for new entrepreneurs credit facilities upto one crore

i. Attitude

Analysis: The collected data 4.5 reveals the attitude of SMEs towards borrowings that is 39.1 per cent of respondents are aggressive towards borrowings, 15.2 per cent of respondents are reluctant towards borrowings and remaining 45.7 per cent of respondents are willing towards borrowings.

Table 4.5: Attitude of the SMEs towards borrowings.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Aggressive	18	39.1	39.1	39.1
	Reluctant	7	15.2	15.2	54.3
	Willing	21	45.7	45.7	100.0
	Total	46	100.0	100.0	

Source: Primary data

Interpretation: From the analysis it is found that only the SMEs those who are aggressive and willing have a frequent contacts with the financial institution for borrowings and utilize the benefits provided by them for the development and those who are reluctant towards borrowings because of worries about building up debt and the economy.

ii. Lending's

Analysis: It is analyzed from the table 4.6 that 30.4 per cent of financial institutions concentrates on facilitating agriculture sector, around 37.0 per cent of financial institutions focus on developing factories and remaining 32.6 per cent of importance is given to service sector for their development.

Table: 4.6 Financial sector main lending's

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agriculture	14	30.4	30.4	30.4
	Factory	17	37.0	37.0	67.4
	Service	15	32.6	32.6	100.0
	Total	46	100.0	100.0	

Source: Primary data

Interpretation: It is clear that all the sectors that is agriculture, factories and services are equally contributed by the financial institution for their development towards the economy.

Impact of Financial Institutions on the demand for credit and investment by SMEs.

Limitations

Analysis: The above collected data 4.7 reveals that 15.2 per cent of respondents reported that there will be huge administrative cost, 26.1 per cent of respondents to huge lending rate, lack of business proposal are 15.2 per cent respondents and non-availability of funds is 43.5 per cent of respondents.

Table 4.7: Limitation of credits to SMEs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Huge administrative cost	7	15.2	15.2	15.2
	Huge lending rates	12	26.1	26.1	41.3
	Lack of attractive business proposals	7	15.2	15.2	56.5
	Non availability of funds	20	43.5	43.5	100.0
	Total	46	100.0	100.0	

Source: Primary data

Interpretations: It is found that there will more non-availability of funds than the other limitation mentioned, if the financial institution limits its credit lending's to SMEs.

Eradication of poverty and economic development

Analysis: From the table 4.8 it reveals the contribution of SMEs towards reduction of poverty and economic development 84.8 per cent is significant and 15.2 per cent is insignificant.

Table 4.8: Contribution of SMEs in reduction of poverty line and towards economic development.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	In significant (No)	7	15.2	15.2	15.2
	Significant (Yes)	39	84.8	84.8	100.0
	Total	46	100.0	100.0	

Source: Primary data

Interpretation: It is found that most of the respondents knows the importance of SMEs development which in turn contributes in reduction of poverty and towards the growth of economy at large scale.

Chi-square test

	Observed N	Expected N	Residual
Yes	39	23.0	16.0
No	7	23.0	-16.0
Total	46		

Test Statistics

Chi-Square(a)	22.261
df	1
Asymp. Sig.	.000

Null Hypothesis: There is no significant level of contribution of SMEs in reduction of poverty and economic development.

Alternative Hypothesis: There is significant level of contribution of SMEs in reduction of poverty and economic development.

Result: Reject null hypothesis as there is significant level of contribution of SMEs in poverty reduction and economic development.

Small and Medium Sized Enterprises

SMEs existence in Bangalore.

Type of business SMEs involved

Analysis: The table 4.9 reveals that 40per cent of SMEs are involved in manufacture and 24.4per cent of SMEs are involved in retail and 35.6 per cent of SMEs are under sales business.

Table 4.9: Business sector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Manufacture	18	40.0	40.0	40.0
	Retail	11	24.4	24.4	64.4
	Service	16	35.6	35.6	100.0
	Total	45	100.0	100.0	

Source: Primary data

Interpretation: It is analyzed that manufacture and sales sector more or less equally participated by the SMEs than the retail sector in Bangalore. The SME sector plays a vital role at an exceptionally fast rate due to which it is proving to be beneficial to the Indian Economy.

Resources

Analysis:The data in the table 4.10 shows that only 37.8 per cent of respondents of SMEs depends on financial institution for investment and 8.9% depends on relatives, friends and government and balance 44.4% use their own fund for investment.

Table 4.10: Resource for your investment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Financial Institution	17	37.8	37.8	37.8
	Government	4	8.9	8.9	46.7
	Own fund	20	44.4	44.4	91.1
	Relatives and Friends	4	8.9	8.9	100.0
	Total	45	100.0	100.0	

Source: Primary data

Interpretation: From the analysis it is clear that most of the respondents contribute their own fund for investment and very less respondents reported that they depend on relatives, friends and government however they also borrow funds from financial institution if necessary.

Chi-square test

	Observed N	Expected N	Residual
Own funds, friends and relatives	24	22.5	1.5
Financial Institution and government	21	22.5	-1.5
Total	45		

Test Statistics

Chi-Square(a)	.200
Df	1
Asymp. Sig.	.655

Hypothesis:

Null Hypothesis: The level of SMEs satisfaction in investment is towards own funds, relatives and friend

Alternative Hypothesis: The level of SMEs satisfaction in investment is towards borrowings from financial institutions.

Result: Accept null hypothesis.

Bank loans

Analysis: It can be analyzed from the table 4.11, that 77.8 per cent respondents are reported that they are aware of loans granted by the financial institution and 22.2 per cent are not aware loans.

Table: 4.11 Awareness of bank loans

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	10	22.2	22.2	22.2
	Yes	35	77.8	77.8	100.0
	Total	45	100.0	100.0	

Source: Primary data

Interpretation: It is found that most of the respondents are aware of bank loans as compared to the respondents that are not aware of loan

Borrowings of fund

Analysis: The table 4.12 reveals the data that 57.8 per cent of respondents have borrowed funds from the financial institutions and 42.2 per cent of respondents reported that they haven't applied for any kind of loan so far.

Table: 4.12 Funds borrowed by SMEs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	19	42.2	42.2	42.2
	Yes	26	57.8	57.8	100.0
	Total	45	100.0	100.0	

Source: Primary data

Interpretation: There is clear indication that most of the respondents of SMEs have borrowed funds from the financial institution that would help them in creating job opportunities, growth, expansion, supply of raw materials to the large cooperates etc.

Variety of times that SMEs borrowed funds

Analysis: The collected data 4.13 reveals that 44 per cent of respondents have borrowed loans and advances only once, 26.7% of respondents twice and 13.3% of respondents thrice and only 2.2% is four times and 11.1% is 5 times and 42.2% of respondents haven't applied for any loan so far.

Table: 4.13 Variety of times that SMEs borrowed funds

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 time	2	4.4	4.4	4.4
	2 times	12	26.7	26.7	31.1
	3 times	6	13.3	13.3	44.4
	4 times	1	2.2	2.2	46.7
	5 times	5	11.1	11.1	57.8
	Nil	19	42.2	42.2	100.0
	Total	45	100.0	100.0	

Source: Primary data

Interpretation: It is analyzed that most of respondents have borrowed loan and advances from financial institution only few respondents reported that they don't depend on financial institution.

Purpose of such loan

Analysis: Table 4.14 shows the utilization of funds borrowed from the financial institutions i.e. around 42.2 per cent of respondents reported that they haven't borrowed loan, remaining respondents agreed that they have borrowed funds from the financial institutions and the fund is utilized in the activities of operation and to start up business.

Table 4.14: Purpose of such loan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nil	19	42.2	42.2	42.2
	Operation	17	37.8	37.8	80.0
	Start up	9	20.0	20.0	100.0
	Total	45	100.0	100.0	

Source: Primary data

Interpretation: It can be analyzed that the funds borrowed is utilized in proper manner by the SMEs for their improvement and to facilitate others.

Amounts borrowed

Analysis: The data collected in the table 4.15 reveals the range of amount borrowed from the financial of respondents have borrowed funds more than 500000 and around 42.2 per cent of respondents haven't borrowed or applied for any such loans.

Table: 4.15 Range of amount borrowed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	200000-500000	12	26.7	26.7	26.7
	More than 500000	14	31.1	31.1	57.8
	Nil	19	42.2	42.2	100.0
	Total	45	100.0	100.0	

Source: Primary data

Interpretation: It is analyzed that most of the respondents are reluctant towards borrowings.

Easy to get loan.

Analysis: In table 4.16 most of the respondents up to 70 per cent reported that it was easy to get loans after 2000 and around 30 per cent of respondents believed that before 2000 only it was easy to get loans from the financial institutions.

Table: 4.16 Easy to get loan.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	After 2000	33	73.3	73.3	73.3
	Before 2000	12	26.7	26.7	100.0
	Total	45	100.0	100.0	

Source: Primary data

Interpretation: Only after 2000 it is easy to get loans.

Improvements in granting loans.

Analysis: The table 4.17 suggests that most of the respondents around 64.4 per cent have reported and agreed that there is improvement in granting loans and only 35.6 per cent respondents reported that there no any improvement as such.

Table: 4.17 Improvements in financial institution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	16	35.6	35.6	35.6
	Yes	29	64.4	64.4	100.0
	Total	45	100.0	100.0	

Source: Primary data

Interpretation: There are many policies and schemes of loan that have set up in order to support SMEs in various fields for their development, only those SMEs who properly utilize the facilities provided by the financial institution are benefited. Therefore all the SMEs should and must utilize the benefit provided for SMEs sector.

Null Hypothesis: There is no significant improvement in granting loans to SMEs by financial institutions.

Alternative Hypothesis: There is significant improvement in granting loans to SMEs by financial institutions.

Chi-square test

	Observed N	Expected N	Residual
No	16	22.5	-6.5
Yes	29	22.5	6.5
Total	45		

Test Statistics

Chi-Square(a)	3.756
df	1
Asymp. Sig.	.053

Result: Accept null hypothesis.

Representation of SMEs

Analysis: In table 4.18 it is reported that 42.2 per cent of respondents of SMEs are been assisted by financial institution is granting loans and 57.8 per cent of respondents have not been assisted and represented by the financial institutions.

Interpretation: From the analysis it is clear that financial institution is still forwarding it self to help SMEs in different ways.

Table: 4.18 Assisted by financial institution in granting loans

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Insignificant (No)	26	57.8	57.8	57.8
	Significant (Yes)	19	42.2	42.2	100.0
	Total	45	100.0	100.0	

Chi-square test

	Observed N	Expected N	Residual
No	26	22.5	3.5
Yes	19	22.5	-3.5
Total	45		

Test Statistics

Chi-Square(a)	1.089
df	1
Asymp. Sig.	.297

Null Hypothesis: Financial institutions do not help SMEs in getting loans.

Alternative Hypothesis: Financial institutions help SMEs in getting loans.

Result: Accept null hypothesis.

Conclusion

The evidence from this study clearly indicates that after 2000 financial sectors have led in increase in financial savings, therefore I conclude that there are many facilities provided by the financial institutions also on other hand they are responsible in saving mobilization. The financial institutions has specific policy of lending credits to Small and Medium Enterprises to all kinds of sectors such as venting, food, service, agriculture, manufacturing, production, factories etc.. The opinion of financial institution is that the credit availability and accessibility among SMEs has been improved to greater extent as government and MSME departments are refining and helping the financial institution to extend credit facilities to SMEs in Bangalore as well as the financial institution has bridged the gap between finance and SMEs to a large extent. The financial institution concluded that if the SMEs were assumed with adequate credit in turn they will significantly contribute to reduction of poverty line and towards economic development. Therefore the SMEs should recognize the facilities and benefits given by the financial institutions and utilize the opportunity to develop and to serve others. In one way or the other even financial institutions are responsible to increase the level of competition among SMEs development.

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ECONOMIC FREEDOM THE CZECH REPUBLIC AND ITS NEIGHBORS

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Abstract

We analyze the Index of Economic Freedom in Czech Republic in our article. The Index of Economic Freedom is an indicator which defines and tries to measure the economic freedom of a country or a region. The most famous are the Index of Economic Freedom created by the Heritage Foundation and the Wall Street Journal and Economic Freedom of the World published by the Canadian Fraser Institute. To analyze the Czech Republic's position it is reasonable to take into account its neighbors and Visegrad Four as the closest group. It is also insightful to compare it with other countries from the European Union (EU). According to Economic Freedom summary rating in 2011 all these countries belong to the "Top 60": Germany (19), Austria and Hungary share 27 place (before Sweden), the Slovak Republic (36), the Czech Republic (52) and Poland (59). However, remembering the fact that there were significant changes during the last 25 years, it would be very interesting to look back to previous years.

Keywords: Economic Freedom, Economic Freedom of the World Index, Heritage Foundation, Fraser Institute

Introduction

The Index of Economic Freedom is an indicator which defines and tries to measure the economic freedom of a country or a region. The most famous are the Index of Economic Freedom created by the Heritage Foundation and the Wall Street Journal and Economic Freedom of the World published by the Canadian Fraser Institute. We compare the values of this index Czech Republic and its neighbors in our article. Studies of this index is given a lot of work. We have assumed the publications listed in references that are available in the online form in this work.

Index of Economic Freedom

For above mentioned countries the Index of Economic Freedom is available for each year from 2000 till 2011. Additionally, there are data for each five years, i.e. 1995, 1990 and so on till 1970. Due to the fact that the Czech and Slovak Republics formed a unitary state Czechoslovakia till the end of the year 1992, only data from 1995 is available for both countries. Considering the fact that all countries from the Visegrad group till late 1989 were communist countries, the cut in time serious was made in the year 1985 to include the latter communist years. All available summary indices and rankings are shown in table below.

Country / Year		2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1995	1990	1985
Germany	Total Score	7.68	7.57	7.56	7.52	7.6	7.79	7.75	7.77	7.84	7.54	7.45	7.67	7.6	7.64	7.27
	Ranking	19	31	19	29	28	18	17	18	19	21	22	18	16	11	11
Austria	Total Score	7.59	7.61	7.63	7.69	7.8	7.94	7.85	7.92	8.02	7.46	7.38	7.55	7.14	6.96	6.46
	Ranking	27	27	17	17	19	15	15	13	12	28	26	22	32	24	21
Hungary	Total Score	7.59	7.3	7.17	7.16	7.12	7.19	7.21	7.35	7.22	6.69	6.9	6.56	6.16	4.89	4.48
	Ranking	27	64	52	57	62	60	52	36	42	60	46	61	59	82	87
Slovakia	Total Score	7.46	7.42	7.48	7.58	7.54	7.59	7.63	7.45	6.93	6.58	6.53	6.2	5.42	n/a	n/a
	Ranking	36	33	26	24	35	31	21	29	55	66	61	75	82		n/a
Czech Rep	Total Score	7.25	7.21	7.17	7.25	7.22	7.1	7	7.07	7.09	6.68	6.56	6.53	5.79	n/a	n/a
	Ranking	52	58	52	50	58	66	64	52	47	61	59	63	73	n/a	n/a
Poland	Total Score	7.2	7.13	7.15	7.01	6.96	7.16	6.91	6.93	6.52	6.48	6.13	6.34	5.3	3.54	3.7
	Ranking	59	48	56	64	70	62	69	57	72	71	80	72	89	104	97

Table 1: EFW for selected countries

From the table above it is clear that communist countries had less Economic Freedom. It can be estimated that the Czech Republic and Slovakia had similar results to Poland and Hungary. It is especially confirmed by taking into account the fact that they had comparable development over the years 1990-2005. All these countries became a part of European Union on the 1 of May 2004, while Austria entered on the 1 of January 1995 and Germany is one of the founders. The process for each country was different over the years. Countries from the Visegrad Four made giant improvements with regards to Economic Freedom. It is especially seen from the growth rate of summary index through the years 1985-2011 shown in table below.

The most significant rise was, probably, in the first decade after the fall of communism. Poland, for example, had shown increase by 149.7 % from 1990 with the total score of 3.54 in comparison to 5.3 in 1995. All Visegrad countries have an increase higher than 107 % between the years 1995 and 2005. With regard to the Czech Republic, in 1995 it had a worse summary ranking (5.79) than Hungary (6.16), but overtook it in the year 2007 with the score 7.22 compared to 7.12 for Hungary. It follows that Czech Republic had higher ranking till the year 2010, but in 2011 ended in the 52 position, while Hungary “jumped” to 27 (from the 64 in 2010).

Next, the more interesting development of the index was for Slovakia. In 1995 it had even lower value of the summary index (5.42) than Czech Republic. Nevertheless, it overtook Czech Republic in 2004 with the score 7.45 (compared to 7.07) and remained with better results up until the last reported year 2011. In general, the evolution of economic freedom was more unstable for the former communist countries. This result is natural not only because the economic system should change from planned to market, but also the organization of the country (including legal system) and equally important the way of thinking. Through the given period of time, the lowest score for Germany as well as for Austria was in 1985 (7.27 and 6.46 correspondingly) and the highest in 2003 (7.84 and 8.02). The development of the summary index and movements in rankings are shown in Figure 15 and Figure 16 below. From both graphs it is clear that during the whole time period 1985-2011 countries from the Visegrad Group pursued Germany and Austria and in the last years they drew closer especially in score of the index. The total scores have risen rapidly during the years 1985-2000 for the all Visegrad countries. Then from the years 2001-2002 there was still an incremental trend however with slowdowns for some years.

