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ON THE CONSTRUCTION OF AN EDUCATIONAL RESOURCE PORTAL
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Abstract
The article reflects the technology for creating a resource portal of the university, aimed at the implementation of distance learning. In order to construct the resource portal it is proposed to divide the portal into function blocks. The functionality of the system is proposed to be divided into two parts, each relating to one of the two key stages of system operation: 1) knowledge management; 2) organization of continuous education. Also the architecture of the resource portal is proposed. There are described requirements to the content of the resource portal as well as a shown use case diagram for teachers to form the portal content.

Key words: resource portal, educational component, functional model of a corporate portal, content of the resource portal.

INTRODUCTION.
In the modern conditions the learning process is unthinkable apart from the latest educational technologies. It is, first of all, distance learning technologies, which are based on the use of e-books, training programs, telecommunication means of information exchange between standards, universities and lecturers.

Systematic activity aimed at implementing distance learning technology is inseparably connected to the automation of the management and creation of an information resource center or corporate knowledge management system (Gagarin and Titenko, 2009).

A resource portal construction. For the construction of a resource portal of educational institutions it is necessary to break it into functional blocks. Partition of the portal into separate blocks (modules) will enhance the level of a system manageability, reduces the complexity of the automation process and allows modules to be developed independently of each other.

The educational component of the resource portal of the university must meet the following requirements:

1. to provide teaching means for the students all forms, including the distance forms;
2. to provide students with access to teaching and learning materials of a university;
3. to provide regulated access to information resources;
4. to integrate with a university’s corporate data.

The architecture of an educational part of the resource portal involves placing a web server in an area which is separated from the internal corporate network with a firewall. The firewall is set up in such a way so as not to pass requests from the external network to the internal network. The educational part
of the portal is placed on the outside due to the fact that there should be access for all users of the university, including the remote students of the distance form. In addition, external users also can use the portal. Corporate data, which is necessary to run an educational portal, is replicated from the internal network to the external database servers once a day (Iztleuova, 2003, p. 21).

The resource portal can have a three-level structure.

The first level is the level of user interaction containing a content management system and additional services. Content Management System provides high-level tools for creating the portal interface. The interface is designed to provide access to the functions of the portal. Additional portal services such as Forums and Chat allow students and teachers to communicate with each other, discuss the learning process and the portal performance.

The second level is the level of knowledge management; it contains the business logic of the subject area. Business logic is the implementation of the rules and limitations of automated operations.

The third level is the level of knowledge storage which is represented as a knowledge based on ontology. The knowledge base consists of rules of analysis of information from the user on a particular issue. Rules and facts, stored in the knowledge base, describe the relationship between an ontology classes that allows producing new knowledge on the basis of existing knowledge on a subject area.

The resource portal development involves the implementation of such characteristics as personalization, relevance and actuality of training, orientation of the training process to achieve practical results applicable in a student’s professional activity conditions. Automating the process of personalization of learning process in distance education in the conditions of rapid development of science and technology should be implemented on the basis of the knowledge management process. Thereby, functional architecture of Web-oriented system of continuous education can be represented as a functional model.

The functionality of the system is proposed to be divided into two parts, each relating to one of the two key stages of system operation: 1) knowledge management; 2) organization of continuous education (Utepbergenov and Kubekov, 2002, pp 33-38).

At the stage of knowledge management an expert provides knowledge formalization that includes the formalization of educational information and formalization of knowledge about the professional competencies and job descriptions. The result of this process is the knowledge base, which functions as a Web-portal of knowledge. At this stage, we solve the problems specific to knowledge management in the management of the technological conditions of the WWW network. The next step is solving the key challenges of continuous education in the context of its distance form, which is construction of personal information and educational Web-resource realizing didactic functions of learning support. It becomes possible owing to the presence of knowledge base obtained from the first phase of work. Thus, the subsystem of continuous education organization takes as input the individual educational request of the student expressing his academic goals (Yavorskiy and Kintonova, 2009, pp 178-181).

Knowledge management is the first stage of working with the proposed system of continuous education support. This process consists of the following components:

1. creation of a hierarchical structure of the content;
2. establishment of non-hierarchical relationships between the content elements;
3. creation of a taxonomy of subject areas (thematic groups);
4. establishment of relationships between subject areas and the content;
5. formalization of content meaning and selection of a conceptual component. Here we use the adequacy validation by semantic maps of concepts of and semantic abstracts;

6. creation of a hierarchy of professional competences;

7. establishment of relationships between the content and professional competences.

Creating a hierarchy of content involves loading educational and instructional information in the system. The initial materials can serve as tutorials, developed courses, manuals and other educational and methodological information. Content elements have typing, that relates them to one of the three key types: a semantic block, a list, a common information item. A semantic block is used to refer to a subtree in the content hierarchy that contains information which has logical and thematic unity. A list is used to indicate that the immediate child components compose certain collection, a set of elements. Thus, in contrast to the block, a list makes one-level “slice” of the hierarchy, while the unit joins all the elements deep into the hierarchy.

Knowledge, which was laid into the system on the first stage, allows the automatic construction of individual information and education resource (IER). We shall distinguish these types of individual IER depending on the educational goals of trainees:

1) IER for acquisition of a specialty;
2) IER for acquisition of a competence or adapted specialty;
3) IER to study individual training course;
4) IER to study the subject area;
5) IER to study individual concepts.

One of the key problems in the automatic construction of the individual information educational resources is an automation of control knowledge task within the generated set of educational material. This problem is solved by using the conceptual and thesis base (CT base) from which the subset of semantic information corresponding to a selected area of educational content is automatically selected. Then, tests are constructed based on the CT base. As a result of testing, the system defines educational concepts that need to be repeated, and also points to specific areas of the content on which the answers of the test were wrong.

Implementation of saving individual IER within the portal is solved by constructing a "personal knowledge base" by a registered user. User can add to his knowledge base (KB) content areas, competencies, interested subject areas and concepts.

Content requirements of the resource portal

Basic standards for information representation include the requirements to:

- representation of textual information;
- animated videos;
- reels;
- accompanying sound;
- graphics and digital photos;
- file representations of the material;
When placing MELT on the portal, it is necessary to follow the requirements to their content: integrity, scientific character, systemacy, visualization, functionality, and virtuality, interactivity, adequacy of tests and practical tasks, stability of color associations.

MELT located directly on the corporate resource portal:

a) the basic packed version to be downloaded and installed on a student’s computer so that a student could use it for his training, without a permanent connection to the Internet;

b) the Internet version in expanded form (as a one-semester course); it is used in online mode to study the theoretical material and to organize an interactive learning process.

The Internet version of MELT is used to study the subject in the on-line mode.

Each module should contain the following material needed for assessment:

a) the theoretical material: part of the theory, which should be studied by a student before the end of the module;

b) forum-seminar: discussion of the most important and interesting problems and issues from a study of the theoretical material composed by a lecturer. Posts in the forum are assessed by a lecturer;

c) practical assignments (laboratory works, tests). This section should include laboratory works, tests (guidelines and deadlines). It is recommended to load into MELT practical assignments of average complexity of at least 20 variants for each practical assignment. Students send the completed work in a packed (zip or rar) form via http (through a form available in the same section), or by e-mail;

d) chat-consultation: at certain time the lecturers and students come to the portal for consultation on matters, such as advice on attestation or examination tests. Possible modes of chat operation: one-time, daily, weekly;

e) test: the test questions on learned material used for frontier control. Testing is held in the last ten days of the module;

f) the term paper or term project (assignment, guidelines, deadlines);

g) an electronic attestation statement (a rating list, that is a table of student’s marks).

Each course must include the following sections:

a) a title section. In the title section the following elements of the course are placed: home page, abstract, introduction, developers, the list of recommended reading;

b) a section of the first module (the main elements of the course are placed in a section of each module: the theoretical material, forum-seminar, chat-consultation, practical assignments, tests, term paper or term project, electronic attestation statement, in consecutive order);

c) a section of the second module;
d) a section of the third module;
e) the concluding section (assignment to the course project (if required by the program), guidelines and terms of its implementation, the outcome (pass or examination) test, the final rating-list).

Figure 1 shows an example of the appearance of the semester course (in distance education system on «MOODLE» platform).

<table>
<thead>
<tr>
<th>Module 1</th>
<th>Module 2</th>
<th>Module 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1: Theory</td>
<td>T2: Theory</td>
<td>T3: Theory</td>
</tr>
<tr>
<td>F1: Forum #1</td>
<td>F2: Forum #2</td>
<td>F3: Forum #3</td>
</tr>
<tr>
<td>C1: Test #1</td>
<td>C2: Test #2</td>
<td>C3: Test #3</td>
</tr>
<tr>
<td>A1: Certification (checkpoint) #1</td>
<td>A2: Certification (checkpoint) #2</td>
<td>A3: Certification (checkpoint) #3</td>
</tr>
</tbody>
</table>

Figure 1. The structure of the course

Each course must be set (name, description, etc.) separately for correct operation. Example of the course settings is shown in Figure 2.
The event unit displays all the events occurring during the course study, such as the date of handing a laboratory work, holding testing, etc. The system displays all the events in 30 days before their occurrence. Example are shown in Figures 3-4.
The element of the course called "Assignment" is used to represent a Course project on the Portal.

A quick way to the list of assignments is named "Elements of the course > Assignment".

Testing is intended to test students' knowledge; it can be used for the final control, as well as for the knowledge test within the module, on selected topics.

Findings

For the construction of a resource portal of the university it is necessary to break it down into functional blocks. Partition of the portal into separate blocks (modules) will enhance the level of a system manageability, reduces the complexity of the automation process and allows modules to be developed independently of each other.

The resource portal can have three-level architecture: the first level is the level of user interaction containing a content management system and additional services; the second level is the level of knowledge elicitation which contains a program extracting knowledge from ontology on user's request; the third level is the level of knowledge storage on which knowledge is stored as an ontology.
Directly on the resource portal the basic packed version and the Internet version in expanded form (as a one-semester course) of MELT can be located. The Internet version of MELT is used in on-line mode to study the theoretical material and to organize an interactive learning process.

When constructing the resource portal it is necessary to determine requirements to the content of the resource portal. The requirements can be reflected in the basic standards for information representation.

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THE TEACHING EXPERIMENT IN CHEMISTRY
AND THE PROBLEM OF SMOKING

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Abstract
The article presents the results of a diagnostic research on the role of the teaching chemical experiment for the enrichment of the system of the knowledge and attitudes of students towards the problem of smoking. The focus is on the data from a pedagogic experiment carried out following the method: incoming testing experimental teaching by including the developed chemical experiments outgoing testing. Using statistical analysis on the results of the test, we formulate conclusions about the usefulness of the proposed chemical experiments for the formation and development of students’ knowledge about health and the environment.

Key words: smoking, tobacco smoke, experiment in chemistry teaching

1. INTRODUCTION
Smoking is the most widespread drug addiction worldwide, which encompasses people from all levels of society and from different age groups. A burning cigarette generates more than 4000 different compounds more than 40 of which are carcinogenic; over 300 have biological toxicity and an irritative effect on the respiratory tract. Smoking is the cause of many diseases – lung cancer, chronic bronchitis, brain stroke, heart attack, etc. (Malakov, 2000).

Regardless of the numerous facts highlighting the harm of smoking, the number of smokers among adolescents is growing continuously. In this direction, it is necessary to utilize the full capabilities of the governmental authorities, the mass media and the education about the negative effects of cigarette smoke on the human body, in order to build a responsible attitude towards personal health and the health of others (National health strategy 2008-2013, 2008; National program for prevention of smoking in the Republic of Bulgaria 2011-2015, 2011).

The leading method in the process of studying chemistry is the chemical experiment, because it most clearly reflects the specific nature of chemistry as a science and as a school subject. By teaching chemical experiments, students develop a system of knowledge (of facts, concepts, laws, theories), a system of skills (experimental, organizational and technical, for the use of the language of Chemistry, for the performance of fundamental logical operations) and a system of ethics (moral, aesthetic, ecological, etc.) (Angelacheva, 2006).

This article presents our experience in using the teaching chemical experiment to enrich the systems of knowledge and attitudes of students towards the problem of smoking while studying the topic “Narcotic substances” in the 9th grade.
2. RESEARCH CONTEXT

In accordance with the growing in recognition humanistic concept for the content of education, the cultural and educational field of “Natural sciences and ecology” is differentiated as part of the mandatory general education in Bulgaria. The school subject “Chemistry and protection of the environment” is included in the aforementioned area, and is distinguished by the didactically transformed in the curriculum branches of Chemistry - general, inorganic, organic chemistry in the coordination and integration with other disciplines (Biology, Geography, Physics). The educational content of the subject re-creates the corresponding to these areas system of basic knowledge and methods of cognition, which in turn underpin its division into various cognitive levels.

A review of the curriculum on narcotic substances in the textbooks for the 9th grade “Chemistry and protection of the environment” (Pavlova et al., 2002) indicates an absence of experimental activity in the presentation of facts relating to the types of narcotic substances and their effects on the human organism. An opportunity to enrich the health and environmental knowledge of students in studying this content we see in: (a) selection and development of appropriate chemical experiments to identify the presence of harmful substances in cigarette smoke; (b) inclusion of experiments that illustrate the effects of cigarette smoke on living organisms; (c) discussion in the course of the experimental work of information about the components of cigarette smoke and their physiological action.

3. RESEARCH METHODOLOGY

The objective of the experimental study is to obtain sufficiently reliable data on the effectiveness of the chemical experiments developed (see Appendix 1) in studying the 9th grade topic “Narcotic substances”.

To achieve this aim, it is necessary to solve the following tasks: (a) determination of variables which will be registered during the experiment and with the help of which we could measure the impact of the chemical experiments developed on the cognitive results of students studying chemistry; (b) gathering a representative sample of pupils in the 9th grade and dividing them into equivalent groups according to selected criteria; construction of reliable research tools to diagnose the experimental results; (c) conducting a pedagogical experiment and analysis of the results.

Object of the research is the student in the 9th grade and subject – his learning activity and the results of this activity – knowledge and attitudes towards the problem of smoking.

The experimental hypothesis is formulated as follows: we expect that the chemical experiments developed positively influence the cognitive results of students – knowledge and attitudes, connected with the problem of smoking.

The hypothesis is based on the idea that the students mastering the system of knowledge and attitudes towards the problem leads to a more active cognitive process while studying the subject of Chemistry.

To verify the hypothesis, we use the following methods of scientific research – a pedagogical experiment, testing, a questionnaire, and statistical analysis of the experimental results.

4. DESCRIPTION OF THE RESEARCH

The analysis of the pedagogical literature (Deriabo & Iasvin, 1996; Ivanov, 1999) allows us to determine the productivity of learning Chemistry (knowledge and attitudes of students towards the problem of
smoking) as the dependent variable. To measure this variable the following criteria and indicators are used:

- Criterion of the application of knowledge to the problem of smoking with indicators:
  - application of knowledge in familiar (identical and analogous) cognitive situations, which assesses the capability of students to evaluate and transform the information about studied chemical objects;
  - application of knowledge in unfamiliar (new) cognitive situations, which assess the capability of students to use information in building hypotheses and defending them for chemical objects not yet studied.

- Criterion of a developed attitude towards the problem of smoking with indicators:
  - an awareness of the relationship, which shows what significance the individual attaches to his newfound knowledge of the problem of smoking;
  - intensity (efficacy) of the relationship, which reflects the degree of importance to the individual of the knowledge about the problem of smoking.

In order to measure the selected criteria and indicators, we use a self-developed criterion test (presented in Appendix 2). It was designed following the selection of more than 20 study problems and has been verified using a small sample of students in experimental education conditions. The test is divided relatively into two subtests. Subtest 1 includes five tasks (tasks 1–5) which test the ability of students to apply the acquired knowledge about the components of cigarette smoke and their physiological action in different situations while studying “Narcotic substances” in the 9th grade. Subtest 2 contains five tasks (tasks 6–10) which diagnose not only the knowledge of students about the educational content included in subtest 1, but also the attitude of students towards the problem of smoking. In both subtests the tasks are multiple choice questions in order to reduce the time needed to solve them. Each of the tasks has only one correct answer, while the grading is to be as follows: 1 point for each correct answer and 0 points for a wrong answer.

As an independent variable we determine the teaching chemical experiment associated with the identification of harmful substances in cigarette smoke and the discussion of their physiological action.

In the textbooks the information about the components of cigarette smoke and their affect to the human organism is incomplete. Therefore in Appendix 3 is systematized an information about the properties and the physiological action of the basic components of cigarette smoke (Petrov, 2006; Rodgman & Perfetti, 2008; Watson & Witten, 2001). An estimation for the volume of information which could be used in teaching process is carried out by the teacher.

In the pedagogical experiment, two groups of students take part and are trained using two versions (table 1). The first version focuses on a demonstration experiment (where the student is only an observer) and the second version focuses on a laboratory experiment (the student is an active participant in the experimental research).

The students are selected for the experiment on the basis of their grades in chemistry (the mean grade of the selected students is: Very Good 4.50). As an additional characteristic for the alignment of the experimental groups, we have used the results of the incoming test “Aromatic compounds” before learning “Narcotic substances” in the 9th grade. Two independent student groups who are equal in their academic achievements in Chemistry are formed.
Table 1. Versions of the experimental training

<table>
<thead>
<tr>
<th>Indicators for comparison</th>
<th>Experimental group E₁ (trained in version I)</th>
<th>Experimental group E₂ (trained in version II)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Curriculum</td>
<td>curriculum for narcotic substances in the textbooks “Chemistry and protection of the environment” for the 9th grade</td>
<td></td>
</tr>
<tr>
<td>2. Teaching methods</td>
<td>demonstration experiment for the identification of harmful substances in cigarette smoke and discussion</td>
<td>laboratory experiment for the identification of harmful substances in cigarette smoke and discussion</td>
</tr>
</tbody>
</table>

The experimental impact, monitoring and measurement are carried out following the scheme: *incoming testing* (performed by an incoming test to equalize the groups) *experimental learning using the two versions* (carried out in 2 school hours) *outgoing testing* (to measure the results of the training) (Lakurski, 1999).

5. RESULTS AND DISCUSSION

To process the results of the test, we use the *Student’s t-test* (Bizhkov, 1996, p. 111). It reliably compares mean arithmetic values of the experimental groups of students (formula (1)).

\[
t = \frac{\bar{x} - \bar{y}}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad (1)
\]

where \(\bar{x}, \bar{y}\) – the arithmetic means of the samples; \(n_1, n_2\) – number of students in samples; \(s\) – the mean weighted average of variance \(s_x^2, s_y^2\); it is calculated with the formula (2).

\[
s = \sqrt{\frac{(n_1 - 1)s_x^2 + (n_2 - 1)s_y^2}{n_1 + n_2 - 2}} \quad (2)
\]

The experimental hypothesis is re-formulated for the purpose of the statistical analysis of statistical hypotheses.

*Hypothesis H₀*: There is no difference between the means of both samples.

*Hypothesis H₁*: The means of the samples are different.

The test of the statistical hypotheses is carried out using the students’ results from the test (table 2).
**Table 2.** Results from the test of experimental groups $E_1$ and $E_2$

<table>
<thead>
<tr>
<th>Number of tasks solved</th>
<th>$E_1$ (subtest 1), frequency</th>
<th>$E_1$ (subtest 2), frequency</th>
<th>$E_2$ (subtest 1), frequency</th>
<th>$E_2$ (subtest 2), frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4</td>
<td>6</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>17</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>3</td>
<td>22</td>
<td>19</td>
<td>11</td>
<td>27</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>8</td>
<td>29</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

The information about the statistical parameters which characterize the productivity of learning in the two samples is presented in table 3.

**Table 3.** Parameters of the distribution of the measured variables

<table>
<thead>
<tr>
<th>Statistical parameters</th>
<th>$E_1$, subtest 1</th>
<th>$E_1$, subtest 2</th>
<th>$E_2$, subtest 1</th>
<th>$E_2$, subtest 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of respondents (n)</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Mean arithmetic values ($\bar{x}$)</td>
<td>2,72</td>
<td>2,58</td>
<td>3,62</td>
<td>3,02</td>
</tr>
<tr>
<td>Variance ($s^2$)</td>
<td>0,74</td>
<td>0,82</td>
<td>0,64</td>
<td>0,71</td>
</tr>
<tr>
<td>Standard deviation (s)</td>
<td>0,86</td>
<td>0,91</td>
<td>0,8</td>
<td>0,84</td>
</tr>
</tbody>
</table>

After substituting these numbers in formulae (1) and (2) we obtain:

(a) for subtest 1 $t = 5,4$;

(b) for subtest 2 $t = 2,53$.

Selecting a confidence level of $\alpha = 0,01$ and degrees of freedom $f = n_1 + n_2 - 2$ the calculated values of the t-test is compared with the critical value $t_{0.01/98} = 2,368$ (Bizhkov, 1996, p. 161).

*The null hypothesis $H_0$ is rejected because for both subtests $t > t_{0.01/98}$ and we accept the alternative hypothesis $H_1$: for both subtests the average arithmetic means differ substantially in the groups trained in differ versions.*

The statistical analysis of the test results confirms our expectation of better results from the learning under version II. Under the same time constraints, students who learn under version II reach a higher level of understanding as measured by the selected criteria and indicators. Regarding students who learned under version I, we have found difficulties with solving tasks that require assessment and transformation of information about the composition of cigarette smoke and the consequences of smoking (subtest 1). The decision making process in a particular situation (subtest 2) is restricted, which explains the registered unsatisfactory results in respect to the criterion *Developed attitude towards smoking.*
The results of the test indicate that the laboratory experiment has a stronger positive influence on the productivity of learning as it more fully affiliates students with the experimental research and makes them active participants in the learning process.

The follow-up questionnaire (presented in appendix 2) indicates that the implementation of chemical experiments for the detection of harmful substances in tobacco smoke and the discussion of information about their physiological action increases the cognitive interest of students towards the subject of Chemistry and leads to the formation in students of an active attitude to the problem of smoking.

It is evident from table 2 that the results on subtest 1 (for knowledge on the problem of smoking) are higher than the results on subtest 2 (for an active attitude). That means that the knowledge is not thoroughly understood and does not give rise to an automatic ethical attitude towards the discussed problem. For the knowledge to become more pro-active, we can use the capabilities of not only the teaching chemical experiment, but also of other methods and means of education (e.g. educational tasks in chemistry). The optimal version for a combination of the selected methods and means of training may be sought through special didactic research.

6. CONCLUSION

In conclusion, we can conclude that: (a) the proposed didactic materials (the chemical experiments for the detection of toxic substances in tobacco and tobacco smoke, and an educational text with information about the physiological action of the components of tobacco smoke) can be directly used in the process of teaching chemistry; (b) the experimental study confirms the usefulness of the suggested chemical experiments for the enrichment of the health and the ecological knowledge of students.

REFERENCES


Appendix 1

Chemical experiments to detect the presence of harmful substances in cigarette smoke and their physiological action (Jenkins, Guerin & Tomkins, 2000; Mitkov, Nikiforov & Chorbadiev, 1994)

Experiment 1. Extraction of certain substances, which are retained in the cigarette smoke filter

Pour in two glasses 30-40 cm³ respectively water and ethyl alcohol C₂H₅OH. In each glass put 9-10 cigarette smoke filters and place a glass cover on top. The mixtures are heated to their boiling points, then cooled and filtered. The resulting solutions are used in subsequent experiments to prove the presence of different toxic substances in them.

Experiment 2. Identification of alkaloids (nicotine, nornicotine, anabasine, anatabine, etc.) in cigarette smoke

The resulting solutions are tested for the presence of alkaloids using the following reagents:

(a) Dragendorff’s reagent – in the presence of alkaloids, an orange-red sediment is formed. The reagent is prepared by adding 0,5M potassium iodide KI to a 1 cm³ 0,5M solution of bismuth(III) nitrate Bi(NO₃)₃ until the obtained sediment of bismuth(III) iodide BiI₃ is dissolved.

\[
\text{Bi(NO}_3\text{)}_3 + 3\text{KI} \rightarrow \text{BiI}_3 \square + 3\text{KNO}_3; \quad \text{BiI}_3 \square + \text{KI} \square \rightarrow \text{K}[\text{BiI}_4] 
\]

(b) Meier’s reagent – a pale yellow sediment is formed. The reagent is prepared by adding a solution of potassium iodide KI to a solution of mercury(II) nitrate Hg(NO₃)₂ to dissolve the resulting sediment of mercury(II) iodide HgI₂.

\[
\text{Hg(NO}_3\text{)}_2 + 2\text{KI} \square \rightarrow \text{HgI}_2 \square + 2\text{KNO}_3; \quad \text{HgI}_2 \square + 2\text{KI} \square \rightarrow \text{K}_2[\text{HgI}_4] 
\]

Experiment 3. Identification of phenols in cigarette smoke

Tobacco smoke contains around 380 different phenols. A characteristic reaction of theirs is the interaction with a solution of iron(III) chloride FeCl₃ where the phenols receive a characteristic
colouring: hydroxybenzene (phenol) – purple, 1,2-dihydroxybenzene (pyrocatechol) – green, 1,4-
dihydroxybenzene (hydroquinone) – green, changing to yellow, etc.

In two tubes we pour 1-2 cm$^3$ of tested solutions per tube. We add 2-3 drops of a solution of iron(III) chloride FeCl$_3$. A brown-green colouring becomes apparent due to the formation of a mixture of complex compounds of various phenols.

**Experiment 4. Identification of aldehydes** (metanal HCHO, ethanal CH$_3$CHO, propenal CH$_2$=CH–CHO, etc.) in cigarette smoke

To detect aldehydes in the solutions we can use Schiff’s reagent where pink-red colouring is observed. The reagent is prepared when 1 g magenta is dissolved into 1000 cm$^3$ water H$_2$O and 20 cm$^3$ 30% sodium hydrogensulphite NaHSO$_3$ is then poured into the mixture. After the solution becomes colourless, we add 10 cm$^3$ 96% sulphuric acid H$_2$SO$_4$. The resulting solution should be stored in dark banks.

**Experiment 5. Identification of organic substances with reducing properties** (benzaldehyde C$_6$H$_5$CHO, metanal (formaldehyde) HCHO, propenal (acrolein) CH$_2$=CH–CHO, etc.) in cigarette smoke

In two tubes, pour in 1-2 cm$^3$ of the tested solutions. We add 1-2 drops of 0.1M potassium manganate(VII) KMnO$_4$ and we heat the tubes in a water bath. Then we added a few drops of ethyl alcohol C$_2$H$_5$OH. A brown sediment of manganese(IV) oxide MnO$_2$ is formed.

$$\text{MnO}_4^- + 3e^- + 2\text{H}_2\text{O} \rightarrow \text{MnO}_2 \downarrow + 4\text{OH}^-$$

**Experiment 6. Identification of polycyclic aromatic hydrocarbons** (anthracene, pyrene, benzopyrene, phenanthrene, etc.) in cigarette smoke

The qualitative reaction for the detection of aromatic compounds is with chloroform in the presence of anhydrous aluminium(III) chloride AlCl$_3$.

In two tubes, pour 1 cm$^3$ of the tested solutions. Then add 2 cm$^3$ anhydrous chloroform and about 0.5g anhydrous AlCl$_3$ so that most of it sticks to the inner side of the tubes. The tubes are tilted to enable the solutions to moisten the AlCl$_3$. The solutions change their colours differently depending on the presence of various aromatic hydrocarbons – benzene, alkylbenzenes and halogenoarenes give yellow-orange to red colouring; naphthalene – blue; pyrene, benzopyrene, phenanthrene – scarlet; anthracene – green.
Experiment 7. Detection of carbon dioxide CO$_2$ in cigarette smoke

The tobacco smoke can be contained in a large syringe (or in a bottle of hair dye), which has had its tip cut off, so that a cigarette can be fitted in the resulting aperture. On the inside of the syringe and near the aperture, place a small piece of moist cotton. Light the cigarette and gradually pull the piston of the syringe (or grip the bottle), thus filling it with tobacco smoke. The smoked cigarette is removed and in its place a glass tube (or a plastic straw) is mounted, the end of which is placed in clear lime water (a solution of calcium hydroxide Ca(OH)$_2$). If you let smoke through the solution, it will become darker.

\[
\text{CO}_2 + \text{Ca(OH)}_2 \rightarrow \text{CaCO}_3\downarrow + \text{H}_2\text{O}
\]

The cotton which imitates human lungs should stain yellow-brown.

Experiment 8. The effect of substances contained in cigarette smoke on lentil, beans, etc.

In two glasses, place bits of cotton moistened: one with the aqueous solution derived from the smoked cigarette filters, and the other with tap water. Place 5 lentil grains on the cotton. Leave the glasses in a good light and warm places. If it is necessary, the lentil can be watered at the same time and with the same amount of liquid. After 1-2 days, the lentil grains which were watered with tap water sprout. The lentil grains watered with the solution of the used cigarette filters do not developed.

Experiment 9. The effect of substances contained in cigarette smoke on the behaviour of fish and cockroaches

(a) In two baths (or cups) filled with water place the small river fish. One bath is the control one. In the other, place used tobacco smoke filters. The baths are positioned under the same conditions of light, moderate temperature. Observe the behavior of the fish in both baths. During the first 20-30 minutes, the fish in the cigarette bath are more active in comparison with those in the other bath. Then they begin to move more slowly, they gather near the surface of the water, often show their heads above the surface, and after about 7-8 hours they die. The presence of toxic substances in water reduces the life expectancy of the fish.

(b) In three flasks with a volume of 500 cm$^3$, place three cockroaches, the same amount of bread and pieces of moist cotton. The first flask is closed with a cork and is the control one. The second is filled with tobacco smoke in advance. For that purpose, it is closed with a stopper which is fitted with two glass tubes. At the end of one of them is a cigarette, and at the end of the other – a rubber pipette filler. Light the cigarette and by gripping the filler, gradually fill the flask with tobacco smoke.

In the third flask, place the filters of several smoked cigarettes. Observe the behaviour of the cockroaches in the three flasks and formulate conclusions.

Cockroaches are insects which can easily adapt to the surrounding environment. Cockroaches love warm and humid places and can live in an enclosed space with a volume of 500 cm$^3$ for around 12 days.

When the tobacco smoke displaces the air in the flask the cockroach dies for 15-20 minutes. In the flask with the used cigarette filters the cockroach decreases its activity.

On the walls of the second flask, you can observe an oily deposit which is difficult to remove, even with a cleaning liquid. The used rubber pipette filler exudes a strong smell of tobacco smoke even after repeated washing.

Experiment 10. The effect of substances contained in cigarette smoke on a protein solution
The aqueous solution derived from the tobacco smoke filters is added to the solution of protein. Observe that the protein solution becomes turbid and curdles.

Appendix 2

Test "Smoking and health"

Task 1. Only one of the proposed lines contains substances which are present in cigarette smoke. Point it out.

A. N₂, O₂, CO; (0 pts)
B. CO, nicotine, tar; (1 pt)
C. CO, H₂, H₂O (water vapor); (0 pts)
D. O₂, NH₃, HCN; (0 pts)
E. NO₂, O₂, CO₂; (0 pts)

Task 2. Which of the following statements is not true?

A. Nicotine increases the level of dopamine in the main brain, which is a factor of pleasure during smoking. (0 pts)
B. Polycyclic aromatic hydrocarbons (anthracene, pyrene, benzopyrene, etc.) have a strong carcinogenic effect. (0 pts)
C. Nitrogen(IV) oxide NO₂ has irritant effects on the respiratory system, causing swelling of the lungs. (0 pts)
D. Ammonia NH₃ does not irritate the respiratory system and mucous membranes of the nose and the eyes. (1 pt)
E. Tar leads to the yellowing of the teeth and fingers of smokers. (0 pts)

Task 3. Which of these substances leads to addiction to cigarettes?

A. carbon monoxide; (0 pts)
B. nicotine; (1 pt)
C. tar; (0 pts)
D. ammonia; (0 pts)
E. cadmium. (0 pts)

Task 4. Smoking is a major factor for:

A. development of lung cancer; (0 pts)
B. higher risk of heart diseases; (0 pts)
C. rapid ageing of the skin; (0 pts)
D. the emergence of chronic lung diseases; (0 pts)
E. all of the above. (1 pt)
Task 5. What is the impact of carbon monoxide CO on human beings?
A. CO has a calming effect; (0 pts)
B. CO is a stimulant, i.e. tones, activates the organism; (0 pts)
C. CO is a strong blood poison; (1 pt)
D. CO does not affect the organism; (0 pts)
E. CO leads to irritability, difficulty in concentrating, and sleep disorders. (0 pts)

Task 6. Imagine that you are in a room with closed windows and all present in the room smoke. What will you do?
A. I will think about possibilities for the reduction of cigarette smoke in the room. (0 pts)
B. I will explain to the people present in the room the effects of cigarette smoke on the human organism. (0 pts)
C. I will immediately open the windows in the room and I will invite the people to stop smoking, revealing to them the effects tobacco smoke has. (1 pt)
D. I will show the people the warnings on the cigarette packs. (0 pts)
E. I will not take any action, since the smoke does not affect human beings. (0 pts)

Task 7. The teacher demonstrates the following experiment: a wet leaf of a plant is placed in a flask full of tobacco smoke. After some time the leaf is covered with yellow-brown spots. What thoughts does this experiment provoke in you?
A. The leaf withered probably because it was cut off some time ago. (0 pts)
B. The leaf is covered with brown spots, but smoke is not the reason of this. The poor leaf has stayed in a closed container for too long. (0 pts)
C. Instead of one leaf the experiment should be conducted with a whole plant, in order to better illustrate the negative consequences of cigarette smoke. (0 pts)
D. Nicotine and other substances contained in cigarette smoke are cell poison. That is why they affected the leaf. (1 pt)
E. Either way the leaf gradually dies, regardless of what environment it is located in. (0 pts)

Task 8. How would you comment on the warnings on the cigarette boxes?
A. The inscriptions describe the short-term and long-term adverse effects of smoking on the human organism. (1 pt)
B. The inscriptions describe the short-term negative effects of smoking on human health. (0 pts)
C. The inscriptions do not apply to young people, but for those of a more mature age. (0 pts)
D. The inscriptions exaggerate the impact of smoking on the body. (0 pts)
E. The inscriptions refer to addicted smokers – those who smoke one or more boxes of cigarettes per day. (0 pts)

Task 9. Do I need to stop smoking?
A. 3-4 cigarettes per day do not affect on human health. (0 pts)
B. If I stop smoking, I will breathe more lightly; the taste in my mouth will improve and my general health too; I will save money. (1 pt)
C. The environment in which we live is quite dirty, so cigarette smoke does not substantially influence our health. (0 pts)
D. Nicotine acts as a stimulant (tones, activates and calms) on the human organism. (0 pts)
E. If I stop smoking, my appetite will increase and I will get fat. (0 pts)

Task 10. You are in the courtyard of the school. The “model student of your class” is smoking a cigarette and comes to you. He offers you a cigarette. You hesitate whether to accept or not. What will you do?
A. I will refuse because smoking is forbidden in the courtyard of the school. (0 pts)
B. I will accept. He is an example of proper behaviour and I admire him. (0 pts)
C. I will refuse because I could be expelled from school. (0 pts)
D. I will refuse because smoke seriously damages the health of adolescents. (1 pt)
E. I will accept because I will make a new friend. (0 pts)

Questionnaire
1. Do you think that chemical experiments for the identification of toxic substances in cigarette smoke enrich your knowledge and ethics? Motivate your answer.
2. Is it necessary for the knowledge of substances to be connected with their effects on living organisms? Motivate your answer.
3. Do you consider significant the knowledge about the physiological action of the components of tobacco smoke in connection with solving the problem of smoking?
4. How would you apply this knowledge in your life?

Appendix 3
Components of cigarette smoke and their physiological action
During the smoking are formed the mainstream and the sidestream tobacco smoke. They are with almost the same quality composition, but with different quantitative content of the chemical substances.
- Mainstream tobacco smoke:
  (a) It forms during the suctions at the cigarette, passes through all its length and enters the lungs.
  (b) It contains nicotine, tar, carbon monoxide CO, nitrogen dioxide NO₂, ammonia NH₃, benzopyrene, hydrogen cyanide HCN, formaldehyde HCHO and other very toxic substances.
- Sidestream tobacco smoke:
  (a) It separates between the suctions at the cigarette and it is the basic pollutant.
(b) It contains larger quantity of harmful substances in comparison with the mainstream tobacco smoke (2 times more nicotine and tar, 5 times more CO, 73 times more NH₃, 3 times more benzopyrene, etc.). This is explained by differences in the chemical composition and the size of the particles.

The cigarette smoke contains many toxic substances (table 1).

Table 1. Some toxic substances in cigarette smoke

<table>
<thead>
<tr>
<th>Components of cigarette smoke</th>
<th>Physiological action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nicotine</strong> is a colourless oily liquid with an unpleasant smell and a puget taste; well soluble in water and in organic solvents. Nicotine is oxidized of the air to brown liquid.</td>
<td>It relaxes and stimulates mental activity; increases the level of dopamine (it is the substance of pleasure in the brain), serotonin (it regulates mood), betaendrofin (it is a natural narcotic for the human body). External negative effects of nicotine are yellowing of the teeth and the fingers of the hands, bad breath and taste, dry skin of the face, nail changes, etc. Nicotine constricts the blood vessels. This leads to rapid heartbeat, rapid shallow breathing and increased blood pressure. The poor blood supply to the skin leads to its rapid ageing. Nicotine provokes skeletal muscles, causes a slight but noticeable tremor of the hands. Nicotine affects cardio-vascular, respiratory, digestive and excretory systems.</td>
</tr>
<tr>
<td><strong>Anabasine</strong> is a colourless oily liquid, well soluble in water and in organic solvents.</td>
<td>It is very strong poison. Its physiological action is similar to that of nicotine.</td>
</tr>
<tr>
<td><strong>Tar</strong> is a sticky brown-black liquid.</td>
<td>It leads to yellowing of the teeth and the fingers of the hands. Tar sticks to bronchi, destroys lungs’ alveoli, causes painful cough and asthma. The bronchi are become inflamed more often and more easily. It is appeared bronchitis which gradually goes into chronic. Tar is the main cause for cancer of the lungs and the throat.</td>
</tr>
<tr>
<td><strong>Polycyclic aromatic hydrocarbons</strong> are solids, insoluble in water, well soluble in organic solvents.</td>
<td>They have strong carcinogenic effect.</td>
</tr>
<tr>
<td><strong>Isoprene</strong> CH₂=(CH₃)–CH=CH₂ is a colourless liquid.</td>
<td>It has a drug action. It irritates the respiratory tract; affects the liver, the circulatory and the nervous systems.</td>
</tr>
<tr>
<td><strong>Phenols</strong> are solids with a specific odour. Their solubility in water grows with elevation of the temperature.</td>
<td>They have carcinogenic effect.</td>
</tr>
<tr>
<td><strong>Carbon monoxide</strong> CO is a colourless gas without odour; CO dissolves very poorly in water.</td>
<td>It is a blood poison. The explanation of the poisonous action of CO is that CO readily combines with the hemoglobin of the blood and renders it incapable of transferring oxygen O₂ from the lungs to the tissues.</td>
</tr>
<tr>
<td><strong>Ammonia</strong> NH₃ is a colourless gas with a characteristic sharp odour, lighter than air and dissolves very well in water.</td>
<td>It gives to cigarette smoke a sharp taste and increases the absorption of nicotine. NH₃ irritates the respiratory tract.</td>
</tr>
</tbody>
</table>
**Nitrogen oxides** NO, NO\(_2\)  
They destroy the respiratory tract, the lungs. They are a cause for the formation in the blood of nitrites and nitrates, which alter the composition of the blood and reduce the blood pressure.

**Hydrogen cyanide** HCN  
It is a strong poison that is fatal even in negligible doses.

**Propenal (acrolein)** CH\(_2\)=CH–CHO  
It highly irritates the respiratory system; the tongue and the oral cavity smart from the propenal. It is one of the main reason for the chronic cough in smokers. It is liver poison.

**Essential oils**  
In the human body they change to aldehydes, acids, phenols, etc. which have toxic action.

**Formaldehyde** HCHO  
It crosses proteins. It is highly poisonous.

**Resins** are black sticky liquid.  
They accumulate in the lungs, change the breathing, make difficult the transfering oxygen O\(_2\) to the blood.

**Nitrosamines** R\(_2\)N–N=O  
They are strongly carcinogenic.

**Polonium 210 Ro, Lead Pb 210, Bismuth Bi 210, Radium Ra 226, 228** are radioactive isotopes.  
They cause cancer of the lungs.

**Cadmium Cd, Mercury Hg, Nickel Ni, Chromium Cr, Lead Pb** and other generally around 76 metals.  
They disturb the activity of the liver, kidneys, pancreas and thyroid gland.
FOSTERING TEACHERS’ TRUST IN SCIENTIFIC EVIDENCE
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Abstract

Occupational decisions, as physicians’ decisions concerning a treatment, can be based on scientific evidence or gut feeling. Relying on scientific evidence improves decisions and leads to success. Therefore, identifying predictors of evidence orientation is important. We focus on the school’ context and predictors of teachers’ trust in scientific evidence (e.g., when deciding about a curriculum’ implementation). We hypothesized that principal’s transformational leadership, characterized by empowerment and change-orientation predicts teachers’ trust in scientific evidence. Also teachers’ confidence to carry out proactive tasks, namely role breadth self-efficacy (RBSE) should be a predictor as well as moderator concerning trust in scientific evidence. We collected data from 1356 teachers in 122 German schools. Results from multi-level models showed that principal’s high transformational leadership as well as teachers’ high RBSE fostered trust in scientific evidence. RBSE was also a moderator, in that the effect of transformational leadership was stronger when RBSE was high.

Key words: scientific evidence, transformational leadership, role breadth self-efficacy

1. INTRODUCTION

In recent years, considerable political efforts have been made to improve the quality of the German education system and provide a scientific basis for school development. Schools are increasingly expected to manage themselves and to independently implement all required steps to develop successfully (Kohler 2005). For example, schools are needed to implement a school specific curriculum within the framework of the state-wide core curriculum. Schools also have to independently administer a certain amount of budget and have the responsibility to identify learning contents for educational objectives (Kohler 2005).

How do schools proceed when making these development steps and which facts and information sources are used during decision-making? One might expect that schools’ decisions are based on the best available knowledge and that integration of scientific facts into daily work is common practice. A behavior like this is called evidence oriented behavior and has been discussed within several occupational settings, as management or medicine (Rousseau 2006). To illustrate evidence orientation, an example from the medical context should be given. For example, when consulting a physician one expects to get state-of-the art treatment. Still, only a few medical decisions are actually based on scientific evidence. Many physicians fall back on the knowledge gained during their study, trust their gut feeling or their all-day experience.

Also in the school context, evidence orientation during decision-making is important. For example, when deciding about the implementation of a new curriculum schools can rely on journal articles, results of state-wide exams or expert implications. Still, research suggests that scientific evidence is not well
transferred to organizations (Rousseau 2006) and probably not to schools either. Instead of having scientific basis, many decisions in the school context are based on personal experience that could be unreliable, traditional behaviors that have been questioned, or gut feeling (Russeau 2006). Research findings are rarely used and teachers claim that they do not trust them (Shkedi 1998). Doing things as they ‘have always been done’ hinders change (Fay & Frese 2000), initiative and activity (Frese & Plüddemann 1993). In contrast, abandoning old routines and instead having the openness to build decisions on scientific evidence leads to success (Fay & Frese 2000). Rousseau states that “decision quality is a direct function of available facts” (Rousseau 2006, p. 260) and that decision-making based on scientific evidence is a key factor for organizational and institutional success (Rousseau 2006). Hence, in order to make school development more evidence-based, teachers’ trust in scientific evidence has to be fostered.

Individual teachers are highly important within school development processes and to a great part accountable for school initiatives and the implementation of educational objects (Ball & Rundquist 1993; Putnam & Borko 1997). Therefore, whether scientific evidence is used or not hinges on teachers’ commitment and trust in existing evidence (Kushman 1992). Consequently, teachers’ commitment to change and trust in taking new paths (e.g., use of scientific evidence during decision-making) is at the center of school organizational reform (Kushman 1992). Teachers have to trust in scientific evidence to longitudinally foster school’s evidence orientation. Therefore, learning more about potential predictors of teachers’ trust in scientific evidence is important for researchers and practitioners.

Our study’s aim was to identify predictors of teachers’ trust in scientific evidence. First, we studied the effect of schools’ transformational leadership climate (Chen & Bliese 2002), as school-level predictor of teachers’ trust in scientific evidence. Second, we examined the effect of teachers’ individual role breadth self-efficacy (Parker 1998) as individual-level predictor variable. Third, we studied the interaction of both, transformational leadership climate and role breadth self-efficacy on trust in scientific evidence. We hypothesized that both predictor variables foster teachers’ trust in scientific evidence and that trust in scientific evidence is highest if both conditions are favorable. In the following section we describe the central constructs used in our study: trust in scientific evidence, transformational leadership climate and role breadth self-efficacy.

1.1 Teachers’ trust in scientific evidence

Within the school context a wide range of scientific evidence exists that teachers can rely when making decisions concerning educational development processes. Scientific evidence constitutes hard facts gained with scientific methods, such as state-wide exams, school inspections, students’ feedback and research results from scientific journals. However, the transfer of any kind of scientific evidence into everyday practice rarely is satisfying and a huge knowledge-doing gap has been identified (Pfeffer & Sutton 2006). For example, teachers are supposed to use only a few available scientific evidences to participate on school development processes (Posch 2009).

To overcome this gap, evidence-based management (EBM; Pfeffer & Sutton 2006) has been suggested (Hense & Mandl 2009). Applying the ideas of EBM to schools, EBM in the school context means focusing on existing scientific evidence and translating best scientific evidence into schools’ practices (Rousseau 2006). As teachers are main implementers of school development processes, we propose that teachers’ trust in scientific evidence is essential for implementing EBM in a school. Trust in scientific evidence comprises positive attitudes towards this evidence and is characterized by confidence that scientific findings and other hard facts are reliable and valid sources for decision making. In schools with high levels of trust in evidence, behaviors will be continuously challenged, instead of staying at traditional ways of acting without questioning.
Relying on previous findings from organizational psychology (Fay & Frese 2000; Frese & Plüddemann 1993) we expect that teachers’ trust in scientific evidence is affected by principals’ leadership behavior as well as teachers’ individual characteristics. Leadership and employees’ personal characteristics impact on organizational learning and on the success of newly introduced behaviors. In particular, we propose that principal’s transformational leadership behavior as well as teachers’ role breadth self-efficacy predict teachers’ trust in scientific evidence. Furthermore, we expect that trust in scientific evidence is highest when both, transformational leadership behavior and teachers role breadth self-efficacy, are favorable.

1.2 Transformational leadership climate as shared school-level predictor of teachers’ trust in scientific evidence

We propose that transformational leadership climate predicts teachers’ trust in scientific evidence. Principals play a pivotal role in providing a work context that is supportive for using scientific evidence. Transformational leadership is one of the most frequently studied leadership behaviors in organizational psychology (Judge & Piccolo 2004). Transformational leadership has already been investigated in schools’ context with principals as leaders and teachers as followers (e.g., Leithwood & Jantzi 1990). Transformational leadership is similar to charismatic leadership, but above and beyond being transformational leaders are particularly able to bring about change, innovation and entrepreneurship (Seltzer 1990). According to Bass (1985), transformational leadership comprises four core dimensions: charisma, inspiration, intellectual stimulation and individualized consideration. Charisma refers to leader’s high level vision and moral requirements communicated to the followers. Inspiration refers to leader’s optimistic future vision, goal orientation and the behaviors helping followers to realize the vision. Intellectual stimulation comprises principal’s behaviors to foster followers’ creative thinking, improve their logical thinking and challenging the status quo. Individualized consideration is focused on considering followers’ individual’s needs and giving them allowance for development and self-realization.

Previous research has shown that transformational leadership fosters followers’ organizational attitudes, such as change commitment or inspiration, which are associated with change and development (Yu, Leithwood & Jantzi 2002; De Jong & Den Hartog 2007). We therefore expect a positive effect of transformational leadership on teachers’ trust in scientific evidence.

Specifically, we argue that transformational leadership climate increases teachers’ engagement in and reflection of scientific evidence and consequently the chance that teachers gain trust in this kind of evidence. Previous research has identified empowerment as an important underlying process accounting for the positive effects of transformational leadership on employees (Bass 1997). Empowerment is the motivational component of self-efficacy (Conger & Kanungo, 1988) and particularly fostered by transformational leadership behavior (Avolio, Zhu, Koh, & Bhatia 2004; Bass 1985). Leaders can directly empower followers by intellectual stimulation and idealized consideration.

Intellectual stimulation comprises that principals increase teachers’ awareness of problems and make them think about problems in another way (Rafferty & Griffin, 2004). We argue that it is likely that intellectual stimulation draws teachers’ attention to discrepancies between current ways of acting and evidence-based practices. Thereby, intellectual stimulation encourages teachers to rethink old ways of doing things (Strauss, Griffin & Rafferty 2009), increases the chance that teachers encounter scientific evidence during decision-making and consequently gain trust in this kind of evidence.

Also, principals can empower teachers by individualized consideration. Individualized consideration comprises to recognize teachers’ needs, to compliment teachers and acknowledge their improvements.
We argue that principals’ idealized consideration makes it more likely that teachers feel supported when taking new paths (Shamir, House & Arthur 1993), as using scientific evidence during decision-making. For example, Frese and Plüddemann (1993) showed that workplace resources foster employees’ confidence of being able to take new paths. Applied to our study, we therefore argue principal’s individualized consideration constitutes source of support for teachers that makes it more likely that teachers get in touch with scientific evidence and use this source during decision-making. Consequently, teachers should be more likely to gain trust in this kind of evidence.

Furthermore, a high charismatic vision can be associated with high ethic standards concerning decisions made within the school. A principal who communicates this vision to teachers makes it more likely that they experience scientific evidence as necessary information source. Also, principals who are change-oriented, proactive (Crant & Bateman 2000) and communicate a challenging vision should act as role-models for evidence-oriented behavior. Bandura’s (1997) social learning theory utilizes behavioral modeling as an important means of teaching new behaviors and modifying attitudes. Teachers will be more committed to use scientific evidences if their principal leads by example and vividly demonstrate that scientific evidence is a useful information source.

While previous research has mainly used dyadic approaches to study leader’s impact on followers’ behavior (e.g., Strauss, Griffin & Rafferty 2009), our specific sample requires a different approach. In the school context where the principal can be defined as leader and teachers as followers dyadic situations are seldom. Most of principal’s leadership behaviors are not directed at individual teachers but at the teaching staff as a whole or at no one in particular (Chen & Bliese 2002). For example, we expect that principals do not express their visions to only a few teachers and retain their visions from others. Rather, expressing visions, encouraging change and stimulating innovation is likely to happen towards all teachers. In line with Chen and Bliese (2002), we therefore conceptualize transformational leadership as a shared school-level climate; transformational leadership climate reflects the aggregated perceptions of all teachers of a school regarding the extent to which principals enact transformational leadership behavior.

We expect a positive effect of transformational leadership climate on teachers’ trust in scientific evidence. A high transformational leadership climate in which teachers are encouraged to look at problems from different angles, to take new paths and to try out new teaching concepts, teachers will be motivated to make use of new information sources, including scientific evidence. Furthermore, teachers should be more likely to see themselves as capable of using new information sources and recognize the necessity of using scientific evidence when making decisions. Consequently, it becomes more likely that teachers due to many experiences with scientific evidence gain trust in this kind of evidence. Consequently, trust in scientific evidence will be higher in teachers within a high transformational leadership climate.

Hypothesis 1: School’s transformational leadership climate positively predicts teachers’ trust in scientific evidence.

1.3 Role breadth self-efficacy (RBSE) as individual level predictor of teachers’ trust in scientific evidence

We propose that teachers’ role breadth self-efficacy (RBSE) fosters their trust in scientific evidence. Self-efficacy is one of the most studied individual cognitive concepts in psychology and accounts for several work-related attitudes and behaviors (Stajkovic & Luthans 1998). Self-efficacy is defined as a personal judgment of “how well one can execute courses of action required to deal with prospective situations” (1982, p 122). Expectations of personal efficacy determine whether an individual's coping
behavior will be initiated, how much task-related effort will be expended, and how long that effort will be sustained despite disconfirming evidence (Bandura 1986).

RBSE is a special form of self-efficacy that should be particularly important when it comes to openness of and attitudes toward change. Role breadth self-efficacy (RBSE) is the “extent to which people feel confident that they are able to carry out a broader and more proactive role, beyond traditional prescribed technical requirements” (Parker 1998, p. 835). RBSE constitutes the confidence and motivation to carry out a proactive task and therefore should comprise curiosity and openness towards new information sources, as scientific evidence. Kohler (2005) suggests that RBSE affects teachers’ response to external school evaluations (one important source for scientific evidence in the school context). Kohler (2005) argues that teachers low on RBSE should be more likely to fear external evaluations because they do not feel confident enough. Due to their low RBSE they may doubt their ability to make use of this kind of feedback as information source and are more likely to reject these results (Kohler 2005). Teachers high on RBSE should be open-minded towards these results and use them within school development processes (Kohler 2005). As research suggests, efficacy beliefs facilitate integration and effective use of complex information, such as scientific evidence (Brown, Ganesan & Challagalla 2001). Applied to our study, we expect that teachers high on RBSE are more likely to use scientific evidence, which makes it more likely that they gain trust in this kind of evidence. Teachers with low levels of RBSE may feel stressed when being confronted with changes in their work. They will be more likely to experience new information (e.g., scientific evidence) as inconvenient and impractical. Thus, teachers low in RBSE are probably inclined to devalue and mistrust scientific evidence as a basis for making decisions that could affect their work role. Teachers high on RBSE should be more confident of being able to use new information sources including scientific evidence and they will be more inclined to leave traditional ways of acting instead of sticking to traditional ways of acting. Thus, teachers low in RBSE should have low levels of trust, and teachers with high RBSE should have higher levels of trust.

Hypothesis 2: Teachers’ RBSE will positively predict their trust in scientific evidence.

In addition to the main effect of RBSE on trust in scientific evidence, we propose that teachers high on RBSE will be more motivated by transformational leadership climate than teachers low on RBSE. Research supports this assumption. For example, Griffin, Parker and Mason (2010) found that leader vision related positively to proactivity for individuals high on RBSE. Den Hartog and Belschak (2012) found that transformational leadership can foster proactivity, when employees’ RBSE is high. Applied to our study, we expect that teachers high on RBSE are more likely to reinforce the effects of high transformational leadership climate. A teacher feeling confident concerning the use of new information sources including scientific evidence and they will be more inclined to leave traditional ways of acting instead of sticking to traditional ways of acting. Thus, teachers low in RBSE should have low levels of trust, and teachers with high RBSE should have higher levels of trust.

In contrast, teachers low on RBSE will not feel as encouraged by high transformational leadership climate as teachers high on RBSE. Transformational principals do not automatically communicate how to do things but challenge followers to come up with ideas (Avolio et al., 2004). Teachers low on RBSE may feel unable to cope with this requirement and will not have enough mastery cues of guidance on how to contribute and use new information sources (Den Hartog & Belschak 2012). These teachers will be more likely to experience scientific evidence as inconvenient and uncomfortable information source, and their confidence to strike new paths (e.g., use scientific evidence) will be low. Consequently, it is less likely that teachers low on RBSE gain trust in scientific evidence. Thus, we propose that teachers’ RBSE moderates the effect of transformational leadership climate on trust in scientific evidence in that the relation is stronger when RBSE is high.
Hypothesis 3: Teachers’ RBSE moderates the effect of transformational leadership climate on trust in scientific evidence. The relation will be stronger for teachers high on RBSE.

Our research model is displayed in Figure 1.

![Research Model](image)

**Figure 1.** Research model

### 2. METHOD

#### 2.1 Sample

We collected data in 122 German schools. Study participants were German teachers. We recruited participants by sending study information and by directly speaking to principals. In schools that agreed to participate, every teacher was asked to fill in a questionnaire. In total, 1,403 teachers participated in the study. Due to missing data on study variables (transformational leadership climate, RBSE and trust in scientific evidence), 47 participants had to be excluded from analysis. The final sample consisted of 1,356 participants. Most teachers worked at junior high and high schools (46.2%), followed by ‘vocational schools’\(^1\) (35%), schools for people with special needs (17.8%) and elementary schools (1%). Average age was 44.25 years ($SD= 10.33$) and 59.3 % of or participants were female.

#### 2.2 Measures

All questionnaire items had to be answered on a five-point Likert scale ranging from 1 = “I do not agree at all” to 5 = “I fully agree”.

*Transformational leadership climate* was measured with 15 items from Rafferty and Griffin’s (2004) transformational leadership scale. A sample item for intellectual stimulation is “My principal challenged me to think about old problems in a new way”. Cronbach’s alpha was .96. To conceptualize a shared school-level climate variable, we aggregated teachers’ individual ratings.

*RBSE* was measured with three items from a scale developed by Parker (1998). RBSE refers to the confidence carrying out new tasks and going beyond traditional requirements. A sample item is “How confident would you feel designing new procedures for your work area?” Cronbach’s alpha was .85.

*Trust in scientific evidence* was measured with a scale introduced by Dormann, Ohlemann and Stumm (2010). Trust in scientific evidence refers to teachers’ beliefs about the validity of scientific evidence at

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\(^1\) German vocational schools are high schools providing students with technical and on-the-job training.
their school. Sample items are “At our school, we base our decisions more on hard facts than our gut feeling” and “We trust in the slogan knowledge is power”. Cronbach’s alpha was .73.

3. RESULTS

Means, standard deviations, correlations and Cronbach’s alphas are displayed in Table 1. Before calculating correlations, the intra-class correlations (ICC) of study variables were calculated. The ICC is an index of agreement for determining correspondence of ratings (e.g., agreement of teachers at a school concerning their principal’s transformational leadership style). Only a sufficiently high within-group agreement between teachers concerning their principal’s transformational leadership justifies aggregation to the school’s level (cf. James 1982). We found an ICC of 0.20 for transformational leadership, which justifies the aggregation to the school-level. Therefore, we aggregated transformational leadership. ICC for trust in scientific evidence was 0.062.

<table>
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<tr>
<th>Variables</th>
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<td>2 Gender¹</td>
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<td>3 Trust in scientific evidence</td>
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<td>4 Transf. leadership climate²</td>
<td>3.30</td>
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<td>-.12**</td>
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<td>.17**</td>
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<tr>
<td>5 RBSE</td>
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Table 1. Means, standard deviations, Cronbach’s alphas, and correlations between variables

Note. ¹ 1 = Female 2 = Male. ² School level variable.

N at the personal level = 1356. N at the school level = 122. ** p < .01. * p < .05

3.1 Data analyses

We had data at two levels: the person-level (Level 1) and the school-level (Level 2). Person-level data was nested within schools. To account for this nested data structure multilevel analyses are needed. We therefore used the HLM software (Raudenbusch, Bryk & Congdon 2009) to analyze the data with multilevel analyses. To test our hypotheses, RBSE as a person-level predictor variable as well as transformational leadership climate as school-level predictor variable were centered around the grand mean. Also, control variables (age and gender) were grand-mean centered.

In the Null Model of our multi-level models predicting trust in scientific evidence the intercept was the only predictor. In Model 1 we entered age and gender as person-level control variables. In Model 2 we entered transformational leadership climate and RBSE to test main effects. In Model 3 we included the cross-level interaction between transformational leadership climate and RBSE to test our moderator hypothesis. Results are displayed in Table 2.
Model 2 showed that transformational leadership climate ($\beta = 0.21 \ p < .001$) as well as RBSE ($\beta = 0.09 \ p < .001$) were significant positive predictors of trust in scientific evidence. In Model 3 the cross-level interaction between transformational leadership climate and RBSE emerged as significant predictor ($\beta = 0.11 \ p < .05$). When transformational leadership climate was high, teachers high on RBSE trusted more in scientific evidence whereas for teachers low on RBSE almost no effect of transformational leadership climate was found (Figure 2).
4. DISCUSSION

Evidence orientation is important for success and decision making and has been discussed within several occupational fields, as medicine and management. Responding to the current impetus to evidence-based decision making in schools, we aimed at identifying determinants of teachers’ trust in scientific evidence, which represents a prerequisite for using scientific evidence in decision making. Thereby, we focused on transformational leadership climate and RBSE as well as their interaction as predictors on trust in scientific evidence. We could show that principals and teachers are important predictors concerning teachers’ trust in scientific evidence.

As hypothesized, transformational leadership climate fostered teachers’ trust in scientific evidence. That is, in schools with an empowering and motivating principal, teachers are more likely to trust in scientific evidence during decision making. Our finding on transformational leadership as a shared group-level climate variable is in line with previous findings on organizational attitudes and behaviors in dyadic settings (e.g., Strauss, Griffin & Rafferty 2009). Principals who show transformational leadership by serving as challenging role-models, behaving instructively and intellectually stimulating seem to encourage teachers to question own assumptions and traditional behaviors. As a result, these principals seem to increase teachers’ engagement in scientific evidence and their trust in this kind of evidence. Therefore, it can be concluded that principals can foster school development processes by transformationally leading their workforce and thereby increasing trust in scientific evidence. Until now, it is an extended process becoming a principal by gradually reducing teaching and replacing it with leadership activities (Bush 2011). While new principals are required to have teaching qualification and experience, management and leadership capabilities are no necessary prerequisite (Bush 2011). Our results indicate that transformational leadership skills do matter for evidence-based school development.

Research has shown that transformational leadership can be learned and that leaders attending transformational leadership training benefit their employees in terms of motivation and attitudes (Dvir, Eden, Avolio & Shamir 2002). We therefore recommend to implement transformational leadership
trainings for principals in which they are taught such transformational leadership skills (e.g., how to communicate a challenging vision). As many new principals feel unprepared concerning their leadership capabilities (Daresh & Male 2000), not only teachers’ trust in scientific evidence but also principals themselves would benefit from such leadership training. Restrictively, it has to be said that the intra-class correlation of trust in scientific evidence was relatively small (6%). That reveals that only a small percentage of total variance in trust in scientific evidence are between schools but depend more on teachers’ individual characteristics, as RBSE.

Teachers’ RBSE was identified as positive individual level predictor of trust in scientific evidence. That means that teachers’ openness and confidence concerning new information fosters their trust in scientific evidence as decision basis. Teachers high on RBSE who are confident to fulfill proactive tasks positively affected confidence to use scientific evidence as fundamental basis of behavior and decision-making. Teachers low on RBSE refrained from these behaviors and stuck to traditional ways of acting. Furthermore, teachers’ RBSE moderated the effect of transformational leadership climate on trust in scientific evidence in a way that the relationship was stronger, when RBSE was high. This result implies that teachers high on RBSE were more likely to gain trust in scientific evidence in a high transformational leadership climate. It could be suggested that these teachers felt highly motivated by a transformational leading principal concerning the use of scientific evidence as new source for decision-making. In contrast, for teachers low on RBSE a high transformational leadership climate had almost no effect on their trust in scientific evidence. It could be suggested that these teachers experienced not enough guidance from a transformational principal to actually make use of scientific evidence during decision-making (Den Hartog & Belschak 2012).

Our finding of the importance of teachers’ RBSE for trust in scientific evidence is in line with other studies from schools’ research. Schools’ research accentuates the impact of self-efficacy on teachers’ learning and schools’ effectiveness (Thoonen et al. 2011). As research suggests that self-efficacy can be trained, trainings to foster teachers’ RBSE could be implemented. Central of aim of self-efficacy trainings is not to train new skills, but to enhance individuals’ beliefs as to what they can do with the skills they already have (Stajkovic & Luthans 1998). Applied to our study, trainings to foster teachers’ RBSE could be implemented to increase teachers’ confidence to use scientific evidence. Longitudinally, this could foster evidence-based school development. Thus, it would be important for future research to design and evaluate training curricula on RBSE for teachers’ preparatory and on-the-job courses.

5. IMPLICATION & CONCLUSION

A lack of trust in scientific evidence has been found to be an important reason for not using scientific evidence (Shkedi, 1998). Our results show that transformational leadership climate and RBSE increase teachers’ trust in scientific evidence. Therefore, attempts to improve transformational leadership climate and RBSE are promising measures for successful evidence-based school development. A more direct way of increasing trust would be to increase the scientific training of university students who aim at becoming a teacher. Instead of only preparing prospective teachers for their classroom work one could also on how to use scientific evidence within their daily work. For example, this would involve basic empirical research knowledge, training in reading scientific articles, and learning how to systematically integrate available knowledge. A few years ago, the federal state of Rhineland Palatinate where our study was conducted, made it compulsory for future teachers to study “educational science” in addition to their principal disciplines. We believe this represents an adequate means to directly increase teachers’ trust in scientific evidence in the long run; which the future can prove.
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PREPARATION ABOUT PROFESSIONAL COMMUNICATION OF STUDENTS IN SPECIALTY "SOCIAL ACTIVITIES" THROUGH COMMUNICATION GAMES
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Abstract
The present article examines the problem of preparation of students in specialty "Social activities" about their future professional communication through communication games. Special attention is paid to the characteristics of the professional communication of social workers, related to the diversity of interactions in which they participate on a daily basis in view of their professional obligations. The stages of the development of the game are analyzed in detail, as well as the role of the teacher in the gaming process, as well as the necessary conditions for implementing the game.