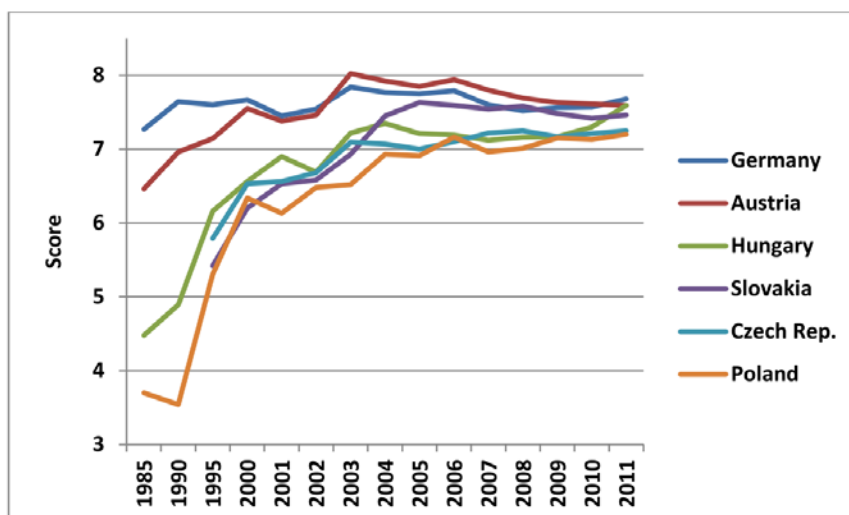


Figure 1: Score trend for selected countries

Despite the growing score, the graph of final ranking shows a very volatile process during all the years. Partially it is because the rating included more countries which could shift “competitors”. For instance, in 1990 the final rating was calculated for 113 countries, in 1995 for 123, for 2011 it contains 152 countries. However, the performance of the countries adds more fluctuation in ranking. For example, as it can be seen from the graph below, in 1990 Poland was in 104 place in comparison to 48 place in 2010. At the same time, Germany was in 11 place in 1985 and 1990, but rolled back to 31 place in 2010.

Within 42 partial indices the results are almost the same for each country with only a few exceptions. The highest value of the component 1A (Government consumption), where countries with a larger proportion of government consumption received a lower rating, is shown by Hungary (8 out of 10), while the lowest is shown by the Czech Republic (3 out of 10). Germany and Austria have 4, while Slovakia and Poland have 5. All these countries have very low results (5 or less) in components 1B (Transfers and subsidies), 1Dii (Top marginal income and payroll tax rate), in 4Dii (Capital controls) only Slovakia has 5.4, while Poland has the lowest value of 1.5; in 5Bii (Hiring and firing regulations) only Hungary has 5.3; in 5Ci (Administrative requirements) Germany and Austria have the highest values of 4. Lower values in described indicators mean that these countries have higher taxes and high regulation barriers. The same results can be found within the majority of high-income countries.

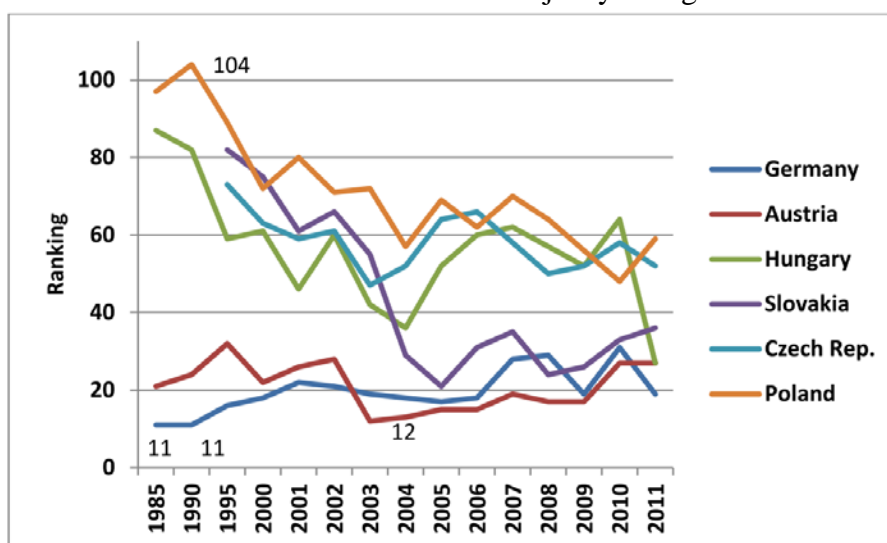


Figure 2: Ranking trend for selected countries

On the other hand, these countries have high values in 2D (Military interference in rule of law and politics), which means that military involvement in politics is rare; in comparison to 57 countries (out of 152) which have values 5 or less. With regard to Ukraine which has 8.3 (in this parameter) and Russia (7.5), it would certainly be interesting to see how these values will change taking into consideration the current situation in the region. For example, Egypt was known for its military intervention of government institution and politics. From the existed data it can be seen that Egypt had the highest score of 6.1 in indicator 2D in 1995. Then between 2000 and 2009 it had 5, with a following decrease in 2010 (4.2) and ended up with 2.5 in 2011. As a result, in comparison to the 70 place in 1995 in overall ranking or even 50 thin 2000, Egypt ended up in 108 place in 2011. Without a doubt, this result among other things is connected to the so called Arab Spring (a revolutionary wave in Arab world). Obviously, indicator 2D (Military interference in rule of law and politics) is very important not only for the foreign and domestic business and investments, but it is a basic prerequisite for the freedom of a country in general. The other indicators as it was already stated earlier, where developed countries have significantly higher values are 2C (Protection of property rights), 2E (Integrity of the legal system), 2H (Reliability of police) and 2I (Business costs of crime). All these variables only prove that these are basic requirements for the prosperity of the country. To get back to the subject, Austria and Germany significantly differ (their values lie farther from the group's mean than one standard deviation) from the Visegrad Four in protection of property rights (both have 8.1 while the mean for the Visegrad Group is 5.1 and for the current EU countries it is 6.6). It is the same for the indicator "business costs of crime", where both countries have a value of 8 in comparison to 7.4 for the EU (the mean of 28 European Union's countries), Slovakia turned out the worse (from the group of six countries) with 6.4, while the Czech Republic has 7.3. On the other hand, the Czech Republic has the lowest value in the "legal enforcement of contracts" in comparison to 5.4 for the EU or 6.6 for Germany and Hungary. Unfortunately, the Czech Republic (as well as other countries from the Visegrad Group) does not have good value in "reliability of police" indicator (4.7), while the mean for the EU is 6.8. Republic has the lowest value (5.4) among the group of six in 5Cvi (Cost of tax compliance) indicator (compared to the European Union's mean of 7.8). This means that it takes longer for businesses to prepare, file, and pay taxes on corporate income, value added or sales taxes, and taxes on labor. In addition to what already has been mentioned, the Czech Republic is far below the mean of the European Union (including the nearest neighbors) in the following indicators: Transfers and subsidies, Judicial independence, Impartial courts, Reliability of police, Capital controls, Business regulations. Below (Table 17) is a part of the table where values for the indicators are shown for the Czech Republic and its neighbors. In addition, the table contains the mean and standard deviation for given countries, as well as the mean for the 28 countries of the European Union and the difference in values between the Czech Republic and EU ("Difference CZ-EU").

The cells with light red color show countries that have a significantly higher score (lie far than one standard deviation from the mean of six countries) for the indicator. It is similar for the light green cells but with opposite meaning. The other two indicators where countries from the Visegrad Four have lower values are 5Cii (Bureaucracy costs) and 5Civ (Extra payments/bribes/ favoritism). In addition, the Czech (countries have significantly lower values). From the following table 17 it is also clear that the Czech Republic is much better (orange cells) in six indicators than the EU's average, i.e. Top marginal tax rate, Top marginal income tax rate, Centralized collective bargaining, Hours regulations, Conscription and Licensing restrictions.

	Germany	Austria	Hungary	Slovakia	Czech Rep.	Poland	Mean	Std. dev	EU 28	Difference (CZ - EU)
1B. Transfers and subsidies	2.9	2.2	4.6	4.5	2.8	5.3	3.7	1.24	4.40	-1.60
1D. Top marginal tax rate	5	3.5	6.5	6.5	7	5.5	5.7	1.29	4.66	2.34
1Di Top marginal income tax rate	5	4	10	10	10	7	7.7	2.73	6.14	3.86
2A. Judicial independence	8.7	7	4.5	2.8	4.5	5.4	5.5	2.09	6.03	-1.53
2B. Impartial courts	6.6	6.2	3	2.3	3.3	3.5	4.2	1.79	4.81	-1.51
2C. Protection of property rights	8.1	8.1	4.7	5.1	5.1	5.6	6.1	1.56	6.64	-1.54
2F. Legal enforcement of contracts	6.6	6.4	6.6	4.5	3.9	4.1	5.4	1.31	5.36	-1.46
2H. Reliability of police	8.2	8.3	5.4	4.8	4.7	5.5	6.2	1.66	6.83	-2.13
4Dii Capital controls	3.8	3.1	3.8	5.4	3.1	1.5	3.5	1.27	5.33	-2.23
5Biii Centralized collective bargaining	3.6	2.5	6.7	6.8	7	7.3	5.7	2.05	5.76	1.24
5Biv Hours regulations	8	8	4	8	10	8	7.7	1.97	7.00	3.00
5Bvi Conscription	10	3	10	10	10	10	8.8	2.86	8.39	1.61
5C. Business regulations	7.6	7.2	6.3	5.7	5.8	6	6.4	0.79	6.83	-1.03
5Cii Bureaucracy costs	7.3	7.4	4.7	4.3	4.3	5.6	5.6	1.44	5.99	-1.69
5Civ Extra payments/bribes/favoritism	7.8	7	5.2	3.9	4.4	6.2	5.8	1.52	6.29	-1.89
5Cv Licensing restrictions	9.3	7.7	9.2	6.2	8.9	5.9	7.9	1.52	7.84	1.06
5Cvi Cost of tax compliance	7.7	8.1	6.9	7.7	5.4	6.8	7.1	0.97	7.83	-2.43

Table 3: Comparison of selected countries by category

Conclusion

To conclude, according to the Economic Freedom of the World index, countries from the Visegrad Group made significant steps and improved their results in the degree of Economic Freedom. They have achieved the results close to the most economically free countries. During the last decade they solidly took place within 60 of the most economically free countries and had a higher ranking than most of the other post-communist countries. They have good prerequisites and already have high values in some indicators, but still should work on the field of regulations (including business requirements, time cost and obviously in bureaucracy costs, bribes and etc.).

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COST OF DEBT AND DIVIDEND POLICY: EVIDENCE FROM MENA REGION

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Abstract

Prior literature documents a positive relationship between dividend policy and corporate governance, and negative relationship between the quality of corporate governance and cost of debt. Therefore, we hypothesize that there is a negative relationship between cost of debt and dividend policy. Using a sample of firms from the MENA region (Middle East and North Africa), during the period between 2004 and 2008, we document a negative relationship between cost of debt and dividend policy. Our results remain robust even after controlling for various firm-specific characteristics. The main reason for this negative relationship is that dividend policy act as a substitute for corporate governance mechanisms in emerging markets. Prior literature argues that creditors take into consideration the quality of corporate governance while assessing the riskiness of the firm. High dividend payout ratio reflects proper corporate governance, which would result in a lower required rate of return by creditors, a lower cost of debt for the firm.

Keywords: Cost of Debt; Dividend Policy; Corporate Governance

Introduction

Prior literature documents a negative relationship between corporate governance and cost of debt. Bhojraj and Sengupta (2003) show the existence of a positive relation between disclosure and bond ratings and a negative relation between disclosure and bond yields. Similarly, Zhu (2009) reports a negative relationship between the firm corporate governance level and the cost of debt. One of the reasons cited for this relationship is that improvement in corporate governance practices of the firm reduces information asymmetry. Hope (2003) documents that proper corporate governance mechanisms contribute in lowering the risks of the firm by reducing information asymmetry between insiders and outsiders. Likewise, Newell and Wilson (2002) provide evidence that proper corporate governance enhances firm's performance and reduces the risks perceived by outside investors. Since debt holders take into consideration the quality of corporate governance mechanisms of the firm while assessing the default risk of the firm, good corporate governance should result in a lower cost of debt.

In this paper, we investigate the relationship between dividend policy and cost of debt. Several papers consider dividend policy as one of the major tools that firms can use to reflect proper governance practices in emerging markets and attract outside investors (La Porta et al., 2000a). These studies regard emerging markets as markets characterized by the pervasiveness of corruption, weak legal institutions, and expropriation of minority shareholders (Saidi, 2004). Such corporate governance weaknesses at firm as well as country level deter the development of capital markets and hinder firms' access to external capital. La

Porta et al. (2000b) argue that dividend payout policy can be used as a substitute for the corporate governance of the firm. In other words, firms, aiming to raise funds externally and repeatedly, have to build a reputation that they are protecting shareholders by paying higher dividends to facilitate their access to capital markets. Sawicki (2008) shows that firms with weak corporate governance mechanisms tend to pay high dividends in emerging stock markets to build or improve their reputation. This strand of literature argues that high dividend payout mirrors the low level of agency problems within the firm. Myers (2000) argues that when the corporate governance mechanisms and investors' protection are low, outside investors would prefer high dividends rather than retained earnings. Similarly, Jensen (1986) documents how high dividend payout ratio contributes in lessening the agency cost by reducing the free cash flow that could be expensed on unprofitable projects. Therefore, firms paying high dividend are perceived to be less risky and experience low agency problems. Thus, management can use dividend as a signaling device to arrange for future access to capital markets at competitive rates.

Using data from eight MENA (Middle East and North Africa) countries, we document a significantly negative relation between cost of debt and dividend policy for the period between 2004 and 2008. This study uses interest coverage ratio as the proxy for debt. Prior literature associates higher interest coverage ratio with lower default spreads and thus lower cost of debt (Damodaran, 2001). Our results show an increase of 0.171 units of interest coverage ratio for each unit increase in payout ratio. Since higher interest coverage ratio is associated with low cost of debt, our result indicate a significant negative relationship between cost of debt and dividend payout ratios. Our results are robust even after controlling for a number of firm-specific characteristics – for example size, leverage, growth, and auditor type. All of the factors controlled for in our analysis can have significant impact on cost of debt. Our results, after controlling for a number of firm-specific characteristics, show an increase of 0.111 units in interest coverage ratio for each unit increase in dividend payout. We also show that our results are robust in different regions and different time periods. For example, our results remain qualitatively the same in North African region and in Middle East region. Similarly, our results retain their significance in different sample periods, i.e. sample period between 2004 and 2006 and between 2007 and 2008. An important finding of this paper is that it documents a strong and negative relationship between current payout and future cost of debt.

Our results have implications in a way that it will enable creditors to better assess the riskiness of firms and help management identify ways to reduce the cost of debt, therefore the cost of capital in MENA region. Lowering firms' cost of capital would enable the firm to undertake many projects that would have been rejected otherwise. This would increase shareholders' value and contribute to the growth, efficiency and enhanced productivity of the whole economy.

The paper will be structured as follows: Section 2 briefly discusses motivation and background for this study, while Section 3 illustrates our choice for cost of debt variable. Section 4 discusses the data used in this study. Section 5 presents assessment of the relationship between the cost of debt and dividend policy. Section 6 documents robustness of our results and the paper concludes with Section 7.

Motivation and background

Corporate governance in emerging markets

Investors have always been concerned about the relevant information, signals, and measures that would reflect the financial health of the firms they are investing in. Financial health of the firm would determine the risks of investing and thus the required rate of return. The need for relevant information and signals increase many fold in emerging markets where the corporate governance mechanisms are low. Prior literature suggests that insiders and managers do not disclose the information correctly in these markets (Leuz, Nanda and Wysocki, 2003). As a result, emerging market firms are prone to corruption, abuse of minority shareholders right through assets tunnelling, asset stripping, weak legal institutions, and insider trading and self dealing (Saidi, 2004). Prior literature, thus, documents increase in the fear of investors, delay in the development of capital markets, and inability of firm's to access external sources of financing in these markets. Shleifer and Vishny (1997) mention that "in less developed countries, including some of the transition economies, corporate governance mechanisms leads to substantial diversion of assets by managers of many privatized companies, and the virtual non-existence of external capital supply to companies".

Prior literature holds that the difficulty to raise external capital induces firms, especially those that need to raise funds from the market repeatedly, to look for innovative ways to distinguish themselves from their competitors. One such mechanism is the effective corporate governance. Newell and Wilson (2002) document that corporate governance helps firms improve their financial performance, enhance their market valuation, reduce risks, and increase investor confidence. By sending signals regarding the effectiveness of their corporate governance mechanisms, strength of investor protection rights, and lower agency problems, firms can build their reputation and attract outside investors to invest at a favourable rate with them.

Dividend policy and corporate governance

Prior literature considers dividend policy as an important mechanism via which firms can build their reputation. This strand of literature argues that high dividend payouts are an important tool that can signal lower agency problems within the firm. Grossman and Hart (1980), for example, document that high dividend payouts alleviate agency conflicts through the reduction of free cash flow available to managers. Similarly, Jensen (1986) concludes that high payout ratio can lessen the agency cost by reducing the free cash flow that could be expensed on unprofitable projects. The above strand of literature argues that paying high dividends reflect managements' good faith and signals the low agency problems and the good corporate governance mechanisms. As a result, firms are able to raise capital at efficient rates. Gomes (2000), for example, documents that dividend policy may help firms raise capital by building reputation. He notes that by disgorging high amount of cash, firms can minimize the agency costs and improve their reputation and thus, enable them to raise capital at competitive rates.

The above findings have been discussed and interpreted in various ways in the literature. La Porta et al. (2000b) formalize the above findings in a theory that is called as the substitute model. They argue that insiders interested in issuing equity in the future choose to pay high dividends to establish a reputation for decent treatment of minority shareholders. An important interpretation of this theory is that even the weaker minority shareholder rights should be associated with higher dividend payouts.

Corporate governance and cost of debt

There has been an extensive literature on the relationship between corporate governance and the cost of debt. Bhojraj and Sengupta (2003), for example, show the existence of a positive correlation between disclosure and bond ratings and a negative relation between disclosure and bond yields. Likewise, Blom and Schauten (2006) document a negative relationship between corporate governance and the cost of debt. This strand of literature argues that good corporate governance mechanisms reduce information asymmetry between firms and other agents in the capital markets and therefore reduce the risk of the firm. Debt holders, being outsider to the firm, minimize the information asymmetry by taking into consideration corporate governance mechanisms of the firm. Better governance mechanisms signal lower information asymmetries, therefore allowing debt holders to require lower returns on their investments.

Dividend policy and cost of debt

We have argued that dividend policy is an important determinant of the quality of corporate governance in emerging markets (La Porta et al., 2000a). High dividend payouts not only affect the reputation of firms vis-a-vis outside investors but also lower agency problems and information asymmetries (Grossman and Hart, 1980). An important implication of the relationship between dividend policy and corporate governance is that dividend policy should also be significantly related to cost of debt. We argue that high dividend payouts, being an indicator of better governance, should be associated with lower cost of debt. Thus, firms paying high dividends should be able to not only raise equity at lower rates but also be able to access debt at competitive rates.

Cost of debt

Unlike many studies that use the yield on outstanding bonds as a proxy for the cost of debt (Zhu, 2009; Blom and Schauten, 2006), our study uses interest coverage ratio as a proxy for the cost of debt. One of the reasons for this choice is the unavailability of the data on the yield on outstanding bonds in the MENA region. This is due to the fact that the bond market in the MENA region remains the weakest bond market in the world (Abed and Soueid, 2005).

The arguments behind the choice of interest coverage ratio as the proxy for cost of debt are based on (1) the relationship between cost of debt and credit ratings and (2) the relationship between interest coverage ratio and credit ratings.

Credit ratings and cost of debt

One of the most important ways to estimate the cost of debt is to add firm-specific debt premium to the risk-free rate. Prior literature considers credit ratings as the main drivers of firm's debt premium (Baker, Hern, and Bennett, 1999). Credit ratings are usually assigned by agencies, such as Standards and Poor's (S&P's) and Moody's. They define credit rating as the ability of an obligor to honor financial obligations and contracts.⁴⁶

Plentiful of prior literature has used S&P's long-term credit ratings to proxy for the cost of debt.⁴⁷ For example, Minardi, Sanvicente, and Artes (n.d.) argue that the yield to maturity of fixed income securities is strongly correlated to credit ratings. They also document significantly lower yields for well-rated securities in comparison to poorly-rated

⁴⁶ S&P's (2008) defines credit rating as a current opinion of the creditworthiness of an obligor with respect to a specific financial obligation, while Moody's Investor Service (2007) defines credit rating as an opinion about the ability of entities to honor unsecured financial obligations and contracts. Consult S&P's and Moody's websites for the definition.

⁴⁷ See Mansi et al. (2004), Ghosh and Moon (2005), and Ashbaugh-Skaife, Collins and Lafond, (2006) for greater details.

securities. While, Baker et al. (1999) document that a decrease of credit rating of one notch from A- to BBB+ is associated with an increase in debt spreads by 30 basis points.

Credit ratings and interest coverage ratio

Prior literature documents that rating agencies take into consideration business risk, financial risk, and industry risk, amongst others, to arrive at an appropriate credit rating (Altman, Caouette, and Narayanan, 1998). This strand of literature notes that the rating agencies pay a special attention to Funds from Operations (FFO)⁴⁸ to interest ratio and to interest coverage ratio while determining the credit ratings (Baker et al., 1999). These ratios reflect firms' ability to honor their debt obligations. Baker et al. (1999) also note that credit rating agencies, such as S&P's and Moody's, require a specific interest coverage ratio for a given rating and that the highest interest coverage ratio corresponds to the highest rating. Furthermore, Altman and Katz (1976) use a multiple discriminate analysis to show that interest coverage ratio is one of the most important determinants of the credit rating. In another important study, Damodaran (2001) suggests the use of interest coverage ratio to come up with estimation for the cost of debt. He proposes the creation of synthetic ratings based on interest coverage ratio. He documents that higher interest coverage ratio corresponds to higher synthetic ratings.⁴⁹ These arguments confirm a positive correlation between credit rating and interest coverage ratio.

The above discussion implies a strong relationship between cost of debt and credit ratings, and a strong relationship between credit rating and interest coverage ratio. By extension, this would imply a strong relationship between cost of debt and interest coverage ratio.

Data

This paper documents the relationship between cost of debt and dividend policy in the MENA region. Our sample consists of 242 firms listed at the stock exchanges of eight MENA countries. The countries include Bahrain, Egypt, Jordan, Kuwait, Morocco, Qatar, Saudi Arabia, and United Arab Emirates. Our sample covers the period between 2004 and 2008. The choice of time period is driven by the fact that this period attracted significant interest from investors and regulators resulting in the increased market activity.

Datastream, Worlscope, and Thomson Financials were used to assemble data of the following items: cost of debt, payout ratio, debt to equity ratio, market capitalization, type of auditors, auditor's opinion, retained earnings to total assets ratio, revenues growth rate, total debt to common equity ratio, and total debt to common assets ratio.⁵⁰ We will, briefly, describe data in the following section.

Cost of debt

We measure the cost of debt by interest coverage ratio. Interest coverage ratio is defined as the ratio between Earnings before interest and taxes (EBIT) and total interest expenses. Table 1 documents the descriptive statistics for the cost of debt. Panel A presents cost of debt within each country, Panel B illustrates similar statistics for each industry, and Panel C exhibits descriptive statistics for the cost of debt for each year.

The results in Table 1, Panel A, shows that interest coverage ratio is of almost the same range in most of the countries. The only exceptions are Egypt, where it is too high, and Bahrain, where it is too low. It points to higher cost of debt in Bahrain and lower cost of debt

⁴⁸ FFO is the sum of funds from operations and cash interest paid.

⁴⁹ The method was developed by listing all rated firms in the US, based on their market capitalization lower than or greater than \$2 billion, with their interest coverage ratio, and then sorting firms based on their bond ratings.

⁵⁰ See Appendix – A for the definition of variables.

in Egypt relative to other countries in the sample. Table 1, Panel B, documents interest coverage ratio for each sector represented in our dataset. The results show homogeneity of cost of debt across all industries. The only exception is healthcare, where cost of debt is too high. Table 1, Panel C, documents interest coverage ratio for each year. The results show no noticeable difference through our sample period.

Definition of variables

Variable	Definition	Source
Cost of Debt (CoD)	Earnings before interest and taxes divided by total interest expenses	Worldscope
Payout ratio (PoR)	Payout is the ratio of total dividends to total earnings.	Worldscope
Size of the firm (Size)	The natural logarithm of the total market value of equity.	Datastream
Total debt to common equity (LEV1)	The total book value of debt divided by the market value of equity. Value of equity equals the total number of outstanding shares multiplied by the stock price.	Thomson Financials
Sales growth (Growth)	The ratio of change in the firm's revenues between two consecutive years	Worldscope
Retained earnings (RE) to total assets (RE)	Retained earnings (RE) divided by book value of total assets. Retained earnings equals Beginning retained earnings + Net Income - Dividends	Worldscope
Choice of auditors (Auditors)	This variable is assigned the value of 1 if the firm was audited by one of the big 4 auditors (Deloitte Touche Tohmatsu, Ernst & Young, KPMG, and PricewaterhouseCoopers); 0 otherwise.	Worldscope
Auditors' opinion (Opinion)	This variable is assigned a value of 1 if the firm has received an unqualified opinion; 0 otherwise.	Worldscope
Total debt to total assets (LEV2)	Total book value of debt divided by the book value of total assets.	Thomson Financials

Table 1: Descriptive statistics for cost of debt

Dividend policy

In this study, we consider dividend payout ratio as a proxy for dividend policy. The descriptive statistics for dividend policy are presented in Table 2. Panel A documents dividend payout within each country, Panel B exhibits similar statistics for each industry, and Panel C presents descriptive statistics for dividend payout for each year.

Table 2, Panel A, reports relatively low level of payout ratios in the sample countries. None of the countries have payout ratio exceeding 40%. This observation is in line with the findings of previous studies that document relatively lower level of payout ratios in emerging markets. An interesting observation from Table 2, Panel A, is extremely low payout ratios by the firms located in the UAE. The average payout ratio for the UAE firms is 16.98%. This can be due the high growth rate of the country's firms that require firms to increase their reinvestment rate to take advantage from the available investment opportunities. However, weakness of corporate governance mechanisms may also be cited as a reason for such low average payout ratios.

The results in Table 2, Panel B and Panel C, show that payout ratios are similar across industries and across years in our sample, suggesting homogeneity in dividend policies across industries and years. The only exception is telecommunications sector that reports more than 40% of dividend payout ratios.

The following table documents the descriptive statistics for cost of debt. We measure cost of debt by interest coverage ration ($EBIT / \text{Total Interest Expense}$). Panel A documents

cost of debt for each country, Panel B documents similar statistics for each industry, while Panel C reports cost of debt for each year.

Panel A: Cost of debt within each country

Country	Average Interest Coverage Ratio
Bahrain	27.618
Egypt	13.560
Jordan	18.316
Kuwait	15.820
Morocco	18.444
Qatar	22.438
Saudi Arabia	17.795
United Arab Emirates	19.185

Panel B: Cost of debt within each industry

Industry	Average Interest Coverage Ratio
Oil and Gas	13.105
Basic Materials	13.473
Industrials	17.794
Consumer Goods	17.256
Healthcare	32.600
Consumer Services	20.550
Telecommunications	16.439
Utilities	11.438
Technology	9.521

Panel C: Cost of debt within each year

Year	Average Interest Coverage Ratio
2004	14.972
2005	20.234
2006	16.119
2007	16.848
2008	17.481

Table 2: Descriptive statistics for dividend policy

Control variables

Size (Size), revenues growth (Growth), choice of auditors (Auditor), auditors' opinion (Opinion), total debt to common equity (Lev 1), retained earnings to total assets (RE/TA), and total debt to total assets (Lev 2) are used as control variables for this study. Table 3 reports the descriptive statistics of our control variables.

The following table documents the descriptive statistics for dividend payout ratio. We measure dividend payout ratio by percentage of earnings paid as dividends to shareholders. Panel A documents dividend payout ratio for each country, Panel B documents similar statistics for each industry, while Panel C reports dividend payout ratio for each year.

Panel A: Dividend policy within each country

Country	Average Dividend Payout Ratio (PoR)
Bahrain	37.848
Egypt	34.520
Jordan	36.911
Kuwait	30.316
Morocco	38.298
Qatar	31.464
Saudi Arabia	26.759
United Arab Emirates	16.983

Panel B: dividend policy within each industry

Industry	Average Dividend Payout Ratio (PoR)
Oil and Gas	35.903
Basic Materials	34.032
Industrials	29.422
Consumer Goods	30.517
Healthcare	38.031
Consumer Services	27.660
Telecommunications	41.874
Utilities	32.624
Technology	24.651

Panel C: dividend policy within each year

Year	Average Dividend Payout Ratio (PoR)
2004	32.873
2005	27.063
2006	26.622
2007	31.420
2008	33.2181

Table 3: Descriptive statistics for control variables

Table 5 represents the correlation matrix for the variables used in our analysis. It shows low levels of correlations between variables. This fact enables us to include all of the variables together in our regression equation.

The following table documents the descriptive statistics for the control variables used in our study. Panel A documents descriptive statistics for each country, Panel B documents similar statistics for each industry, while Panel C reports descriptive statistics for each year.

Panel A: control variables within each country

Country	LEV1	Size	LEV2	RE/TA	Growth
Bahrain	20.380	4.456	12.175	0.173	76.269
Egypt	70.940	7.887	25.384	0.137	79.289
Jordan	32.84	5.107	14.209	0.060	18.028
Kuwait	58.022	4.582	26.024	0.148	71.308
Morocco	79.809	8.818	22.563	0.075	33.545
Qatar	44.775	7.843	22.923	0.070	361.270
Saudi Arabia	61.137	8.410	25.443	0.092	117.318
United Arab Emirates	54.188	8.038	23.682	0.100	79.033

Panel B: control variables within each industry

Industry	LEV1	Size	LEV2	RE/TA	Growth
Oil and Gas	75.514	5.741	28.810	0.126	64.342
Basic Materials	82.815	7.682	31.509	0.098	189.720
Industrials	55.348	6.929	23.263	0.128	44.996
Consumer Goods	42.911	6.059	20.781	0.121	27.297
Healthcare	11.621	6.684	8.894	0.091	10.045
Consumer Services	38.687	6.470	17.421	0.113	38.219
Telecommunications	73.720	9.200	23.750	0.123	36.539
Utilities	55.905	7.216	23.339	0.052	14.766
Technology	59.018	5.645	27.070	0.085	64.080

Panel C: control variables within each year

Year	LEV1	Size	LEV2	RE/TA	Growth
2004	66.695	6.572	25.773	0.092	39.630
2005	50.651	6.880	22.553	0.114	265.229
2006	52.542	6.692	22.890	0.127	58.481
2007	61.016	6.663	25.011	0.125	53.517
2008	62.039	6.767	24.116	0.113	89.825

Table 4: Correlation matrix

Methodology

The most obvious question while analyzing the relationship between cost of debt and dividend policy is to see whether or not there exist a significant relationship between the two. We test this relationship by estimating a regression with cost of debt as a dependent variable and dividend policy as an independent variable. If our arguments regarding the relationship between cost of debt (CoD) and dividend policy (PoR) are true, we should expect the coefficient estimate for the variable representing dividend policy to be statistically significant and positive. Our basic regression equation takes the following form. For the purpose of completeness, we will estimate all of the equations used in this study with and without year (YDum), industry (IDum), and country dummies (CDum).⁵¹

$$CoD_i = \alpha + \beta_1 (PoR_i) + \sum_{yr} \beta^{yr} (YDum) + \sum_{ind} \beta^{ind} (IDum) + \sum_{Ctry} \beta^{Ctry} (CDum) + \varepsilon \quad (1)$$

The result of the above equation is reported in Table 5. As hypothesized, our results show a significantly positive relationship between payout ratio and cost of debt. We document that an increase of 0.171 units of interest coverage ratio for each unit increase in payout ratio (without including dummy variables) and an increase of 0.202 units of interest coverage ratio for each unit increase in payout ratio (while including dummy variables). Since increase in interest coverage ratio represents lower costs of debt, our results indicate significantly negative relationship between cost of debt and payout ratios. The reason behind the negative relationship is that firms may use high payout ratios as a signaling mechanism to tell investors that they are properly governed. Good governance should result in lowering information asymmetry and thus reducing the cost of debt. Furthermore, high payout ratios may also indicate lower level of agency problems within the firm by signaling to the market that no excess cash is available with the firm to expropriate (Easterbrook, 1984). This will also result in lowering the cost of debt.

This table documents correlations for the variables used in our study. The sample period is from 2004 to 2008 and the countries represented in our analysis are Bahrain, Egypt, Jordan, Kuwait, Morocco, Qatar, Saudi Arabia, and United Arab Emirates.

	PoR	Auditor	Opinion	LEV1	Size	LEV2	RE/TA
PoR	1						
Auditor	-0.014	1					
Opinion	-0.005	-0.005	1				
LEV1	-0.087	-0.005	0.0567	1			
Size	0.008	0.447	0.0329	0.100	1		

⁵¹ We used robust regression in STATA for all of the regression estimations done in this paper. Robust regression can be used in any situation in which you would use OLS regression. When doing the regression diagnostics, you might discover that one or more data points are outliers. These are the points that you have determined are not data entry errors, from a different population than the rest of your data, and for which you have no compelling reason to exclude them from the analysis. Robust regression is a compromise between deleting these points, and allowing them to violate the assumptions of OLS regression.