Key words: professional communication, communicative game, communication, professional training.

In recent years there has been an increasing interest in the issue, related to the role and place of the game and its various forms in the process of preparation of specialists from different professional fields, including students of specialty "Social activities". Its inclusion in this process is necessarily determined by the needs and motives of the future professional activity.

It is with a good reason that the profession of the social worker refers to the group of the communicative professions. One of the major trends in the professional activity of the social worker is his/her work with clients - users of social services. This process is based on communication of individual, personal character.

Communication as a process appears as a concept of great importance for many scientific disciplines. Which is more it is seen as a necessary prerequisite for any human activity, including labor.

Professional communication and especially its curricular subject are mediated to a large extent by the characteristics of the professional field to which it relates. As its characteristic features, depending on its professional orientation, can be specified speech layout, professional slang, the composition of speech.

Professional communication is related to professional needs and ensures the conduct of a respective professional activity, determined directly by its goals and tasks.

In the course of professional communication, its three structural components are realized. They are inherent to communication as a process-communicative, interactive and perceptive. Each of these components is specifically implemented in professional communication.

The specifics of the communicative component may be found mostly in the professional nature of the information to be conveyed. This information can be linked to solving issues of professional nature, or searching for innovative forms for their solving, etc.

The particularity of the perceptual component of professional communication can be found in the perception of oneself as a representative of a specific professional group.
In most of the cases in which it is implemented, professional communication carries purely situational characteristics. They are linked with the preliminary set conditions in which it takes place - time, space, associated with the number of participants, etc.

To A. Derkach (А. Деркач 2001) professional communication is characterized by many signs, some of which are:

- it is strictly targeted;
- it is regulated by normative documents;
- it has functional role nature, determined by the need to comply with a particular etiquette;
- it has position, hierarchy, subordination, which is reflected in the effect of "above" and "below", i.e. in the relationship between superiors and subordinates;
- it occurs in certain forms of communication, styles;
- it has attributive character – it is carried out in special rooms, suggests the presence of a corresponding environment, which creates optimal conditions for its implementation from the point of view of psychology.

The Guide for effective professional communication HANDBOOK FOR EFFECTIVE PROFESSIONAL COMMUNICATION of the Education Committee of the University of New York, as effective is described this kind of communication, which always leads to the desired result. The authors believe that "in terms of communication, effective means that the message, intended to be conveyed to one person, is actually the same message that this person gets". Meanwhile, the communication can be professional, but not effective. "You may talk politely, the authors continue, but your ideas might remain ambiguous. On the other hand, communication can be unprofessional, but at the same time, more efficient." (HANDBOOK FOR EFFECTIVE PROFESSIONAL COMMUNICATION 2008)

Based on the above characteristics, professional communication can be defined as a process of interaction between individuals united by the implementation of one and the same professional activity, in the process of which an exchange of professional information and experience is carried out. - Continuation.

V. Shosheva, K. Benkova and S. Dinchiyska (В. Шошева, К. Бенкова, С. Динчийска 2008) specify the following communication skills to be acquired by future social workers:

- to consciously construct, using linguistic tools /verbal and nonverbal/, their interactions with various communication partners, either client or the client's family, or colleagues;
- to identify what actions they cause with some words or others and with intonation;
- to distinguish the meaning they put in communication, as well as the meaning others put in it, as well as to understand that both might differ;
- to understand that the art to communicate lies in the skill to coordinate meanings, i.e. to build mutual understanding.
The professional communication of the specialists in social work can be seen as an established system of internal linguistic resources, necessary for carrying out effective interpersonal interaction in the systems: specialist - specialist and specialist – client, focused respectively on the exchange of professional information and providing social assistance to the needy ones.

The characteristics, which build the professional portrait of the social worker in terms of mastering the communicative techniques, form its communicative professional program. According to V. Dobroshtan (В. Доброслтан 2008) pursuant to this program, the social worker is obliged:

- to be familiar with the social etiquette and be able to use it;
- to be able to formulate the goals and tasks of business communication;
- to organize the communication process and to guide it;
- to analyze the subject of communication, to understand complaints, requests, to pose questions and respond specifically to any issues;
- to master habits and techniques of business communication, its tactics and strategy;
- to be able to organize debate, interview, business conversation, argument, controversy, discussion, dialogue, debate, dispute, round table, business meeting, business game, negotiations;
- to be convincing and able to explain, justify, criticize and contradict, to reach to an agreement and decision, to make estimates and suggestions;
- to master the art of speech, rhetorical skills and figures, to be able to properly construct his/her speech, to master public introductions;
- to know how to use speech in order to conduct psychotherapy, to relieve from stress and anxiety, to support the client's adaptation to the relevant circumstances, to correct the client’s behavior and estimations.

In terms of the specifics of the professional activity of the social work specialist, the following functions of communication in social work may be mentioned:

1. Diagnostic. Its main task is the proper diagnosis of social problems in order to predict the further development of the dialogue with the client and, not less important, carrying out an appropriate selection of effective means of information and influence on the client.

2. Informational. It includes the information obtained from colleagues and clients in the process and as a result of communicating with them. In this case, the social worker acts as a receiver and transmitter of the information.

3. Empathic. It refers to the mutual empathy in the course of solving the social problem.

4. Affective. It is connected to the communication process aimed at creating a psychological comfort and emotional stimulation.

5. Provocative. It provokes the performing of certain actions.

6. Organizational. It is expressed in the ability of the social work specialist to organize directly his/her own interaction with colleagues and clients.
7. Regulative. It manifests itself through the forms of conscious regulation of the social worker's own behavior in his/her activity aimed at assisting the client or the creation of conditions for his interpersonal change.

All these functions are realized integratively in the process of professional activities of the social work specialist. The process of communication between the social worker and the person in need of social assistance or support is realized through various forms, determined by the goal, character and level of communication. The most common forms of communication in this sense are the formal and informal communication.

What is characteristic about formal communication is that the participants perform certain functions in relation to their partners, according to the role they have taken in this process. Formal communication suggests different duration of the process and has purely business nature.

Informal communication comprises all types of personal, non-business contacts, the center of which are personal relationships.

The purpose of the professional communication of the social work specialists is the solving of specific problems of the client or the group.

The social work specialist usually builds his/her own style of communication in the process of communication with customers and colleagues.

The style of communication can be seen as a set of expressive means that the communicator uses most commonly in the process of communication. V. Boiko (B. Boiko 1996) defines the term "communicative style of the individual" as a combination of the usual individual ways and means to establish and maintain contacts with the surrounding in different forms of interaction discussions, negotiations, disputes and other situations of communication. The same author identifies three communication styles:

- Synergic. The personality, through its own style of interaction, helps the process of union, hence increasing the effectiveness of the mutual activity.
- Non synergic. It is characterized by the fact that the person is unable or unwilling to assist in the mutual effort for achieving a desired result. Usually, the person takes the position of an observer, does not take any initiative, does not demonstrate partnership and empathy within the working process;
- Anti synergic. It is expressed in the expression of active destructive forms of behavior of the individual in his/her interaction with partners. This causes damage to the process and in general to the result of the mutual activity.

Where is the place and the role of communicative games in the process of preparation students in "social activities" for professional communication?

The purpose of learning through communicative games is the acquisition of skills to solve professional communication problems. This purpose determines the content of the games included in the training process. The training includes professional problem situations of communication that eventually students would face in the course of their professional activity. This suggests the game to be used as a tool for modeling of speech behavior in professional communication situations.
The communicative games can be of different types in the process of learning. When they are directed at the formation and improvement of communication skills, they could be assigned to the group of didactic games. If the core of the game is an imitation of business communication, then it is a business game. Taking communicative roles as a main purpose of the game puts the game in the group of role-playing games. However, regardless of the type of the game, its basis should always be an authentic communication situation, in the frames of which there is an information gap, which should be overcome in the course of communication. The presence of such gap to some extent encourages partners to exchange information, which bears the signs of reciprocity. In the course of the game process, the student gets the opportunity to perform a desired, customary social role for him, and to manage his/her own verbal behavior.

Seen in that context, the game appears as a teaching method, which on one hand organizes the joint communicative activity of the trainees and the trainer, and on the other hand it gives the opportunity to each trainee to be actively involved in situations of real communication, as a result of which he/she forms communicative skills.

It is necessary to specify some specific signs of communicative games, which distinguish them from the other types of games:

- They focus on the implementation of communicative goals and solving communication problems;
- In most cases they are closely linked to the professional communicative activity through implementation of a series of communicative actions in real situations of professional communication;
- Professional vocabulary and professional clichés, required for a future professional career, are adopted in the gaming process;
- An active verbal interaction is performed;

The analysis of different sources allows the identification of several characteristics of communication games, used in the process of this preparation:

- during the game students master a professional experience similar to that which they would eventually master in a real working environment;
- there is a real possibility that in the course of the game certain professional activities be repeated many times, which naturally leads to their more effective assimilation and consolidation;
- games drastically shorten the time necessary for the accumulation of communicative experience, related to the future professional activity;
- they teach adequate communicative behavior in different communicative situations, while contributing to the absorption of techniques for overcoming existing communication barriers;
- They provide an opportunity to shape and develop the general professional skills of the students.

The inclusion of communicative games in the students' professional training is an important condition for the successful formation of professional and meaningful communicative skills, the most important of which are the modeling of speech behavior depending on the speech situation, successful argumentation, hearing and summarizing.

The content of the game, for the most of its part, must have a problematic character, which is a prerequisite for the students to demonstrate high professional habits and skills. On the other hand such
kind of game content is a challenge for the creative activity of individuals, expressed in searching and finding original, innovative solutions that have a major influence on the course of the game.

In the course of communicative games, there appear favorable conditions for the development of the verbal activity of the students, which is mediated by the following important communicative functions:

- Development of skills for conflict-free communication;
- Searching for new patterns of behavior within a particular communicative role;
- Development of skills to perform, maintain and complete the contact;
- Formation of individual communication style;
- Improving the skills of professional communication in typical professional situations.

The formulated goals are evidence of the extremely wide application range of communicative games.

The following stages of the game can be pointed out in terms of the process of preparation and implementation of the game:

1. Preparation. During this stage the trainer has to identify and subsequently to specify participants, to assess which teaching and methodological materials will be needed, to specify the regulations and rules of the game. During the course of this stage the following major tasks are being solved:

- choosing a specific skill that will be formed or further improved and a curricular content, which will be studied or reproduced in the game;
- including patterns of behavior in the game, associated with the specific professional training and requiring continuous exercising;
- choice of the social form of the game;
- choice of the mode to form the groups within the game itself;
- searching for the optimal spatial location of the participants in the audience;
- didactic securing of the game.

2. Stage of implementation of the scenario. It includes the consecutive implementation of the following key moments:

- Familiarizing the participants with the content of the game and game rules;
- giving the necessary didactic materials to each participant in the game;
- demonstration of a fragment of the game by the teacher or a student;
- a trial game by a mini group in front of the whole group;
- a game of all participants in the group;
- analysis of the actions of the participants in the game.

3. A final stage. This stage suggests an analysis and discussion by students and the teacher of the results of the game through self and mutual evaluation of the performance. The process can be additionally supported by spreadsheets, drawings, diagrams, etc. This stage is characterized by discussion of the
mistakes in order for them to be resolved in future activities. An important aspect is the exchange of thoughts, sharing the feelings, experienced during the game, as well as the opportunity of every participant to express his/her own opinion.

During the three stages of the game the teacher plays different roles, such as the role of a game developer, instructor and consultant, mentor, organizer, communicator, facilitator. We will discuss in more detail each of them.

The role of the teacher as a developer of the game is determined by the fact that in the training process he/she does not always have the chance to use ready-developed games. Therefore, the teacher often has to develop his own technology depending primarily on the goals he sets. In the field of preparing future professionals in social work, these are most commonly games, aimed at developing the professional and personal qualities and encouraging the acquisition of theoretical knowledge and practical skills, needed for their future career success.

Another role, which the teacher often takes within the game, is that of an instructor and consultant. This means that he is supposed to explain to the participants what the meaning of the game is, as well as its purpose. He also has to formulate the rules and norms, to give instructions on individual roles, to describe the sequence of the stages included in the game.

The teacher in the role of a mentor is required to provide the participants in the game with the required information in a form, which they can understand. He has to be a careful listener and to observe for the establishment of positive role models.

We will examine in more detail the role of the teacher as an organizer of the game, as he embodies himself into that role in the course of the whole process. As such, he sets goals, makes decisions, plans and virtually organizes the whole game process, monitors its progress and results, and if necessary, makes corrections to the game content.

The successful organization requires the teacher to perform a variety of activities, different in content: coordination of the work of all subgroups of the game within the whole game group, management of the discussions within the groups, assistance and emotional support, monitoring compliance with the rules and regulations. To all this we have to mention solving issues of substantive technical nature, such as providing adequate space, proper equipment, educational provision, etc.

An important element of the overall process of implementation of game forms and methods of education is the creation of appropriate conditions for their implementation. The room in which they are carried out must be of good natural lighting and be quiet. Its size is also very important since the spacious rooms allow for better movement and more effective creative work of the participants and the teacher. The spacious room allows for various options of location of the chairs and the tables.

The most important factors should not be missed, because they appear as an obligatory prerequisite for the effectiveness of the inclusion of game forms and methods of learning. These can be primarily well-developed communication, reflexive, cognitive, social and psychological skills and attitudes in the trainees. Not of a less importance is the presence of a high level of motivation to participate in the game training and achieve the purposes of the game.

In the development and implementation of games in the process of preparing students the following important issues should be taken into consideration:

The strategic and pedagogical goals of game training shall be justified clearly in any particular game situation. Which is more, the primary objective of this training shall be always present, namely assisting
the preparation of a future career success. When it comes to choosing targets, then as a basis should be taken the specifics of the educational content that must be learned and last but not least, on the specific characteristics of the learning group. The first implies filling the games with content that is closely related to the studied topic. In this case it is a necessary requirement that the content is always professionally meaningful. A strong correlation might be found between the degree of reflection of a professional aspect in the game and the effectiveness of its pedagogical impact on students. In the process of acquiring new professional knowledge the teacher also needs to strive to form respect for the future profession.

When selecting the content of individual games, it is necessary to answer the question whether this content helps the activation of interest towards acquiring new knowledge.

In conclusion we may note that the inclusion of communicative games in the process of preparation of students in the specialty of "Social activities" leads to the implementation of cross-curricular links of integrative nature aimed at one main purpose – formation of skills for professional communication. It also significantly helps to improve the quality of communicative training of the future specialists in social work.

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GENERATION OF INTELLIGENT E-LEARNING EDITIONS ON THE BASIS OF ONTOLOGIC MODEL

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Abstract
This work describes a system of methods to create the generator of intelligent e-learning editions (IELE) for higher education on credit education technology. The purpose is to develop technology which would make it possible to automate stages of IELE creation.

An intelligent e-learning edition (IELE) is a set of digital, text, graphic, audio, video and other types of information which have means of programmed control and documentation, possess adaptive properties and intelligent interface and can be thus placed in the global Internet network.

This work was supported by a grant under the program “Targeted development of university research focused on innovative results” for the project “Methodology, algorithms and programs for e-learning editions generation”.

Key words: e-learning, generator, intelligent e-learning editions

INTRODUCTION

Informatization of education requires IELE for all studied subjects. The IELE developers use various technologies, create different interfaces for users, offer different requirements for the composition, structure, ergonomics and other items. This gives rise to new imperfect IELE, which are not always suitable for use in learning.

Generator of intelligent e-learning editions

IELE, created by the method of direct programming, are distinguished by quality design, a variety of realization styles (color, interface, IELE structure, methods of material presentation). But such IELE are also characterized for:

- IELE modification and maintenance complexity, as such products are usually private, under the control of only the programmer-creator,
- being time consuming in creating IELE.

It is worth mentioning one more problem of the direct method – the effect of the second author: the creation of IELE involves a programmer and a methodologist (first authors), and another teacher (second author) uses IELE in teaching, who often has methods of presentation, other than laid in particular IELE. The closedness, typical for such IELE does not allow the teacher to change this IELE and adapt it to their needs. [1]

The most negative aspect of this method is that the non-programming methodologist cannot use it on his own, without the involvement of highly qualified programmer.
Experience in creating IELE shows that we need a transition to a more productive technology of creating IELE of various types. Moreover, IELE must be mainly created using a software tool. The use of a software tool in creating IELE reduces labour-output and development time and allows to work directly with the computer for teachers who are not highly qualified programmers. [2]

Today in the era of informatization processes in our society and comprehensive importance of information technology in human life we need to create universal patterns that will become mass algorithms for many processes of human activities. The process of creating models can be represented as a process of formalizing a particular subject area. Consequently, the use of ontology and its laws allows us to construct an elaborate system of functioning of information systems, applications, etc.

Intelligent e-learning edition (IELE) is a set of numeric, text, graphics, audio, video and other types of information which have means of software management and documentation, have adaptive properties and intelligent interface and thus can be placed in the global network Internet.

According to the standard, an intelligent e-learning edition (IELE) is described by a semantic model shown in Figure 1.

The structure of IELE consists of a title page, abstract, table of contents, a unit of learning and control functions.
A unit of learning represents a semantic unit of learning information. Units of learning are modules, blocks and classes. A module should include a sequence of classes with an increasing semantic link from class to class. Blocks must include a sequence of modules with an increasing semantic link from module to module. A class is a minimal semantic unit of learning information, which includes the following parts: theory, questions, assignments, tests, thesaurus, handbook.

Theory is the theoretical part of the teaching material presented in class.

Questions should relate to the goals and objectives of content, aimed at acquiring knowledge and skills to work with IELE.

Assignments should provide clear and precise statements of tasks and exercises related to the studied learning material in class.

Test is a set of questions relating to the studied learning material in class. Tests are designed for self-knowledge control in a given lesson and should be highly considered in order to rule out a simple method of guessing when choosing the correct answer.

Thesaurus should contain a set of terms and acronyms found in the content of IELE, and hypertext references to their definitions.

Handbook should contain brief educational information for each module of the course.

Management functions are registration, navigation, browsing, testing, training, designer.

Registration must be able to enter and edit the data about the user (the student) to keep statistics on him.

Navigation should provide a visible link between the elements of IELE and provide the necessary means of orientation and travel in IELE.

View provides view of the entire e-learning material included in IELE. At the same time the user will not perform the tasks.

Testing should be able to test the student’s knowledge both in the current lesson and throughout the course of study or a section. The test results are displayed on the screen.

Designer is a toolbar which builds the trajectory of learning.

Education should provide the student with the opportunity to explore the theoretical material on the current lesson, look at the questions and answers, do exercises, or solve tasks and do the tests. In case of insufficient number of correct answers to the test the student will not be able to move to the next lesson in the trajectory and will continue studying the current lesson.

Education begins with the selection of the learning mode.

The first viewing mode. In this mode, the learning program provides a view of only the educational material. In this case, there is no access to tasks, questions and graphics.

The second testing mode. In this mode, the learning program provides testing of the entire volume of educational material. In this case, after testing, the student can get information about the test results.

The third start learning mode. To start learning the student has to register.

In this mode, the learning program provides a choice of learning trajectories. In this case, after learning of theoretical material on the current lesson the student will need to answer the test questions. In case of insufficient number of correct answers to the tests, the student will not be able to move to the next lesson in the trajectory and will continue to study the current lesson. In addition to the current testing there is
an intermediate testing (during the transition to the next block), borderline testing (in the transition to the next module) and final testing (at the end of learning).

Start learning mode allows you to select one of the three learning trajectories: manual selection, test selection and full selection. When manually selecting, the trajectory is determined by the student himself through ticking modules, blocks, lessons. With test selection, the trajectory is determined automatically based on the results of testing on the entire volume of educational material. In this case, the trajectory of learning includes only those lessons, for which the student has received an insufficient number of correct answers. With full selection, the trajectory includes the entire volume of educational material of the discipline, including all classes, modules and blocks.

The fourth continue learning mode. In this mode, the learning program provides continuing learning on the chosen trajectory. The process of learning begins with the next lesson after an interruption.

Also this diagram shows the process of functioning of IELE with levels of learning.

An approximate ontological model of the generator of intelligent e-learning textbooks with basic concepts and definitions is shown in Figure 2.

![Figure 2](image)

Recently, the use of ontologies for modeling subject areas of automated information systems is becoming more widespread. Most often, this approach is applied to intelligent systems, especially designed for the operation of the Internet. The Internet is increasingly becoming an educational platform for the majority of the population not only in Kazakhstan but also around the world. This is due to the fact that ontological model allows the development of a metadata model, which greatly improves the use of the system by a wide range of users in terms of interaction. A more detailed model of the IELE generator is shown in Figure 3.

Ontology is a structure that describes the meanings of the elements of a system, an attempt to structure the surrounding world, to describe any particular subject area in the form of concepts and rules, assertions about these concepts, with which you can build relationships, classes, functions, etc. Ontologies of subject areas are limited to a description of the world in a specific subject area [3].
Naturally, each model may become obsolete and out of use, as well as any software, while having a life cycle. Life cycle model is a structure that determines the sequence of performance and relationship processes, activities and tasks throughout the life cycle [4]. Life cycle model depends on the specifics, scale and complexity of the project and specific environment in which the system is created and functions. The authors of the article also consider this issue (Figure 4).

The main purpose of creating the IELE generator is to create a single standard and systematic model of electronic textbook with intelligent and adaptive functions that can operate not only within the educational territory of a unified information environment of Kaznet, but also outside it, entering the general global environment (Figure 5).
The problem of constructing an ontological model of subject area of the IELE generator to support the commercialization of innovation results in scientific research is a relevant and complex scientific and practical task. The complexity of the assigned problem is determined, in particular, by the presence of many interdisciplinary and multidisciplinary relationships and different purposes of end-users of the system: scientists, experts, users [5].

In the research institute “Artificial Intelligence” of L.N. Gumilyov Eurasian National University the authors of this article conduct research to create intelligent e-learning textbooks. The process of creating intelligent e-learning textbooks has achieved progress as it has been through the following steps so far:

– there has been developed a national standard for the creation and introduction of intelligent e-learning textbooks to the educational process;

– there has been developed technology of automated creation of local IELE;

– there has been developed technology of automated creation of online IELE;

– with the help of the IELE generator the teaching staff have elaborated a number of intelligent e-learning textbooks in different disciplines, which are used in the learning process, as evidenced by acts of application. Some IELE are posted on the official website of the Information Technology Faculty of L.N.Gumilov ENU (e-content project). There are certificates of state registration of intellectual property obtained for the IELE generators and for the developed IELE.

Currently we have implemented a Kazakh speech synthesizer to voice content of IELE. We are also working to provide the IELE voice-activated management function. For the control of knowledge we are planning to connect up a subsystem of the expert system based on fuzzy logic.

Detailed information on automated technology of IELE creation is available at [www.ezerde.kz/generator](http://www.ezerde.kz/generator).
CONCLUSION

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HUMANITIES AND STUDY OF MATHEMATICS

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Abstract

Considering mathematics a science is a philosophical problem. Mathematics is an abstract as well as technical science. No strict criteria stating exactly the object of mathematics are known to academics yet. We are only aware of its mutual interconnection with all other scientific branches. Its position in the Faculty of Humanities is well-grounded and results also from its historical relation with humane fields of study.

Key words: history of mathematics, humanities, humanistic mathematics, symmetry, applications

1. INTRODUCTION

The word mathematics comes from the Greek máthēma – which means object of study and also knowledge. In a long-term development perspective mathematics became an organic part of scientific, technical and technological world. It has been shown that mathematics is essential not only in science and technology but it is helpful also in art, music, archaeology, sociology, and sport. Mathematics helps us to understand an infinite diversity of the world whose part people definitely are. And if we want to understand mathematics correctly, we have to know the process of its development. In classification of sciences mathematics (like philosophy) is ranked among sciences with ambiguous classification. And this is a philosophical problem. Mathematics is an abstract as well as technical science. For this reason it is sometimes ranked among natural sciences in spite of the fact that it misses a real object of research. In some sense it is a science dealing with research methods. On the other hand, when classifying philosophy as a science, there is a problem with its scientism. In spite of the fact that philosophy is based on logic, unlike mathematics it has not got explicitly stated methods for assertion-based verification.

Mathematics can be understood as a system of deductively derived theorems. A mathematician in his research always starts with unverified axioms from which he/she deductively draws conclusions. These conclusions are called theorems and the final number of steps leading to verification of their truth is called a proof. In spite of the fact that axioms are logically compelling, they often do not have application in the real-world environment. In the sphere of humanities deductive methods are used, too. Unlike mathematics, the truth of hypotheses and their application in real life are very important.
It can be stated that arguments used by a mathematician are always 100% convincing. Other scientific arguments are sufficiently convincing and in the sphere of humanities convincingness of arguments is relatively low (Henson, 2009). This is probably one of the reasons why people often think that mathematics and humanities are two incompatible subjects.

2. FROM THE HISTORY OF MATHEMATICS

Even before the year 3000 BC Egyptians were able to record numbers with the help of hieroglyphs. They knew about 400 signs which helped the Egyptian mathematics to bring the first symbol for numbers, introduce a decimal system, weights and measures, etc. The knowledge level of a pre-scientific phase of the development of mathematics is a product of human cognitive processes. In the spheres with favourable living conditions also the process of mathematics development ran faster. Clay tablets with the texts recording the existence of a school system near temples come from the region of Mesopotamia. But not only Egyptians and nations of Mesopotamia and China were able to change nature as well as themselves by application of their knowledge. We can find beginnings of modern mathematics even in the age when Greek scholars Aristotle, Descartes, Pythagoras, Thales and Plato were not only well-known philosophers fascinated by the harmony of the world which they wanted to express by numbers. They were also scientists who were able to transform principles of human thought into a logical system. Pythagoras of Samos (ca. 570-496 BC) was observing musical harmonies and found out that they can be expressed arithmetically. Together with his students he discovered mathematics as a method of argumentation and logical derivation. Thales of Miletus (624-547 BC) was one of the most famous scholars of his age (one of Seven Sages of Greece). He was a philosopher, astronomer, geometrician and a businessman, too. A Greek philosopher Plato (427-347 BC) also entered into the history of mathematics. He was aware that a graceful power of a human soul is its ability to rely on measuring and calculation. A universal ancient thinker Aristotle (384-327 BC) emphasized that the most remarkable human ability is the ability to think (Jedinák, 1992).
Even ancient Egyptians knew that regularities and demonstrations of Fibonacci sequence can be found in plant, and predominantly, in animal life. Leaves and insect wings structure as well as cones, shells, horns and sunflower ovaries (in spirals) are arranged according to them (Bačová, 2011).

In 12 century arithmetic, geometry, astronomy, music, grammar, rhetoric and dialectics represented seven liberal arts (as well as the source of wisdom) which became the basis of the art faculties. Similarly in later times, famous scholars pointed out that mathematics is an inseparable part of people’s lives. An Italian astronomer Galileo Galilei (1564-1642) on the basis of his night sky observations concluded that the whole universe is written by the “mathematical speech”. Also other scientists and thinkers claimed that mathematical ideas and laws considerably influence science and society. A German astronomer and astrologer Johannes Kepler (1571-1630) discovered that the ratio of two consecutive members of Fibonacci (1175- 250) sequence is close to the value of a golden ratio which is obtained by dividing a line into two parts so that the longer part divided by a smaller part is equal to the whole length divided by a longer part. The approximate value of this special number is 1.618. It is very important in art composition – composition in painting and photography. For many centuries artists had been studying psychology of beauty. On the other hand, biologists had been studying the complexity of nature. More than 800 years ago Leonardo Pisano Fibonacci discovered a mathematical interconnection between these two disciplines which provides their deeper understanding. Also several music composers used mathematical theories and procedures as a basis for composing their music. We can mention a French impressionist composer Claude Debussy (1862-1918) who used Fibonacci sequence when composing music (Fischer, 1992).
3. HUMANISTIC MATHEMATICS

In the course of history mathematics was dealing with a wide range of issues. Even nowadays we do not know precise criteria which would set its object of study. With the help of mathematics, characteristics of observed facts and relations between them have been abstracted. These relations can be verified through various models. Mathematics extends to all spheres of scientific activities and plays an important role in biology, physics, chemistry, economy, and engineering but also in sociology. We are able to explain colours of sunset or architecture of the human brain with its help. Mathematics helps to construct supersonic aircraft and roller coasters, to simulate exploitation of natural sources and discover how distant galaxies look like. It has changed our view of the universe.

Nowadays we use the term humanistic mathematics – it is considered to be the teaching philosophy. Its effort is to observe a human side of mathematical thinking and lead students to discovering the beauties of mathematics. The main aim of the humanistic approach to education is to show students that mathematics is not just a monotonous summary of rules used when solving boring exercises whose useful and practical aim cannot be so easily seen by them. Its aim is to show students how to find the answer to the question: Why are numbers beautiful? This question can be answered by other questions (Křížek, 2011):

- How can the ISBN code be generated?
- How are bank accounts numbers created?
- How does a digital signature work?
- What is the connection between DNA and quaternary system?
- What are primes and what is their use?

The strategy of teaching humanistic mathematics includes interdisciplinary connection of mathematics with other thought worlds and ways of new concepts expression. One of them can be for example using of symmetry which is observed when studying Platonic solids (Tennant, 2002). These solids represent regular polyhedrons whose faces are congruent regular polygons. The lengths of their edges are identical and they look the same from each of their vertices. In ancient times but also in Middle Ages they became the source of various philosophical discussions. They were named after Plato who gave them a special philosophical meaning when he supposed that atoms – indivisible parts of the elements of nature (fire, air, water, earth) which the world is made up of – have the shape of regular convex polyhedrons.
Humanistic mathematics presents also an interconnection with other methods of teaching. It is philosophy of teaching mathematics which guides students by way of mathematical thinking with application of metaphors, history, etc. in interdisciplinary connections. It creates an educational environment which is productive and interesting for students.

Symmetric natural structures have become a basic device enabling deeper understanding the material world. Symmetry has also an aesthetic dimension and though we do not realize it, it forms an essential part of basic social norms. Social networking requires a basic human characteristic – honesty. David Wade claims that any justice system has to be reflected by understanding the proportionality. It is symbolised by the scales with weighting pans – the most illustrative expression of symmetry (Wade, 2012). Another way of abstract concepts creation is using well-known concrete environments. Artworks and pictures created by computers are illustrated by sequences of slides which enable to gain an insight into the dimension. Each of the pictures contains some property for description a concrete dimension. The pictures and drawings require certain imagination of a student. Only on its basis he/she is able to concretise his/her thought processes into precise mathematical procedures. The picture of Pablo Picasso Portrait of Dora Maar requires this type imagination, too (Tennant, 2002).
4. MATHEMATICS IN THE FACULTY OF HUMANITIES

Applied mathematics is one of the study branches led by the Faculty of Humanities of the University of Žilina in Žilina. Faculty of Humanities (founded in 2010) was gradually transformed from the Faculty of Science (1998-2010) where the stated study branch was originally accredited. It consists of two study programmes – Mathematical modelling in Bachelor studies and Applied mathematics in Magister studies.

Nowadays there is a need for skilled workers who will be able to use mathematical methods and calculations creatively and independently when analysing and creating mathematical models not only in the sphere of natural science but also in the sphere of technical, economical and social science. That’s why mathematicians from the Department of Mathematics and experts from the sphere of social sciences and humanities working on the Department of Pedagogical Studies on the basis of their mutual cooperation came to the conclusion that there is a high need for mathematically educated people who will have basic knowledge of sociology, quantified social theories, modelling, social phenomena prognosing, demography, etc. Only then they will be able to communicate with the experts from these spheres, create mathematical models of socio-economic processes, and apply suitable mathematical apparatus for their solving and evaluating (Růžičková, 2008).

For this reason the study branch Applied mathematics is nowadays oriented economically and financially and offers subjects also from the sphere of social sciences and humanities:

- Systematic Sociology (2-1-0),
- Basics of Methodology in Social Science (1-2-0),
- Quantified Social Theories (1-2-0),
- Modelling and Prognosis of Social Events (1-2-0),
- Planning and Interpretation of Experiment (2-1-1),
- Demography 1-2-0),
- Social Nets Theory (2-1-0),
- General Theory of Systems and Social Systems (2-1-0),
- Management of Human Resources (1-2-0), and
- Agent Based Modelling (1-2-0).

Their aim is to:

- provide students with basic orientation in sociology,
- introduce basic theoretical view on individual elements of society and relations between them,
- point out the possibility of their quantitative description,
- provide the overview of basic ways by which it is possible to record a social reality,
- show those theoretical solutions, on the basis of which it is possible to carry out modelling of some social phenomena – such as a social change, innovations and their spreading, population and demography,
• acquaint them with basic procedures of demographing data acquisition and their possible application when creating demographic models,

• point out the relation of demography and other scientific branches and its social importance,

• teach students basic principles of experiment planning and selection of suitable evaluation methods,

• introduce bases of theory of systems as well as the concept of social systems on the basis of which it is possible to formulate mathematical models within the social environment,

• know special peculiarities of work with people, and

• manage and know how to apply principles of human resource management especially in the sphere of hiring, selecting, motivating, evaluating and rewarding.

In the academic year 2002/2003 the faculty had the first six graduates of the mentioned study programmes. Since that time another 100 students have successfully finished their studies. They have obtained not only theoretical and application knowledge from mathematics and economics but also basic knowledge from the sphere of social sciences and humanities which they can apply as experts in research teams, financial institutes and also as managers in companies.

In the current period the Faculty of Humanities lead not only Bc and Mgr study programmes in mathematical modelling and applied mathematics but also in teaching mathematics in combination with other subject: English language and literature, citizenship education, music or religious studies. Since the academic year 2004/2005 (when the faculty had the first graduates of the teaching programmes) up to the academic year 2011/2012 150 graduates of the joint honours programmes: Teaching academic, artistic and educational subjects finished studying at our faculty. They have gained competencies to teach mathematics (plus one more subject) at basic, secondary and university levels.

Mathematics is an important part of other study programmes led by the Faculty of Humanities – Social Pedagogy and Mediamatics and Cultural Heritage. Students have the possibility to study mathematics within the scope of subjects:

• Statistic methods (2-2-0), and

• Logic (1-2-0).

As it was stated before, mathematics taught in the Faculty of Humanities has an important and indispensable place not only within its own study programmes but also as a part of other study programmes.

5. CONCLUSION

Scientists, who are working in the sphere of humanities, very often avoid using mathematics in their research. But after some time they find out that without basics of mathematical and specifically statistical literacy they cannot reach reliable research results. It is not true for several thousand years that mathematics is only the science of numbers. It studies structures and functional relations in nature (e.g. artistic structures) and is applicable also to social sciences. There were recorded the attempts to analyse even a human language with the help of mathematics. That’s why mathematics is a certain, unusual sort of art (Brodzko, 2012).
Not all people have a positive attitude towards mathematics. Many of them think it is not necessary for their lives. They do not realise the fact that it is an essential assumption of progress. It offers the space for creativity, realization and in some cases also pleasant perception. Mathematics does not study things which objectively exist outside the consciousness of mathematicians. It studies only things invented by mathematicians themselves. Mathematicians often invent theories which seem to be divorced from reality but if good mathematics is used, then this theory will find its application in a real life (Kudriavcev, 1990).

Mathematics deals with discovering existing things and not only things invented by people. It is up to us – people – how many new concepts we will invent and understand. We do not need to show how many concepts will exist. In the real life mathematics and humanities are not separated – on the contrary, they are interconnected. Only in the sphere of education they are unnaturally separated.

A mutual interconnection of mathematics with the surrounding world and also with other scientific disciplines can be supported by referring to its interrelatedness with historical and cultural development of humankind as well as to its practical applications. Mathematics is a science and art in unison. In some sense it interconnects a science with an art. It would be good to understand it and never let it be forgotten because with the disappearance of mathematics an essential part of us would disappear (Fischer, 1992).

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EDUCATION IN ERITREA

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Abstract

Eritrean education was under the church supervision up to the early 20th century as Eritrea was part of the Ethiopian Empire and followed the Ethiopian educational system formed in the 13th-16th centuries.

In 1881 Italians annexed part of Eritrea and according to a peace treaty (1890) Eritrea was to belong to Italy. In this period Eritrea first introduced the European educational system. The number of Eritrean students from 2,472 was growing to 4,177 in 1939.

In 1935 Ethiopia was again attached by Italy. Only by spring 1941 Ethiopia was liberated by English and Ethiopian troops. English military administration ran the country until 1952.

The struggle of Ethiopia for regaining Eritrea resulted in 1952 formation of the Federation of Ethiopia and Eritrea. During the Federation, namely starting in 1962, the evolution of the educational system followed a purely Ethiopian scenario. Amharic and English became working languages at all educational levels. The year 1964 witnessed 200 primary schools more as well as seven complete secondary schools.

After monarchic rule in Ethiopia fell and power was taken by DERG (Provisional Military Administrative Committee) in 1974, the issue of Eritrea was reopened and reconsidered. A strong political group “The Peoples Front of Liberating Eritrea” was formed in 1975. After the years of struggle in 1993 the independence of Eritrea was officially proclaimed. Despite the critical situation in the independent country, its political priorities lay in the revival of its educational system. The sum total of schools of all levels grew from 293 in 1990/91 to 829 in 1999/2000. The number of students rose from 208,168 to 431,508.

Another educational trend was development of private schools. State primary schools and the University of Asmara are tuition-free, secondary schools are fee-paying. The total number of state and private schools reached 600 with 420 of them in country side.

Key words: education, policy, independence, formation, primary, secondary

1. EDUCATIONAL POLICY IN THE PRE-COLONIAL PERIOD

Eritrean education was under the church supervision up to the early 20th century as Eritrea was part of Ethiopian Empire and followed the Ethiopian educational system formed in the 13th-16th centuries. There were five types of clerical schools: the primary school nebab bet (literally, “house of reading”); the secondary school qiddase bet (“house of liturgy”); the higher school comprising zema bet (“house of singing”), qene bet (“house of poetry”) and metsyhaf bet (“the house of the writing”). The whole
course of education took almost thirty years to complete and required hard work, years of deprivation and moving from the site one famous school to another.

2. EDUCATIONAL POLICY IN THE COLONIAL PERIOD

Starting with the 16th and up to the mid-19th centuries a long-term strife between the Imperial centre and the opposing forces commenced. In the 16th-18th centuries part of the western flatland of Eritrea was occupied by the army of one of Sudan states. The relationship between Eritrea and Ethiopia was also strained. In 1865 the Sudan-Turkish occupation was mainly replaced by Egyptian rule.

Ethiopian Emperor Johannes II strove to regain the areas taken by Egyptians and get an access to the sea, which was made use of by Great Britain and, later, by Italy. In 1888 Italians annexed part of Eritrea with port Asab leaving Ethiopia cut off from the sea. Italy was thus able to penetrate into other regions of the country along the Red Sea coastline.

On January 1890 the Italian king announced the formation of the colony of Eritrea which consisted of lands at the Red Sea and had Massawa as its capital. According to a peace treaty signed in Addis-Ababa on October, 3, Eritrea was to belong to Italy. This manifested its separate political status as an Italian colony and exposed Eritrea to the 70 years influence of European civilisation.

It was under Italian rule that Eritrea first introduced the European educational system, starting with schools for Italians opened in 1896. The end of World War I saw the spread of education to a limited number of Eritreans, like only 523 pupils in 1921. Providing school education for Eritreans had a pragmatic objective, as the colony needed service personnel, interpreters, minor clerks, telephone operators and typists. In 1935 twenty five schools were opened for this purpose, the number of Eritrean students reaching 2472 and growing to 4177 in 1939.

In 1935 Ethiopia was again attacked by Italy and in 1936 it became a province of Italian East Africa. By spring 1941 Ethiopia was liberated by English and Ethiopian troops. English military administration ran the country until 1952.

The British rule provided for the appearance, in 1943, of an educational centre for training Eritrean primary school teachers; 1947 was the year when the first school for 115 Eritreans was launched, the language of education being English. In the year 1950, 85 primary schools for 913 students and seven secondary schools with the total number of 82 young people were opened. Some schools conducted education in Tigrinya language in primary years, while others used Arabic. Textbooks in Tigrinya were composed by Tewelda Madhin, while Arabian books were imported from Egypt and Sudan.

3. EDUCATIONAL POLICY IN THE PERIOD OF THE FEDERATION OF ETHIOPIA AND ERITREA

The struggle of Ethiopia for regaining Eritrea resulted in 1952 formation of the Federation of Ethiopia and Eritrea per UN General Assembly Resolution of December, 2, 1950.

During the Federation period, namely starting in 1962, the evolution of the educational system followed a purely Ethiopian scenario. Eritrean Publication Committee was abolished; books in Tigrinya and Arabic were confiscated and burned down. Amharic and English became working languages at all educational levels; their knowledge was compulsory to be able to enter the Asmara University.
New primary and secondary schools, two incomplete secondary schools, a vocational school and a medical nurses’ school opened in the country. The year 1964 witnessed 200 primary schools more, as well as seven complete secondary schools.

4. EDUCATION IN ERITREA AT THE PERIOD OF ITS INDEPENDENCE

After monarchical rule in Ethiopia fell and power was taken by DARGA (Provisional Military Administrative Committee) in 1974, the issue of Eritrea was reopened and reconsidered. A strong political group “The Peoples Front of Liberating Tygray”, later “The Peoples Front of Liberating Eritrea” was formed in February, 1975 and eventually brought about the independence of Eritrea, which was officially proclaimed on May 24, 1993. Meanwhile, the economic situation in the country was disastrous: within the thirty years of fierce military combat on the territory of Eritrea most part of industrial objects and infrastructure had been destroyed or put out of service. The state of affairs was aggravated by the border war with Ethiopia (1998-2000), in the end lost by Eritrea.

Even a worse effect was caused by a severe draught at the end of 2002, when every third person in the country faced starvation. In January 2003 an agreement was signed between the Eritrean government and the UN World Relief Food programme according to which 45 million US dollars amount of food was supplied to Eritrea as humanitarian aid.

Despite this critical overall situation in the independent country, its political priorities lay in the revival of its educational system. The sum total of schools of all levels – primary, middle (incomplete secondary) and (complete) secondary, technical vocational schools - grew from 293 in 1990/91 to 829 in 1999/2002. During the same period the general number of students rose from 208168 to 431508, the number of teachers sky-rocketed from 5286 to 8724. The literacy in the country in 2003 was 58.6% of men and 47.6% of women.

Another educational trend was development of private schools and ensuring equal access to them for every population stratum.

State primary schools and the University of Asmara are tuition-free, secondary schools are fee-paying. Primary education takes five years, secondary education is six years long (comprising the first stage of two years and the second stage of four years). According to Eritrean Ministry of Education, two hundred primary schools of 1991 educated 93.1 thousand children, i.e. 22.4% of children at the age of 7-11 (42% boys and 33% girls).

270 new schools were built between 1991 and 1997, 77 school buildings having been erected in 1997 only. The total number of state and private schools reached 600, with 420 (70%) of them in the countryside. Within the same period the number of primary school teachers grew from 3.6 thousand to 5.5 thousand; the number of secondary school teachers increased from eight hundred to one thousand. A secondary school teacher was to be a graduate of the University of Asmara. By 1999 31% of children studied in primary schools (32% boys and 29% girls), 16% studied in secondary schools (17% of boys and 15.5% of girls). Three year technical vocational institutions worked and are still working in Asmara and Nakfa, and the capital can also boast medical schools.

Regrettfully, the initial progress in the sphere of education failed to become sustainable. Internal and external instability of the country as well as periods of draught led to social and economic decrease and, hence, the decrease in education. The inflation of 15.1% in 2006 fell to 9.3% in 2007 and then climbed to 11% in 2008. In 2008 only 48% of school-age children had access to primary education, 10.5% could get middle (incomplete secondary) education and 13.6% studied in schools of complete secondary
education course. As few as 4.5% of children aged 4-5 were able to get pre-primary education. The level of education remained low; there was shortage of teaching staff and school books; gender disproportion kept evident.

5. HIGHER EDUCATION

There is a university, a college of commerce, a teacher training institute and several technological and vocational institutes.

The University of Asmara was founded in December 1958 as a missionary institution with a ten years long educational course. The official status was granted to the university in 1964; the first graduation took place in 1969. In 1970 the university was qualified by the Vatican as a Catholic educational institution, where professors were Christian ministers. In 1977 the Asmara University came under the authority of Ethiopian Commission of Higher Education.

There were 60 lecturers and 600 students there in 1981/82. According to the information of 1987, 1600 students graduated in seven faculties, where 57 teachers worked at the time. In 1990 the university was closed on demand of the Ethiopian government and all its teaching staff and movable estate were transferred to Ethiopia.

In 1991 the Eritrean government made a decision to revive the University of Asmara. In 1998 the teaching staff exceeded two hundred people and the number of students reached 1400, which was only 6% of the number of applicants. At present, the Asmara University numbers 3250 students, employs 106 professors, houses a library with 12,000 books donated by various charities, has a new chemical laboratory. There are faculties of humanities (including arts), sciences and commerce. In 1992, the university was granted autonomy and academic independence. In 1996/7 all former courses were reinstated and new ones developed. Isaias Afwerki, the president of the country is the Chancellor of the University.

Eritrean Institute of Science and Technology is located in Mai Hefhi, 20 Km off Asmara. It comprises four colleges: sciences, technology and engineering, education, arts and social sciences. The number of students in 2003-4 reached 5500. The Institute of Science and Technology was founded to decentralize staff and students concentrated in the University of Asmara and spread them to other educational institutions. Similar colleges were opened in other parts of the country.

In 2007 several international organizations took part in computerizing Eritrean schools, colleges and institutes and supplied computers to 40 schools and five educational centres. This project was carried out by the Ministry of education, the University of Asmara and the National Union of Eritrean Youth and Students. The project was also assisted by Norway, especially Norwegian University of Science and Technology.

The capital also has a secondary medical school; technical schools are located in Asmara and Nakfa.

6. RESEARCH CENTRES

The University of Asmara includes several research centres, such as the Institute of Information and Development, Institute of Human Rights, Institute of Education, etc. In the 1990s, the Institute of Information and Development was in the process of merger with the Institute of Studies and Publications, with Eritrean Research and Information centre, with the new unit “Study of Development
Issues” and technological department. Already in the period of the struggle for independence there existed a research department in the structure of the Peoples Front of Liberation of Eritrea which dealt with collecting ethnographic material about the peoples of Eritrea.

7. LIBRARIES
The Public library of Asmara has been functioning since 1955; Ambatkala (a suburb of the capital) hosts the library of the Institute of Management. Higher and secondary vocational institutions have libraries as part of their structure.

REFERENCES
TEACHER’S AND STUDENT’S ROLES IN PROMOTING THE DEVELOPMENT OF STUDENTS’ INDEPENDENT LEARNING SKILLS
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Abstract
The article focuses on the necessity to develop skills of the English language as a foreign language during lifetime. At the same time the topicality of the research was determined by the urgent need to help and guide students in purposeful development of their general independent learning skills in order to ensure their life quality and professional development. The article deals with the changing role of the teacher in the process of the development of students’ English language skills and general independent learning skills.

An action research has been conducted to explore the possibilities of developing upper-secondary school students’ general independent learning skills in the process of learning the English language under the guidance of a teacher whose educational philosophy is based on humanistic pedagogy incorporating principles of social cognitive theory and social constructivism.

Key words: cognitive approach, humanistic pedagogy, independent learning, knowledge construction, upper-secondary school student.

1. INTRODUCTION

Nowadays, when in all spheres of life we experience changes, it is of outmost importance to be ready to face and challenge new situations. It demands readiness to learn and acquire new skills which can be done provided that people are equiped with independent learning skills. Learning occurs throughout our life and although people learn all life, both in formal and informal settings, there are special times when learning is particularly rapid and intense.

Upper-secondary school is a time when students are getting ready for independent learning in their future life. School environment has an impact on both teachers and students, and at the same time they create school environment by their relationships and attitudes towards teaching-learning process. (Bandura 1977). The foundation for lifelong learning is set in childhood and in school that shares philosophy of lifelong learning, which is based on four pillars of education: learning to know, learning to do, learning to live together and learning to be (Delors 1998), thus preparing students for their further professional development that determines life quality.

School environment can provide an opportunity to acquire the eight key competences for lifelong learning: communication in the mother tongue, communication in the foreign languages, mathematical competence and basic competences in science and technology, digital competence, learning to learn, social and civic competences, sense of initiative and entrepreneurship, cultural awareness and expression (Eiropas valodu portfelis, 2006). During the last decade a great attention has been paid to learning foreign languages. In 2001 Council of Europe launched a broad language project - European Language Portfolio which was developed to support the development of learner autonomy, plurilingualism and intercultural awareness and competence (Council of Europe 2011).
In the school environment that supports the development of learning skills, students may develop learning skills and accept responsibility for their own learning by transferring responsibility from teacher to student, by encouraging students to reflect on their learning experiences, by systematically raising students’ awareness of the teaching - learning process, by getting students to recognize their learning style and encouraging them to develop their own learning strategies (Common European Framework, p.149).

2. FOCUS ON LEARNING DURING STUDY PROCESS

First, teachers and students should have a common understanding about what learning actually is. Illeris states that learning is a process that develops person’s skills (Illeris 2007). Keefe and Jenkins claim that learning has taken place when it results in changes in behaviour as a result of the new experience. They point out that learning is an active process that depends on what the student is learning, student’s personality, intellectual development, needs, motivation and environment (Keefe & Jenkins 1997). Petty adds that learning is not memorising, learning is an active process during which the student understands the meaning. Only such information that student has structured and organised is kept in a long-term memory and can be used afterwards in various life situations (Petty 2004). Learning is both a conscious and unconscious process, but in both cases it is an active process. When the learner wants to learn something, consciously or unconsciously an aim is put forward, and afterwards taks and activities are carried out. Students who have not developed learning skills experience difficulties storing knowledge in a long-term memory (Keefe & Jenkins 1997).

Students can develop their independent learning skills in the environment that supports learning and self-development and under the guidance of a teacher who is ready and who can help every individual student to develop independent learning skills. Teachers should be aware of complex psychological factors which are of great importance when learning a foreign language, such as motivation, attitudes, emotional climate of learning situations, nature of linguistic input, ability to learn (Littlewood, 1984). At the same time Littwood points out that we know very little about these factors and teachers must be careful not to draw premature and unrealistic conclusions for teaching (Littlewood 1984, p.97).

Each learner constructs new knowledge based on previous learning experience. When students are aware of how new knowledge is being constructed, they start analysing their learning experiences. Under the guidance of a teacher who takes charge of the development of students’ learning skills, students gradually learn how to take responsibility for their learning and how to develop their learning skills. The aim of the teacher is to share responsibility for learning with each student individually. The more independent students become in their learning process, the more individualised the teaching-learning process becomes. Fisher and Frey describe the process of sharing responsibility from the perspective of the teacher: „I do it”, „We do it”, „You do it together”, „You do it on your own”, in other words - input phase, guided learning, cooperative learning, and independent learning (Fisher & Frey 2008). Learning is a meaningful active process as it has been stated by Zimnaja. The author points out that during teaching-learning process various activities can be carried out and students seem to be active but actually they passively perform activities designed by the teacher. Zimnaja claims that skills can be developed when the learner understands the aim of each activity (Zimnaja 1978, p.145).

Teachers can guide students in their learning process but only students can develop their skills. Littwood W. (1984) believes that teachers should encourage learners to have confidence in their own system of learning, to compensate for their gaps in their second language knowledge by using communication strategies. Learning is an active process and students acquire new experience through active cooperation.
Gergen claims that people understand the meaning when cooperating, i.e., when two or more people coordinate their efforts and actions so that they can understand the meaning and could integrate new knowledge in their previous experience (Gergen 1995).

Learning skills can be acquired in the learning process which takes place in school or/and outside school. The author of this article has done an action research during learning the English language in upper-secondary school. It addressed the situation of very little awareness concerning how to promote the development of students’ independent learning skills within the environment of a regular school routine. Firstly, there was very little information about what upper-secondary school students think about independent learning and what teachers understand by independent learning. Secondly, ways to promote the development of independent learning skills had to be identified and activities that would implement the ideas had to be carried out. The researcher and teacher had to face challenges of new situations. Finally, the research results, which reflected the development of students’ independent learning skills and their English language skills, had to be analysed.

3. TEACHING AS GUIDANCE OF LEARNING

Learning process in upper-secondary is guided by the teacher so that after finishing school students are able to learn independently throughout their lives. Thus, the teacher’s role in the teaching-learning process has changed. According to Applefield, Huber and Moallem, the teacher creates a supportive and positive environment and acts as an adviser in acquiring learning skills (Applefield, Huber & Moallem 2000). Killen describes teaching as a process where the teacher organizes students’ learning experience so that it encourages students to think about what the teaching goals are. The author states that the main aim of the teacher is to help students acquire cognitive skills which are necessary to understand their learning experience and information during the teaching-learning process (Killen 2006). Vargas claims that teaching means creating such conditions that change behaviour of another person (Vargas 2009). Greer states that teaching is a process when teacher carries out pedagogical activities and as a result students can do something that they were not able to do before the teacher interfered (Greer 2002). In the teaching - learning process both aspects are inseperable and learning is the criterion of teaching and the product of effective teaching (Siddiqui 2007). To summarize, teaching means creating such an environment that would encourage students to construct new knowledge. Moreover, when students understand how knowledge is constructed and how cognitive processes take place, they themselves in cooperation with the teacher create learning supportive environment.

During the first stage of the action research a survey was carried out to find out students’ and teachers’ knowledge and attitude towards independent learning 349 students and 52 teachers participated in the preliminary research and 31 students participated in the basic research. Some of the findings related to the teacher’s and student’s roles in teaching-learning process are presented in the article.

1. Teacher has to tell students what to do to reach better results.
Results of the processed data showed statistically significant differences between all three respondent groups ($p=0.003$). The greatest difference can be seen between the respondent group „Student” in the basic research and respondent group „Teacher” ($p=0.000$) and between respondent group „Student” in the preliminary research and respondent group „Teacher” ($p=0.022$). Majority of teachers (82.7%) completely agree with the statement that teacher has to explain students what to do to reach better results and only 1.9% or one respondent partly agrees. It proves that teachers are aware of the necessity to advise students on how to develop independent learning skills. Students’ opinions are slightly different - in the preliminary research 59.4% of respondents and 35.5% students in the basic research completely agree with the statement that teacher has to explain students what to do to reach better results.

Different opinions can be explained by several assumptions. Firstly, students want to be independent and they want to find appropriate learning strategies themselves by discovery method. Secondly, students do not want to listen to teachers because of bad previous experience. Possibly, the differences can reflect teachers’ willingness to lead a teacher-centered study process and students’ want to experience a student-centered study process.

The initial stage of independent learning starts with defining one’s needs, which is followed by setting a goal and choosing appropriate learning strategies and concluded by evaluation of the learning process and results. Teacher’s advice is needed in every stage of independent learning.

When the student has identified his/her needs and set an aim, appropriate learning strategies which also include different and appropriate learning materials have to be chosen. The question is - should the teacher, who is a professional, choose learning materials for the whole group or should the teacher let students themselves select material for learning? During the action research students and teachers expressed their opinion concerning the selection of learning material.

1. Student has to select learning material.

During the development of independent learning skills students develop a skill to choose appropriate learning material. However, this skill is to be developed gradually under the guidance of the teacher.
Research findings reveal teachers’ willingness to share responsibility with students and students’ readiness to take this responsibility.

Research data collected in the first survey conducted during the first stage of the research show that there are not significant differences in teachers’ and students’ opinions. Majority of respondents do not agree that students have to choose learning material. At the same time there are students who are ready to take the responsibility for selecting learning material: in the preliminary research 15.7% of students agree and 6% of students fully agree and in the basic research 3.2% of students fully agree and 16.1% of students agree with the statement. On the whole, an assumption can be made that students trust their teachers in choosing learning material or maybe students do not feel confident about their ability to choose appropriate learning material.
To research students’ ability and willingness to take responsibility for choosing appropriate learning material, during the basic research pedagogical activities were undertaken and students expressed their opinion on the same issue two more times when they were 11th and 12th graders.

During the action research students have become more independent which can be proved by students’ attitude to the selection of learning material. Results of the processed data reveal statistically significant differences between the respondent groups of students when they were 10th graders and when they were 12th graders (p=0.048), as well as between the respondent group of students when they were 11th graders and when they were 12th graders (p=0.026). In the last grade of upper-secondary school (12th grade) students have become more confident about their ability to choose learning material: 6.9% of students fully agree with the statement that students have to choose learning material, 34.5% of students agree and 34.5% of students partly agree. The number of students who fully disagree with the statement has gradually decreased - in the 10th grade 16.1%, in the 11th grade 13.3%, in the 12th grade 6.9%.

Independent learning skills are characterised by students’ ability to choose appropriate tasks suited for their learning styles, goals, previous knowledge and skills. During the action research students expressed their opinion about the statement „Teacher has to tell students which tasks to do“ when they were in Grade 10, Grade 11 and Grade 12.

1. Teacher has to tell students which tasks to do

![Teacher has to tell students which tasks to do](image)

Results of the processed data reveal statistically significant differences between the respondent group of students when they were 10th graders and when they were 11th graders (p=0.006), as well as between the respondent group of students when they were 10th graders and when they were 12th graders (p=0.008). Results show that students of Grade 12 are more willing to take responsibility for their learning as 17.2% of respondents disagree and 31.0% of respondents partly agree with the statement that teacher has to tell students which tasks to do.

Students have different learning styles and teachers have their teaching styles. Although teachers are aware of it and they could try to apply various teaching methods, there are students who do not develop
their skills as they are not sure about their learning style. Teachers should encourage students choose their own learning strategies which can be also called learning methods (Dembo M.H., ....) The author also points out that it is not possible to become a successful learner merely by acquiring new learning skills, there must be also motivation, i.e., beliefs and perceptions, regarding the task.

4. Student himself/herself has to develop learning strategies.

Results of processed data about the development of learning strategies reveal the tendency to take a bigger responsibility in the learning process. Statistically significant differences are observed between respondent groups of students in the basic research and in the preliminary research (p=0.020), and even more significant differences are between the respondent group of students in the preliminary research and the respondent group of teachers (p=0.000), as well as between the respondent group of students in the basic research and the respondent group of teachers (p=0.000). Results show that only 34.6% of teachers agree that students themselves have to develop learning strategies, but 38.7% of students in the preliminary research fully agree and 33.6% of students in the preliminary research agree that students themselves have to develop their learning strategies. Moreover, the number of students who fully agree and agree with the statement that students themselves have to develop their learning strategies, make 41.9% (fully agree) and 41.9% (agree). It means that students are more willing to take responsibility for their learning than teachers are ready to share the responsibility.

In order to start a new learning cycle, evaluation process is to be carried out and students’ self-evaluation skills have to be developed so that they can become autonomous learners in future. Students’ and teachers’ opinions about students’ ability to carry out self-evaluation differ greatly.

5 Student is able to carry out self-evaluation.
Results show that there is a statistically significant difference between the respondent group of students in the preliminary research and the respondent group of teachers (p=0.000) and the respondent group of students in the basic research and the respondent group of teachers (p=0.012). Teachers do not agree with the statement that students are able to carry out self-evaluation because the results show that only 23.1% of teachers think that students are able to carry out self-evaluation. At the same time 17.3% of students in the preliminary research fully agree and 49.4% of students agree with the statement. Also, in the basic research students are much more confident about their ability to evaluate their learning process - 9.7% of students fully agree with the statement and 48.4% agree with the statement.

Results of the research presented in this article prove that teachers have little information about their students’ learning skills as there are statistically significant differences in their opinions about selecting learning materials, choosing tasks, developing learning strategies and carrying out self-evaluation. During the action research the teacher-researcher applied basic ideas of social cognitive theory and social constructivism, thus creating a supportive learning environment which was developed in cooperation with the students. The results of the research showed that students during the action research developed their independent learning skills as they felt more confident about selecting learning material by themselves and choosing appropriate tasks for themselves.

4. CONCLUSIONS

- The main factor that influences the development of independent learning skills is a supportive independent learning environment which is created by the application of student-centered approach taking into consideration the student’s needs and interests that are being researched.
- Development of independent study skills is promoted when students and teachers are aware of the basic principles of knowledge construction so that students can apply appropriate learning strategies.
• Students’ awareness of their abilities and learning styles helps in choosing appropriate learning strategies. When developing independent learning skills, students improve their English language skills, which leads to the development of independent learning skills.

• The role of the teacher is the one of a students’ adviser in exploring their personalities, forming self-efficacy, and developing self-regulation skills. Creation of independent learning supportive environment and developing self-regulation skills is the result of teachers’ and students’ systemic approach in observing regularities of learning cycle.

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TEACHER’S ROLE IN APPLYING ICT IN PRIMARY SCHOOL
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Lithuanian University of Educational Sciences

Abstract
The article discusses the shifting role of a teacher as a result of purposeful use of ICT. The role of the primary school teacher in educational process as well as the results of a qualitative study, which was aimed at finding out pupils’ attitudes towards their learning experience and teacher’s role are discussed. It was found out what was important for pupils while using ICT and what changes in educational process when ICT is used. In addition to that, pupils have acknowledged their attitudes towards the shifting role of a teacher. Pupils who used computers in the third and fourth grades and were close to completing primary school were analysed. Every pupil was presented with a computer, which was used during the educational process in primary school. Pupils used computers individually for various learning purposes during the classes; ICT was used in such conditions in Lithuania for the first time.

Key words: teacher’s role, primary school teacher, information and communication technologies (ICT), primary school, primary school pupils, Lithuania.

INTRODUCTION
Information and communication technologies (ICT) not only changed the world, but also altered the way of learning how to live in it. ICT became the catalysts of different changes in the world, as well as the means to achieve and implement these changes. Rapid formation of information and creative society and modernisation of education have raised a lot of questions about the application of ICT to primary education, effectiveness of traditional and innovative educational methods and their relations in a lesson. It became clear that in primary education ICT must be used not only as a source for information and knowledge, but also as a mean to convey educational content, communicate and cooperate.

The greatest changes appearing because of the use of ICT oblige primary school teacher not only to adapt to the constantly changing environment, but also to keep up with new methods and technologies, as informational literacy, mastery of informational knowledge and skills allow primary school teacher to develop abilities of using ICT in educational process. Therefore, it is important for teachers not only to master ICT, but also to improve cultural, didactic flexibility of ICT use while focusing on a major emphasis in primary education – development of pupils’ thinking. The formation of information and creative society requires new approach to learning when pupils create knowledge, effectively transfer them to others, do not have to memorise or regenerate them mechanically, but apply them to solve problems. A. Hargreaves (2008) claims that new constructivist approach to learning requires a new approach to teaching, which focuses on higher level thinking skills and metacognition. Such thinking based teaching is done through a group teaching strategies, various assessment techniques and ICT.

also examine the problems of ICT use in education. Authors highlight that changing approach to teaching changes the role of the teacher. The teacher has to acknowledge that ICT is becoming a part of every person’s daily life, therefore are important to the teacher and a pupil when teaching and learning. A. Semenov (2006) argues that the fact that ICT is a great aid to many educational activities depends largely on teacher’s creativity, enthusiasm and willingness to learn. In education ICT should be used when trying to enrich educational process with new possibilities, make it more attractive, facilitate teaching and learning, foster positive emotions and motivation of students, broaden the experience of communication and collaboration of all participants of educational process (pupils, teachers, parents and etc.).

The problem of the research is the change of the primary teacher’s role when applying ICT in the process of primary education.

The research aims at evaluating pupils’ approach towards learning and a teacher when ICT is used in everyday learning in the context of Lithuanian primary education.

The research tasks are as follows:
- to discuss the importance of the use of ICT and the trends of the change in teacher’s role;
- to analyse the situation of ICT application in primary education in Lithuania;
- to find out the approach of pupils to the teacher’s role expressed in their texts (letters) when ICT is used in their everyday learning practice.

Research participants. The main characteristics of a research sample are reliability and representativeness.

In order to describe the current situation of ICT application in Lithuania the report of the scientific study “The status of ICT and innovative teaching and learning methods’ application in primary and special education in Lithuania and abroad in 2000-2010”, which was conducted during the EU project “Testing and development of the model of primary school teachers’ and special education teachers’ competences to use ICT and innovative teaching and learning methods” implemented by the Education Development Centre, was used.

As this study was to a large extent descriptive in nature, the principle of random selection of respondents had to be ensured, which allowed representatively assessing the characteristics of the object studied, insured statistical significance and reliability of data. Random cluster sampling method was used for the formation of the sample. The type of selection used was one-stage stratified cluster (nested) sampling. Sampling unit (cluster) was one school. Selection of units was stratified according to the level of urbanisation and the type of school. 1400 primary school teachers from all types of schools and all 10 regions of Lithuania were surveyed, thus the study reflects general situation in Lithuania.