LEV2	-0.141	-0.069	0.0384	0.886	0.037	1	
RE/TA	0.101	-0.020	-0.0074	-0.200	0.051	-0.160	1
Growth	-0.087	0.03	0.0098	0.023	-0.022	0.054	-0.115

Table 5: Relationship between cost of debt and dividend policy (without control variables)

We may argue that firm-specific characteristics may have a role in driving the results of the above equations. For instance, larger firms may pay higher dividends and enjoy access to preferential debt financing due to their relatively lower perceived risk. In such situation, a negative relationship between dividend policy and cost of debt is caused by firm size instead of dividend. Mindful of the effects that firm-specific factors may have on cost of debt, we re-estimate the above equation after controlling for several firm-specific characteristics. For example, size of the firm (*Size*) is used to capture for any effect that the size may have on cost of debt. Prior literature has shown that smaller firms are riskier than larger firms (Banz, 1981). As a result, we should expect higher cost of debt for smaller firms. Furthermore, Total debt to common equity ratio (*LEV1*) and total debt to total assets ratio (*LEV2*) were added to control for the effect of leverage on the cost of debt.⁵² Prior literature associates higher leverage with higher risk (Ahmed et al., 2008; Zhu, 2009). We also controlled for the governance environment of the firm by introducing two dummy variables representing whether a firm is audited by big-four auditor (*Auditor*) and whether the auditors have issued unqualified opinion (*Opinion*) regarding firm's disclosure. Mansi, Maxwell and Miller, (2004) and Pittman and Fortin (2004) document that the use of big-four auditor is associated with a lower cost of debt, while Li, Stokes Taylor and Leon, (2009) document that firms receiving a qualified audit opinion suffer an increase in the cost of equity capital.⁵³ Retained earnings to total assets (*RE/TA*) is also used as a controlling variable to capture the impact of higher or lower retained earnings on the risk perception of creditors. Firms with high retained earnings are more able to meet their obligation even when the operations of the firm are not generating enough cash flows. This would reduce the default risk of firms with high retained earnings, and therefore their cost of debt. While, sales growth (*Growth*) is used as a proxy for the growth of the firm. High growth necessitates more external financing, but it has a lower cost (Zhu, 2009).

$$\begin{aligned}
CoD_t = & \alpha + \beta_1(PoR_t) + \beta_2(Auditor_t) + \beta_3(Opinion_t) + \beta_4(LEV1_t) \\
& + \beta_5(LEV2_t) + \beta_6(Size_t) + \beta_7(Growth_t) + \beta_8(RE/TA_t) \\
& + \sum_{yr} \beta^{yr}(YDum) + \sum_{ind} \beta^{ind}(IDum) + \sum_{Ctry} \beta^{Ctry}(CDum) + \varepsilon
\end{aligned} \tag{2}$$

The result of the above equation is reported in Table 6. The results document that our hypothesized relationship between cost of debt and dividend payout remains intact even after controlling for a number of different firm-specific characteristics. The results show a significantly positive relationship between dividend policy and interest coverage ratio, suggesting lower cost of debt. We document an increase of 0.111 units in interest coverage ratio for each one unit increase in dividend payout (without including the dummy variables), and an increase of 0.128 units in interest coverage ratio for each one unit increase in dividend payout (while including the dummy variables). An important observation that should be emphasized is that the adjusted R² has increased from 5.40% in equation (1) to 34.3% in

⁵² The importance of the leverage ratios pushes us to use more than one proxy to capture most of its aspects. The total debt to common equity is more forward looking since debt is scaled on the market value of equity. While, total debt to total assets is backward looking since total debt is scaled by the book value of assets. Even if there is relatively high correlation between the two variables, the VIF value is below 10 for all the regressions estimated by us, indicating no severe multicollinearity.

⁵³ Another strand of literature argues that a high leverage ratio reflects their good reputation in the market and firm's their ability to raise debt more easily (Denis and Mihov, 2003).

equation (2). This fact means that firms-specific characteristics have a big impact on explaining cost of debt.

The following table documents the relationship between cost of debt and dividend policy using equation (1). The sample period is from 2004 to 2008 and the countries represented in our analysis are Bahrain, Egypt, Jordan, Kuwait, Morocco, Qatar, Saudi Arabia, and United Arab Emirates. Variables significant at 10% are followed by *, variable significant at 5% by **, and variable significant at 1% by ***.

Equation (1)		
PoR	0.171***	0.202***
Year Dummies	No	Yes
Industry Dummies	No	Yes
Country Dummies	No	Yes
No. of Observations	691	548
Adjusted-R ²	0.054	0.085
F-Values	33.860	3.220

Table 6: Relationship between cost of debt and dividend policy (with control variables)

Robustness of results

In this section, we investigate whether our results are robust to different specifications.

Relationship between cost of debt and dividend policy in different regions

As a first robustness check, we re-estimate equation (2) for North Africa and Middle East separately. If our arguments are robust, the relationship between cost of debt and dividend policy should hold in both regions. The results of this estimation are provided in Table 7. The results show a significantly positive relationship between interest coverage ratio and dividend policy for both regions, suggesting that high dividend payouts are associated with lower cost of debt. The relationship is, however, weaker in Middle East.

The following table documents the relationship between cost of debt and dividend policy using equation (2). The sample period is from 2004 to 2008 and the countries represented in our analysis are Bahrain, Egypt, Jordan, Kuwait, Morocco, Qatar, Saudi Arabia, and United Arab Emirates. Variables significant at 10% are followed by *, variable significant at 5% by **, and variable significant at 1% by ***.

Equation (2)		
PoR	0.112***	0.128***
Auditor	1.954	0.751
Opinion	5.569**	6.146*
LEV1	0.054**	0.109***
Size	0.441	-1.022
LEV2	-0.834***	-0.979***
RE/TA	36.581***	54.473***
Growth	0.000	0.007*
Year Dummies	No	Yes
Industry Dummies	No	Yes
Country Dummies	No	Yes
No. of Observations	486	386
Adjusted-R ²	0.343	0.358
F-Values	27.72	8.09

Table 7: Relationship between cost of debt and dividend policy in different regions

Relationship between cost of debt and dividend policy in different years

As a second robustness check, we re-estimate equation (2) for different time periods. Our first estimation period is spans from 2004 to 2006, while the second estimation period ranges from 2007 to 2008. The results of this estimation are provided in Table 8. The results show a significantly positive relationship between interest coverage ratio and dividend policy for both time periods, suggesting that high dividend payouts are associated with lower cost of debt.

The following table documents the relationship between cost of debt and dividend policy in different regions using equation (2). The sample period is from 2004 to 2008. North Africa comprise of Egypt and Morocco, while Middle East include Bahrain, Jordan, Kuwait, Qatar, Saudi Arabia, and United Arab Emirates. Variables significant at 10% are followed by *, variable significant at 5% by **, and variable significant at 1% by ***.

	North Africa	Middle East
PoR	0.1455**	0.0997**
Auditor	-8.582	1.391
Opinion	12.082	7.126*
LEV1	0.108***	0.099**
Size	0.044	-0.922
LEV2	-0.958***	-0.944***
RE/TA	-1.279	77.190***
Growth	-0.004	0.007**
Year Dummies	Yes	Yes
Industry Dummies	Yes	Yes
Country Dummies	Yes	Yes
No. of Observations	110	276
Adjusted-R ²	0.356	0.380
F-Values	5.79	7.17

Table 8: Relationship between cost of debt and dividend policy in different time periods

Relationship between next period's cost of debt and current dividend policy

As a last robustness check, we adjust equation (2) as follows to test the relationship between next period's cost of debt and current dividend policy. The motivation behind estimating this relationship is driven by the fact that creditors take into consideration historical data, the historic dividend payouts, to assess the current riskiness of the firm.

$$\begin{aligned}
 CoD_{t+1} = & \alpha + \beta_1(PoR_t) + \beta_2(Auditor_t) + \beta_3(Opinion_t) + \beta_4(LEV1_t) \\
 & + \beta_5(LEV2_t) + \beta_6(Size_t) + \beta_7(Growth_t) + \beta_8(RE/TA_t) \\
 & + \sum_{yr} \beta^{yr}(YDum) + \sum_{ind} \beta^{ind}(IDum) + \sum_{Ctry} \beta^{Ctry}(CDum) + \varepsilon
 \end{aligned} \quad (3)$$

The results of the above regression equation are provided in Table 9. The results show that current dividend payouts are significantly associated with next period's cost of debt. We document an increase of 0.096 units in next period's interest coverage ratio for each one unit increase in payout, suggesting a negative relationship between next period's cost of debt and current dividend payout ratio.

The following table documents the relationship between cost of debt and dividend policy in different time periods using equation (2). The first period consist of years between 2004 and 2006, while the second period consists of years between 2007 and 2008. The countries represented in our analysis are Bahrain, Egypt, Jordan, Kuwait, Morocco, Qatar,

Saudi Arabia, and United Arab Emirates. Variables significant at 10% are followed by *, variable significant at 5% by **, and variable significant at 1% by ***.

	2004-2006	2007-2008
PoR	0.122**	0.143***
Auditor	0.566	0.996
Opinion	0.615	9.416*
LEV1	0.106***	0.110**
Size	-2.049**	0.471
LEV2	-0.887***	-1.089***
RE/TA	59.351***	46.201**
Growth	0.004	0.026
Year Dummies	Yes	Yes
Industry Dummies	Yes	Yes
Country Dummies	Yes	Yes
No. of Observations	209	177
Adjusted-R ²	0.2970	0.390
F-Values	6.92	6.50

Table 9: Relationship between next period's cost of debt and current dividend policy

The following table documents the relationship between next period's cost of debt and dividend policy using equation (2). The sample period is from 2004 to 2008 and the countries represented in our analysis are Bahrain, Egypt, Jordan, Kuwait, Morocco, Qatar, Saudi Arabia, and United Arab Emirates. Variables significant at 10% are followed by *, variable significant at 5% by **, and variable significant at 1% by ***.

Equation (3)	
PoR	0.096***
Auditor	2.294
Opinion	2.850
LEV1	0.078**
Size	-0.224
LEV2	-0.069***
RE/TA	44.560***
Growth	0.005
Year Dummies	Yes
Industry Dummies	Yes
Country Dummies	Yes
No. of Observations	243
Adjusted-R ²	0.275
F-Values	6.67

Conclusion

This paper documents the relationship between cost of debt and dividend policy in the MENA region during the period between 2004 and 2008. Our results show a significantly negative relationship between cost of debt and dividend policy. Our results are robust after controlling for different firm-specific characteristics and in different regions and periods. We argue that one of the reasons for this negative relationship is that dividend policy acts as a substitute for corporate governance mechanisms in emerging markets. Since higher payout

ratios signal lower agency problems and better governance, creditors can infer valuable information about the riskiness of the firm and thus can ask for lower return for better governed firms.

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TAX REVENUE - THE DETERMINANT FACTORS- THE CASE OF ALBANIA

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Abstract

The purpose of this paper is to analyze the factors that will increase or will reduce revenues from taxes collected by the government. The variables that we have took in consideration are GDP, inflation, income tax, unemployment and imports. We have used the statistical analysis to see if there is a connection between the variables that we have chosen as explanatory ones. Through the use of the logarithmic function we will see how flexible is the GDP of our country related to income from taxes and government spending. The data that we have analyzed are obtained from the Ministry of Finance, INSTAT, World Bank, etc..

Keywords: *GDP, Tax, infation, elasticity, income*

Introduction:

The revenue collected from taxes, economic growth, inflation, unemployment, etc. have become more and more concern for the economies of different countries. Income taxes are one of the tools that the government will use and for governmental spendings. The Albanian government classifies revenues as a) income tax, b) non-tax revenues and grants. Tax revenues include both direct taxes and indirect ones. Direct taxes include taxes such as corporate profit tax or personal income tax, property tax, social and health contributions and indirect taxes include taxes such as excise, VAT, customs duties, etc.. Tax revenues are allocated from a) Income Tax and Customs, b) local government, and c) special funds. Non-tax revenues include income from various service fees, revenue from budgetary institutions, interest, investment returns but the ones from privatization receipts are included as financing for deficit in. Income from income assistance are received from different donors or governments of other countries. If we refere to the last 20 years (1993-2013) we will notice that income from taxes has an increasing trend. The biggest amount of the taxes is collected from taxes and customes.

Government spending in our study include government fees refundable for the purchase of goods, services, transfers and interest payments, for performing of the state. The questions that we adress are:

Which is the relationship between GDP growth, inflation rate, unemployment, increased imports and increased tax revenues? Is this relation significant? How flexible is the country's GDP versus tax revenues and government spending?

Methodology

To achieve the conclusions of this study we used the program SPSS. The data consists of independent variable and dependent variable which are GDP, inflation rate, unemployment and Imports. Pearson coefficient of correlation is used to the extent of relationship among different variables. The analyzed information is provided by the Albanian Ministry of Finance , World Bank and INSTAT. The data will be analyzed through the analyses of Beta

coefficient. We have used this measure in order to understand the connection between dependent and independent variables. The Coefficient of determination R-square is used to explain the dependent variables in the regression analyses.

T-statistic is used to identify the significance of each dependent variable with the independent variable and after we use F-test to test the significance of all all independent variables.

Standard Error of Estimation (SEE) is used to test the level of confidence and multiple regression analysis.

Definitions

GDP shows the market value of all final goods and services produced in the economy of a country for a given period of time. The variable used for the study is growth Annual Percentage rate of GDP at market prices based on constant local currency. Inflation rate measures the increase in price index. We also use it to calculate the real interest rate. If the stated interest rates are high, individuals have higher borrowing costs, so generally it causes economic slowdown due to the decrease of investment.

Inflation as measured by the consumer price index reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.

A high unemployment rate means less income for individuals, less consumption, less production, and creates a situation of recession for the economy.

In our study was obtained (Unemployment, total (% of Total Labor Force) (modeled Estimate ILO) Unemployment refers to the share of the Labor Force That is without-works but available for and Seeking Employment. Definitions of Labor Force and Unemployment differ from one country to another.

In Albania employed people are defined as people that have an age of 18 years who can have a job as employed or as self-employed who are declared at the General Directorate of Taxation.

According to our law “job seeker”, is every unemployed individual, who appear periodically in the relevant employment office. Considered and such persons are employed or self-employed, but seeking a new job. Job seeker is a person who:

- a) lives in Albania
- b) older than 18 years old
- c) appear in person at the Employment Office to seek for a job
- d) able to work

Imports of goods and services represent the value of all goods and other market services received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments. Data are in current local currency.

Theoretical background

1. If the rate of inflation will increase total tax revenues will fall. There is a negative relationship. Lucotte (2010)
2. If GDP will grow, the revenues collected from taxes will increase. There is a positive correlation. CLAUSING (2007)
3. If unemployment will increase revenue collected from taxes will be lowered. There is a small negative relationship. Kubatov and Rihova (2009)

4. If grows dote% growth that Imports of Goods and Services, collected tax revenues will increase. (Qazi 2010)

Regression analysis

Y dependent variable, (tax revenue growth %)

GDP independent variable, GDP growth (annual %),

Ir independent variable, inflation rate

Un independent variable, unemployment rate

Im independent variable, Imports of goods and services (annual % growth).

$$Y = \alpha + \beta_1 \text{GDP} + \beta_2 \text{Ir} + \beta_3 \text{Un} + \beta_4 \text{Im} + \varepsilon$$

With the given data we have run the regression for Albania where Y represents the dependable variable and represents the Tax revenue of the country while others are the dependable variables .

Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.853 ^a	.728	.651	9.1723454

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3158.785	4	789.696	9.386	.001 ^a
	Residual	1177.847	14	84.132		
	Total	4336.632	18			

a. Predictors: (Constant), Imports of goods and services (annual % growth), Inflation, consumer prices (annual %), GDP growth (annual %), unemployment

b. Dependent Variable: tax revenue growth %

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.757	11.455		1.725	.107
	Inflation, consumer prices (annual %)	1.764	.369	1.025	4.783	.000
	Unemployment	-1.867	.837	-.465	-2.231	.043
	GDP growth (annual %)	2.828	.551	.910	5.128	.000
	Imports of goods and services (annual % growth)	-.220	.183	-.178	-1.206	.248

From the regression analysis we notice that our model represents 72.8% of the variation in the values of the dependend variable Y, that can be explained by variation in the value of the independend variables **GDP**, **Ir**, **Un**, **Im** and this model is statistically significant (F = 9.386) because the p-value (0.001) is smaller than $\alpha=0.05$.

It is also statistically significant for the independent variable *Ir* because it has a p-value of 0.000 which is smaller than the $\alpha=0.05$ taken by us as a point of reference for this study, but is a positive relationship. The independable variable *GDP* , is also statistically

significant because it has a p-value of 0.000 . The independent variable of unemployment is also statistically significant p-value =0.043. We can say that are not statistically significant independent variable *Im* and *constant* because their p-value are higher than the α under study.