The sample of qualitative research was formed according to qualitative sampling requirements. 72 fourth grade pupils participated in the project, 40 of them were girls (56 %) and 32 were boys (44 %). Purposeful typical cases sampling (Patton, 1990) was chosen to select qualitative research participants. Classes in schools were selected according to teachers’ experience to use ICT in the process of primary education. Extreme sampling (Patton, 1990) was applied for the selection of teachers, which means that teachers who participated in ICT seminars and had a good experience of application of ICT were chosen.

The research methodology is based on the theory of social constructivism, which emphasises on the role of social culture and context in learning process and Vygosty’s concept on the zone of proximal development defining the relationship between actual and potential levels of pupil’s development.
Scientific literature analysis, analytical descriptive and generalization research methods were used in the study. Quantitative research (data of teacher survey) was used in order to describe current situation in Lithuania. Narrative strategy was used for the analysis of qualitative (interpretative) research, that is the interpretation of the change in teacher’s role as a phenomenon according to the fourth grade pupils’ texts (letters) was performed in the study. The research is based on the analysis of texts (letters) written by pupils who were completing primary school. This creative task helped to reveal what could not be done with the help of other research strategies, which is to look at the learning with the use of ICT through the eyes of the main participants of primary education – pupils, and to select those thoughts, which they expressed about their learning experience and attitude towards a teacher’s role. Qualitative research as a systematic research of class (group of pupils) and their teacher’s role in a natural environment was performed in order to understand investigated phenomenon and to give interpretative explanation arising from situation analysis (not as a consequence of individual variables, but as “an outlasted experience”).

THE IMPORTANCE OF ICT AND TRENDS OF CHANGE IN A TEACHER’S ROLE

In order to ensure that the use of ICT makes educational process more effective, they have to be used purposefully. The use of ICT in primary education helps pupils master learning materials better, increases their learning motivation, and develops their cognitive skills. Purposeful use of ICT stimulates collaborative learning – problem solving in groups and preparation of projects. ICT enables the search of new methods and ways of interaction between a teacher and a pupil.

According to S. Wheeler (2000) the use of ICT in primary school changes the role of pupils in giving them more possibilities to choose how to learn by themselves requiring fewer instructions from a teacher. Pupils can learn by themselves when a teacher facilitates and directs rather than leads. It substantially changes the role of a primary school teacher from the source of knowledge to a teacher who indicates the direction where to go in order to achieve results. The use of ICT in educational process requires minimal guidance from a teacher and increases the possibilities of independent learning. However, the use of ICT not only helps learning, but also makes it enjoyable and increases learning motivation.

The use of new technologies, including ICT in primary education does not mean that a teacher becomes no longer needed and educational process can take place without one. But new technologies change the attitude to the role of a teacher. After being only the instructors of education teachers become its constructors, facilitators and creators of learning environments. Traditional roles of teachers and those, which are gained when using ICT, are presented in the Table 1 (Cohen and others, 2012).

<table>
<thead>
<tr>
<th>Traditional roles of teachers</th>
<th>New roles of teachers</th>
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<tbody>
<tr>
<td>Didactic teaching</td>
<td>Active teaching</td>
</tr>
<tr>
<td>Teacher as a learning leader</td>
<td>Teacher as an enabler of learning structures</td>
</tr>
<tr>
<td>Teacher as a supplier of knowledge and information</td>
<td>Teacher as a developer of learning skills</td>
</tr>
</tbody>
</table>
Table 1. Traditional and new roles of teachers (according to L. Cohen and others, 2012)

<table>
<thead>
<tr>
<th>Traditional Role</th>
<th>New Role</th>
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<tbody>
<tr>
<td>Teacher as an authority</td>
<td>Teacher as a learning consultant and facilitator</td>
</tr>
<tr>
<td>Teacher as a task setter for individual learning</td>
<td>Teacher as a manager of collaborative learning</td>
</tr>
<tr>
<td>Teacher prescribing what, when and how pupils will be taught</td>
<td>Teacher responding to pupils’ cognitive needs and development</td>
</tr>
<tr>
<td>Teacher’s control of learning – its timing, pacing and content</td>
<td>Teacher standing back to let learning happen and letting children to solve problems</td>
</tr>
<tr>
<td>Teacher requiring low order retention and recall</td>
<td>Teacher creating conditions for the development of thinking skills</td>
</tr>
<tr>
<td>Teacher using ICT to teach</td>
<td>Teacher using ICT to promote interaction</td>
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<tr>
<td>Teacher using ICT as a source of enquiry</td>
<td>Teacher using ICT to support creativity</td>
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According to M. Leask (2012), the emergence and use of ICT in educational process brings a number of important changes, such as:

- a change in teachers’ relationship with pupils;
- a change of teachers’ role to facilitators and managers of learning;
- a change in the content and scope of learning;
- a changing locus of control from teacher to learner.

Even though the teacher’s role changes traditional teacher’s management skills are still very important (especially those related to lesson planning, preparation for lessons and provision of reflection). The use of ICT in the process of primary education requires planning lessons in such a way that pupils’ work would be concentrated and consistent, which improves their learning achievements.

Primary school teachers must become facilitators that help pupils find out and decide, which knowledge and new sources are reliable and of high quality. Open mind, criticism and independent professionalism of teachers are needed in order for teachers to become active associates, partners, and providers of learning support.

THE SITUATION OF ICT APPLICATION IN PRIMARY EDUCATION IN LITHUANIA

During the project “Testing and development of the model of primary school teachers’ and special education teachers’ competences to use ICT and innovative teaching and learning methods” implemented by the Education Development Centre, a scientific study “The status of ICT and innovative teaching and learning methods’ application in primary and special education in Lithuania and abroad in 2000-2010” was conducted. During this study it was examined how Lithuanian primary school teachers use computers for the purposes of primary education (Fig. 1).
Teachers’ responses about the frequency of the use of computers directly during lessons show that in Lithuania teachers still lack experience in this area and use computers quite rarely during lessons. Even 19% of teachers do not use computers during lessons. Therefore it is likely that primary school pupils acquire their computer skills not at school and use computers mainly for playing video games. The research was also aimed at finding out for what purposes primary school teachers use ICT in educational process (Fig. 2).

Computer is more often used for the variation of teaching process and to increase pupils’ learning motivation than for the improvement of learning individualization, development of skills of practical application of knowledge and connection of topics to everyday life (daily learning context, which is important for pupils). Two main directions of innovative methods can be distinguished in primary education: first is directed to educational methods that correspond individualised education and other personal needs of a pupil, while another is directed to a more effective whole class teaching.

It is being discussed in Lithuanian schools how to improve the experience of the use of computers. Even though computer classrooms and libraries at schools are used for primary school pupils’ teaching, often two pupils are using one computer and only rarely one pupil can use a computer alone. It is clear that the best solution for individualised education would be for every primary school pupil to have his/her own adapted equipment in the classroom, which could be used whenever needed.
The analysis of research data shows that the barriers of ICT use in educational process to a large extent are human factors. The change of primary class teachers’ attitude and vision should be directed to a new approach what in informational and creative society means to teach and learn.

Becta’s (former British Educational Communications and Technology Agency) conducted studies (Somekh, Haldane, 2007) show that among the three major barriers of ICT application in educational process teachers indicate not only a shortage of time, but also insufficient knowledge of ICT application in educational process and the lack of information about existing software. Lithuanian teachers indicated these barriers as well.

Figure 2. Teachers’ responses about the purposes of ICT application in educational process

The analysis of research data shows that the barriers of ICT use in educational process to a large extent are human factors. The change of primary class teachers’ attitude and vision should be directed to a new approach what in informational and creative society means to teach and learn.

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QUALITATIVE RESEARCH AND ITS RESULTS

In Lithuania the experience of computer application when pupils can use it whenever needed is very limited. A possibility to test computers when using them in the process of primary education in Lithuanian schools appeared after the Education Development Centre signed an agreement with the company “Intel”. The first class, where computers “Classmate PC” were installed, was Vilnius “Vyturys” primary school’s third grade (24 pupils) after their school won the competition held in autumn of 2010. Later according to the technical conditions and teachers’ computer literacy skills the Education Development Centre selected two more schools for which “Intel” computers were bought. This way the opportunity to test computers for the improvement of educational process was given to teachers of three Lithuanian schools (each class comprised of 24 pupils): Vilnius “Vyturys” primary school’s teacher Neringa Vaškevičiūtė, Alytus “Šaltiniai” lower secondary school’s teacher Ramunė Toleikienė and Šiauliai “Jovaras” pro-gymnasium’s teacher Erika Poškevičienė. Teachers had a possibility to consult with the company Intel, which installed computers in the classrooms, about emerging technical problems. In addition to that, they could consult with the specialists of the Education Development Centre about purposeful application of these technologies to educational process. School teams of three volunteers working at school were formed for this process. Such school team was comprised of one primary school teacher, working with third grade pupils, one teacher responsible for IT at school, one special education teacher and/or other teacher working with primary school pupils, foreign languages, music, art and technologies, religion or ethics teacher and one person responsible for communication with project’s partners.

Schools participating in this project had to have the same technical conditions: internet in the classroom (speed not less than 1 MB/s), wireless internet connection for all 24 “Intel” computers, teacher’s computer (processor 1.3 GHz) in the classroom and a possibility to safely charge all 24 computers at school. In addition to that, to ensure safe use of computers schools had to follow the requirements of Lithuanian Hygiene Norm HN 20:2010 “Secondary school. General health care requirements”, which was approved by the Minister of Health in 2010 by the order No. V-60.

A two-year project not only allowed testing technical possibilities of computers, but also let to identify the problems of ICT application for primary education and check for their solutions. The experience of computers’ application in the process of primary education in Lithuania was enriched. In “Vyturys” primary school and “Šaltiniai” lower secondary school computers were used very successfully as interactive whiteboard was connected to the system with computers of the teacher and pupils. The application of interactive whiteboard allowed making educational process more effective. Connection of teacher and pupils’ computers with interactive whiteboard enabled maximising technical capabilities of computers’ application in educational process. Wide possibilities of the use of internet and other cooperation allowed involving parents and other participants into learning interactions, which changed qualitative characteristics of the process of primary education.

The question is how the teacher’s role is described, revealed and evaluated by the pupils who had a possibility to learn in the classrooms with “Classmate PC” computers. It can be disclosed while analysing pupils’ creative works – their written texts (letters). Letters were written at the end of the fourth grade. They were addressed to future pupils who would start a new school year with their teacher and possess the right to use computers from the first grade. L. Cohen’s teacher’s role descriptions (Table 1) were used when analysing and distinguishing criteria of the new teacher’s roles with ICT.

Pupils’ responses about the teacher’s role (according to P. Cohen and others) and the number of pupils providing such responses are the following:
1. **Active learning** (independent search of information, check of its reliability and change):
   - “We learned to search for information independently.” (2 pupils)
   - “Sometimes when we have to find out or check something quickly we take computers and search for information online.” (4 pupils)
   - “We searched for information online related to the subject that we were learning.” (6 pupils)
   - “We used computers when we were searching for information about famous people.” (2 pupils)
   - “During lessons we were searching for information about composers and Lithuanian heroes, hanging bridges and highest buildings, animal species and anything else that corresponded the subject. For example, I learned that there are a lot of species of spiders; a year has 365 days; that some animals are mammals like people.” (1 pupil)

2. **Teacher as an enabler of learning structures** (result is oriented towards pupils’ competence, pupils’ attitudes and provisions are exposed):
   - “Did you know that you would get a small, but valuable computer for learning? When I found out that I was very glad.” (1 pupil)
   - “I like little computers a lot. I hope you will like them too and you will use them only for learning, not for games, because they do not teach anything and do not help, but just waste your time.” (1 pupil)
   - “I thought they were harmful, but it seems I was wrong. If you use them smartly, do not play games, computers can give you knowledge.” (1 pupil)
   - “What should make you very happy is that you will get a computer! You will be able to do a lot of things with it! Many wonderful moments and discoveries are waiting for you.” (1 pupil)
   - “We did a lot of interesting things with our little computers.” (1 pupil)
   - “Computers are not game machines, which cost six litas, computer is a thing that is intended for learning.” (1 pupil)
   - “I hope your thoughts will be focused on learning, not on any computer games and other things that interrupt learning.” (1 pupil)
   - “Computers are important things for learning.” (2 pupils)

3. **Teacher as a developer of learning skills** (practice of skills’ development in various teaching areas revealed):
   - “We played science-related games, where we could do different tasks and actions.” (6 pupils)
   - “We found a lot of interesting things, useful knowledge and fun games.” (1 pupil)
   - “We counted money in “Rainforest Maths”. (2 pupils)
   - “When we got computers in the third grade it got pretty amazing and sometimes we played games related to learning.” (2 pupils)
   - “We played games that teach something. For example, in “Mokinukai” we played a game “Stone age”. This game shows what happened in the past. A game “Electricity” teaches how electricity is produced and how it travels through wires.” (1 pupil)
   - “During Lithuanian language lessons you can visit “Mokinukai” website, where you can play some game or watch a video, which help you learn.” (1 pupil)
   - “We did experiments during lessons.” (2 pupils)

4. **Teacher as a learning consultant and facilitator** (teacher’s role as well as attitudes towards him/her are reflected):
   - “Our teacher is very good. She looked at us as her own children and did everything for us to get
along.” (1 pupil)

- “If you do not know anything, you can ask the teacher. She will definitely advise you where to look for answers.” (1 pupil)
- “The teacher offers to help others.” (1 pupil)
- “We looked at a lot of different websites that the teacher showed us and that we showed her.” (1 pupil)
- “First graders, be happy with your future class and the teacher. She is the best and does not say everything, because you will have to find out everything by yourselves.” (2 pupils)
- “A wonderful and inventive teacher is waiting for you at school.” (1 pupil)
- “But we could not do anything. Our teacher always sees what we are doing in her computer.” (1 pupil)
- “The teacher will be very good. Sometimes she gets angry, but only for a reason. But our teacher is indulgent and wishes us the best.” (1 pupil)
- “Maybe something will look scary for you, but our teachers are the best and the nicest. I was also afraid to start school, but when I met our teacher, I completely calmed down.” (1 pupil)
- “When I started school I felt very timid, but our teacher immediately proved to be very pleasant and nice. After some time I was confident to ask her anything, what was interesting or asked for help when I needed something.” (1 pupil)

5. **Teacher as a manager of collaborative learning** (reflected in cooperation and experience of teaching others):

- “Of course, pupils from other classes come to the computers, if they need anything and we help them.” (1 pupil)
- “We taught first grade pupils to work with computers. It was a great success!” (8 pupils)
- “We wrote letters to pupils who had computers in the classroom just like us.” (4 pupils)
- “We did a project where everyone had what to do.” (5 pupils)
- “We taught our parents to work with computers at school.” (4 pupils)
- “I helped a new pupil.” (2 pupils)

6. **Teacher responding to pupils’ cognitive needs and development** (pupils’ experience when developing their thinking through different needs was revealed):

- “We do not work with computers every time, everyday and definitely not every lesson. We use computers when we need to do something what can be done easier with the use of computer. We play games only related to learning, which develop imagination, mind, memory and fantasy.” (1 pupil)
- “According to the article on production of ecologic paper we created different tasks and gave them for other classmates to solve.” (3 pupils)
- “You can choose simple or difficult things.” (2 pupils)

7. **Teacher creating conditions for the development of thinking skills**:

- “It got completely amazing when we got computers in the third grade, because sometimes we played games, which helped us learn and had several levels.” (1 pupil)
- “We played games with different levels of difficulty in the planet of Liema.” (4 pupils)
- “We created crossword puzzles with special program and solved them with our families.” (2 pupils)
8. **Teacher standing back to let learning happen and letting children solve problems** (experience of solving problems according to pupils):
   - “In the project we had to plan, count by ourselves, everyone was responsible for something and had to do something together with others.” (2 pupils)
   - “We planned an excursion by ourselves, we counted time, mileage, expenses, and then we sold newspapers to earn money for it.” (2 pupils)
   - “We could correct our essays using special program, therefore anyone who needed it could use this possibility.” (4 pupils)
   - “We looked up dictionaries if we did not know how to write something correctly.” (2 pupils)
   - “We learned to use a program, which helped to create different origami’s.” (4 pupils)
   - “We did experiments.” (5 pupils)
   - “I learned how to build a house.” (1 pupil)
   - “We found out a lot of new websites and could play music, Lithuanian and English language, maths games at home.” (5 pupils)
   - “When you start learning English language in the second grade, you will be able to play English language games and it will be easier to learn it.” (1 pupil)
   - “We played a lot of fun games.” (3 pupils)
   - “We watched a movie about the pollution of environment and we all decided to clean up the park.” (4 pupils)

9. **Teacher using ICT to promote interaction** (reflects pupils’ experience, views and attitudes):
   - “All of the experience was very useful for us.” (6 pupils)
   - “Everything what we tried gave us joy, we helped each other and competed with each other.” (2 pupils)
   - “We wrote letters to the teacher, corresponded.” (8 pupils)
   - “When my friend got sick with flue I wrote down everything for him.” (1 pupil)
   - “I used to send completed tasks for the teacher and parents.” (5 pupils)
   - “I admit that I envy you a little bit, because I will no longer have this joy. But I am happy for you. You will experience a lot of adventures and get a lot of knowledge. I think that these years with computers will be the time of discoveries. And remember that computer is not only intended for games. It is necessary in order for you to grow a smart, clever person. In addition to that, you need a computer to become a modern and bright child.” (1 pupil)
   - “Sometimes we took tests that were created by the teacher.” (4 pupils)
   - “We took various tests – maths, Lithuanian language and others. I like tests so much! The hardest test was when we had to write what would be easier to tame – a dog, a cat or a horse.” (1 pupil)
   - “We took tests to check what we learned.” (2 pupils)
   - “We also did a lot of things in the computer that were created by our teacher, for example, tests. Taking tests in the computer is much more fun than solving them on a piece of paper.” (1 pupil)
   - “Did you see the computers? We did a lot of things with them: took tests of maths (counting), Lithuanian language (writing and reading), English language and a lot of others.” (9 pupils)

10. **Teacher using ICT to support creativity** (experienced creative activity):
    - “We found a program on the computer where we could draw.” (2 pupils)
    - “We drew using the program ArtRage.” (2 pupils)
    - “We listened to the music and created it, then danced according to that music.” (4 pupils)
“We used to create music by ourselves and listen to it.” (9 pupils)
“We created texts and wrote them down, then we created our book, illustrated and printed it.” (6 pupils)
“We used computers to create stories from pictures.” (4 pupils)
“We used computers to create newspaper of our class, printed it and sold at school during a school fair.” (5 pupils)

The analysis of pupils’ creative works – their letters was performed in the research. Pupils’ educational experience, which is reflected in their letters, clearly demonstrates the role of their teachers. Their educational experience, grouped according to different roles of the teacher, shows valuable educational process. Pupils not only highly evaluate educational process, but also compare it to previous experiences when computers were not used in the classroom. In many cases the transition to a specific and independent activities of pupils, which are provoked by the role of a teacher, is made. Pupils pay a lot of attention to a positive evaluation of the teacher as a personality, notice his/her human qualities. The change of teachers’ attitude and vision is directed to a new approach what in the information and creative society means to teach and learn.

The use of ICT in the process of primary education gave more freedom and responsibility to pupils, strengthened their learning experience helping pupils think, communicate and act creatively, enriched their social experience and strengthened their positive approach to learning.

CONCLUSIONS
Rapid changes in the area of technologies, increasing influence of ICT in all fields of life enhances the importance of ICT application in educational process.

The application of ICT requires the change of teacher’s role in educational process. A teacher must be open to innovations, seek to inspire, support and facilitate, create a learning friendly environment. A teacher must become an assistant, partner, assessor combining traditional role of an expert and a role of facilitator in educational process.

Effective use of ICT in primary classrooms requires the change of schools’ cultural environment. ICT is a catalyst the use of which shows new ways of thinking about teaching and learning and on-going changes in the primary schools. However, it is important to maintain the balance between traditional and innovative teaching and learning methods used in primary education. The application of ICT in primary education must be meaningful, purposeful and contributory in achieving set educational goals.

Not all Lithuanian primary class teachers have the competence of using ICT in educational process. In order to facilitate the modernization of Lithuanian primary education the problems of governmental and institutional level, such as the shortage of equipment and infrastructure and professional development of teachers’ abilities to apply ICT in educational process, must be solved.

The analysis of qualitative data shows that pupils welcome a teacher who is applying ICT, sees him/her as a mediator and facilitator. Purposeful use of ICT for teaching and learning raises pupils’ learning motivation and has a positive effect on their attitude towards learning. Pupils realize and positively evaluate the change of the scale of learning content. Pupils perceive and indicate declining control of a teacher and their increasing responsibility in learning. Opportunities of exclusive use of ICT in the classroom and educational innovations enhance the sense of pride of primary school pupils in their class and strengthen their positive attitude towards school.
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TRAPPED BETWEEN THE RESEARCH CULTURE AND THE CONTEXT CULTURE:
A CHALLENGE TO RESEARCH STUDENTS OF EDUCATIONAL TECHNOLOGIES

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Abstract

Considering the importance of fostering a culture of critical reflection and political literacy amongst research students, this article is an attempt to critically and politically reflect on my doctoral academic experience, during which I naturalistically researched educational technologies in the Saudi Arabian context. During the course of this research, I noticed a distance between the academic culture of naturalistic research and the societal culture of the setting being studied, with the research student accordingly trapped in-between. This paper therefore seeks to help us understand some of the key challenges caused by such a distance between these two cultures.

Key words: culture, society, research, context, student, education, technology, criticism, reflection, politics, literacy, doctorate, Saudi, Arabia.

In Al Lily (2008), I argue theoretically for the value of enhancing a sense of critical reflection and political literacy among researchers and, indeed, research students. This paper takes this argument further, putting this theory into practice, with me critically and politically meditating upon my doctoral academic experience at the University of Oxford, during which I was enquiring into educational technologies in Saudi Arabia. In terms of the political aspect, this article is intended to act as a ‘wild’ contribution towards the politicisation of research generally and of doctoral academic experience in particular. The subject matter of this publication could therefore be located between the poles of methodology and politics.

It is easy to fall into the trap of assuming that one should, as is widely believed in Saudi Arabia, follow those who s/he thinks are more knowledgeable and advanced than himself or herself. There are various instances in the academic world that underpin the core idea of this assumption. For instance, because some social scientists have come to see science as more advanced and respected than social science, they have therefore started to follow the parameters of science, for example adopting the scientific quality concepts of internal and external validity, reliability and generalisation (see Hammersley, 1992; Avis, 1995; Hoepfl, 1997; Fossey et al., 2002). A similar instance is that, when it comes to ethical considerations, the scientific discipline of medicine is advanced, and therefore the authorities of social science have begun to import some ethical parameters from the field of medicine to their own field, therefore eventually imposing them on their research students.

As a consequence, the challenge now has become that social scientific research, as a combination of scientific and social aspects, has drawn increasingly closer to its scientific aspects and pushed further away from its social aspects. This implies that the scientific culture of academic research has become increasingly incompatible with the societal culture of the context under research, resulting in a ‘clash’ between ‘the culture of the setting and the culture of research’ (Holliday, 2005: 10, original emphasis).
The academic culture of research is, at least to some extent, institutionalised, standardised and structured through the regulations of higher education institutions, with less attention paid to the political dynamics and complexity of the context configuration. The research student, therefore, is in a situation wherein s/he has to follow the regulations of the research culture in order to gain the degree, but these regulations might not actually be applicable to the societal arrangement of the environment s/he encounters in practice. A relevant example from my own doctoral experience is my struggle to express in writing to the Central University Research Ethics Committee of the University of Oxford (a committee responsible for granting research students ethical approval) how I was going to act ethically during the fieldwork in Saudi Arabia. This struggle was caused by the fact that none of the Committee members was apparently familiar with the norms of Saudi society. Because of this unfamiliarity, I came to realise that it was not useful and even justifiable for me, for my research and for the target audience that these committee members were the ones who were to assess and judge the application I had submitted for gaining ethical approval. This realisation resulted in deep disappointment on my part as a research student.

Two lessons could be learnt here. One is that a psychological challenge that the research student might face during the course of doctoral research is to reconcile the societal culture of the setting with the academic culture of research, and/or vice versa. This reconciliation could be achieved through various tactics. For example, the research student might lie to the ethics committee, giving them many ethical yet unpractical promises s/he knew s/he would break in practice, but that s/he thought of as the only possible political way of getting ethical approval out of the committee, getting on with his/her doctorate and coping with the committee members’ ignorance of the setting. This instance, with which my peers were familiar but never admitted, refers to the political aspect of doing a doctorate and illustrates how the research student could be politically literate. Another supporting example concerning the political aspect of doing a doctorate is that some students avoided writing in their thesis about the mistakes they made during the course of their research, fearing that the examiners might fail them because of these mistakes. Although such students were, in theory, supposed to be explicit about their mistakes and to show how they have learnt from them (see Harford, 2012), they felt their examiners, however, might not appreciate such explicitness and honesty. Such explicitness and honesty might be perceived by the students themselves, their peers, their supervisors and even their examiners as a sign of political naivety.

Lesson 2 is that some academics could be criticised for authorising themselves to assess even what lies outside their own expertise. An example from my doctoral experience is, as already mentioned, that the members of the ethics committee assessed the application I had submitted to them for ethical approval despite the fact that none of them had actually been to Saudi Arabia or even apparently had sufficient knowledge about its culture. Another general yet still relevant example is that, in peer-reviewed journals, articles could be reviewed by academics not necessarily fully familiar with the topic/methodology of the articles under review (see Mumford, Times Higher Education, 13 September 2012). In the same vein, in Saudi universities some faculty members agree to (or are even keen to) teach extra course units with which they are not necessarily familiar, but the motivation behind this is to gain the financial allocations assigned to extra teaching hours.

An essential question that should be addressed is whether the academic culture of research should be reformed to fit within the societal culture of the context, or the opposite (see Holliday, 2005). It seems in practice that, if the research student decides to fit the communal culture of context within the scholarly culture of research, this decision might entail many ethical challenges, for example bringing possible risks to the social configuration of the setting and its people. If, however, the research student chooses to fit the university culture of research within the societal culture of the setting, this then might upset the ethics committee and eventually the examiners. Because of this concern, the research student might thus claim in the thesis and viva that s/he has managed to reconcile the context culture with the research
culture, although s/he actually did not or indeed could not. Such ‘trickery’ therefore suggests why it is that some students see the act of doing doctoral research as merely a ‘job’ that needs to be carried out tactically and politically in order to gain the degree anyway (see Selwyn, 2011a; 2011b). Such behaviour, in general, seems to take place normally when practice (here, research) becomes institutionalised and standardised through regulations. The use of such a trick is redolent of how doing a doctorate could be conceptualised by some students as a political act whereby they seek to shape what they encounter during the course of their doctoral programme for their own benefit, i.e. getting the certificate.

So, the research student might find himself or herself obligated to contend with two incompatible cultures: the academic culture of research and the societal culture of context. S/he, moreover, might feel that s/he cannot destabilise either of these cultures, as each culture has deep roots, being historically stable and politically protected. On the one hand, the culture of the higher education system as a global concept is well established and politically protected, being ‘one of the most stable institutions in our civilization, surviving for a millennium through wars and plagues and technological change with its values and roles largely intact’ (Duderstadt et al., 2002: 1). Yet, on the other hand, the culture of the setting, here the culture of Saudi Arabia, is also politically protected, not only from above by the social authorities but also from below by most citizens – and moreover from outside by international Arab and Muslim communities (see Pharaon, 2004; Al Qathami, 2005; Al-Saggaf, 2012; Al Lily, 2012). The research student might feel that s/he is in a frustrating situation where s/he cannot proceed with his/her doctoral studies unless s/he breaks either the academic parameters of research or the societal values of the context. Yet this academically or socially illegitimate behaviour might result in sanctions, with him/her being punished either by the academic authorities (through, for example, not passing the viva/defence) or by the social authorities (by, for instance, arresting him/her for breaking certain social norms). This suggests that the academically or socially illegitimate behaviour of the research student constitutes a political challenge, and one way through which the academic or societal authorities deal with it is to oppress it through sanctions. This could be seen to underpin the belief that the doctoral experience actually takes place as a negotiation between various political actors, including the research student, the academic authorities of research and the societal authorities of the context. This is why one might argue that the doctoral experience is essentially political and politicised and thus should be analysed, interpreted and discussed from a politically informed standpoint. Doctoral students, who are expected to have a high level of intelligence, should, or at least are hoped to, be able to figure out ‘the game of higher education’ (Selwyn, 2007: 90).

Indeed, although the divergence between the scholastic culture of research and the communal culture of the context could cause disappointment for the research student, it could also enhance his/her creative ability, encouraging them to find roundabout ways of overcoming this divergence. The following shows a relevant instance from my own doctoral experience. On the one hand, the fact that I was legally forbidden from interviewing women due to the carefully made gender separation made me regretfully think that I had to change the topic of my thesis, which required the incorporation of women’s views. Yet, on the other hand, after much thought about the challenge, I came up with the roundabout idea of interviewing women through postal and email correspondence, thereby avoiding breaking the pattern of gender separation but still being able to access women’s opinions. To cite another example, subjecting Saudi society (including its male and female populations) to naturalistic exploration proved problematic because the necessary accessibility was constrained by the firmly applied custom of gender separation. Alternatively, therefore, I drew on the help of female relatives who acted as ‘data collectors’ for the study, thereby helping me work around this societal constraint.
In the case of any conflict between the academic culture of research and the societal culture of context, the attempts of the research student to sustain the norms of the academic culture might not only result in breaking the societal patterns of the setting but expose the participant to risks or at least make him/her feel uncomfortable and/or concerned that their participation might be risky. For example, the academic practice of asking the participant to sign his/her name on the participant information sheet discouraged and sometimes prevented some of my potential informants from participation given that ‘the Arab neither reveals nor signs his name’ (in the words of some participants in my research). In this respect, Yin (2009) discourages researchers from asking the participant to do things s/he is not comfortable with. Considering this recommendation by Yin, I therefore allowed my interviewees not to reveal their name or to sign the consent sheet. Instead, they were given the option to either use a nickname or just to write the following sentence: ‘I have read the information provided in the invitation’. Such alternatives, I found, served the purpose.

Another general area of contradiction between the scholarly culture of research and the communal culture of the milieu under research is that the Saudi female population is private and sheltered, and hence it is not to be exposed through academic investigations. The privacy of this population covers five components: the female place, name, voice, face and telephone number. By interviewing women through emailing and writing back and forth, I managed to protect the female name, voice, face and telephone number, although researching the female place has necessarily meant exposing it through academic investigations. I must admit that I do not know whether this exploration of the female place through academic investigations is, in academic terms, ethically acceptable. This exposition, however, one might argue, has to be done anyway if interventions by the international community are to be made to ensure that Saudi women are not oppressed by societal and cultural norms.

An additional aspect of the inconsistency between the academic culture of naturalistic research and the societal culture of the Saudi context is that the critical nature of naturalistic enquiry proved to be in conflict with the sensitivity of Saudi society towards research critically examining its milieu. By way of illustration, during the course of my research I received an anonymous email warning me not to pursue the study given its critical nature, while a female academic-manager warned me that, in conducting such a study, I was ‘trying to climb a difficult mountain.’ In a talk I gave one day about the Saudi higher education system, I stated jokingly that, ‘my ultimate aim in my life is to problematise Saudi educational technologies, and then just die.’ A member of the audience, however, commented: ‘I hope you do not die just because of that.’ This could be taken as suggesting that the course of politicising, unsettling and calling into question the Saudi societal and political order is a necessarily risky one for qualitatively oriented critical researchers.

The thrust of the argument has been to single out some aspects of the distance between the academic culture of research and the societal culture of the context, showing how the research student is trapped in-between. The paper, more essentially, has attempted to develop a basic understanding of how doctoral academic experience could be seen by the research student as a political act, with him/her attempting, whether spontaneously or premeditatedly, covertly or overtly, to shape the research culture and/or the context culture so as to ensure that s/he can proceed with his/her doctoral programme anyway and eventually gain a doctoral degree. Bearing this in mind, there is therefore a need to promote analysis of research in general and of doctoral academic experience specifically that puts the concept of the political act at the centre of its concerns. Research students, like other human beings, are, as hinted by Dubos (1970), better depicted as essentially political figures in the sense that they, whether impulsively or with intent, shape what they experience to their own advantage. To sum up, it is hoped that the international academic community of educational technologies will keep a sceptical eye on the political and thus often
silent aspects of research practices, and always be sure to view doctoral academic experience through a political lens.

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CAREER OPPORTUNITIES OF LOCAL GRADUATES IN THE MALAYSIAN
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Abstract

The involvement of local graduates in the agriculture sector and in farming activities of the country is most crucial to boost the position of this sector as it is now ranked as the second largest contributor to the Gross Domestic Product (GDP), after gas and petroleum. A study was initiated to gauge the current status of career opportunities and job vacancies available in the plantation and commercial agricultural sector while at the same time obtaining views from undergraduates of local universities of their expectation which can motivate them to venture into the agriculture sector upon graduation. This study was conducted on 20 leading plantations and commercial agricultural growers in Malaysia. The study involved conducting interviews with human resource managers through a survey questionnaire basically to identify issues and problems faced by the industry with regard job applicants from graduates of local institutions of higher learning and the vacancies made available by this particular sector on the job market. From the analyses made the study revealed that there exist a steady supply of vacancies but limited in number as positions in the managerial and professional field are far in between unlike the menial jobs commonly associated with the plantation industry. From the students perspective the acceptance level in the agricultural industry are not different from that in the manufacturing industries as graduates would prefer to seek jobs with the government or government linked companies. The findings from this study should be a basis for the policy makers especially MOHE to formulate a relevant recommendations in an effort to encourage more graduates to involve in the agriculture sector. The results of the study should assist the private sector to relook at their policies and initiate new guidelines on attracting more graduates into their companies and thereby indirectly help the country to expand its agriculture base and move towards achieving the target of making the agriculture sector the third engine of growth in the economy of the country.

Key words: plantation industry; commercial growers; private sector; third engine of growth

1. INTRODUCTION

Graduates are a valuable human asset as they are an important source of trained labour who are the heirs of the present generation who will inherit to continue the national economic development of a country. In the past energy resources has been the pillar of growth for Malaysia at the expense of agriculture which has backslided to become the third engine of growth. The workforce must now be geared towards producing skilled manpower for the agriculture industry to correct the imbalance. In this direction the government has taken steps to give greater prominence to produce larger number of agriculture graduates to meet the demand of the expected increase in the workforce in the plantation industry and commercial agriculture. Career opportunities for graduates are not hard to come by as the graduates can
obtain jobs as employees in the private sector or work on their own as modern-day farmers or entrepreneurs

Agriculture encompasses a broad field which include livestock, crop production, aquaculture and various downstream industries. Commercial agriculture refers to agricultural activities encompassing private sector plantations involving rubber and oil palm cultivation, smallholder farms like cocoa, pepper and big commercial growers of fruits and vegetable crops. The plantation industry particularly that of rubber and oil palm was the mainstay of the economy since 150 years ago when foreign capital investment was brought in by the British colonial masters to meet the world demand for natural rubber and palm oil. Soon after the other commodities followed like cocoa, pineapple, tea and pepper as world demand for them grow. Foreign capital investment flowed in and commercial giants like Sime Darby, Socfin, Guthrie, Golden Hope and Cameronian were already well established and synonymous with the country’s agricultural landscape. Needless to say, these companies and some other big players in the plantation industry provide employment opportunities for our agriculture graduates. The Incorporate Society of Planters asserts that many professional career opportunities in commercial agriculture and smallholder farms are offered by several private plantations with various incentives and benefits which may not be offered in other economic sectors, like manufacturing, etc. Despite the generous schemes on offer, most of the commercial farms are still experiencing a shortage of skilled labour to take up managerial and professional positions in their companies.

The graduates, particularly those from the agriculture background, who have decided to venture into commercial farming either as employees or as budding agricultural entrepreneurs should be commended for making the bold decision. They could have well chosen to opt for other more popular and cushy jobs like their peers who are equipped with Diplomas and Degrees considered a ticket towards a professional career. These set of graduates are now ready to face the real challenges on the field and are prepared to work on the farm or plantations after acquiring relevant knowledge and skills for they are more confident as they can now adopt modern farming techniques to achieve their desired goals. What is more important is for them to dismiss the often misconceived perception among family and community members that the agriculture sector does not offer a professional career that guarantees their future.

A study is urgently needed to obtain information from the industry in the plantation sector and commercial growers the actual picture on the career opportunities available on the job market as well as getting their point of view regarding the competency of our local graduates. The other aspect of the study should also look into ascertaining the perception amongst the local undergraduates as to why opportunities available in this sector are not that popular and what really do they look for as a professional agriculturists which this sector should offer them upon graduation.

The other objectives of the same study should include the job status and positions offered by the sector, the steps taken by the industry to ensure vacancies are filled and that there are no occurrence of dropouts and the industry’s perception of the courses offered in tertiary education locally to suit their needs.

2. LITERATURE REVIEW

The government is trying its best to attract the younger generation to engage in several agricultural activities and programmes it has embarked on by specifically training youths and particularly encouraging students to take up agriculture courses offered by the local institutions of higher learning. This is to address the present labour shortage in the plantation and agriculture sector as well as turning some of them into agricultural entrepreneurs. This approach is similar to those practiced by many
developed countries where agriculture has become a choice for their young generation when during their secondary education the students were sufficiently exposed to programme of studies in agriculture and that was followed through to the university level. Results from a few studies have shown that a majority of the students had a mind positive perception of enrolling in an agricultural education course (Scott and Larvergne, 2004; Yahya and Mahadhir, 2010; Rohana, 1996). In Malaysia, currently there are a number of successful young entrepreneur in the agriculture industry which can attest to the fact that agriculture is a profitable business although the percentage involved in this area is too small. This was believed to be due to the notion or perception amongst students who see farming or agricultural activities as outdated occupation, less glamorous and often involved hard work in the sun and which does not guarantee their future (Utusan Malaysia, 2008). Students view agriculture as a field which will not guarantee high income but merely to produce enough food for the whole family per cropping season (refer to cycle from planting until harvest). They do not see that agriculture can be a vocation to produce successful businessmen or entrepreneurs. They see agriculture which their parents engaged in as something which they should inherit rather than an activity or employment that can be profitable given the right ecosystem. The narrow or often misguided perception of many of these students who view agriculture as an activity which involve the use of limbs and draught animal with traditional tools for tillage has to be debunked. They ought to be told that in modern agriculture expertise in various fields are needed to drive the agenda of the country towards sustainable agriculture and for this to happen many more graduates in these fields are needed.

Agriculture can be turned into a successful career which can bring in immense benefits to the operators or entrepreneurs. The agriculture industry today is very different to that in the past where it now requires professionals with new ideas, who are risk takers, ready to look at various approaches and are innovative with new production processes to increase productivity and earnings. Graduates that are needed by the agriculture industry today are those graduates well trained with practical skills, ready to accept challenges, helped the industry to prosper by ensuring to provide clean and safe food through modern farming methods (Hamid and Auwal, 2012; Chiu et al., 2010). The notion that agriculture is a traditional occupation engaged by village folks, is unprofitable, often involved menial work and is dirty has to be relooked by the present generation. The present day agricultural profession require well trained graduates from institutions of higher learning who are sufficiently exposed to modern production technology so that a new generation of modern farmers or entrepreneurs are produced to meet the demand of modern day agriculture when expertise in many fields are needed to ensure the sector become productive and can contribute to the national economy significantly (Aidit & Husnizam, 2005).

The Ministry of Agriculture and Agro Based Industry (MOA) has reported that there are large number of job vacancies in the agricultural sector waiting to be filled by local graduates especially those who are unemployed (Utusan Malaysia 2005). The involvement of local graduates in the agriculture and farming sector is crucial to boost the sector’s position currently the second largest contributor to the Gross Domestic Product (GDP) after gas and petroleum. The trouble is, these unemployed graduates are least interested and placed the agricultural sector as the last resort. In its earnest effort to develop and modernize the agro-based industry in Malaysia, the Ministry of Human Resources’ Department of Skills Development together with MOA conducted a study to analyze the job profile in the agriculture & agro based industries sector. The study found that there were proposals for 192 job titles that may be offered through three sub-sectors and eight terms of reference. These sectors are Fisheries (terms of reference: aquaculture and capture fisheries); Food Crops, Floriculture & Industrial Crops (field work: planting materials, operations); and Production (the job: food, production, health and abattoirs). This study clearly goes to show the determination of the government and the private sector trying to help the graduates secure a career in this sector. All is left to the graduates as to their willingness to serve in the
rural and remote areas away from the city lights for which most graduates these days would prefer to be stationed.

The mindset of the present generation would have to be conditioned right from the very young age to accept that the working environment in the agricultural sector is as important and more productive if not rewarding just as in the other sphere of economic activities. Education has a prime role to play here in molding the minds of the students beginning at all levels that agriculture and related courses be viewed positively. The parties involved, the government and the private sector, must give some serious thought on how to develop a more acceptable course in agriculture offered by those institutions of higher learning to meet the issues and the needs of the present graduates. Hopefully, this study will try to provide some answers on most of the issues and reduce the unemployment problem faced directly by the graduates and shortage of trained manpower badly needed in the plantation industry and commercial agriculture industry.

3. METHODOLOGY

3.1 The creation of a research instrument

The methodology employed was the use of a questionnaire designed and developed through discussions with all members of the research team based on the objectives of the study which were to determine the current status of vacancies available and career prospects, views of industry employers with regard to competency of local graduates and the steps taken by them to prepare so as to meet the needs of the students in the agricultural sector. This instrument was first tested in a pilot study to ascertain its 'validity' and 'reliability' before they were distributed and face to face interviews were conducted. The questionnaire format comprised three parts: i) demographic and employment status, ii) measures to promote career in the plantation sector, and iii) the industry’s perception of local graduates.

3.2 The pilot study

A pilot study was conducted using a questionnaire that was designed to test its reliability and five questionnaires were sent out in Kelantan. From the pilot study conducted some improvements were made in the sentence structure that was easily understood to facilitate ready answers from the respondents. The pilot study was used to produce the reliability coefficient to determine the internal consistency of the instrument. Table 1 shows the calculation of Cronbach's alpha for the entire industry, that is 0.552, which indicates an efficient data to continue the analysis. The purpose of this analysis was conducted to test the correlation between the items in each construct. The other purpose was to ensure there was no conflict in the correlation values between the items in the questionnaire.

<table>
<thead>
<tr>
<th>Cronbach's Alpha</th>
<th>Cronbach's Alpha Based on Standardized Items</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>.552</td>
<td>.309</td>
<td>19</td>
</tr>
</tbody>
</table>

Table 1: Cronbach’s Alpha for reliability statistics
3.3 Sampling method

Twenty big plantation companies and commercial growers were chosen for the survey and although the number of samples was relatively small this was of no significance since these companies have a huge commercial value and of reputable standing. Only one respondent representing the company’s top management were sought. In addition to the questionnaire which was sent out, information was also obtained through interviews conducted with senior human resource personnel in these companies within the agricultural sector. Amongst them were the Kelantan Biotech, Kesedar Perkilangan Sdn Bhd, Cabaran Indah Sdn Bhd, GM Peladang, Pertubuhan Peladang Negeri Pahang, Genting Plantation Research Centre, Lembaga Kemajuan Pertanian Muda, Agricultural Chemicals(M) Sdn. Bhd, TM Organic Farms Sdn Bhd, Forest Research Institute Malaysia (FRIM), Symbient Corporation Sdn Bhd, Premium Food Corporation Sdn Bhd, Sime Darby Research Sdn Bhd, Wisma Felcra, Starfresh Agro Park, Bioblooms Sdn Bhd, Phytotech Sdn Bhd and UK Farm Sdn Bhd. For further study the formula for determining the sample size for an unknown population is given below.

\[
\text{SAMPLE SIZE} = \frac{\text{RANGE} \times \text{Desired Level of Accuracy}}{2 \times (\alpha/2)^2}
\]

Confidence Levels: Accuracy Level:

<table>
<thead>
<tr>
<th>α</th>
<th>α/2</th>
<th>Range X Desired Level of Accuracy( expressed as a proportion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.10</td>
<td>1.28</td>
<td>1.64</td>
</tr>
<tr>
<td>.05</td>
<td>1.64</td>
<td>1.96</td>
</tr>
<tr>
<td>.01</td>
<td>2.33</td>
<td>2.58</td>
</tr>
<tr>
<td>.001</td>
<td>3.09</td>
<td>3.29</td>
</tr>
</tbody>
</table>

3.4 Data analysis

This research is a study on the form of a survey in accordance with standard practices and methods that can provide high levels of confidence. The method for the data analysis used was the quantitative approach from the primary data collected through the survey made.

Some of the analyses used were also those of descriptive analysis, frequency analysis and cross tabulation analysis. Descriptive analysis provides simple summaries about the sample taken and about the observations that was made. Such summaries may be either quantitative, i.e. summary statistics, or visual, i.e. simple-to-understand graphs. Frequency analysis is the study of the frequency of letters or groups of letters in a ciphertext. The method is used as an aid to breaking classical ciphers. The first part of this data analysis use descriptive analysis and frequency analysis to obtain demographic profiles and an overview of the status and career scenario in the agricultural sector as well as issues and challenges.
In addition to the detailed analysis performed to support the findings of the descriptive analysis, further analysis is used to investigate the cross tabulation of the relationship between the two categories of variables. Each variable can have two or more categories. All the methods used was to answer the objectives that have been submitted.

4. ANALYSIS AND RESULTS

Firstly, the analysis of the frequency of the data submitted by the respondent was made to obtain basic information on the types of crops cultivated, the current number of employees, status of job applications, gender and ethnicity of graduates preferred. Frequency analysis is a very important tool to obtain an overview of the actual situation occurring in the plantation industry and the commercial agriculture sector with regard to the supply and job application.

As we all know, the main activity within the agriculture and farming sector in Malaysia is the cultivation of oil palm and this is not contradictory to the findings of this study. Results from the analysis showed that the most popular crop is oil palm and about 47% of the respondents were involved in the cultivation. This is because oil palm is a hardy crop and can thrive in the tropics and sub-tropics suited to a variety of soils from peat to mineral soil with a range of pH between 4.5 -7.5. In addition, the oil palm crop has many uses derived from palm oil and the kernel oil. The processed kernel shells are used as animal feed and non-food items such as lauryl alcohol, detergent ingredients and essential fatty acids. Refined palm oil is used to make food products such as margarine, fatty compound, cream, ice cream and cooking fat while the unrefined crude oil is used to make cooking fats or ghee. The smallholder sector usually those who own less than 10 hectare are also involved either in combination with rubber or with some fruit orchards while the other farming activities as depicted in Figure 1 are about 7% of the total cultivated crops.

![Figure 1: Distribution of the types of crop cultivated by the plantation industry and commercial agriculture in Malaysia](image-url)
Most of the industry players in the plantation and commercial agriculture prefer more non-graduates than graduates just like those seen in the manufacturing sector, oil and gas where the bulk of the employees or operators require no specific or specialised skills, work competencies or knowledge which graduates would have acquired during their stint at the institutions of higher learning. Figure 2 portrays very well where the graduates stand amongst the total workforce that the plantation sector hire. The 9.3% graduates that were hired are those that are required to fill management and managerial positions in the company. Their number may be small but their contribution to the plantation industry and commercial agriculture farms in the country significant as they are the ones which drive the sector to what it is today.

Frequency analysis was also conducted to gather information about the number of companies which accept job applications from local agriculture graduates. The result shows that 85% of the companies in the plantation industry and commercial agriculture received job applications from this group while only 15% did not (Figure 3). This goes to show clearly that this sector in the country’s economy are an important niche for students majoring in agriculture for them to begin work and build their career from then on. However, whether they are recruited or not is another matter for usually the number of available vacancies for managerial and professional positions may be limited to begin with. The opportunity to work in big well-established plantation companies is a starting point for them to contribute towards developing the agriculture and the commercial farming sector further while some may go on their own later as agricultural entrepreneurs.

Although the number of employees at the graduate level hired was only >9% (Figure 2) the number of graduates applying for positions in the agriculture sector remained large accounting to about 85% (Figure 3). Despite the fact that a large majority of the work in the agriculture and farming does not require a tertiary education a large number of graduate students do apply for the job in this sector mirroring the fact that the students were very much interested to secure work here but then the vacancies available were limited.

Based on the demographic pattern, results from this study showed that the majority of ethnic groups working in these companies are Malays representing 90% while the Chinese and others was only 5%
(Figure 4). The graduating students of ethnic Chinese origin showed little interest in the agriculture sector, as they prefer doing business and residing in urban areas just like their forefathers who have gone into business right after the country achieved independence. The void left was filled up by the Malays who became more dominant in this sector given that they were raised basically from the agriculture background.

![Sample distribution of the ethnic groups of graduate workers in farming and commercial farming industry in Malaysia](image)

![Has your company received job applications from students with higher education institutions majoring in agriculture?](image)

**Figure 3**: Status of job applications from graduates of agriculture in the plantation industry and commercial agriculture in Malaysia

**Figure 4**: Sample distribution by ethnic groups of graduate labour in the plantation industry and commercial farming industry in Malaysia
It was already pointed out that the plantation industry and the farming sector was open to graduates in Malaysia to begin a career here but further analysis is needed to determine the actual status of the current career opportunities available. For this a frequency analysis was carried out to identify the number and types of positions were offered annually by each of the company surveyed.

Table 2 shows that although the number of vacancies offered had increased but about of 25% of the companies still did not offer any position in a year. On the other hand, there was another 25% that offered jobs with five vacancies. Generally, 50% of the companies surveyed did offer various posts for either for 1, 2, 10, 15 or 60 vacancies available. This goes to show that the number of vacant positions in the plantation industry and commercial agriculture sector has always existed for the local graduates in agriculture. Furthermore, the sector also offered various positions on the job market for the graduates to pursue their career here as shown in Table 3. Positions that were readily offered were for farm workers and supervisors each group showing a frequency of 6 or 13.33% of the various jobs available. What is meant here is that the companies within this sector were in dire need of workers particularly in the factories especially from those who are less well educated.

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>25.0</td>
<td>25.0</td>
<td>25.0</td>
</tr>
<tr>
<td>1</td>
<td>15.0</td>
<td>15.0</td>
<td>40.0</td>
</tr>
<tr>
<td>10</td>
<td>5.0</td>
<td>5.0</td>
<td>45.0</td>
</tr>
<tr>
<td>15</td>
<td>5.0</td>
<td>5.0</td>
<td>50.0</td>
</tr>
<tr>
<td>2</td>
<td>10.0</td>
<td>10.0</td>
<td>60.0</td>
</tr>
<tr>
<td>5</td>
<td>25.0</td>
<td>25.0</td>
<td>85.0</td>
</tr>
<tr>
<td>60</td>
<td>5.0</td>
<td>5.0</td>
<td>90.0</td>
</tr>
<tr>
<td>by vacancy</td>
<td></td>
<td></td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Frequency distribution of the number of vacancies available annually in the plantation industry and commercial agriculture sector.

In addition to these categories of workers, there were also a number of managerial positions offered by these companies such as senior executives, station, plantation or company managers, cadet planters and others as given in Table 3. This is the category where the companies desperately seek graduates to fill the positions offered. More often than not vacancies available were not filled by the young graduates as senior positions usually require those with sufficient skills and neither can they be filled with non-graduates. The companies usually faced this dilemma when filling up posts. In other words, the study showed that the availability of vacancies for executive or managerial positions offered by the companies
to the graduates would be more suited to someone more experienced or showed keen interest in this sector for their career advancement.

As to the steps initiated by the industry to ensure that appropriate measures were taken to fill the vacancies available and that no dropout occurred a descriptive analysis of the data to compare the mean values for the four measures adopted by the industry to promote careers in the plantation sector was made. The four measures were advertising of vacancies in the local media, has the companies any linkages with the local institutions of higher learning, road show for for recruiting agriculture graduates into their workforce and taking part in career exhibitions organised by the government or local agencies.

The results in Table 4 showed that all mean values were different. Among the four measures taken, the highest measure was the road show with a mean value of 1.70 and was followed by career fairs or exhibitions with a value of 1.50 while company’s linkages with institutions of higher learning in Malaysia did not fare well either (mean value of 1.30). Advertising vacancies in the mainstream media are somewhat less favourable to the graduates with the lowest mean value of 1.20. From this survey, clearly road shows would be the most effective measure to attract agricultural graduates to venture into the plantation industry and commercial agricultural sector.

<table>
<thead>
<tr>
<th>Type of job vacancies offered</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>biotechnology</td>
<td>1</td>
<td>2.22</td>
</tr>
<tr>
<td>chemist</td>
<td>1</td>
<td>2.22</td>
</tr>
<tr>
<td>farm manager</td>
<td>3</td>
<td>6.667</td>
</tr>
<tr>
<td>agribusiness manager</td>
<td>1</td>
<td>2.22</td>
</tr>
<tr>
<td>senior executives</td>
<td>3</td>
<td>6.667</td>
</tr>
<tr>
<td>trainee account</td>
<td>1</td>
<td>2.22</td>
</tr>
<tr>
<td>management trainee</td>
<td>1</td>
<td>2.22</td>
</tr>
<tr>
<td>management</td>
<td>4</td>
<td>8.889</td>
</tr>
<tr>
<td>clerk</td>
<td>4</td>
<td>8.889</td>
</tr>
<tr>
<td>administrative assistant</td>
<td>1</td>
<td>2.22</td>
</tr>
<tr>
<td>farm workers</td>
<td>6</td>
<td>13.33</td>
</tr>
<tr>
<td>assistant farm</td>
<td>1</td>
<td>2.22</td>
</tr>
<tr>
<td>general engineer</td>
<td>1</td>
<td>2.22</td>
</tr>
<tr>
<td>supervisor</td>
<td>6</td>
<td>13.33</td>
</tr>
<tr>
<td>Mandore</td>
<td>2</td>
<td>4.44</td>
</tr>
<tr>
<td>producers</td>
<td>2</td>
<td>4.44</td>
</tr>
<tr>
<td>beauty consultant</td>
<td>1</td>
<td>2.22</td>
</tr>
<tr>
<td>marketing</td>
<td>1</td>
<td>2.22</td>
</tr>
<tr>
<td></td>
<td>N</td>
<td>Min</td>
</tr>
<tr>
<td>----------------</td>
<td>----</td>
<td>-----</td>
</tr>
<tr>
<td>technicians</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>plante</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Type of job vacancies offered in the company.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Sum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is this the vacant posts advertisement in a newspaper or news media?</td>
<td>20</td>
<td>1</td>
<td>2</td>
<td>24</td>
<td>1.20</td>
<td>.410</td>
</tr>
<tr>
<td>Does the company has alliances with any institution of higher education in Malaysia?</td>
<td>20</td>
<td>1</td>
<td>2</td>
<td>26</td>
<td>1.30</td>
<td>.470</td>
</tr>
<tr>
<td>Does this company make a 'road show' for workers among agricultural graduates?</td>
<td>20</td>
<td>1</td>
<td>2</td>
<td>34</td>
<td>1.70</td>
<td>.470</td>
</tr>
<tr>
<td>Does the company take part in career fairs organized by the government or other agencies?</td>
<td>20</td>
<td>1</td>
<td>2</td>
<td>30</td>
<td>1.50</td>
<td>.513</td>
</tr>
<tr>
<td>Valid N (listwise)</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Descriptive analysis programs to promote careers in the plantation sector

Further analysis was attempted and this time by making cross tabulation of the distribution which was used to analyze the relationship between each of the four measures taken by the industry with the selection of workers from agriculture graduates. What can be observed from Table 5 is that generally 35 percent of those employed were agriculture graduates, while the remaining 65 percent were mostly not from agriculture. Those who responded to advertising in the media, 50% of the employees were non-agriculture graduates and only 30% agriculture graduates. For those companies which did not advertise their vacancies in the news media, again a higher proportion of the graduates employed were from non-agriculture background (15%) while that from the agriculture stream was only 5%. Even though advertising was the favourite route taken to entice graduates to work in the plantation industry and the commercial agricultural sector those with agriculture background fell well below that from those who received no agriculture education. In short advertising for available vacancies through the local mainstream media is of little help to encourage graduates in agriculture or related disciplines from the local institutions of higher education to venture into this important sector of the national economy.
Table 5: Cross tabulation between vacant posts advertised in the local news media and the employment of agricultural graduates

<table>
<thead>
<tr>
<th>Are the vacant posts advertised in the local mainstream news media?</th>
<th>Graduates are employed mainly from agriculture</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>6</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>30.0%</td>
<td>50.0%</td>
<td>80.0%</td>
</tr>
<tr>
<td>No</td>
<td>Count</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>5.0%</td>
<td>15.0%</td>
<td>20.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>7</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>35.0%</td>
<td>65.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Table 6: Cross tabulation between industry linkage with any institution of higher education and the recruitment of graduates from agriculture background

<table>
<thead>
<tr>
<th>Does the company has alliances with any institution of higher education in Malaysia</th>
<th>Graduates are employed mainly from agriculture</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>6</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>30.0%</td>
<td>40.0%</td>
<td>70.0%</td>
</tr>
<tr>
<td>No</td>
<td>Count</td>
<td>1</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>5.0%</td>
<td>25.0%</td>
<td>30.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>7</td>
<td>13</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>35.0%</td>
<td>65.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>
Table 6 shows that those companies that have links with institutions of higher learning and that of recruitment made of their graduates who received their education from either the agriculture or non-agriculture streams were only 30% for the former and lower when compared for the latter at 40%. For the case where no such links were established recruitment of workers with agriculture background from these companies in the agriculture sector were much lower when compared to those of other background in their education at the local institutions of higher learning. No matter what, whether the companies established links or not with those local institutions offering agriculture courses the recruitment into the workforce were those from the non-agricultural background.

<table>
<thead>
<tr>
<th>Does this company make a ‘road show’ for workers among agricultural graduates</th>
<th>Graduates are employed mainly from agriculture</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Yes</td>
<td>Count</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>15.0%</td>
</tr>
<tr>
<td>No</td>
<td>Count</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>20.0%</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>% of Total</td>
<td>35.0%</td>
</tr>
</tbody>
</table>

Table 7: Cross tabulation between road shows held to attract young agriculture graduates and recruitment made by companies in the plantation and commercial agriculture sector

The cross tabulation made between the road shows held to attract young agriculture graduates and recruitment made among graduates with agriculture and non-agriculture backgrounds are shown in Table 7. The result showed that irrespective of whether the road shows were held or not by the companies 65% of those graduates employed were from the non-agriculture background. When the companies had their road shows there was an even response from the two different educational backgrounds of 15% apiece and those that did not held their road shows paint a different picture altogether when only 20% of the agricultural graduates obtained employment compared to 50% from the other backgrounds. Only when roadshows were held was there stiff competition for job vacancies in these companies of the agriculture industry.
The results in Table 8 shows very clearly that the companies preferred to take in agriculture graduates for their workforce from the public institutions (95%) rather than from the private sector institutions. Whether the posts were advertised in the media or not was irrelevant as company managers would prefer to solicit graduates in agriculture from the public colleges and universities.

5. CONCLUSION

A study which was undertaken on 20 leading plantations and commercial agricultural companies in Malaysia involved conducting interviews with human resource managers through a survey questionnaire. The study was basically to identify issues and problems faced by the industry with regard to job applications from graduates of local institutions of higher learning and the vacancies made available by this particular sector on the job market. From the analyses made the study revealed that there exist a steady supply of vacancies but limited in number as positions in the managerial and

<table>
<thead>
<tr>
<th>Is the vacant posts advertised in a newspaper or electronic media?</th>
<th>Count</th>
<th>Public higher education institutions</th>
<th>Private higher education institutions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>15</td>
<td>1</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>% of Total</td>
<td>75.0%</td>
<td>5.0%</td>
<td>80.0%</td>
<td></td>
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<tr>
<td>No</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>% of Total</td>
<td>20.0%</td>
<td>.0%</td>
<td>20.0%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>19</td>
<td>1</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>% of Total</td>
<td>95.0%</td>
<td>5.0%</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

Table 8 : Cross tabulation between vacant posts advertised in the local mainstream news media and employment preference of agricultural graduates from public and private institutions of higher education.
Professional field are far in between unlike the menial jobs commonly associated with the plantation industry. From the students' perspective, the acceptance level in the agricultural industry are not different from that in the manufacturing industries as graduates would prefer to seek jobs with the government or government linked companies.

The study also revealed that most of the employees working in the plantation industry and the commercial agriculture sector are non-graduates as this particular sector do not depend entirely on highly qualified personnel for the daily operations in the field. Graduates who worked in these companies account for about 9 – 10% of the total workforce occupying executive and managerial positions. It was made known that the agriculture industry do received numerous applications for jobs commensurate with the students’ qualifications but vacancies available for management positions were relatively limited.

The number of vacant positions in the plantation industry and commercial agriculture sector has always existed for the local graduates in agriculture and there has been an increasing trend annually yet the number of vacancies available is still far short to meet the demand of some these graduates who aspire to make agriculture their vocation. Although the industry has played their role in offering more places for the local graduates but more often than not the graduates that come on to the job market are not of the right choice for mostly they lacked the soft skills required if they are to work in a private sector environment.

The findings from this study should be a basis for the policy makers especially MOHE to formulate relevant recommendations in an effort to encourage more graduates to involve in the agriculture sector. The results of the study should assist the private sector to relook at their policies and initiate new guidelines on attracting more graduates into their companies and thereby indirectly help the country to expand its agriculture base and move towards achieving the target of making the agriculture sector the third engine of growth in the economy of the country.

ACKNOWLEDGEMENTS

The authors would like to acknowledge the support given by Universiti Malaysia Kelantan (UMK) for permission to present this paper in this Conference from a study which was conducted through a Short Term Research Grant offered by UMK. We would also like to thank Ms Nur Hidayah Hasan of the Faculty of Computer And Mathematical Sciences, Universiti Teknologi Mara, Shah Alam for carrying out the analysis for the massive amount of data received from respondents.

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GLOBALIZATION AND ITS CHALLENGES IN EDUCATION
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bobakova@opf.slu.cz and karpeta@opf.slu.cz

Abstract
Higher education is facing major changes that will affect their future development. The following paper deals with some aspects of tertiary education, too. In the introductory part attention is paid to the language and education, which are humane and an economic nature. This is followed by an interpretation of the concept of a terminology of globalization in its various connotations, economic, linguistic and educational ones. The paper follows up on the description of the selected methods and procedures. The next section deals with the issues of foreign language teaching at universities and the discrepancy between the theoretical requirements of the European institutions and their implementation in practice. Subsequently, the perspectives of higher education from the view of the issue of higher education and the impact of the economic crisis on education are analyzed. Attention is also paid to the key issues of education in the Internet age. The conclusion of the study is focused on some problematic aspects of the field of tertiary education.

Key words: Globalization, higher education, language policy, distance learning, competitiveness, flexibility, foreign languages

INTRODUCTION
Higher education is facing major changes. All universities will go through the changes. The path to science will even more open. Language and education as human capital will bring benefits and profits, that’s why education and language deserve attention within the meaning of a high-profile study and education programs with the focus of language/communication.2


Higher education is designed in the European area in the spirit of the expanding internationalization of a rising demand for a quality educational process. This trend is becoming a link between primary, secondary and tertiary education. Their common denominator is the decreasing level of study skills of Czech pupils across all educational levels. As reported by Simonová (2011, 142), the adult Czech

2 We can see the designation of the language as human capital on a global scale with external and internal aspects.

population in 1998 was highly regarded in terms of the basic skills such as functional literacy such as numerical, document and literary ones, and was clearly the best among the post-socialist countries and besides such countries as Switzerland, the Netherlands and Belgium, and surpassed the countries such as Canada, the US, Ireland and New Zealand, yet the youngest population already in 1999 showed that in the field of mathematics and natural sciences it has significantly deteriorated.

The lack of quality students, the initial sign of an unfavorable demographic evolution of the population, the lack of financial resources in the education sector, the fight for the students and the competitive environment of universities present to foreign language teachers many challenges at universities in the content area of learning, in the choice of appropriate methodological and didactic procedures and in the use of information technology, etc.

Specifically in the field of higher education a document called Updating the concept of the reform of higher education⁴ was created. It is mainly focused on three areas – the financing reform, the development of human resources and research, the development and innovations. In the area of financing by government resources emphasis will be put on the achievement of the results of the activities of universities and on the effectiveness of the use of these resources, while ensuring a sufficient stability of the financial environment. The Ministry through the financial rules, among others, will encourage high schools to reduce the failure rate of study while maintaining the quality of graduates, and will promote the cooperation of universities with industrial companies and employers of graduates in general, with the customers of the results of research and development, and explicitly with the private sector. In the area of the development of human resources the Ministry stresses the need to extend access to education and openness of all social and minority groups, the promotion of cooperation with employers, higher education institutions, the innovation of study programmes within the meaning of the new requirements on the part of employers and an emphasis on language and other competencies of students and academic staff.

1. The terminological background with regard to the connotations of the concept of globalization

In introducing the issues of globalization efforts in Europe and their impact on the educational system it is useful to provide some background for the broader starting points:

(1) The issue of globalization is not just a phenomenon of the Czech society, it touches the unification of Europe and the world.