The relationship is explained by the relation :

$$Y = 1.764Ir - 1.867 Un + 2.828GDP + \varepsilon$$

We have to mention that the relationship between % of increase in income from taxes and the % of imports results to be insignificant.

If we refer to the relationship between income collected from taxes and imports we will notice that this relationship shows to be very important according to the parameters below;

Y dependent variable, tax revenue (current LCU)

Im independent variable, Imports of goods and services (current LCU)

$$Y = \alpha + \beta_1 Im + \varepsilon$$

After data analysis we notice that:

Regression

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.995 ^a	.990	.990	9.7522038

a. Predictors: (Constant), Imports of goods and services (current LCU)

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	162510.112	1	162510.112	1708.736	.000 ^a
	Residual	1616.793	17	95.105		
	Total	164126.905	18			

a. Predictors: (Constant), Imports of goods and services (current LCU)

b. Dependent Variable: tax revenue (current LCU)

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11.223	4.222		2.658	.017
	Imports of goods and services (current LCU)	4.197E-10	.000	.995	41.337	.000

From the regression analysis we notice that our model represents 99% of the variation in the values of the dependent variable *Y*, that can be explained by variation in the value of the independent variable *Im*, and this model is statistically significant because the p-value (0.000) is smaller than $\alpha=0.05$.

Also is statistically significant for the constant because it has a p-value of 0.017 which is smaller than the $\alpha=0.05$ which we have taken as a point of reference for this study.

$$Y = 11.22 + 4.19 Im + \varepsilon$$

Elasticity of GDP against income tax and government expenditure

Elasticity will show the change in percentage of GDP versus percentage change in tax revenues and government spending.

This will be achieved through the logarithmic function is where I hung logGDP-length, while independent variable will be the log of income tax (logTR) and the log of government spending (logGS). The equation would have the form:

$$Y = \alpha + \beta_1 \log TR + \beta_2 \log GS + \varepsilon$$

Data refer to the period 2001-2013. After data analysis in SPSS we have this results:

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.984 ^a	.968	.961	.02120

a. Predictors: (Constant), LOGgovernment spending., LOG tax revenue

ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.136	2	.068	150.808	.000^a
	Residual	.004	10	.000		
	Total	.140	12			

a. Predictors: (Constant), LOGgovernment spending., LOG tax revenue

b. Dependent Variable: LOGGDP

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.032	.349		5.819	.000
	LOG tax revenue	.626	.217	.871	2.890	.016
	LOGgovernment spending	.098	.258	.115	.380	.712

a. Dependent Variable: LOGGDP

From the regression analysis we notice that our model represents 96.8% of the variation in the values of the dependend variable Y, that can be explained by variation in the value of the independend variables logGDP and log TR, and this model is statistically significant because the p-value (0.000) is smaller than $\alpha=0.05$.

Also is statistically significant for the constant and log tax revenue because they have a p-value of 0.000 and 0.016 which is smaller than the $\alpha=0.05$ which we have taken as a point of reference for this study. We can say that is not statistically significant independable variable Log GDP because theirs p-value are higher than the α under study.

$$Y = 2.032 + 0.626 \log TR + \varepsilon$$

The coefficient 0.626 explains the elasticity of GDP related to taxes. Since its value < 1 then we say that GDP is not elastic. With an increas of 1% in tax revenues, GDP will grow only by 0.626%.

Conclusion:

According to the analysis that we have conducted we come to the conclusion that the increasing rate of income tax in Albania is directly related to the rate of inflation, with the unemployment rate and the growth rate of GDP. Revenue from taxes in Albania have a growing trend for the entire study period 1993-2013 except for 2012 where we have a decrease of 1%. It is not associated with the growth rate of imports. There is a positive correlation of percentage growth of revenues from taxes with the rate of inflation and the GDP growth rate, while the link with unemployment is negative.

On the other hand tax revenues are directly related to imports and this relationship is positive. With the increase of 1 unit of imports and tax revenues will increase by 4.19 units.

Also, we concluded that the GDP of Albania is not resilient against income tax. with growth of 1% of GDP tax revenues increase by only 0.626%.

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GESTÃO DE IDEIAS EM PRÁTICAS DE INOVAÇÃO ABERTA

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Abstract

The ideas are part of the early stages of innovation processes. The challenge is to capture them in the most diverse sources of knowledge available beyond the company limits and transforms them into innovative projects that provide return. Cooperation networks are formed with universities, suppliers and other companies via the platforms on the Internet, to identify new opportunities. The aim of this paper is to identify the open innovation actions used by companies to capture and select ideas for innovation. For this, a literature review was done by selecting six Brazilian companies identified as cases of innovation. This paper consists of a brief introduction on the importance of ideas as innovation strategy. The next section deals with the management of open innovation on the transaction of knowledge and technologies, collaborative initiatives with external networks, distinguishing the two models of innovation, open and closed in function of mechanisms of absorption and offer of technologies to increase the success rate of innovations. The mains results indicates that Brazilian companies need to restructure their innovation actions opening their processes through collaboration, internalization and externalization of ideas to reduce risks and increase their competitiveness. Two of the six companies, still practice the closed innovation. The others seek external sources, such as customers, suppliers, universities and patents, new ideas and information for their innovation processes.

Keywords: Innovation management, Ideas management, Open innovation.

Resumo

Ideias fazem parte das fases iniciais dos processos de inovação. O desafio está em capturá-las nas mais diversas fontes de conhecimento disponíveis além dos limites da empresa e transformá-las em projetos de inovação que proporcionem retorno. Redes de cooperação são formadas com universidades, fornecedores e outras empresas, por intermédio das plataformas na internet, para identificação de novas oportunidades. Assim, o objetivo do artigo é identificar as ações de inovação aberta utilizadas pelas empresas para captar e selecionar ideias para inovação. Para tanto, foi feita uma revisão bibliográfica selecionando seis empresas brasileiras apontadas como casos de inovação. O artigo é composto por uma breve introdução sobre a importância das ideias como estratégia de inovação. A próxima seção trata da gestão da inovação aberta relativa à transação de conhecimentos e tecnologias, das iniciativas de colaboração com redes externas, diferenciando os dois modelos de inovação, aberto e fechado como mecanismos de absorção e desabsorção de tecnologias para aumentar a taxa de sucesso das inovações. Os principais resultados apontam que as empresas brasileiras ainda precisam reestruturar suas ações de inovação abrindo seus processos por meio da colaboração, da internalização e da externalização de ideias para reduzir os riscos e

para aumentar a sua competitividade. Duas das seis empresas, ainda praticam a inovação fechada. As demais buscam em fontes externas, como consumidores, fornecedores, universidades e patentes, novas ideias e informações para os seus processos de inovação.

Palavras-chave: Gestão da inovação, Gestão de ideias, Inovação aberta.

For this, besides the literature review, six Brazilian companies identified by the literature as cases of innovation have been selected.

Introdução:

A finalidade de qualquer empresa é criar valor a partir das suas atividades produtivas para prosperar e permanecer no mercado (ESCOBARI; SULL, 2004). No entanto, o ambiente organizacional é um sistema complexo, dinâmico e incerto (SCHERER; CARLOMAGNO, 2009) no qual o sucesso de uma empresa atrai outras empresas concorrentes que copiam as estratégias e invadem o mercado uma das outras (ESCOBARI; SULL, 2004). Para minimizar esse efeito, a inovação passa a ser uma estratégia fundamental para a sustentabilidade, crescimento e competitividade da empresa (KOULOPOULOS, 2011; SCHERER; CARLOMAGNO, 2009). Passa a ser conduzida com “a exploração de uma nova ideia com sucesso, resultando em grande retorno” cujo processo é contínuo, estruturado e gerenciado com a definição de estratégias, prioridades, projetos e monitoramento dos resultados (SCHERER; CARLOMAGNO, 2009, p. 8).

Para Nambisan e Sawhney (2011, p.11), existem dois fatores que obstruem a habilidade de inovação das empresas: i) a velocidade da inovação exigida para aumentar e manter o lucro e ii) a redução da produtividade da inovação interna, forçando as empresas a olhar para o mundo para identificar profissionais talentosos, intermediários de inovação e novas plataformas tecnológicas. Chesbrough (2012) acrescenta, ainda, os seguintes elementos de obstrução ao gerenciamento da inovação:

i) alta mobilidade das pessoas capacitadas e experientes: ao trocaram de emprego, estas levam consigo parte dos conhecimentos internos compartilhando-os com outras empresas;

ii) o crescimento do capital privado de risco: esses capitais passaram a criar novas formas de comercializar as ideias e,

iii) a velocidade da comercialização dos produtos e serviços: fator que reduz a vida da tecnologia do produto. Esses são os fatores que impedem a sustentabilidade da inovação fechada.

Nesse contexto, o processo de inovação “passa por um processo de transformação” no qual há uma “mudança de paradigma” em que só as ideias originadas internamente na empresa para o lançamento de novos produtos e serviços não bastam (CHESBROUGH, 2012, p. 4).

O interesse em realizar este artigo, surge na necessidade de identificar como as empresas estão praticando a gestão de ideias em ações de inovação aberta. Devido à crescente e constante importância das inovações, acredita-se que a relevância deste trabalho está pautada na contribuição para identificação dessas ações de forma a contribuir para a agregação de valor e competitividade das empresas. Nesse sentido, realizou-se uma revisão bibliográfica pertinente a questão de pesquisa para confrontá-la com as ações relatadas por seis melhores empresas apontadas pela literatura como inovadoras.

O artigo esta estruturado, além desta breve introdução, com mais três seções. A segunda seção trata da inovação aberta e dos casos de estudos identificados na literatura. A seção seguinte realiza uma análise para identificar as ações de inovação aberta destacadas

pela revisão bibliográfica e por fim, a quarta seção realiza as considerações finais destacando as ações praticadas por essas empresas.

Inovação Aberta e Casos de Estudo:

A inovação aberta não é um conceito novo. Huizingh (2011) afirma que é um dos temas mais discutidos em várias disciplinas, mas que foi organizado por Chesbrough que atribuiu um rótulo e um corpo que engloba, conecta e integra uma série de atividades que já existiam.

O modelo de inovação aberta contraria alguns princípios seguidos pelas empresas, ainda neste começo do século XXI, no qual a gestão da inovação concebida o produto, desde a ideia inicial até a sua comercialização (CHESBROUGH, 2012). A premissa básica é a adoção de estratégias de colaboração estabelecendo relações com outras organizações para explorar comercialmente as oportunidades de inovação e canais de distribuição que conquistam a confiança dos clientes e permitem a expansão geográfica da empresa (HANSEN; BIRKINSHAW, 2007; HUIZINGH, 2011). Isso implica em relacionamentos organizacionais com diversos parceiros para o desenvolvimento de práticas e ferramentas de inovação (BÜCHELER et. al., 2010; CHIARONI; CHIESA; FRATTINI, 2011).

Em relação às práticas referentes à transação de conhecimentos e tecnologias, Arruda (2011) destaca as seguintes:

a) fluxos de conhecimentos e tecnologias, de dentro para fora e de fora para dentro, na geração de ideias, pesquisa, desenvolvimento e comercialização;

b) nível de engajamento nas parcerias com funcionários, clientes, empresas do mesmo grupo, concorrentes, fornecedores, universidades etc;

c) características da inovação aberta referente às atividades nas mudanças estruturais da empresa, em gestão do conhecimento, na capacidade de absorção e desabsorção;

d) resultados do processo de inovação quanto ao tempo de mercado, custo e qualidade.

A empresa norte-americana *Innocentive* realizou uma pesquisa com 229 tomadores de decisão de grandes empresas nos EUA, Alemanha e Reino Unido, em setores industriais que praticam ações de inovação aberta. As ações identificadas são relativas à formação de rede de relacionamento, programas de ideias, problemas ou solução em rede, programas de cocriação e iniciativas de colaboração social conforme apresentado no Gráfico 1.

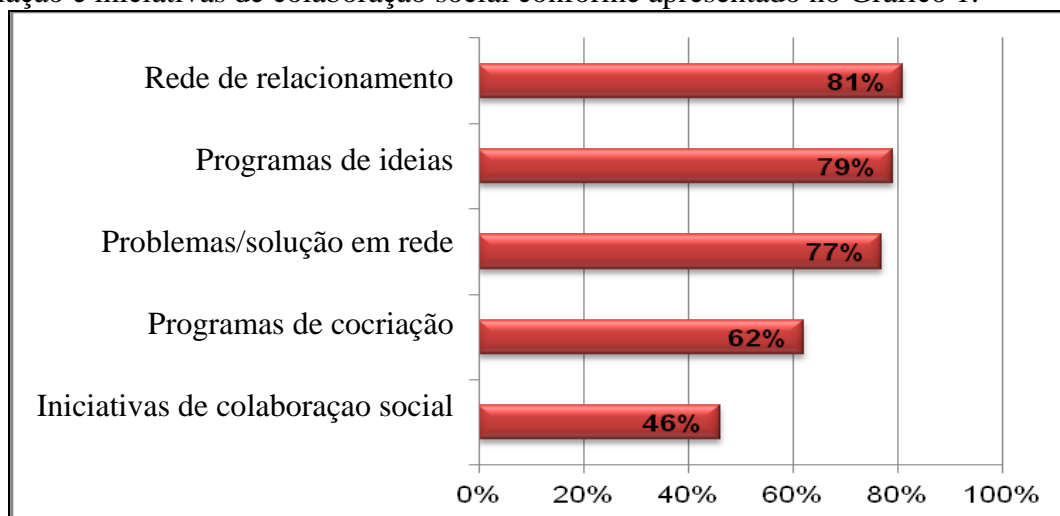


Gráfico 1 - Iniciativas que caracterizam a inovação aberta
 Fonte: Traduzido e adaptado de *Innocentive* (2012, p. 4)

Nota-se que a colaboração entre as redes de parceiros externos, os programas de ideias e a solução em rede para problemas aparecem em primeiro lugar no gráfico. A tendência do pensamento **Faça Você Mesmo**, observada por Huizingh (2011) e Chesbrough (2003a) está ultrapassada para a empresa. Os autores consideram que esta mudança é impulsionada, principalmente, pela redução do ciclo de vida dos produtos, redução do retorno dos investimentos nos laboratórios de P&D e os crescentes custos de operações dessas estruturas. Esses fatores enfraquecem o controle do processo tornando o caminho da inovação difícil e árduo, pois a empresa precisa converter as ideias em resultados capazes de satisfazer a crescente demanda do mercado (HUIZIG, 2011).

Assim, a gestão das ideias é imprescindível para o desenvolvimento de novos produtos (STEVENS; BURLEY, 1997). Pode se tornar uma forma coletiva de conexão, denominada por Howe (2006) de *Crowdsourcing*, que transforma o processo de inovação tornando-o mais colaborativo e aberto. Todos podem participar com ideias e informações para a inovação, Esta, deixa de ser produzida somente com os recursos e ideias internos da empresa (AZNAR, 2007). A diferença de ambos os modelos, inovação fechada e inovação aberta, é representada na Figura 1 com a “porosidade” da linha tracejada que possibilita à empresa a entrada de novas ideias oriundas do ambiente externo (CHESBROUGH, 2003b).

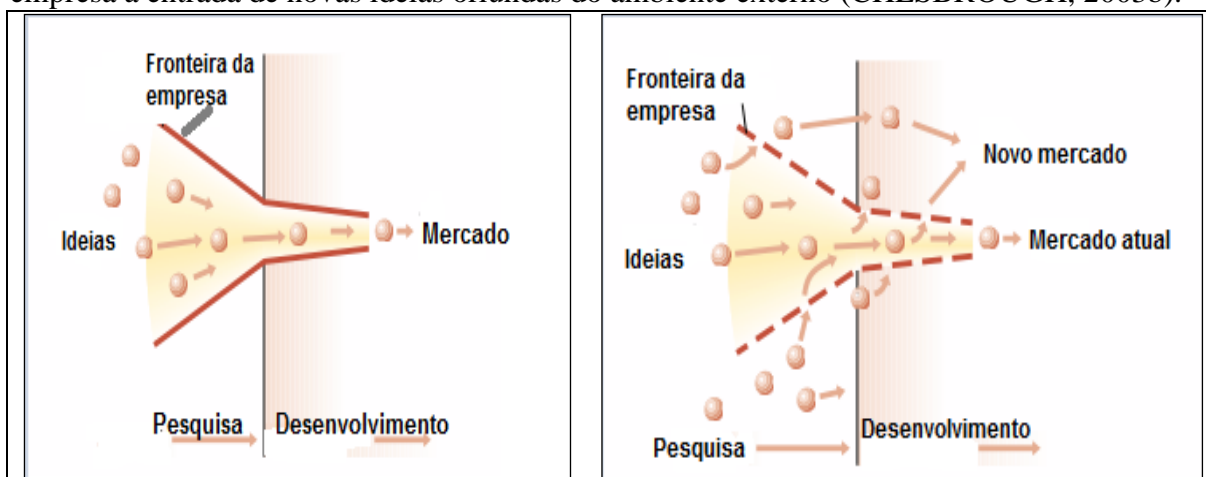


Figura 1 - Inovação fechada versus Inovação aberta
Fonte: Traduzido e adaptado de Chesbrough (2003b, p. 36-37)

A abertura pode viabilizar e ampliar o retorno da inovação uma vez que os riscos podem ser minimizados por meio da implementação de novas tecnologias, do uso de marcas alternativas ou da criação de novas empresas (*spin-offs*) derivadas da matriz, de órgãos do governo, de universidades ou de centros de pesquisa para o desenvolvimento de oportunidades.

Desta forma, a comercialização das ideias pode alavancar as próprias competências da empresa, uma vez que esta não se restringe somente aos mercados em que atua (CHESBROUGH, 2003a). Ao invés disso, a empresa participa de outros segmentos com licenciamentos, *joint ventures*, *spin-offs*, etc. criando novos fluxos de renda e receita com a realização de parcerias que visam, neste contexto, dividir os riscos, custos e lucros, além da compra e da venda de propriedade intelectual, inovando de forma mais rápida. (ENKEL, 2007; GASSMANN; ENKEL; CHESBROUGH, 2009)).

PARCERIAS/COLABORAÇÃO

A “parceria é um acordo entre duas ou mais partes, no qual recursos, conhecimentos e capacidades são compartilhados com o objetivo de aumentar a competitividade de cada uma das partes” (ARRUDA; ROSSI; MENDES, 2011, p. 8). Esse compartilhamento, para Howe (2006), é denominado de *crowdsourcing* referindo-se à utilização do conhecimento coletivo,

distribuído de forma global pela internet, para resolução de problemas e para o desenvolvimento de novas tecnologias.

Esse compartilhamento muda a visão de futuro da inovação, principalmente no que tange à geração de ideais entre os cientistas de Pesquisa e Desenvolvimento (P&D) (PINHEIRO, 2012). Além disso, as empresas reúnem os participantes da sua cadeia de valor formando redes que atuam como mecanismos de inovação por meio de uma nova lógica de novos conhecimentos, de dentro para fora e de fora para dentro, acelerando o desenvolvimento de produtos e abreviando o tempo de comercialização, reduzindo os gastos e aumentando a taxa de sucesso das inovações (CHESBROUGH, 2003b; LINDEGAARD, 2011; SATISH; MOHANBIR, 2011).

Quanto ao fluxo de conhecimentos e tecnologias **de fora para dentro**, as empresas demonstraram estar mais abertas para a geração de ideia, desenvolvimento e comercialização do que para a pesquisa. Da mesma forma, o fluxo de conhecimentos e tecnologias **de dentro para fora** é mais aberto na geração de ideias, comercialização e desenvolvimento sendo a abertura menos intensa na fase de pesquisa. A pesquisa conclui que há mais absorção de conhecimentos e tecnologias nos processos de inovação do que receitas com a comercialização ou licenciamentos (ARRUDA, 2011).

Os Gráficos 2 e 3 apresentam os resultados obtidos na pesquisa de Arruda (2011) sobre a transação de conhecimento e tecnologia, tanto de fora para dentro quanto de dentro para fora, com a rede de parceiros.

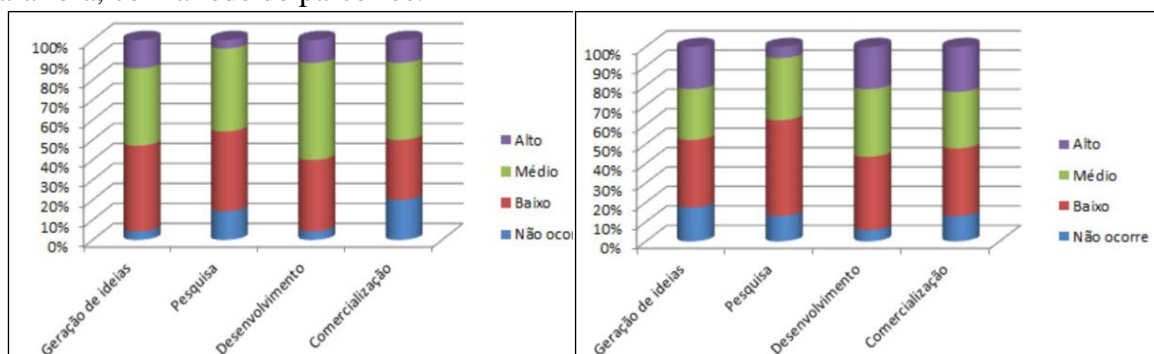


Gráfico 2 - Fluxo de fora para dentro

Fonte: Arruda (2011, p. 5)

Gráfico 3 - Fluxo de dentro para fora

Fonte: Arruda (2011, p. 5)

A tendência de cooperação no Brasil também é identificada, por meio de um comparativo, realizado pela pesquisa em parceria pelo Instituto Euvaldo Lodi do rio Grande do Sul (IEL/RS) e a empresa de consultoria *Innoscience* com uma amostra de 244 respondentes sobre a evolução da Gestão de Inovação. Verificou-se que em 2011 em relação a 2010 houve maior acesso aos novos conhecimentos em todas as categorias de parceiros. Os resultados estão ilustrados no Gráfico 4.

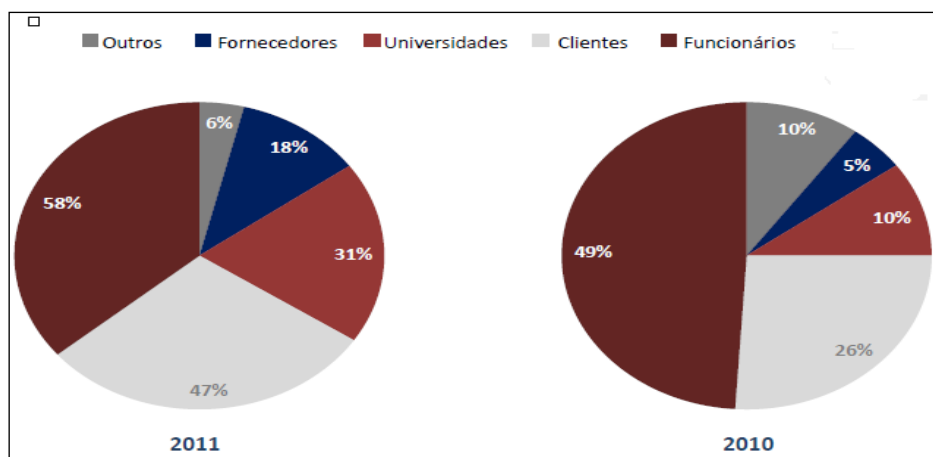


Gráfico 4 - Principais parceiros da rede de colaboração

Fonte: Maximiliano (2012, p.18)

A estratégia de colaboração para a inovação é visível ao se analisar os percentuais de ideias de um ano para outro. Pode-se afirmar que as empresas estão ampliando suas redes de inovação. De 2010 para 2011, o acesso às ideias dos clientes passou de 26% para 47%, um incremento de 21%. Este resultado também se replicou para as pesquisas e ideias originadas nas universidades, de 10% em 2010 passou para 31% em 2011 representando um acréscimo de 13%. Para os fornecedores, o acréscimo foi em menor escala, de 5% em 2010 para 18% em 2011. Percentuais, na visão de Maximiliano (2012), consolidam a importância de um programa de Gestão de Ideias para a empresa em ações de inovação aberta.

ACÇÕES DE INOVAÇÃO ABERTA

Leimeister e Krcmar (2009) notam que tradicionalmente, os departamentos de P&D são os principais motores de inovação de uma empresa. No entanto, há uma tendência de as empresas utilizarem, além das ideias dos funcionários, as ideias dos clientes, fornecedores e das universidades.

Para a mudança da estrutura organizacional são observados elementos que permitem acessar e integrar tecnologias e conhecimentos de fora da empresa para dentro (PITASSI, 2012). Nonaka, Toyama e Konno (2000) afirmam que as empresas ainda não compreendem realmente como criar e gerir esse conhecimento de forma dinâmica proporcionado pela ação e interação com o ambiente.

É nesse sentido que, a empresa precisa desenvolver sua capacidade de absorção para identificar, assimilar e aplicar o conhecimento e as tecnologias externas no seu processo de inovação ao mesmo tempo em que desenvolve a capacidade de desabsorção para identificar oportunidades de realizar transferência de tecnologia e conhecimentos internos para com os seus parceiros externos (NONAKA; TOYAMA; KONNO, 2000).

Huizingh (2011) evidencia a relevância das relações colaborativas interfirmas, principalmente, na fase de elaboração dos conceitos e nas relações de longo prazo, para o desenvolvimento conjunto de inovações. Para tanto, deve-se considerar elementos do fluxo de conhecimento que Lichtenthaler (2008) classifica em conhecimento de exploração, retenção e utilização realizado internamente ou externamente.

A seção seguinte relata seis casos gestão de ideias com ações de inovação aberta de empresas brasileiras.

Empresas Brasileiras com ações de inovação aberta

Caso 1 - Belgo Bekaert

A empresa Belgo Bekaert Arames (BBA) do grupo ArcelorMittal e Bekaert atua no segmento de cabos de aço. Até 2007, a gestão da inovação na BBA inovava em produto apenas sob demanda. Em 2008 criou uma Gerência para apoiar a busca soluções, estruturar as atividades de P&D de projetos de inovação e para contabilizar os gastos realizados com os projetos. O conceito de inovação foi ampliado incluindo, além do produto, a inovação de processo, novas funcionalidades ou características ao produto ou processo originado por melhorias incrementais e ganhos de qualidade ou produtividade. A empresa passou a captar ideias, por meio do diálogo com os clientes, registrado em relatórios de visitas do Marketing, vendas e assistência técnica em um portal de ideias, disponível na Intranet, para registro das informações. Os critérios utilizados pela empresa para análise e seleção das ideias são os de viabilidade técnica e econômica, interesse do mercado e relevância estratégica. A BBA é um exemplo de estruturação e integração de inovação na estratégia da empresa por meio da criação de um ambiente propício.

Caso 2 - Fiat Mio

A Fiat do Brasil lançou uma campanha para um projeto participativo, com o objetivo de desenvolver um carro por meio de um processo aberto, no qual os consumidores foram convidados a dar ideias para a criação do projeto conceitual. Para tanto, criou uma plataforma na internet e pelo site o público podia acompanhar a criação do veículo. A plataforma captava ideias dos consumidores, fornecedores, alunos e professores das universidades. As ideias foram avaliadas, com base em estudos de viabilidade técnico sendo o resultado, de propriedade coletiva.

O Quadro 1 apresenta a dinâmica do projeto Fiat Mio, identificando as ações de inovação, as fases do processo de inovação, os agentes externos envolvidos e a contribuição para o produto final.

PRÁTICAS DE INOVAÇÃO COLABORATIVA	FASES DO PROCESSO DE INOVAÇÃO	AGENTES EXTERNOS	CONTRIBUIÇÃO PARA O PRODUTO
Colaboração em P&D	Pesquisa – geração e seleção de ideias e criação de conceito	Consumidores	Capacidade de o automóvel receber atualizações e novas configurações
Colaboração em P&D	Pesquisa – geração e seleção de ideias e criação de conceito	ICTs (alunos e professores de universidades)	Novas soluções para carregamento da bateria no carro elétrico
Aquisição e licenciamento de tecnologia e colaboração em P&D	Desenvolvimento	ICTs (grupos de pesquisa de universidades)	Transmissão de eletricidade sem fio
Aquisição e licenciamento de tecnologia e colaboração em P&D	Desenvolvimento	Fornecedores (<i>start-ups</i> e empresas incubadas)	Tecnologia que possibilite aos vidros mudarem de cor
Aquisição e licenciamento de tecnologia	Desenvolvimento	Fornecedores atuais	Componentes para fabricação de carro elétrico, com bateria cambiável
Colaboração em gestão da P&D	Pesquisa e desenvolvimento	Fornecedores (Agência Click)	Criação e gerenciamento da plataforma, relação com o consumidor, <i>briefing</i> , decisões de conceito

Quadro 1- Práticas de inovação colaborativa do Fiat Mio

Fonte: Bueno e Balestrin (2012, p. 525)

A prática de aquisição e licenciamento de tecnologia foi utilizada no estágio inicial do projeto, no desenvolvimento do conceito e para o desenvolvimento. Quanto à colaboração em P&D com os consumidores, fornecedores e universidades, o maior destaque foi o envolvimento dos consumidores na cocriação do conceito, com a geração e seleção de ideias

e nas decisões do rumo do projeto. A colaboração na gestão do P&D aconteceu no relacionamento com o fornecedor de mídia digital em todas as etapas do processo por meio das interações com os autores das ideias, postagens na plataforma, captação das ideias, pelo *briefing* (resumo dos dados) e avaliação das áreas da criação, a partir do site.

Caso 3 - Johnson & Johnson do Brasil

A Johnson & Johnson do Brasil (J&J) testando algumas soluções, lançou projetos de inovação e dentre eles um concurso de ideias através da *web-site* da empresa. O objetivo era formar uma base de ideias interna originada pelos funcionários para criar um ambiente inovador (ARRUDA, et al; 2010). O escopo da campanha tinha por diretriz reconhecer a empresa como uma das mais inovadoras, estimular a interação entre equipes e estabelecer atmosfera de trabalho amigável (ARRUDA, et al; 2010). Assim, os mais de 150 funcionários podiam postar vídeos e apresentações comentando as ideias uns dos outros e ainda, incentivados pelos prêmios oferecidos pela empresa às ideias classificadas até a quinta posição.

Caso 4 - Empresa Oi de Telefonia

A empresa Oi, concessionária de serviços de telecomunicações do Brasil realiza ação de *crowdsourcing* com os colaboradores da empresa. Para tanto, lança desafios para os quatro temas permanentes estabelecidos pela empresa com o objetivo de estimular a troca e a integração de conhecimento e buscar soluções, reconhecendo e premiando os participantes. O modelo de inovação criado pela empresa abrange três pilares: fomento, gestão e prospecção. Foi criado para reunir as iniciativas de gestão, processo e fomento em busca de soluções inovadoras. Para isso, capta ideias dos seus colaboradores e efetua parcerias com as universidades de forma colaborativa para desenvolver ações e novos modelos de negócios a partir da prospecção de temas.

Para operacionalizar essas diretrizes, existe uma estrutura com três vertentes: a Fábrica Incremental (para melhoria do desempenho), a Fábrica Planejada (para as conexões externas e estruturação do portfólio de inovação) e a Fábrica Exploratória (para a análise do mercado, de tecnologia e prospecção de temas). O gerenciamento é feito pela área de inovação que adota ferramentas de validação realizando trimestralmente a avaliação, com reuniões presenciais, dos projetos das três fábricas para organizar o fluxo, atualizar os projetos e fornecer um *feedback* às equipes. A avaliação é feita por meio de uma matriz observando os critérios de intensidade da inovação e facilidade de implementação para posterior estabelecimento de parcerias com universidades, centros de pesquisa, fornecedores e *startups* (jovens empresas inovadoras). Essas práticas permitem a interação e o envolvimento ente os diversos níveis da empresa, gerando ideias, incentivadas pelas premiações, através da Intranet da empresa (ROSSI; FREITAS, 2013).

Caso 5 - Faber-Castell

A Faber-Castell atua no ramo de material para escritório. Em 2003 criou um programa batizado de Imaginação com o objetivo de gerar ideias para redução dos custos operacionais. Para tanto, houve uma campanha de divulgação interna, explicando os seus regulamentos por meio de panfletos, cartazes, banners e um evento institucional. As ideias eram registradas em um formulário entregue ao supervisor da área que encaminhava para o departamento de treinamento e desenvolvimento, efetuando o registro em planilhas do Excel. De posse do documento, o gestor realiza um estudo da viabilidade, emitindo o parecer e fornecendo o *feedback* (uma resposta padrão de aprovação ou não) para o autor da ideia. Em 2008 foi criada uma plataforma na intranet para possibilitar maior eficácia à postagem das ideias e melhorar os canais internos de comunicação. Cada colaborador recebeu seu *login* e

senha e a empresa passou a realizar campeonatos internos incentivando a competitividade entre os departamentos e premiando as ideias selecionadas com recompensas financeiras (ARRUDA; ROSSI; SAVAGET, 2010).

Caso 6 - Tecnisa

A Tecnisa é uma empresa do setor de construção civil que recorreu à Internet para coletar ideias inovadoras. Em 2009, solicitou opiniões, via Orkut, para o projeto Consciência Gerontológica. Recebeu muitas sugestões, mais de 200 ideias, para construções inclusivas voltadas aos idosos e deficientes. Em 2010 lançou um concurso, via portal de inovação aberta (<http://tecnisaideias.com.br/web/>), para universitários e jovens até 30 anos com seguinte tema: "ideias para melhoria e diferenciação da infraestrutura de tecnologia, lazer ou serviços nas unidades residenciais e condomínios". Para participar, os estudantes e os jovens profissionais se cadastravam no portal e enviavam suas sugestões. Para esse desafio foram apresentadas 57 propostas das quais as 10 melhores foram selecionadas atendendo aos seguintes critérios: aspectos inovadores, originalidade, aplicação no negócio da empresa e retorno financeiro. A empresa totalizou o prêmio dessas dez propostas em R\$ 13 mil⁵⁴ (CARVALHO, 2012).