(2) The unification of the world included the term globalization is a reflection of the tendency at the level of policy, economy and culture.

(3) Political, economic and cultural objectives of the globalizing society must necessarily manifest itself at the level of language.

It is not possible not to state the fact that from different ideological perspectives, it is possible to meet with a variety of markings of this global process of unification, integration, globalization (Gazda 2003, p. 64).

1.1. Globalization from an economic point of view

Globalization as an elaborate political and economic system of governance which is articulated in different contexts and connotations, Kocourek, Bednářová and Laboudková point to the fact that the concept of globalization can be used depending on the individual preferences of journalists or

⁴ See Updating the concept of the reform of higher education, 2006, p. 19.
researchers, and this may be extended by the term for other uses among which the authors rank in particular the growing interconnectivity of markets, the limiting of national sovereignty transnational players, the transformation of national economies, the widening of inequalities and disparities, greater involvement of "emerging" markets in international financial flows, etc. (2013) (10). In addition to economic and political globalization the globalization of language is increasingly promoting.

1.2. Language globalization

Taking into account the objective of the study it does not seem to be beneficial to analyze the economic aspects of globalization. We will mention only the linguistic aspects of globalization. In this context, the internationalization of the language, which is manifested especially in the lexicon, word-formation, should be recalled etc. In the Czech linguistics, the term internationalization is associated traditionally with the notion of nationalization. Already Havránek (1969, p. 44) mentions antonymy in the language, or countervailing tendencies when adopting the foreign elements in the language. The Czech studies literature is quite extensive on the subject, so let us limit on the principal pieces of work.

The concept of internationalization and nationalization as an antagonist concept of neologic loanwords has two perspectives in the Czech Republic. The first is based on the assumption that the nationalization as a domesticated expression may have preferences in certain social circumstances a touch of purist efforts (Jedlička 1980, p. 185).

An earlier perspective on nationalization appears in a monograph Slowotwórstwo/Nominacja. Nationalization means the manifestation of specific features of the national language in terms of a tight language contact (Martincová, 2003, p. 18). One speaks in this context of compensatory processes coming through the creation of domestic counterparts to neologic loanwords. At this point, let us leave aside the types of nationalization trends from orthoepic, phonetic and morphological levels to the appellative ones.

Between internationalization and countervailing tendencies one can see certain circumstances:

1. The adoption of lexical means (internationalization) and the process of completing the domestic counterparts (countervailing trends) suggests that in many cases there are no domestic counterparts to loanwords or do not have the same communication effect. They differ in the degree of expressivity and lower usualization, but they can act as competitive means.

2. An increase in the internationalist affixoids and radixoids is recorded (Martincová, 2003, p. 22).

It is not possible not to mention the fact that the trend towards internationalization is the process of increasing the share of the load and the functional word-formatting and lexical elements of foreign origin in the current language and its vocabulary (Gazda 2003, p. 64). From this perspective, the internationalization brings the tendency of the vocabulary development.

1.3. Educational globalization

In addition to the economic and language globalization the educational globalization is increasingly breaking through. The Czech higher education has undergone a major development in the period of transition to a market economy. A period of social, political and economic changes had initiated massification of higher education, with all the consequences that this entails. Let us mention only briefly the attributes of the Socialist era of higher education, which will help to better understand the current situation.
Tertiary education had been characterized by efforts to implement the bureaucratic control mechanisms in the educational system. Regulatory mechanisms affected the autonomy of universities and, in particular, had resulted in the financial dependence in education.

In the period of transition control mechanisms did not produce its key role, which led to the gradual legal deregulation of higher education. At present, the Czech higher education is located in the period, which is under the influence of the Bologna process, which kicked off a new direction of higher education policy with a view to a greater coordination and quality of the educational process.

2. The structure of the study and processing methods

The structure of the study was chosen so that it would conceptually comply with sub-aspects of the selected topic and allow an easy processing within a fixed range. The study is the grouping and sorting of available data relevant to the topic, the application of methods of analysis, synthesis, deductions, inductions, and degrees of abstraction.

3. Globalization and language teaching. Languages as a burden or benefit?

3.1. Key EU documents

Further, let us have a closer look at the position of the languages in the educational system of the Czech Republic and its significance and draw attention to some of the important aspects that relate to this issue. We will proceed from the official documents of the European Union and of the universal declarations and we will try to formulate the conclusions arising from them.


3.2. Theory and facts

In documents dealing with the language policy of the EU everyone can read about the main and fundamental objectives of this political, economic and economic grouping that sees its priority in multilingualism.

It seems that the theory is quite different from the practice. Therefore, we ask, what does this serious schism consist in? In ignorance, superficiality, or simply just convenience? We ask, therefore, how in practice will daring plans of the European Union be filled, when practice is lagging behind the theory?

Already the White Paper from 1995 draws attention to the fact that there is a major transformation of the society due to the development of modern technologies and the internationalization of the company. As a result of globalization efforts in Europe the importance of mobility in the broad sense of the word is increasing. We have in mind not only the student's and teacher's mobility, but also the mobility of the labour force. All of these mobility have one common denominator, which is the necessary knowledge of a foreign language. And certainly not by chance, therefore, the strategy based on an exchange of experience is supported.

The culmination of the European Year of Languages resulted in the adoption of measures to promote linguistic diversity and language learning in February 2002. Where do bold ideas by
Ministers remain who called on the Commission to continue its efforts to strengthen the indicated
language teaching in vocational education and training and in adult education and to provide immigrants
with high-quality teaching language of the host country?

The year 2008 was the European Year of Intercultural Dialogue. The extension of education in foreign
languages by an intercultural component represents another important shift in education.

Do we want to be in all circumstances a competitive and dynamically developing society, why do we
fight against the importance of the knowledge of foreign languages? On the one hand is an educational
policy, on the other hand practice. The contribution of languages to the Lisbon strategy is undeniable.

How do we want to achieve better quality in the education of foreign languages when we want as part
of cost-saving measures to reduce the underlying and fundamental things? Any competitiveness is based
on high-quality knowledge. We forget the fact that Western Europe has a high-quality system of foreign
language teaching, behind which, unfortunately, our system is lagging. One of the factors is the lack of
potential quality of teachers of a foreign language. Foreign languages are taught at primary and
secondary schools by unqualified teachers without relevant erudition and qualification. Anyone can
teach a foreign language, the result of the work, however, is apparent and it is difficult to rectify.

Language teaching has to play in this respect the main role of the bold education policy. It set bolds
plans for the year 2010, there are a total of thirteen. Let us just to remind you of those pertaining to
language learning:

- improve education and training for teachers and trainers
- develop skills for the knowledge society,
- create an open learning environment,
- make education more attractive,
- improve the teaching of foreign languages,
- increase mobility and promote the exchange of experience,
- strengthen European cooperation.

The declared open education system certainly will be beneficial, however, let us create the basis for
fulfilling those bold ideas. The Education and Vocational Training Programme 2010 is based on the
assessment of the degree of fulfilment of the criteria for assessing the progress made by Member States
from three aspects:

- methods and organisation of language teaching,
- language learning at an early age,
- ways to support teaching and the use of foreign languages.

The document directly states that no one should “be excluded from language learning and should not be
denied the opportunities and benefits that knowledge brings. Equal access to opportunities in foreign
language teaching is part of the social dimension of the European integration.”
The language policy of the EU speaks clearly. Multilingualism as essential prerequisite to ensure that businesses and citizens has been integrated in the context of a United Europe. It is shortsighted to think that language skills do not affect employment, mobility of workers and their professional success.

The political changes in Eastern Europe liberalized their economic trade and human communication. People began to recognize the influence of language resources as well as the importance of knowledge and experience in a foreign culture.

The need for general foreign language communicative competences is more and more felt and at the same time an extensive lack in the field of special communication skills in the professional context. That is why we should take a work programme for education and training for the period up to the year 2010 seriously. The Program considers the ability to communicate in foreign languages as one of the key skills. Staff with practical language and intercultural skills are competitive on a global scale. How should the individual countries contribute to fulfilling bold and daring plans? By introducing the European Union's ideas into practice. It is their goal and duty at the same time. The fulfillment of the objectives can be seen in conformity with the policy of multilingualism in three levels:

- to support and promote language learning and linguistic diversity,
- to promote social integration by improving language skills,
- to increase interest in the languages of the involvement of students in student mobility.

3.3. Communication optimization

The theoretical recommendations to optimize the communications relate to the following points:
1. Defining the nature of foreign language teaching.
2. Determining the prerequisites of communication.
3. Prioritization of communication.
4. Specifying course abstracts.
5. Determining the target outputs.

It turned out to be highly desirable to access the foreign language teaching from the cognitive, communication, intercultural and professional viewpoints.

3.3.1. The cognitive aspect of communication

From the cognitive point of view, in a foreign language teaching it will deal with the adoption of a theoretical basis of knowledge about the culture, politics, geography, and literature of the country whose language one is studying. The mediation of data, data and information must be subordinate to the level of knowledge of a foreign language.

3.3.2. Communicative aspects of communication

At the forefront of foreign language teaching is no longer teaching contents, but knowledge, experience and attitudes learners a foreign language. A prerequisite for the realization of the new communicative approach to communication is the cognitive aspect of communication. The correct adoption of teaching contents allows the ability to act in the target culture.

Intercultural communication perspective
The tendencies of the political, social and cultural development lead to the European integration and the emergence of multicultural community. The cognitive and communicative component of communication is evaluated by the intercultural component, which aims to lead to learning a foreign language in order to understand one’s own and the target culture.

The ability to perceive the peculiarities of a foreign culture, the ability to express one’s emotion, empathy and liking of a foreign culture is a pre-requisite for the successful communication in the target culture.

3.3.3. Professional viewpoint

In a foreign language education one deals with the mediation of the field of study, which is studied within the higher education. The significance of bearings in the field at European and world level, is an essential precondition for the competitiveness of the European citizen.

By means of the comments relating to the concept of an education system with regard to foreign language teaching we wanted to draw attention to certain aspects of the communication that one will need to think about in the future, if we want to nurture and educate the competitive and confident individuals.

3.3.4. The objectives of the EU educational policy

In this respect, the main role of the bold education policy of the European Union has to be played by language teaching. It set bold plans for the year 2010, there are a total of thirteen. Let us just to remind you of those pertaining to language education:

- improve education and training for teachers and trainers
- develop skills for the knowledge society,
- create an open learning environment,
- make education more attractive,
- improve the teaching of foreign languages,
- increase mobility and to promote the exchange of experience,
- strengthen European cooperation.

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- language learning at an early age,
- ways to support teaching and the use of foreign languages.

The language policy of the EU speaks clearly. Multilingualism as essential prerequisite to ensure that businesses and citizens has been integrated in the context of a United Europe. It is shortsighted to think that language skills do not affect employment, mobility of workers and their professional success.
4. European perspectives of higher education

4.1. Issues of the European higher education

In the introduction to our paper let us briefly recall the most important aspects of higher education in Europe such as increasing globalization, expanding labor markets for Czech population, the importance of continuing education and especially internationalization in education. European options of educational institutions are various and attitudes of individual European states to the education system in Europe differ (Lattke, Nuissl, Pätzold, 2010). What they have in common is their overriding concern about internationalization of educational structures and maintaining European perspectives in education.

European higher education is subject to great pressures. Growing competitive university environment, the struggle for resources, still gaping open of higher education leads to many challenges as one has to deal with a new, not entirely easy situation.

The example of neighboring Germany will try to show a common denominator. The Federal Government supports the process of internationalization of higher education, higher education becomes an open system bringing the same problems as mentioned above. Federal Ministry of Education is aware of the fact that higher education is the bearer of progress and guarantee prosperity of future generations.

Students also come to Czech universities with completely different knowledge and learning capacities, and therefore universities have to be prepared for this situation. One of the methods of optimizing the teaching process is its improvement through information technologies.

4.2. The economic crisis and education

In the year 2009 the Czech presidency of the EU Council ended. The Czech Republic accomplished its Presidency at the height of the global economic crisis. During the six-month Presidency the Czech Republic introduced several priority areas of education, namely:

- Combining a European system of qualifications
- Promoting cooperation between schools and employers
- Coordination of European mobility
- Joint promotion of education

In determining the vision of education by the year 2020, one proceeds from the lifelong learning programme focused on three kinds of learning, formal learning, non-formal learning and informal learning. Formal education represents the institutional education for example in the tertiary sector. Informal learning is seen as the process of acquiring knowledge, skills and competence acquisition from everyday experiences and activities in work, family, and in spare time. In this area can be found all the educational activities of the individual, which are not organized.

European educational systems show marked differences. We obtain interesting data, if we compare, for example statistical data on the education of the population aged from 25 to 64 years of age in the various countries of Europe. The following table provides the correlation data.

\[\text{Czech Presidency in the Council of the EU 2009, p.11.}\]
\[\text{Life long-learning strategy of the Czech Republic.}\]
Table 1: Achieved education at the age of 25 to 64 with a higher secondary education

<table>
<thead>
<tr>
<th>European countries</th>
<th>men in%</th>
<th>women in%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>68.1</td>
<td>67.8</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>77.4</td>
<td>77.5</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>93.9</td>
<td>87.4</td>
</tr>
<tr>
<td>Denmark</td>
<td>76.9</td>
<td>74.0</td>
</tr>
<tr>
<td>Germany</td>
<td>87.4</td>
<td>81.4</td>
</tr>
<tr>
<td>Estonia</td>
<td>87.0</td>
<td>91.0</td>
</tr>
<tr>
<td>Ireland</td>
<td>64.3</td>
<td>70.9</td>
</tr>
<tr>
<td>Greece</td>
<td>58.9</td>
<td>60.8</td>
</tr>
<tr>
<td>Spain</td>
<td>50.2</td>
<td>50.6</td>
</tr>
<tr>
<td>France</td>
<td>70.3</td>
<td>67.1</td>
</tr>
<tr>
<td>Italy</td>
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<td>53.0</td>
</tr>
<tr>
<td>Cyprus</td>
<td>73.2</td>
<td>70.9</td>
</tr>
<tr>
<td>Latvia</td>
<td>81.3</td>
<td>88.2</td>
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<td>Lithuania</td>
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<td>Luxembourg</td>
<td>69.2</td>
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<td>Hungary</td>
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<td>75.8</td>
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<tr>
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<tr>
<td>Poland</td>
<td>87.0</td>
<td>85.7</td>
</tr>
<tr>
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<td>Romania</td>
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<tr>
<td>Slovenia</td>
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<td>86.5</td>
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<tr>
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<tr>
<td>Norway</td>
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</tr>
<tr>
<td>Switzerland</td>
<td>89.6</td>
<td>82.3</td>
</tr>
</tbody>
</table>

Source: Lifelong Learning Strategy of the Czech Republic

From these statistics, it appears that the Czech Republic occupies a prominent place in attaining upper secondary education with the population of the male sex. Slovakia comes second and Switzerland
occupies the third place. Conversely, Portugal has the lowest number, as well as Malta and Turkey. For the female population, the situation is different. The leading took the Baltic States, Estonia, Lithuania and Latvia. The Czech Republic comes not until fourth.

Despite the positive indicators in the education, the Czech Republic faces a range of problems, among which for example, a small interest in lifelong learning can be ranked, handicapped access to education for socially weak population, little participation in all forms of adult education. Restricting access to education could lead to fatal consequences, in the form of the exclusion or a threat to social cohesion. The threat applies in particular to the unemployed, those at risk of losing their job, people at a disadvantage due to ethnicity, disadvantaged persons with working ability, immigrants and others.

In determining the objectives of tertiary education, one should primarily proceed to a greater extent from the prognosis of the Ministry of Education up to the year 2020. According to the analyses carried out changes will take place in each of the economic sectors of the Czech Republic. It is assumed that one can count on demand for university-educated workers in the future. Other categories are listed in the overview:

- Category 1: Legislators, managers and executives
- Category 2: Scientists, experts
- Category 3: Employees in the trade and services
- Category 4: Clerks

The anticipated category of desired professions show possible directions of educational institutions with a view to the year 2020. Linguistic competence will be one of the primary load-bearing qualifications in the broadest sense of the word. It should be noted that the character and qualifications of jobs will change.

Hence, the new tasks of the tertiary education will relate to it. We are getting now at the language as an instrument of economic development. The language will be one of the key qualifications. We are firmly convinced that the language as an economic factor clearly shows the coherence of globalization, labour mobility and flexibility.

In addition to the forecasts of the Ministry of Education another source of necessary information is provided by the Statistical Yearbook, focusing on education. There we can find indicators that have an impact on the tertiary area. Specifically, the numbers of students expressed in percentage numbers, who are learning the respective language. For example, we are presenting the structure of the teaching of foreign languages in the Czech Republic for the school year 2009/2010, in the overview there is data relating to education at secondary schools and higher vocational schools.

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7 Life long-learning strategy, 2007, p. 49.
8 Life long-learning strategy, 2007, p. 16.
Table 2: Education at secondary schools and higher vocational schools

<table>
<thead>
<tr>
<th>Languages</th>
<th>Secondary schools</th>
<th>Higher vocational schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>53.84%</td>
<td>53.02%</td>
</tr>
<tr>
<td>German</td>
<td>29.34%</td>
<td>32.58%</td>
</tr>
<tr>
<td>French</td>
<td>5.16%</td>
<td>1.86%</td>
</tr>
<tr>
<td>Russian</td>
<td>3.29%</td>
<td>3.42%</td>
</tr>
<tr>
<td>Spanish</td>
<td>3.00%</td>
<td>2.33%</td>
</tr>
<tr>
<td>Italian</td>
<td>0.13%</td>
<td>0.14%</td>
</tr>
<tr>
<td>Latin</td>
<td>1.61%</td>
<td>5.37%</td>
</tr>
</tbody>
</table>

Source: Statistical Yearbook of Education 2009/10

4.3. Key educational issues on the Internet age

Teaching and learning are based on the technical features of the age and are subject technical developments. Depending on the degree of technical progress, one can differentiate in the historical development of leaning based on technology three very different generations of users/students, and i.e. the corresponding generation, which dates from 1850, further the so-called telecommunications generation of the sixties of the 20 century and since the nineties of the twentieth century, one can refer to the computer and internet generation (Zawacki – Richter, 2011). According to Garisson (1985) distance learning is influenced by three developmental milestones – print-media, telecommunication media and computers.

A new era has brought along the possibility of Internet communications and the growing importance of media topics not only for education but also for the economy and society. Thanks to generous European development programs considerable funds are used for the improvement of teaching and learning, teaching aids are created to support distance learning and learning is gaining virtual dimensions.

Let us ask the fundamental questions, which have impact on the development of information technologies:

- Are universities ready for the commencement of new student generations and new start of information technologies?
- Do universities have real technological support for the establishment of a new eLearning age?
- What are their expectations? Do they correspond to the trends in the field of education?
- Are universities aware of the connection with the economy?

This is just a list of some of the aspects that could affect the future development of higher education. In today’s higher education we often talk about the quality of higher education, excellence and internationalization. In this respect, the Czech higher education does not differ from their Western neighbors.
To some extent conceptuality is missing in the use of eLearning products throughout the Czech higher education. While universities have their internal study programs for distance learning, there is a wider (commercial) use of information technologies in relation to the economy, labor market and employment.

Another aspect, which is being discussed, is the standardization and evaluation of competences in various fields of knowledge, which would allow the recognition of standardized competences at the European level. In this connection it should be borne in mind that the key competences in education can have completely different dimensions in different European countries.

Further down let us remind of understanding the key competences in German-speaking countries, and also for the reason that some graduates are trying and certainly in the future will seek to exercise the profession even with our western and southern neighbors. In the comparative analysis, we have included the German-speaking Community of Belgium, Germany, Austria and Luxembourg, a country of the European Community. What we find interesting is the lexical designation of key competences, their definitions and the possible scope.

In the context of the European objectives of education one of the leading trends in education lies in a close contact with the practice and lifelong learning program. It is the combination of the mentioned trends in education which presents enormous challenges and diversification opportunities of the educational process with the specific educational institution and also the diversification of higher education. In addition, the relation to the economic subjects is simply a logical result of economic cooperation with companies from the perspective of students' employability in the labor market too.

Ability of participating in the labor market, as well as increasingly promoting "employability" are gaining a greater internationalist dimension in the German environment in the spirit of other aspects such as flexibility, globalization, orientation to world markets.

Higher education in this regard is somewhat handicapped by a smaller degree of flexibility due to established accreditation procedures. Therefore, a more flexible form of education directly linked to economic operators is available such as the introduction of commercial eLearning education portals. There are not temporally and spatially restricted, yet they allow socialization process by means of eLearning practices and life-long learning in the spirit of the four key aspects of learning:

- Learn how to get knowledge.
- Learn to act.
- Learn to live together.
- Learn for live.

In the spirit of this concept there is a clear trend in the change of learning and diversion from the "input-oriented learning process "towards" output-oriented model of education ", and not only within the" learning-on-demand "or" learning - on the job. "

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9 The term "lifelong learning" is used the text in the meaning of the concept of the learning process, which will allow each individual from childhood through old age to acquire new knowledge, skills and competences in the different periods of his/her life, on various occasions, in the context of formal education, non-formal and informal education and learning. The term "lifelong learning" is used more in the sense of courses or programmes for lifelong learning, for example within the meaning of the Act on Universities (Updating the concept of the reform of higher education).
Certified outputs based on practice should be an integral part of the above stated efforts. There is an evident tendency of the state centralist competency to decentralize and localize to the local level or to the individual educational organizations. However, it is important to distinguish between decentralization with the aim of increasing the scope for decision-making of local authorities and between decentralization, which aims to strengthen the autonomy of individual schools (Döbert 2002, 4).

4.4. Competencies and their conception

In times of the economic crisis, it is absolutely essential to realize the significance of education, science and research for further development. For the needs of education and its further development a plan was developed, which is called the Strategy of Education for Sustainable Development of the Czech Republic for the years 2008 to 2015. It defines the concept of Education for Sustainable Development (ESD), which is seen as a prerequisite for the acquisition of such ways of thinking, decision making and individual behavior that lead to sustainable conduct in personal, work and civic life.

The ESD focuses besides the economic, social and environmental aspects of development on the development of competences understood as knowledge, skills and attitudes influencing decision making of individuals too. The notion of competence is not perceived in the German-speaking countries uniformly, nor is the lexical designation the same, so in the next section we will aim at the differences in the descriptions of the scope of the concept, and possibly some specifics.

In the German-speaking Community of Belgium competences are associated with different subjects or disciplines. To obtain the certificate key competencies were determined (Schlüsselkompetenzen) that have to be achieved by all pupils. This concept implies a narrow specification of skills and reduction to a narrow, bounded subject area or discipline. In our context, we could talk about the transversal competences.

In Germany, we can come across the designation of key qualifications (Schlüsselqualifikationen). In educational research, the term was used in the seventies and was further developed. Key qualifications in this sense represent the skill to cope with new initiatives during one’s life. It is evident that the scope of comprehension skills is expanding, not limited to a narrow subject or discipline as in the previous example. Their multi-functionality shows the relation to the process of lifelong learning and the educational process.

In Luxembourg one uses the term basic competences (competences de base). Focus on knowledge and skills extends the scope of the concept and identically as it is the case of the German concept there is a clear link with lifelong learning. New, it includes other aspects of the usability of these competences, such as a sense of peace, dignity, tolerance, freedom, equality, social responsibility, etc. For greater clarity, we present a table with terminology denominations in selected EU countries.

<table>
<thead>
<tr>
<th>Table 3: Identification of key competences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Country</strong></td>
</tr>
<tr>
<td>Belgium</td>
</tr>
<tr>
<td>Germany</td>
</tr>
<tr>
<td>Luxembourg</td>
</tr>
<tr>
<td>Austria</td>
</tr>
</tbody>
</table>
### 4.5. Several comments on the problematic aspects of education

Pressure on the higher education institutions in promoting standardization and achieving communicative competence is evident not only at the national level, it is being promoted on a European platform. The dialogue at all levels (European, Ministerial, university, regional) has the effect of changing the education of teachers, as well as changing teaching (and not just in foreign languages). However, it is necessary to admit that's between the theoretical ideas and concepts there is a highly visible reality of the didactic process and in particular the financial aspects, especially, as to the impact of education on the teaching of foreign languages, which of course is wrong.

Additional comments on the problematic aspects of education in foreign languages include individualization and differentiation in education. Abilities of students, their language competence, the ability to plan and manage and evaluate the process of learning a foreign language are problematic variables that deserve more attention.

Current status on the European labour market clearly shows the close links between tertiary education and professional practice. Within the framework of the OECD research "Learning for Job" an extensive survey of the professional education for the world of work had been conducted. In addition to Australia, Austria, Belgium, Chile, China, and England the Czech Republic was also included in the survey (Learning for Jobs, OECD, Review of Vocational Education and Training Polices, Czech Republic – the OECD, 2010).

As stated in it, the management of secondary vocational education at the regional level in the Czech Republic lacks transparency and accountable mechanisms, which would ensure consistency between the demand on the labour market and students’ choice of secondary vocational schools or training institutions and finally between the provision for quality standards throughout the country.

In the study "Learning for Job" is mentioned in connection with the fact that more and more often, graduates of secondary vocational schools apply for universities one is faced with insufficient levels of default knowledge from the secondary instance of education.

In addition to the already mentioned aspects and their reflection on the quality of tertiary education it is worth mentioning even more problematic, and it's non-existent control mechanisms that regulate the

<table>
<thead>
<tr>
<th>Grundkompetenzen,</th>
<th>basic competences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kulturtechniken</td>
<td>cultural techniques</td>
</tr>
<tr>
<td>Schlüsselqualifikationen</td>
<td>key qualification</td>
</tr>
<tr>
<td>Sachkompetenzen</td>
<td>subject competences</td>
</tr>
<tr>
<td>Sozialkompetenzen</td>
<td>social competences</td>
</tr>
<tr>
<td>dynamische Fertigkeiten</td>
<td>dynamic skills</td>
</tr>
<tr>
<td>Selbstkompetenzen</td>
<td>personal competences</td>
</tr>
<tr>
<td>Schlüsselkompetenzen</td>
<td>key competences</td>
</tr>
</tbody>
</table>

Source: Strategic Education for the Sustainable Development of the Czech Republic (2008-2015)
supply of universities with regard to developments in the labour market and the applicability of the profession.

From this perspective, it is desirable to keep reminding the enormous importance of learning foreign languages. In terms of professional life it is unsustainable to speak only one language. An individual's success stems from his/her ability to communicate in a foreign language.

5. Conclusion

In the study, we have tried to indicate the selected aspects of education, their range and options and solutions. The Czech Republic is already taking a number of measures to promote the quality and application of university graduates (higher education financial support within the framework of development programmes, and the support of the cooperation of universities and employers in the development of study programmes and their accreditation, the establishment of specific knowledge and skills in the graduate’s profile, cooperation in education, vocational training, regular meetings of experts from practice as well as from the universities at the highest level, etc.).

Unquestionably, the European Commission's initiative in the matter of the definition of key competences, which would recognise all EU countries, is a positive step towards the applicability of the European labour market, however, as suggested, there should be greater efforts in promoting effective working methods and cooperation at all levels. The diversification of the supply of the education at universities would also be conducive to their further development.

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SOME EDUCATIONAL PROBLEMS IN AFRICAN COUNTRIES

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Abstract

The illiteracy is still high in African countries. Eradication of it is regarded by African states as the most of important task for the construction of new life, but there are some specific difficulties. The first one is the education of adults. Some years ago it was successfully enough but now we can see “secondary illiteracy”. The second one is the contradiction between European and traditional systems of learning. One more task is the difficult choice of a language of teaching in polyethnic countries. We can add also that all of african countries are polyconfessional that why there are also Coranic and Christian education and contradictions between them and laic schools. Besides some peoples of Africa are nomads. Now special “mobile” or “nomadic” schools exist for them. Lastly the girl’s education is a big problem as always. African states are truing to decide all these problems but the ended decision is the thing of future.

Key words: schools, nomads, coranic education, languages, Africa South of Sahara

Illiteracy is still high in African countries up today in spite of the fact than dozens of years have passed since independence was gained.

Eradication of illiteracy was fairly regarded by governments of new independent states as the most important task for construction of new life. It was perceived ambiguously. On the one hand, it’s a necessity to build schools, develop programs, providing teachers and books, etc. On the other hand, it’s eradication of illiteracy of adult population. This second goal was supported by UNESCO. Special tutorials for adults are published in local languages (it’s worth mentioning that in most independent states the language of metropolitan country which was not spoken by adult population that had not studied in missionary schools, remained the main language). A brochure in Wobe language in Cote d’Ivoire is an example of it (Syllabaire Wobe, 1982). It is assumed that this knowledge was solidified with the texts on hygiene, housekeeping, new principles economic management issued in local languages (in some cases along with state languages) in newspapers or separate issues (Mensa Agbledela, 1956). At that Latin alphabet was used together with special marks for reflection of phonetic peculiarities of this or that language. By the way, at the moment attempts are made to create new writing system. Thus, ” NKO” script was invented in the middle of the previous century in Mali; there are already scientific papers about it (Wydrin V.F., Tomchina C.J., 1999); in the very beginning of our century – barbarian script.

Some nations of Africa had their own writing systems before colonization. Thus, the nations of modern Sierra Leone and Liberia had “Vai script” with some variations for the nations of Temne, Lobe and other. There also were schools. In Cameroon Ndjoya, the governor of bamum nation, invented writing system which combined pictograms and syllabary. Many nations having adopted Islam in the Middle Ages used “adjami” – modified Arabic alphabet. All these systems have been replaced with the Latinic
alphabet after inclusion of the Africans in colonial empires. The exclusion is the Amharic syllabary which originated yet in the beginning of our era and existing un Ethiopia till the present moment.

Eradication of illiteracy has become the government policy, supported by international organizations (UNESCO has already been mentioned). In Ethiopia, for example, such practice ("zemecha") has been carried out for several years; for this university students have been taken from their studies and were sent to rural areas. Such practice was actively applied in the army. In addition to special classes, marching soldiers memorized signs of Amharic script, attached to sheets of paper attached to the back of a foregoer. In the 70's and 80's of the previous century, this campaign was successfully carried out in many countries in Africa. In 1980 Tanzania and Ethiopia were even awarded the Krupskaya International Prize for success in eradication of illiteracy of the adult population. However, it seemed that the success was only temporary. Absorption of literacy was not supported by constant reading – up to now the adult rural population is not able to read, and does not see the need for reading - books, and newspapers as a rule don’t reach the rural neighborhood. The result was the phenomenon of so-called "secondary illiteracy" - people succeeded in absorption of literacy during the campaign, now can neither read nor write. This was confirmed by our observations in Ethiopia in 1990-1992 (Author’s field datas, 1991).

Today the problems of education and literacy are far from being resolved, even though they were paid much attention to, multi-step system of education envelopment (from primary school to university) (as an example, see Gavristova T.M., 1990). In 1960 in Africa there was 124 million people who could not read and write, which was 87 percent of the population (UNESCO Statistic Yearbook.1964). Governments of independent African countries understand the urgent need to change this situation. In 1961, in Addis Ababa, on the initiative of UNESCO a conference of ministers of education was held. The "Plan of Addis Ababa" was developed. According to this plan universal six-grade education was to be introduced by 1980. The main tasks included development of secondary education, teacher training, introduction of teaching in local languages. Special emphasis was laid on establishment of institutions for training teachers. In some countries they have been established. In particular, we have visited such a centre in Jimma (Ethiopia) (Author’s field datas, 1992). The Institutes of Education are successfully operating in Ibadan and Lagos (Nigeria) and so on. Still some difficulties exist. Thus, according to UNESCO, in 2005, 45 percent of school-age children do not attend school, and 40 percent did not graduate even from primary school. Now African countries encounter many difficulties typical of many underdeveloped countries while pursuing educational policy: lack of funds, lack of qualified personnel, textbooks, and lack of understanding of the need of education by parents - villagers (regarding children as labor help), etc. Thus, the resources allocated for education in Africa, are 8-10 times less than in Europe and the United States (UNESCO Statistic Yearbook, 1987). Not enough classrooms, teachers, textbooks, exercise books. In some schools, such as those we have seen in the Ethiopian town of Jimma, there are 50-60 pupils in each class, closely seated on narrow benches. Like in other similar countries the problem of women's education is very acute. However, on this continent the problem of education has some special features.