Análise:

Para o contexto de geração, captação e seleção de ideias para inovação, o Quadro 2 resume as ações utilizadas pelas empresas quanto à Gestão de ideias, destacando, principalmente, as ações de inovação aberta praticadas por elas.

Empresa	Geração e Captação de ideias (internas e externas)	Ferramentas para Seleção das ideias	Ações de inovação aberta
Belgo Bekaert	Clientes; fornecedores e funcionários	Portal na Intranet; Relatórios do Marketing;	Redes de colaboração
Fiat	Consumidores; fornecedores; universidades e patentes	Plataforma na Internet Feira do automóvel	Cocriação; Relações de colaboração
Johnson & Johnson	Concurso interno para os funcionários	<i>Web-site</i> da empresa	Relações internas de colaboração
Oi	Concurso interno para os funcionários; centros de pesquisa; universidades e <i>startups</i>	Plataforma na Internet Reuniões trimestrais	<i>Crowdsourcing</i> ; Relações de colaboração
Faber-Castell	Funcionários	Plataforma na intranet	-
Tecnisa	Concursos externos	Portal da empresa; Jornais; internet e revistas	Redes sociais de relacionamentos

Quadro 2 - Ações de inovação aberta

Fonte: autoria própria

Percebe-se que as empresas adotam o *Crowdsourcing*, as redes e relações de colaboração juntamente com a cocriação como práticas ou ações de inovação aberta conforme recomendado por Chesbrough (2003a), Arruda (2011), Bueno e Balestrin (2012) e Huizingh (2011).

A Faber Castell, única empresa que ainda não implementou uma ação de inovação mais aberta, já percebeu a importância de buscar ideias em fontes externas em busca de ideias para inovação. Há o planejamento, inclusive, de instituir esta ação na empresa, embora o programa Imaginação, criado para gerar ideias, ainda está muito focado nos processos de melhoria da empresa.

Nota-se também, que essas iniciativas, além de o espaço criado para captar ideias, incentivam a colaboração entre as pessoas, configurando-se em estratégias de pesquisa para identificação de novas oportunidades. Neste contexto, as ferramentas de tecnologias de

⁵⁴ <http://www.tecnisa.com.br/noticias/tecnisa-premia-ideias-inovadoras/320>

informação requerem, de acordo com a visão de Chesbrough (2003b), Bücheler et. al.(2010) e Pitassi (2012), apoio tecnológico de modo a formar uma base de dados (banco de ideias) que permite à empresa resgatá-las ao longo do tempo. Esse banco de ideias impede que as mesmas se transformem em “aposentadorias de ideias” (CHESBROUGH, 2012).

Quanto às ações abertas de aquisição e licenciamento de tecnologia, percebe-se que, na maioria dos casos relatados, o processo ainda é incipiente. Exceto no caso do Fiat Mio, que divulgou o protótipo do produto na feira do automóvel, as demais empresas não adotam os canais de distribuição recomendados por Hansen e Birkinshaw (2007). Da mesma forma, embora as empresas apresentem ações de cocriação, relações, redes de colaboração e *crowdsourcing* para captação de novas ideias, as ações propostas por Aznar (2007) para promover e difundir as melhores ideias em rede, local e em eventos, ainda são pouco utilizadas. O que denota que essas práticas de gerenciamento ainda precisam ser desenvolvidas para contribuir efetivamente com o processo de inovação.

Considerações Conclusivas:

As ações de inovação aberta tem por premissa a colaboração, a internalização e externalização de ideias para os processos de inovação para reduzir os riscos e aumentar a competitividade da empresa (CHESBROUGH, 2003a, 2012; HUIZINGH, 2011).

A Belgo Bekaert buscou ideias fora da empresa formando redes de colaboração com os seus clientes, fornecedores e funcionários por meio do portal na intranet, gerando relatórios para medir o desempenho do programa. Da mesma forma, a Tecnisa se valeu das redes sociais de relacionamento para promoção de concursos externos que lhe trouxessem ideias inovadoras em temas específicos estipulados pela empresa.

A Fiat praticou ações de cocriação por meio da formação de relações de colaboração com seus consumidores, fornecedores, universidades utilizando as patentes como fonte de novas ideias e informações para a criação do carro conceito lançado na feira do automóvel, São Paulo - 2010. Do mesmo modo, a Oi se valeu do conceito do *crowdsourcing* formando redes de colaboração para a busca de ideias em concursos promovidos por ela. Também, utilizou como fonte, os centros de pesquisa, as universidades e criou *startups* para desenvolver os projetos elaborados por ideias promissoras e inovadoras.

Porém, a Johnson & Johnson e a Faber-Castell adotam um modelo mais fechado de inovação. Captam ideias somente dos funcionários por meio da *web-site* e intranet da empresa. As relações de colaboração são internas e demonstram pouca abertura para as ações do modelo de inovação aberta. Entretanto, os gestores de inovação dessas duas empresas já perceberam a necessidade de buscar ideias externas indicando mudanças quanto à gestão de ideias para o processo de inovação.

Assim, o desafio dessas empresas, já identificado por Koulopoulos (2011), é quanto à estruturação de uma nova forma de gestão. O processo de Gestão de Ideias, na abordagem de inovação aberta, utiliza o conhecimento tanto interno como externo para resolução de problemas e identificação de oportunidades de inovação. A lógica a ser considerada na Faber-Castell e na Johnson & Johnson, conforme a visão de Nambisan e Mohanbir (2011), é a busca de ideias externas para internalizar no P&D, reduzindo o tempo de comercialização, os riscos e os custos dos projetos. Identificado, também, como fator de obstrução da inovação uma vez que estas empresas não estão olhando para o mundo para identificar novas ideias.

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TRANSITION TO MARKET ECONOMY IN THE CENTRAL AND EASTERN EUROPEAN COUNTRIES – COMPARATIVE ANALYSIS⁵⁵

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Abstract

While in the Western Europe market economy had developed several centuries, in the Central and Eastern European countries (CEECs) the transition from centrally planned to market economy has been undertaken in a considerably shorter time. Although the long-term objectives of CEECs were similar, discrepancies arose in each country as regards the priorities, order and pace of the reforms to be undertaken. The paper starts with a brief view on the transition process in the CEECs and on the Varieties of Capitalism (VoC) theory. The main part of the paper deals with comparative analysis of economic performance of CEECs' and three benchmark Western European countries with focus on three dimensions of the economy, namely macroeconomic stability, innovation/growth/competitiveness and welfare/equality. We identify the main differences and similarities across the CEECs from the view of the three dimensions. Then we try to find which out of the two VoC ideal types the respective CEECs are closer to. The key outcomes of the analysis are summarized in conclusion.

Keywords: Transition, market economy, macroeconomic stability, welfare, Central and Eastern European countries (CEECs)

Introduction

While in the Western Europe market economy had developed several centuries, in the Central and Eastern European countries (CEECs) transition has been undertaken in a considerably shorter time. Historical, political, social and economic diversity in the CEECs at the beginning of their transition has markedly influenced the way and the extent of their transition process. This diversity has been the reason why, despite roughly the same challenges for all the post-communist countries, the concrete results of the transition process have been specific for each country.

Some of the CEECs (Poland, Hungary and Yugoslavia) started to introduce economic reforms towards a market economy, building some of its elements, already from the early 1980s. However, in other countries, no reforms were undertaken at this stage. After the fall of the Iron Curtain, some of the nations integrated into federations (Slovakia, Slovenia, Estonia, Latvia and Lithuania) used the opportunity for regaining their independent statehood (1991-1993). All these countries faced a double challenge: 1. to introduce economic reforms leading to a market economy, 2. to build the basic economic institutions needed for managing an independent state economy (e.g. central bank, own currency).

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There was a belief that it is possible to project and implement capitalist institutions in CEECs from above and in a relatively short period of time. However, reality proves to be much more complicated – transition took a longer time and it was much more difficult and complex. Instead of one universal type of capitalism, several varieties have developed in the CEECs. Given the legacy of central planning, economic transition of CEECs was path-dependent. The centrally planned economy left no institutional vacuum, so the old institutional framework could not be simply replaced by a new one, already successfully implemented in the Western countries. Hence, during transition the old institutions were combined with the new ones. At the same time, transition of formal institutions was accompanied by transition of non-formal institutions, whose importance increased at the early stage of transition when many of formal institutions ceased to exist or were isolated from the real economy. However, non-formal institutions did not improve functioning of the institutional framework as a whole (Balaz, 2006).

From the beginning of their transition, all the CEECs had a common strategic goal of joining the European Union (EU) as soon as possible. This became the key external factor of accelerating their transition. Until accession to the EU but especially in the first stage of transition, a number of fundamental economic reforms had to be implemented in all these countries. These reforms were related mainly to liberalisation, restoration of private property, capitalisation of the national economy as well as macroeconomic stabilisation and the reform of public finances.

The paper starts with a brief view on the transition process in the CEECs and on the Varieties of Capitalism (VoC) theory. Then performance of the CEECs countries and the three benchmark Western European countries is compared from the view of macroeconomic stability, innovation/growth/competitiveness and welfare/equality, using available time series and data from the Eurostat database. After mentioning the differences and similarities among the CEECs' economic performances, the outcomes of the analysis are summarized, taking into account the VoC classification.

Shock therapy versus gradualism

Although, the long-term objectives of CEECs were similar, discrepancies arose in each country as regards the priorities, order and pace of the reforms to be undertaken. In some of the CEECs (e.g. Estonia, Slovakia, Czech Republic, Poland) the supporters of more radical reforms (the so-called *shock therapy*) enforced this approach, especially in the early years of transition, despite its negative impact in the short-term (output fall, unemployment and recession). Other countries (e.g. Slovenia, Hungary, Romania) took a more *gradualist approach*, in which reformers decided to implement step-by-step macroeconomic, structural and institutional reforms at the same time, with the aim to avoid drastic changes in output, employment and welfare and to provide time for the national enterprises to adapt to the new conditions. Differences existed also in the speed of the *shock therapy* – e.g. Poland had partial experience with the functioning of the private sector already before 1989, on the other hand in Czechoslovakia the private sector was absent, which implied the need of a fast transition.

It needs to be pointed out that both *shock therapy* (neoclassical approach to economic transition) and *gradualism* (evolutionary approach) take into account that market will be the coordinator of economic activities in the final stage. In contrast to these two liberal approaches, the *etatist approach* sees the state as the main coordinator in the economy. An important difference between the neoclassical approach (Washington consensus) and evolutionary approach consists in the fact that while according to neoclassical economists the final system includes markets behaving in the same way as in advanced capitalist economies (only already existing types of market economies are possible), according to evolutionary

economists unique types of systems will develop that are difficult to predict (given the legacy of central planning, new types of capitalism can develop) (Morvay, 2005).

Varieties of Capitalism

As described and analyzed by the VoC approach (see e.g. Hall – Soskice, 2001), different market regimes, i.e. capitalist variations, are characterized by different institutional matrices in the economy. These institutional environments and arrangements provide incentive structures for the behavior of firms, households and also policymakers.

Concerning the economic and especially the welfare system, the literature on VoC has established two prototypes of capitalism – Liberal Market Economies (LMEs) and Coordinated Market Economies (CMEs), a categorization that already divides EU-15 in two groups (Anglo-Saxon vs. Continental). Each of these two ideal-types is characterized by a different logic of interaction and coordination between actors. In LMEs, economic actors coordinate their actions mainly through competitive markets and price signals. In contrast, CMEs are largely driven by specific non-market institutions which play critical roles and influence processes of strategic interaction. LMEs comprise the USA, the UK, Ireland, Canada, New Zealand and Australia, and CMEs include the Scandinavian countries, Continental European countries and Japan. However, the bipolar conceptualisation of competitive and coordinated contracting arrangements has been bridged to some extent by the development of additional capitalist typology in the expanding VoC literature, namely that of Mixed Market Economies (MMEs) (see e.g. Hancké et al, 2007). In this type of the VoC, represented e.g. by Italy and Spain, the state has a crucial role in compensating for an absence of institutional complementarities. Nevertheless, both CMEs and LMEs continue to be understood as essentially coherent and homogenous ideal types.

The literature on VoC has largely concentrated on leading OECD countries and on micro issues (e.g. inter-company relations, industrial relations, training/education). The discussion mainly does not consider the context of transition. As argued by Kitschelt (2006), there is a possible or impossible trinity of welfare/equality, innovation/growth and macro stability. Arguably, welfare/equality is often said to be neglected by liberal market economies, while fiscal stability is not given sufficient weight in coordinated market economies. It needs to be mentioned that EU enlargement criteria have also focused on competitiveness and stability in the first place, while welfare and equality considerations have not been high on the list of conditions for entry into the EU (Schweickert et al, 2013).

Similarly as in the OECD countries, instead of one variety of capitalism several varieties developed in CEECs. According to Balaz (2006) institutional and evolutionary economics imply also following conclusions for development of capitalism: Market economy is an economic space with a dense network of institutions. The system of institutions is path-dependent in each country. Institutions determine functioning of the market and, at the same time, market forces affect evolution of institutions. Therefore there are at least so many varieties of capitalism how many countries exist. However, it is possible to group together respective varieties of capitalism according to the common features of components of the institutional framework. Each variety of capitalism functions in its own institutional environment, which may become a source of competitive advantages as well as disadvantages. There is no perfect and universally effective model of capitalism to which all the other varieties had to converge.

Historical legacies played an important role in transition of the CEECs. The heritage of the communist pasts, lower levels of development and various informal institutions mean that there is no close fit with the ideal types used for analysing and comparing mature market economies (Lane-Myant, 2006). The Varieties of Capitalism (VoC) approach can only be

restrictively, flexibly and sensitively applied to post-communist countries, the mechanical application of the VoC can be misleading. These countries are still undergoing changes leading to a variety of capitalism with the shape that is difficult to predict now, although, some features may already be clear. In addition, institutions can be changed more easily in transition economies because of weaker enforcement compared to developed economies. Hence, more alternatives for capitalist trajectories exist in transition countries, which can develop towards LME, CME or a mixed form of both (Mendelski, 2009). It also needs to be pointed out that classification of countries depends on the level of analysis (macro/micro), the length of the period analysed, the sectors and indicators chosen and the methodology. Hence, one and the same country can be sometimes put in different clusters of countries.

Legacy of central planning constituted different starting points and different challenges for CEECs compared to countries in the Western Europe. According to Esping-Andersen's (1990) typology, development in CEECs is often described as a gradual change towards the liberal welfare state, characterized by the minimal state, i.e. minimum government interventions in social area and in labour market, and by the shift of responsibility for social welfare from the state to individuals and their families. There are also attempts to identify elements of the corporatist welfare state, emphasizing merit principle, and social-democratic welfare state, promoting universalism and a high degree of redistribution, in respective CEECs countries. According to Farkas (2011), CEECs cannot be put into one single welfare system. Social protection in Poland, Hungary and Slovenia fits the Continental model; the others have the characteristics of the Anglo-Saxon model. According to other authors, welfare state in CEECs is rather a combination of more types of welfare states, depending on the sector examined. However, legacy of central planning and the so called path-dependency should be also taken into account when explaining formation of welfare states in CEECs.

Analysis of selected indicators

Analysis of selected indicators based on available time series and data from the Eurostat database has been conducted in the ten CEECs (Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia) and three benchmark countries (Germany as the case of CME, UK as LME and Italy as MME) to provide a broader picture of performance of CEECs. The indicators represent the trinity of macroeconomic stability, innovation/growth/competitiveness and welfare/equality (see Annex).

For the analysis a scoring model has been developed, based on the average values of the respective indicators for all countries. The model has the following specifications: The average values of individual indicators have been statistically distributed into 10 percentiles, which provided the necessary intervals for assigning points to countries. The points have been assigned to countries in descending order from 10 to 1 (i.e. the country with best performance in the respective indicator receiving 10 points and the worst receiving 1 point). The total score for each country for individual dimensions of the trinity has been calculated as the sum of the points assigned to the country for indicators in the respective dimension of the trinity.

The summary table with the performance indicators used in the analysis and average values for all countries analysed is in Annex (table 1). The scores for each indicator and each country can be seen in the table 2 (in Annex) and the results are also shown in figure 1 and 2.

Based on the data and methodology used, the following conditions and trends could be identified in CEECs:

- when we look at respective dimensions of the trinity in CEECs, the worst results in macroeconomic stability were registered in Hungary; the worst results in

innovation/growth/competitiveness were clearly reached in Bulgaria and Romania; and in welfare/equality in Latvia and Poland (figure 1 and 2),

- on the other hand, the three Baltic states, Slovenia and the Czech Republic performed best among the CEECs in macroeconomic stability; Slovenia followed by Estonia and the Czech Republic in innovation/growth/competitiveness; and again Slovenia followed by the Czech Republic in welfare/equality.
- among the benchmark countries, Germany and the UK represent more developed economies compared with Italy,⁵⁶
- the results for Slovenia mostly fit those of Germany and the UK; in less extent, the same is the case of the Czech Republic (with the most evident difference in dimension of innovation and competitiveness) and Estonia (with worse performance in welfare dimension),
- at the same time, Estonia seems to have caught up with Italy's performance in the analysed period (with better results in macroeconomic stability) and Slovakia is also rather close to Italy with deficit in the innovation/growth/competitiveness dimension.

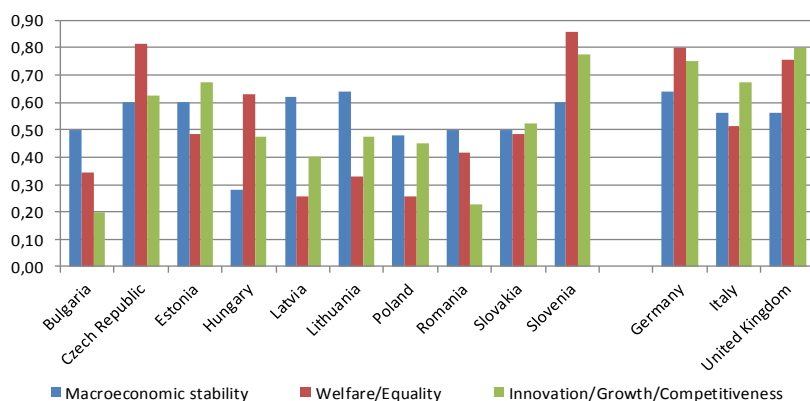
Slovenia and the Czech Republic, followed by Estonia are the most successful countries among the CEECs in reaching objectives of all three dimensions of the trinity, with Estonia lagging in terms of welfare. In general, the Baltic States are rather unequal and socially exclusive, Slovenia and the Czech Republic represent the opposite extreme. As regards research and development (R&D), Slovenia, Estonia and the Czech Republic represent slight exceptions from underfinanced R&D systems in the CEECs.

By many authors, Slovenia and Estonia are considered the most successful transition countries with two diverse but coherent institutional systems. While Slovenia is the case that is very similar to pure CME, Estonia is most similar to pure LME. One of the factors of the success of Slovenia is its exceptional legacy, as the country inherited from the former Yugoslavia a unique enterprise ownership structure based on self-management and a unique institutional setting.

Estonia and other two Baltic States belong to the few CEECs with rather satisfactory results in macroeconomic stability (figure 1), Latvia and Lithuania only before the crisis. The goal of national independence can explain why macroeconomic stability became a priority for these states. They have enjoyed strong political support for reforms towards the market economy in contrast with many other countries, as radical economic reforms were crucial for the defence of national independence. However, in these countries the domestic demand as a growth driver was so dominant that it led to very large deficits on current accounts before the crisis. At the same time, the results of the Baltic States in the welfare/equality dimension are weaker.

⁵⁶ Similar results of Germany and the UK in welfare/equality dimension result from the fact that while Germany reached a higher score in expenditure on social protection, in-work at-risk-of-poverty rate and in Gini coefficient in the analysed period, the UK was performing better in unemployment rates (see Annex).

Figure 1 The trinity in the CEECs and benchmark countries (relative values calculated as shares in the maximum values for each dimension of the trinity)



Source: Eurostat (2014), own calculations.

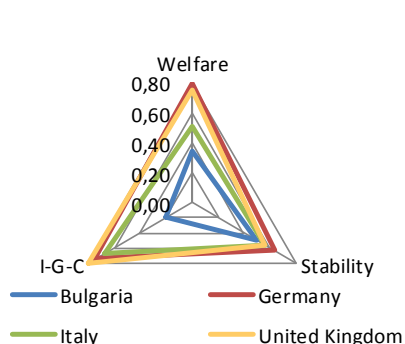
The Czech Republic is also often considered one of the most successful socialist countries to have transited to capitalism, which has been confirmed by the results of our analysis. The results of the trinity in the Czech Republic are closer to those of Slovenia (CME) than those of Estonia (LME). The Czech Republic and Slovenia reached the highest score in welfare/equality dimension among the analysed countries and, at the same time, both performed relatively well in terms of macroeconomic stability.

Also the results of Hungary fit more those of Slovenia, with a stronger emphasis on welfare/equality dimension. However, as regards the trinity, the overall results of Hungary are significantly worse than those of Slovenia. While the case of Hungary confirms that fiscal stability is often not given sufficient weight in coordinated market economies, this is not so evident in the case of the Czech Republic or Slovenia (see Annex).

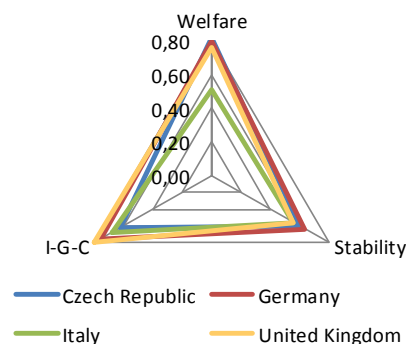
Slovakia is around the middle within the CEEC countries. As can be seen from figure 1, the results of the trinity in Slovakia are closer to those of Estonia (LME) than those of Slovenia (CME), since Slovakia and Estonia have focused less on welfare/equality than on other two dimensions of the trinity. The same is the case of Poland which, however, in comparison with the two mentioned countries, performed even worse, in particular in welfare/equality. The most problematic cases among the CEECs are represented by Bulgaria and Romania with a very weak performance in innovation/growth/competitiveness. In these countries, macroeconomic stabilization proves to be focused more than welfare or innovation.

Figure 2 The trinity of macroeconomic stability – welfare/equality – innovation/growth/ competitiveness in individual CEEC countries compared with the benchmark countries (relative values calculated as shares in the maximum values for each dimension of the trinity)

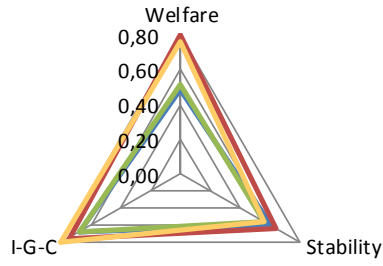
Bulgaria



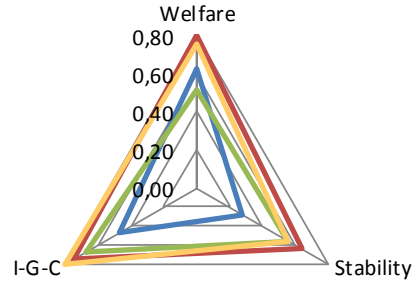
Czech Republic



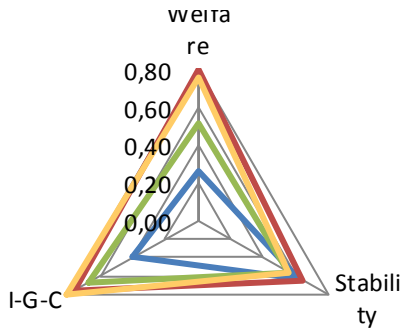
Estonia



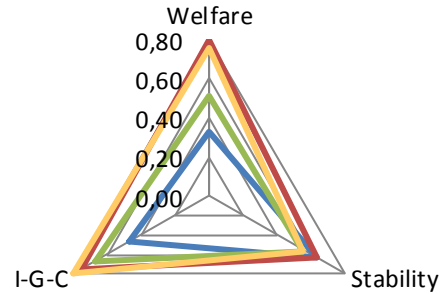
Hungary



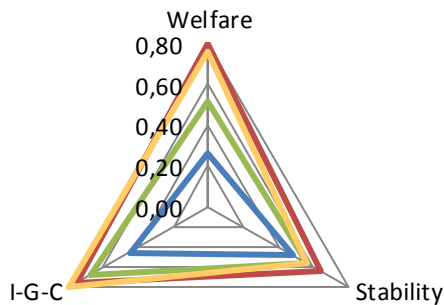
Latvia



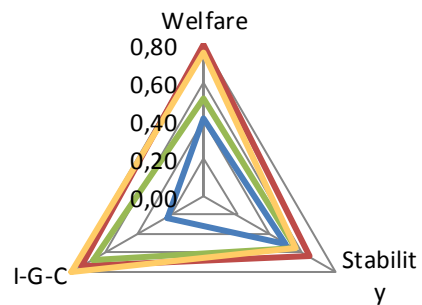
Lithuania



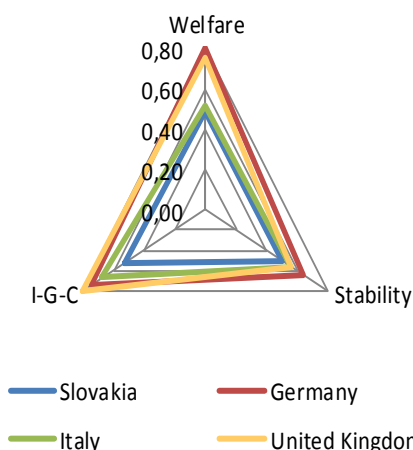
Poland



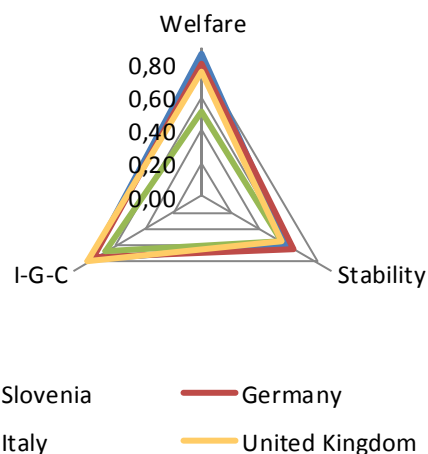
Romania



Slovakia



Slovenia



Source: Eurostat (2014), own calculations.

Conclusion

The authors are aware of the fact that the classification of countries depends much on the indicators chosen, the methodology, as well as on the length of the period and the sample of countries analysed. Indeed, the outcomes of the analysis should be interpreted cautiously. Based on the data and methodology used in the paper, we assume that Slovenia can be considered the CME model and Estonia the LME model. At the same time, the results of the Hungary and also those of the Czech Republic are closer to the CME type, while the other two Baltic States, Poland and Slovakia fit more with the LME type. We can also assume that the results of Romania and Bulgaria, with a lower emphasis on the welfare/equality dimension than on macroeconomic stability, are closer to the LME than to the CME model.

Taking into account path-dependence, the choice between the shock therapy (e.g. Estonia, the Czech Republic, Slovakia, Poland) and the gradualist approach (e.g. Slovenia, Hungary, Romania), and the results of our analysis, we can suppose that the way of conducting transition from the centrally planned to the market economy by itself does not predetermine successfulness of the whole transition process in terms of economic performance. Neither does the type of the market economy, as there are relatively successful economies among the CEECs, which fit more to the LME model and also those closer to the CME type.

Note

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ANNEX

Table 1

Average values of selected indicators in CEECs and the three benchmark countries

Indicator/Country	Bulgaria	Czech Republic	Germany	Estonia	Italy	Latvia	Lithuania	Hungary	Poland	Romania	Slovenia	Slovakia	United Kingdom
Innovation/Growth/Competitiveness													
GDP growth rate - Y-o-Y change (95-13)	2,6	2,6	1,3	4,9	0,7	4,3	4,6	2,0	4,1	2,9	2,8	4,2	2,2
Gross domestic expenditure on R&D in % of GDP (95-12)	0,5	1,2	2,5	1,1	1,1	0,5	0,7	0,9	0,6	0,5	1,6	0,7	1,8
Labour productivity per hour worked vs. EU average (00-12)	37,3	72,4	107,2	60,7	115,0	51,4	57,8	67,4	63,2	39,5	80,4	71,8	109,9
Patent applications to the European Patent Office per million inhabitants (95-11)	1,8	10,7	258,2	13,6	69,4	5,3	2,0	12,9	3,5	0,8	39,6	4,2	88,3
Macroeconomic Stability													
Current account balance in % of GDP - (95-13)	-5,8	-3,5	3,2	-6,7	-0,2	-7,0	-6,5	-4,6	-3,9	-6,2	-0,6	-5,2	-2,0
General government deficit/surplus (95-13)	-0,2	-4,3	-2,4	0,2	-3,6	-2,3	-3,5	-5,1	-4,6	-3,6	-3,9	-5,4	-3,8
General government gross debt (95-13)	41,2	27,1	66,9	6,2	113,3	20,3	23,3	68,2	46,6	21,2	31,1	39,3	53,9
HICP 2005=100 - annual data (97-13)	6,1	3,2	1,6	4,7	2,2	4,6	3,39	7,1	4,76	26,0	4,8	5,04	2,1
Private debt in % of GDP - non consolidated - annual data (95 - 12)	101,6	68,1	125,6	104,8	98,6	76,8	48,4	96,9	61,8	61,1	98,6	61,1	165,0
Welfare/Equality													
Employment rate 20 -64 years (98-13)	62,4	71,4	71,6	71,2	60,2	68,4	68,4	61,5	61,9	65,1	69,8	65,3	74,4
Unemployment rate, annual average % (98-13)	11,8	7,2	8,3	10,3	8,8	12,6	12,3	8,0	13,3	6,9	6,8	15,1	6,1
Long-term unemployment - annual average (98-13)	6,9	3,3	4,2	4,7	4,8	5,8	5,7	3,7	6,4	3,3	3,3	9,6	1,7
Gini coefficient (05-13)	32,8	25,1	28,7	32,3	31,8	36,4	34,6	26,9	35,8	34,1	23,5	25,5	33,1
COFOG - Social protection % GDP (02-12)	12,2	13,2	20,5	11,4	19,0	11,0	11,8	17,1	16,8	12,2	17,3	12,2	16,2
In-work at-risk-of-poverty rate (Source SILC) (05-13)	7,1	3,7	6,8	7,6	9,8	9,6	9,7	6,3	11,7	18,1	5,2	6,2	7,9
Expenditure on social protection per inhabitant (03-11)	1587	3641	7907	2200	6358	1234	2201	3469	2613	1464	4568	2748	6909

Source: Eurostat (2014), own calculations.

Table 2

Scores and relative scores for selected indicators in CEECs and the three benchmark countries

	Bulgaria	Czech Republic	Germany	Estonia	Italy	Latvia	Lithuania	Hungary	Poland	Romania	Slovenia	Slovakia	United Kingdom
Macroeconomic stability													
Current account balance in % of GDP - (95-13)	3	6	10	1	9	1	2	4	5	3	8	4	7
General government deficit/surplus (95-13)	9	2	7	10	4	8	5	1	2	3	6	1	6
General government gross debt (95-13)	6	7	3	10	1	10	8	2	5	9	6	6	4
HICP 2005=100 - annual data (97-13)	3	8	10	6	9	6	7	2	4	1	5	5	10
Private debt in % of GDP - non consolidated - (95 - 12)	4	7	2	3	5	6	10	5	8	9	5	9	1
Relative score (% of maximum 50 points)	0,50	0,60	0,64	0,60	0,56	0,62	0,64	0,28	0,48	0,50	0,60	0,50	0,56
Innovation/Growth/Competitiveness													
GDP growth rate - Y-o-Y change (95-13)	4	5	1	10	1	8	9	2	7	6	6	7	3
Gross domestic expenditure on R&D in % of GDP (95-12)	2	8	10	6	7	1	5	5	3	1	9	4	10
Labour productivity per hour worked vs. EU average (00-12)	1	7	9	4	10	2	3	6	5	1	8	6	10
Patent applications to the European Patent Office per million inhabitants (95-11)	1	5	10	7	9	5	2	6	3	1	8	4	9
Relative score (% of maximum 40 points)	0,20	0,63	0,75	0,68	0,68	0,40	0,48	0,48	0,45	0,23	0,78	0,53	0,80
Welfare/Equality													
Employment rate 20 -64 years (98-13)	3	9	10	8	1	6	6	1	2	4	7	5	10
Unemployment rate, annual average % (98-13)	4	8	6	5	5	2	3	7	1	9	9	1	10
Long-term unemployment - annual average (98-13)	1	10	6	6	5	3	4	7	2	8	9	1	10
Gini coefficient (05-13)	5	10	7	5	6	1	2	8	1	3	10	9	4
COFOG - Social protection % GDP (02-12)	3	4	10	1	9	1	2	7	6	3	8	4	5
In-work at-risk-of-poverty rate (Source SILC) (05-13)	6	10	7	5	2	4	3	8	2	1	10	9	5
Expenditure on social protection per inhabitant (03-11)	2	6	10	4	8	1	3	6	4	1	7	5	9
Relative score (% of maximum 70 points)	0,34	0,81	0,80	0,49	0,51	0,26	0,33	0,63	0,26	0,41	0,86	0,49	0,76

Source: Eurostat (2014), own calculations.