First of all, African countries which have become European colonies in the late 19th - 20th centuries, almost immediately experienced a kind of "culture shock." Objective need for development of the countries themselves in the new environment, as well as more specific interests of colonial administration demanded new approaches to socialization. Traditional methods, including communal and tribal education did not answer the new realities. Introduction of European standards of behavior, culture and education, and, therefore, organization of schools according to the European model which force to educate youth in the spirit of "modernization", was inevitable. European model of education, as well as programs and textbooks have been introduced. The reference to the first phrase from the French
school textbook that was used in the African colonies has become a commonplace: "Our ancestors are the Galloises." M. Ferro had convincingly demonstrated their inefficiency by analyzing educational books of many countries (Ferreau M, 1992). In the first half of the last century local intellectuals readily perceived these innovations denying "mossy" traditional values. Both foreign observers and representatives of new African elite themselves have noted that, for example, educated Nigerians became "Victorians" in greater degree than residents of the UK.

However, with the growth of new elite, the awareness of their unequal and even oppressed position has become a matter of concern. Later the attitude to this problem has changed - from a criticism and intolerance to admiration. The work of philosopher and sociologist Abdou Toure on modern problems of public life in Côte d'Ivoire (Abdou Toure, 1982) was quite typical. The researcher studies interaction of traditional and Western cultures and notes significant changes in the value system of intellectuals. Whereas the 20-60's, the author emphasizes, there dominated criticism of Western civilization and even its complete denial and apologetics of Negro civilizations, in later periods the situation changed. The whole system of education in schools, as well as education of illiterate adults and daily propaganda is focused on Western values. Analysis of various aspects of city life, including family law in modern Côte d'Ivoire shows growing "Westernization", which is inevitable in the author’s opinion.

It is unacceptable for many representatives of contemporary African intellectuals. After gaining of independence a new stage (Yablochrov L.D., 1991) has begun. Thus, attempts of "Africanization" of school education had been made. This was declared in the oath uttered by students of Ghana in 1976: "We must fight to become the true Ghanaians, but not black Europeans" (The Ghanian Times 1975, p.6) At the moment the situation requires careful attention and desire to conserve all the elements of a traditional way of life and culture which appears to be rapidly disappearing (from clothing to philosophical systems of worldview). The educational system started to be regarded as unsatisfactory as it was blindly copying European models, preserving European programs and European textbooks (the way of teaching History is a special subject of discontent).

This was reflected in papers of African educators. The writer and social activist from the Democratic Republic of Congo (then - Zaire) Mudimbe notes bitterly that a modern Zaire intelligent is a product of Western education. In modern culture of Zaire he traces features of the two cultures. "Westernized" features, according to him, are playing a negative role on the one hand, imposing the norms and values of the West and displacing local norms, and a positive role on the other hand - contributing to the appearance of new ways of thinking and understanding of the world, bringing people out of the narrow bounds of traditional outlook. The second culture - "African" - preserves narrow ethnical awareness sharply opposing the Western culture. According to Mudimbe, that began after 1975 when the policy of "genuine authenticity" caused formation of a "true African" modern culture, which embodies all the best from the West and from traditional society. An important role in this synthesis must be played by social sciences, although anthropology, sociology, ethnology, history, and psychology have practical value, in relation to economy, politics and management they have a subordinate position, as well as revision of educational programs of schools and universities (Mudimbe V.Y., 1982).

Many people believe that the instrument for struggle against this phenomenon is rejection of European education system and return to the old ways of learning. This resulted in the great interest to socialization of children in traditional societies. Often representatives of African elite who have got European education and who train their children in elite schools in Europe, during the holidays send them to villages to visit their grandfathers who "teach" them traditional lessons. The book written by Boubou Hama "A Critical Survey of African education" (Boubou Hama, 1974) can be regarded as a genuine apology of the traditional system of socialization. This great work rises much more issues that the title
can prompt. Contemporary Africa, he says, is being formed in the cities. In other parts of the continent there remains a traditional type of "African personality" which is the product of "a truly African education and training constantly evolving throughout the thousand-year history of the continent" (Idid., p.11). This is why it is important to study and possibly even preserve these methods.

Boubou Hama examines socialization of children of seven nations of Niger. The main conclusion of the author is: the upbringing, training and education for Africans, and consequently, the formation of the "African personality" continues throughout the whole life. All the "pedagogy" goes through four stages. These are the training of the child 1) in the family and among adults; 2) communication with other children in age associations, etc.; 3) social and cultural life through learning labor skills, rituals, rights and obligations, heroic epos, etc.; 4) through transfer of knowledge from experts and guardians of tradition (Ibid., p.161). Boubou Hama gives quite a detailed ethnographic description of material and cultural life of the nations under study, completed with some notes (with translations into French) - texts of tales, ritual and play texts, etc. Socialization takes place at several levels: in castes, age and friendship associations, in camps associated; through perception of creativity of poets and griots (singers and storytellers), folk wisdom embodied in proverbs, sayings, riddles, and finally, through perception of morality and ideology of the Koran (Ibid., p.258). As a result, the person is fully prepared to recognize his place in society and the world, to create a truly "African personality." On the contrary, the failure of this system leads to degradation of an individual. Boubou Hama has a deep belief in primacy of spiritual culture. That is, as the scientist believe, what defines a social structure and forms a classless and humanistic traditional society. He regards the past a kind of "golden age," which he contrasts to "cruel present" (Boubou Hama, 1974).

These concepts specific to African intellectuals of 70s cause resistance from more sober-minded authors belonging to comparatively young generation. They deny unconditional idealization of traditional education. So A.Mungala (Mungala A.A.,1982) believes that it is necessary to analyze both positive and negative features of traditional practices and to establish the extent to which – fully or partially - you can bring them into modern life. He does not describe a system of education, adopted by any nation, but he is looking for common patterns of education and upbringing in African societies. Tradition is understood as a series of "ideas, doctrines, customs, practices, knowledge, techniques, habits, passed down from generation to generation by members of human community." Mungala believes that the most important feature in traditional education system is its being organic, inseparable from the whole life of society. Traditional education was firstly collective, "pragmatic", specific, functional, informal; secondly, it was based on the idea of deep connection between a human being and nature and supernatural world; and thirdly, "polyvalent" (as opposed to the modern education, various disciplines are not isolated from each other in these systemes), and finally (this is probably the main thing for the author), "integrational", i.e. its basic aim was "integration", the introduction of human into the society.

Mungala approaches to teaching techniques from the perspective of pedagogy, and shows that songs, dances, legends, riddles and proverbs familiarized people with language, zoology, psychology, ethics, cosmogony, history, geography and other disciplines; games provided physical training, developed intelligence, gave special and moral education, raised a desire to experiment, to compete, etc. The fear to break taboos, laws and regulations, which organized the whole social life played an important role in learning. It’s important that the author tries to approach learning system objectively, to single out its advantages ("values") and disadvantages ("anti-values"). He believes that the biggest benefit is a close connection with life, comprehensive training, etc. - all the things that Western pedagogy declares to be "new methods" and that naturally evolved over the centuries in folk pedagogy. Bringing up the community spirit, mutual assistance, respect to elder people, to the spirit of law, statement of such moral values as courage, obedience, courtesy, responsibility, integrity and dignity is undoubtedly very
important. However, the author clearly sees "anti-values." In particular, according to his opinion, raising fear restricts initiative, makes us look for security in dependency, etc., suppresses individuality, promotes a sense of mysticism interfering with free development of a modern individual.

Almost all the African countries are polyethnical. That is why they have one more problem – the choice of the language for education. There is in education (at schools, on professional and higher levels) after gaining independence traditionally on the former colonial languages (English, French, Portuguese). There were very few exceptions. These were primarily Ethiopia and Tanzania. In Ethiopia, in the first years of primary school the Amariya language was used (Amhara - the political majority), from the fifth-sixth form the children were taught in the English language. But for many people of the country Amharic was also "not their", at home they spoke their native languages. In Tanzania, government policy has always been focused on development of Swahili, which was recognized as the state language. In this language people are taught all over the country. Languages of other nations are not used for the purpose of education. In Kenya, where Swahili is the official language, it is used, but it’s not mandatory. In South Africa the situation is a little different - there are schools and universities, teaching in English and Afrikaans. During the years of apartheid domination there were special schools for black Africans and a special system of education "Bantu Education", which involved a minimum of knowledge and training at the level of craft. Pupils were taught in English. Attempt to change it into Afrikaans caused widespread unrest, which was brutally suppressed by the police in the suburbs of Johannesburg Soweto.

In recent years, in line with general policy of democratization, attempts have been made to introduce languages of nations of Africa into school education. For example, in Ethiopia after 1991 (the fall of totalitarian regime) it was decided to use 22 of the 84 languages of the country in the sphere of education (primary school) and information, but actually only three main languages are used - Amariya, Orominya, Tigrinya (Lvova E.S., Balaschova G.A., 208, pp.157-163). The same issue arose in South Africa, where the government declared 11 languages to be official. The problem of involvement of local languages in education is not easy and has a double aspect. On the one hand, without engagement of these languages, a large number of children who know only their native language, do not go to school or have learning difficulties. This hinders their future life, makes it impossible to continue their education, go into prestigious professions. Inability to find a good job providing decent living leads to marginalization (Lvova E.S., Right M.V., 1998, pp.159-166). On the other hand, introduction of several languages does not solve the problem, as for the majority they are not native. In such cases it’s particularly difficult to solve the problem of teaching children of refugees who have increased in number in recent years. It should be added that there is a lack of preparation of the school system for this kind of innovation - the lack of teachers - speakers of these languages, training materials in local languages, etc. These state programs and statements now bear only political declarative nature.

Besides, there are some non-indigenous communities in many African countries. Some of them established their own schools in the past. In Ethiopia, for example, there are Greek, Armenian, Indian schools in Addis Ababa. Indian communities are especially numerous in East Africa and South Africa; they play an important role in the economy and politics of these countries (Lvova E.S., 2008, pp.140-158). In Tanzania, for example, before independence (then - Tanganyika) there were many Indian schools; teachers came from India (and local teachers advanced their skills in this country), children went to India to go into higher education - they had special quote in universities of Puna and Allahabad. There were such schools in South Africa, there was an Indian University in Durban. In Tanzania there former Indian schools don’t exist, they are all considered to be nationwide and operate according to the same national program (Lvova E.S.2005, pp.116-146). Durban University in the South Africa also ceased to be Indian, and now most of the students in it are black Africans.
Another important feature of African countries is multi-confessional population. Ancient Christian Ethiopia was a centuries-old system of education. However, it was limited to the sphere of the church. Well-designed multi-stage system of Christian education had existed for centuries; it was concentrated mainly in monasteries or courts of rulers. Only at the end of XIX century European missionaries started to promote secular schools. On the contrary, European missionary schools that appeared in Ethiopia and in many other African countries from the beginning of its existence, not only pursued church education, as they were training in craft and administrative skills of junior assistants to European colonial personnel. At the same time, these schools prepared future preachers and vergers. First, young men have been sent in seminaries and other higher education institutions in Europe (for example, the first was a group of children from the nobility of the Congo in the late XV - early XVI centuries, and one of them became the first bishop in Congo – Lvova E.S., 2002, pp.194-199). Later schools of theology, and then the faculties of Universities appeared in some countries (as in the Belgian Congo). Firstly, orphans, vagrants, and freed slaves became students of these schools. Often local nobility (as at the times of Peter in Russia) avoided sending their children to such schools. For example in Mauritania children of slaves were sent instead of them, in Rwanda - Hutu (low ethno-social group). Lately this practice has led to the fact that in both countries "new" modern Europeanized highest stratum was represented by the people of former lower stratas, which had greatly complicated the political situation (confrontation in Rwanda was especially cruel - it resulted in genocide in this country in end of the twentieth century).

Now church and secular education is delineated. Modern missionary schools teach according to national programs, among their students there are children from multi-confessional families - Christians of various denominations (such as Catholics and monophysites, and various forms of Protestantism), and Muslims. In such schools, as in many public or private schools, the priests give "The lessons of ethics and morality" where children are familiarized with basic tenets of religions (Athor’s field datas, 1991-1992, 2003). Sunday confessional schools are also preserved.

There is another specific feature of education in Africa. As a rule, the international educational statistic ignores Koranic education. Meanwhile, many of the Africans are Muslims (according to some sources - more than 30 percent). Whereas North Africa was conquered by the Arabs VII century, was included in the Arab Caliphate and survived Arabization and Islamization. The situation in Sub-Saharan Africa was different. In X-XIV centuries Islam had been penetrating (and gained more and more supporters) not through military force, but with trade caravans. Firstly in West and East Africa traders formed some Muslim quarters in towns, then new religion was adopted by the elite, and after this by the most of local population. There were schools for children and for proper training of the clergy. So, in the states of Mali and Songhai children were taught for fee. In the towns of Djenne and Timbuktu there were schools which were compared by some researches with Arabic madrasah and European universities. Dynasties of Islamic scholars, philosophers, grammarians, lawyers, chroniclers have been formed. Scientists of Songhai, Hausa, Bamana, Swahili, Kanuri, kanembu, Fulani and others left chronicles, poems, proclamations (Lvova E.S., 2002, pp.209-213). Golden age of Islamic culture was in West Africa till the end of the XVI century when the Moroccan invaders destroyed the most important centers of learning in Djenne and Timbuktu. In East Africa, written culture had evolved in line with Islam till the end of XIX century. Similarly written culture of Madagascar was used - a writing "sura-be" was based on the Arabic alphabet.

Koranic education was in many countries replaced by Europeans but did not disappear entirely. It is still alive not only in countries with a majority of Muslim population (Senegal and Mali), but even in traditionally Christian Ethiopia. The basic form of the Koranic teaching is Sunday schools, various courses or groups of home students. Children go to regular schools and in their spare time - to Sunday schools or to the teachers of the Koran. But there are special Koranic schools. Thus, the Ahmadiyya
Muslim Community has more than 500 educational institutions in different countries of West Africa. Attitude towards secular dichotomy is European - Koranic education is ambiguous. Muslims with extreme views believe that the common schools are unacceptable ("haram") and in April 2012 in Cano (the town on the Muslim north of Nigeria), a bashing was made in a Catholic school.

However, co-existence of the two systems of education remains. The very essence of Koranic education changes. The number of women and girls increases. The system becomes more democratic and more systematic. Study of the situation in Burkina Faso, Guinea, Mali, Senegal, Niger has shown that groups of students taught by the "marabouts" (Koran scholars) are replaced by organized school. Although the number of Koranic schools has reduced in recent years and the number of secular westernized school grows, the number of students in Koranic schools has significantly increased. For example, in Mali a quarter of all students are the students of madrasah. Usually Koranic education consists of three stages (levels). After this they are followed by courses on astronomy, mathematics, science, etc., without copying the programs of secular universities, but using them. Often, after the first or second level, students go to regular public or private schools. In the first and second (3-10 years) they are given elementary, then more profound knowledge of the Koran and Islamic history. The number of secondary and higher establishments of Koranic education increases. There is the Islamic University in Harare (Ethiopia), the Islamic Institute in Dakar (Senegal), the Islamic Educational Center in Kano (Nigeria), etc. (Easton P., Peach M and others, 1997).

Particular concern is given by African governments to the problem of schooling among nations leading nomadic life. There are in Africa many nations like these ones: Tuaregs, separate groups of Fulani, Vodabe in West Africa, Somali, Afar, Nuer and others - in Sudan and North-East Africa, Maasai, Samburu etc. - in the East, Herero, Ovambo, separate groups of Zulu – in the South of the continent. Many of them tend to settle down, often move to cities, and children are included in mainstream education. But the problems remain. In countries where nomadic pastoralists constitute a significant part of population, attempts have been made to establish "nomadic schools" (Lambat P., 1976, pp.42-43). These schools have been established, for example, in northern Kenya for Somali refugees. There are 91 schools (Nomadic schools…, 2012). Similar situation can be observed in Senegal and Mali – there are 28 schools for 1,200 students for Fulani and Tuareg, in Ethiopia for the Afar, in Sudan (Mobil schools, 2012). In Sudan where 8 percent of the 45 million inhabitants are engaged in nomadic pastoralism the schools opened their doors to them in 1990s in Darfur, Kordofan, White Nile. In the first years only 109 nomadic children have been covered; by 2008 - 200 000 (in nomadic and in public schools). This issue is seriously treated in Nigeria. There are 9.4 mln of nomads and 3.1 mln of their children. In this country, in 1986 a program of education of nomads was adopted, and in 1990 the National Commission on Education of the nomads was established. In the north of the country there are 250 schools. Since 2005 education in primary schools became free; this immediately increased the number of students. In 2012, there were 20,500 children, it is planned to bring this number up to one million (Ismail Iro, 2011). These schools do not always have permanent buildings, often small sheds are made or students gather under the trees. It’s a long-standing practice related to conventional training. In Addis Ababa, the Ethiopian capital city, the link with the tradition is emphasized by the fact that one of modern schools is called "Learning tree" ("the school under the tree"), and University Library houses a painting of a boy listening an old man with a book sitting under the tree (Author’s field datas, 2006). In these "nomadic" or "mobile" schools classes are given in the early morning and late at night and during the day the children live in full accordance with their pastoral way of life. Teachers are often their relatives and wander together with their pupils. African countries allocate budget money for their development; they are actively supported by UNICEF.
There are also groups of people having hunting-gatherer economy and active way of life - the Pygmies in many states of Central Africa, the Hadza of Tanzania, Sanen (Bushmen) in South Africa. Individual programs and their involvement in education almost do not exist. However, in Tanzania there is a school for the Hadza who are taught in Swahili. In the People's Republic of Congo in the 70s of the twentieth century, a program of "alphabetization" of pygmies was developed, but it was never implemented. The adult population of these nations takes the attempts of the state as an attack on their culture; they often don't want to send their children to school, saying that they want to preserve their way of life (Lvova E.S., 2012).

Women's education remains an acute and complex issue. Girls make up a large minority in all African schools. Thus, in the Afar's nation, for example, a it was pointed by Befekazu Zeleke at the XVI International Conference on Ethiopian Studies, they make only 17 percent of the total number of students (Befekazu Zeleke,1995). Not more than 20 percent of girls study in schools and in higher education establishments almost all African countries. Moreover, not all of them graduate from school. There are some common reasons for all children – parents are usually poor and cannot afford education; children are primarily regarded as helpers in the household, etc. But there are specific reasons concerning girls' education. First, it's traditional mentality, seeing a girl's future as a mistress and a mother. This causes preference to boys, alongside with and early marriages and pregnancies. Some Ethiopian scholars believe that lack of positive examples prevents female education – there are very few women in Africa who had established themselves as political, scientific or artistic figures, although in recent years there becomes more and more of them.

All these problems become more and more acute under conditions of modern globalization.

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PHYSICAL ACTIVITY AND LEARNING IN THE SWEDISH BUNKEFLO PROJECT
EVALUATION OF MOTOR SKILLS TRAINING IN COMPULSORY SCHOOL

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Abstract

The aim was to study relationships between physical activity and school performance in perspective of results found in the Swedish Bunkeflo project, also called the Pediatric Osteoporosis Prevention (POP) study. Another aim was to evaluate the model for motor skills training used in the project, the Motor skills as Ground for Learning (MUGI) model – (in Swedish: Motorisk Utveckling som Grund för Inlärning). The MUGI model for motor skills training was found to be useful as a pedagogic model for improving motor skills (balance/bilateral coordination and eye-hand coordination) in school pupils. Both boys and girls improved significantly in motor skills with extended physical education and extra motor training in school. The article proposes a theoretical model for understanding relationships between motor skills and school performance.

Key words: Academic achievements, Cognition, Motor skills development, MUGI, Physical Education and Health

I INTRODUCTION

Physical activity play is important for children's social life, since friendships develop in conjunction with physical activity play during the first school years. Pellegrini (1995) found that exercise play (with gross motor movement) increase and peak during primary school years. According to Blatchford (1998) being able to participate in physical activities is important when it comes to acquiring friends, maintaining friends, and belonging in peer groups. Some children with impaired coordination may not become involved at all in social physical play and they are at risk of becoming isolated and solitary in the school playground. Research has shown that school-aged children with the diagnosis Developmental Coordination Disorder (DCD) spend less time in formal and informal team play (Smyth and Anderson, 2000). Fundamental motor skills may thus be an important factor in motivation for being physically active and being able to participate in social physical play.

The aim of this article is to discuss relationships between physical activity and school performance in perspective of results found in the Swedish Bunkeflo project, also called the Pediatric Osteoporosis Prevention (POP) study. Another aim is to evaluate the model for motor skills training used in the project, the Motor skills as Ground for Learning (MUGI) model – [in Swedish: Motorisk Utveckling som Grund för Inlärning] (Ericsson, 2003).

II PHYSICAL ACTIVITY AND ACADEMIC ACHIEVEMENTS

Many pupils leave compulsory school without being qualified to apply for a national upper secondary school programs. Despite efforts the number of unqualified pupils appears to increase. In spring 2009,
the proportion of qualified pupils were 88% in Sweden (National Agency for Education, 2009), which is the lowest percentage since 1998. This is a paradox since researchers (Ekman and Dolan, 2010) claim that 100% of Swedish pupils have the potential and capacity to reach the goals in all school subjects.

According to previous research the majority of Swedish pupils participate in the school subject Physical Education and Health (PEH) (Lundvall and Meckbach, 2008; Redelius, 2004). In a study of physical activity among IV- pupils (Ericsson and Cederberg; 2010) a comparatively smaller proportion, 61%, answered that they usually attended PEH-lessons school year 9. Nearly one half, 45% of the IV-pupils never became sweaty or breathless during school year 9 and 34% never exercised or did sports of any kind.

Pupils who have high grades in the school subject PEH often have high grades also in other subjects (Thedin Jakobsson et al., 2012). Åberg et al. (2009) found that cardiovascular fitness at age 18 years was positively associated with cognition and could predict educational achievement later in life. Findings by Middleton et al. (2010) showed that women who have been physically active at any point over the life course, especially as teenagers, had a lower likelihood of cognitive impairment in late life.

III. THE BUNKEFLO PROJECT, A CONTROLLED INTERVENTION STUDY

All pupils (n=220) at two compulsory schools in a middle class area in Sweden were studied from school year 1 to 9. The control group had the school’s regular PEH two lessons (90 min) per week. An intervention group had PEH and physical activities on the schedule five lessons (225 min) per week and also, when needed, one extra hour of motor training per week. Motor skill observations with the MUGI observation checklist (Appendix A) were made at project start, school years 2, 3, and 9. The checklist consists of nine gross motor tasks measuring two components of motor skills: balance/bilateral coordination, e.g. hopping and balancing on one leg and hand-eye coordination with tasks like throwing, bouncing and catching a ball (Ericsson, 2008a). Pupils in the intervention group who needed extra motor training were offered this according to the MUGI model (Ericsson, 2008a).

III.1 Intervention with the MUGI model for motor skills training

The Motor skills as Ground for Learning (MUGI) model [in Swedish: Motorisk Utveckling som Grund för Inlämnning] (Ericsson, 2008a) is an education program, which started in Lund in the early 1980s. The model was developed in collaboration with the school health service. It includes motor skills observations of all pupils at school start, information to teachers and parents, and offers of extra motor skills training. The aim is to identify children with any problems or difficulties in motor skills in order to give early support and stimulate their motor skills development, before motor deficits become a problem to the children. Children who need extra motor training are offered to come and practise gross motor skills with the PEH teacher in a smaller group one hour per week for as long as they need it. The training is a part of the school’s remedial teaching program for pupils with difficulties in motor skills, perception, and self-esteem.

Many children having motor skills problems have experienced a lot of failure when asked to do coordination or balance tasks in PEH lessons. The failures are probably perceived even worse by being visible and obvious to all class mates. Therefore the MUGI model for motor skills training is based on the principle of success, i.e. the children are never asked to do things they are not good at, but instead offered tasks with the aim of automatization of skills coming earlier in motor skills development. The MUGI model is influenced by the social cognitive theory, formulated by Bandura (1997). One of the most important goals in the training is that children feel motivated and enjoy taking part in physical
activities. It is important that the focus is on what each child wants to learn, that goals are achievable, and that the child takes pleasure in practising. Since children often are very good at finding skills they need to practice, the introduction to the training often includes questions like: “What do you think would be a good skill for you to know? “What would you like to learn?”

According to Bandura (1997) cognitive guidance is especially important in early phases of skill development, when a cognitive representation of the skill is formed. It is of importance that any feedback given is structured to build a sense of personal efficacy as well as a specific skill. Corrective feedback that highlights successes and directs attention to relevant aspects of sub skills aids the development of proficiency. Informative feedback improves the performance as well as facilitates observational learning for similar activities. The aim with continued practice is that skills become fully integrated and are executed with ease. Once a skill becomes routinized, it no longer requires higher cognitive control. The execution can then be regulated by lower sensory-motor systems in managing recurrent task demands.

After people develop adequate ways of managing situations that recur regularly, they act on their perceived efficacy without requiring continuing directive or reflective thought. (Bandura, 1997, p. 34)

This disengagement of thought from action performing has considerable functional value. Having to think about details in every skilled activity would consume most of the brain’s attentional and cognitive resources. The automation of complex skills involves several processes. Bandura (1997) outlines three major steps:

1. Mergerization, i.e. segments of the skill are merged into larger skills until it becomes a fully integrated routine that no longer requires cognitive organization or linkage.
2. Production of contextual linkages. Practiced actions repeatedly in the same situations are linked to recurrent contexts so that performers respond instantly without having to think about what to do.
3. Shift of attention from execution to result of the action.

The principles in MUGI motor training can thus be summarized as:

- Success instead of failure
- No training of skills the child cannot perform
- Automatization of skills in earlier development

With better, i.e. automatized, motor skills the child will hopefully improve in self-efficacy (Bandura, 1997), social abilities, and eventually also in self-esteem. An early evaluation of the MUGI model showed that the motor training had positive effects on children’s motor control, perception and ability of remembering details (Ericsson and Lindström, 1987).

The results in the Bunkeflo project showed that motor skills improved from school year 1 to school year 9 in both groups, but more in the intervention than in the control group so that motor skills were superior in the intervention compared to the control group in school year 2, year 3, and year 9. Both boys and girls improved significantly in motor skills and the differences between them decreased with extended physical activity and extra motor training in school. In the control group, however, differences between boys’ and girls’ motor skills increased from school year 2 to school year 3. But in the intervention group there were no significant differences, neither in balance/bilateral coordination nor in eye-hand coordination between boys and girls in school year 3. At this point, 90% of the boys and 94% of the girls had good motor skills. The corresponding values in the control group were 46% and 83% respectively. School year 9 93% of boys and 92% of girls in the intervention group had good motor
skills. In the control group 42% of boys and 33% of girls had good motor skills (Ericsson and Karlsson, 2012). In the control group, which had the school’s ordinary PEH two lessons per week, there were no measurable differences between pre and post test for pupils with small or major deficits in motor skills. This indicates that motor skill deficits do not disappear by themselves, and that the school’s two lessons of PEH per week are not sufficient to stimulate improvements in motor skills for these pupils. These results are in line with other studies (Cratty, 1997; Cantell, 1998; Kadesjö and Gillberg, 1999; SEF, 2000), which confirm that without any remediation program many children with deficits in motor skills will keep these problems for many years.

Significantly higher grades in PEH were found in the intervention than in the control group and there were no pupil without a grade in the subject, whereas almost 4% of the pupils in the control group did not receive a grade in PEH. Additionally, for pupils in the intervention group who had motor skills deficits at project start, the positive effects remained from school year 2 and 3 through school year 9. These pupils received significantly higher grades in PEH compared to pupils in the control group with corresponding deficits in motor skills at project start (Ericsson, 2011).

Results from the Bunkeflo project also showed that the amount of physical activity and pupils’ motor skills had an impact on school achievements in Swedish (reading and writing) and Mathematics (room conception/spatial ability and number conception/thinking proficiency). Pupils with small and large deficits in motor skills at project start, who had extended physical activity and extra motor training in school, performed significantly better in all parts of the national tests of Mathematics and in three of four measured parts of the national tests of Swedish than pupils in the control group with similar deficits, but who had only the school’s ordinary PEH (Ericsson, 2008a; 2008a).

There was a larger proportion of pupils in the intervention than in the control group (96% versus 89%) that reached qualification to upper secondary school. The sum of grades was also higher in pupils with no motor skills deficit than among pupils with motor skills deficits as was the proportion of pupils who reached qualification to upper secondary school (97% versus 82%). In addition, there were in school year 9, significant correlations between motor skills and sum of grades in evaluated subjects. Significant correlations were also found between motor skills and the proportion of pupils that reached qualification to upper secondary school (Ericsson and Karlsson, 2012).

IV MOTOR SKILLS AND SELF-ESTEEM

Physical self-concept is known to be an important part of self-definition in childhood (Harter, 2003). Raudsepp, Neissaar and Kull (2013) found reciprocal relationship between physical self-worth and physical activity in early adolescences. In the Bunkeflo project significant correlations were found between motor skills and self-esteem overall and two components of self-esteem: friendship/sports efficacy and attention/learning efficacy (Ericsson and Karlsson, 2011). Other studies have shown that some children do not participate in sport or exercise because they have not established early coordination skills while at school. A national evaluation of the Swedish school subject PEH revealed that 10% of the pupils felt bad and clumsy during the PEH lessons and that 7% of the girls did not reach the subject’s goals (Eriksson et al., 2003). The lack of development of fundamental motor skills in early years can lead to a disinterest in physical activities, lack of fitness, low self-esteem and health problems as they grow older (Brown, Walkley and Holland, 2004). Children whose fitness is poor and whose motor skills are insufficiently developed often develop a negative self image (Strauss, 2000) and end up in a downhill spiral leading to less and less physical activity. They are physically passive during their leisure time, and do not participate in any sports activities. They are caught in a cycle in which, children who are in
need of motor skills training the most get the least practice. Because they don't participate in physical activity they have poor motor skills, and because they have poor motor skills they don't participate in sport and other physical activities so that their motor skills further decline. This sees them trapped in a spiral of declining motor skills, fitness and motivation to take part in physical activity. School physical education is one logical and practical point for intervening in this damaging cycle. Researchers who found low motor skill levels across Australia claim that more children and young people would play sport and take part in other physical activities if they had better motor skills (Brown et al., 2004).

Levels of self-esteem, of which physical self-esteem is an important part, can be predicting factors for motivation and behavior (Kerni et al., 1993). Favourable perceptions of one’s physical capacity contribute to an increase of participation in physical activity. Regular physical activity seems to promote self-esteem (Steptoe and Butler, 1996) and perceived physical self-esteem can be increased by activity programs (Fox, 2000; Lindwall, 2004). Furthermore, increased physical self-esteem has been found to be a strong predictor to be highly physically active and maintain a normal BMI as adolescent (Raustorp, 2005). A conclusion is that exercise could be a valuable tool for increasing and maintaining physical self-worth. This indicates that, when planning intervention programs to increase physical self-esteem through physical activity, early interventions to improve fundamental motor skills may be successful starting points.

IV.1 Self-efficacy and learning

Theories of the self differ not only in concepts but also in comprehensiveness. Social cognitive theory adopts an ecological perspective on the contribution of efficacy beliefs to cognitive and social development. The self-efficacy theory, formulated by Bandura (1997), addresses sub processes at both an individual and a collective level. Efficacy beliefs play a crucial role in the self-regulation of motivation. The self is socially constituted, but individuals are contributors to what they become and do. Personal standards are constructed to be used to guide, motivate, and regulate the behaviour. Self-esteem, or self-worthiness, has many sources and it can stem from self-evaluations of personal competence. Competence or competent functioning requires appropriate learning experiences; it does not emerge spontaneously. Striving for competence is motivated by benefits of competent actions. This means that self-devaluation rooted in incompetence requires practice of skills that bring self-satisfaction.

The initial efficacy experiences are acquired in the family, but peers have an increasingly important role in development of self-knowledge of capabilities. In peer interactions social comparison processes come into play. Children are especially sensitive to their relative standing among peers in activities that determine prestige and popularity. In a path analysis of influence patterns (Bandura, 1997) it has been shown that strong prosocial connectedness and peer popularity promote academic achievement directly.

Environments that are responsive to infants’ actions promote the development of causal agency. Infants who experience success in controlling environmental events by their actions become more attentive to their own behaviour and more competent learners than infants for whom the same environmental events occur regardless of how the behave. (a.a., p. 164)

Preschool programs that provide rich mastery experiences raise the intellectual level and academic attainments of children. The most disadvantaged benefit the most and the earlier and more intensive enablement programs, the greater the lasting intellectual benefits (Bandura, 1997).

Perceived self-efficacy is an important component in social cognitive theory. Efficacy beliefs are involved in regulating all types of performances, until they become routinized into habitual patterns. In fact, perceived efficacy beliefs contribute independently to intellectual performance rather than simply reflecting cognitive skills. Studies have shown that efficacy beliefs predicted interest in, and positive
attitudes toward mathematics, whereas actual mathematical ability did not. The more self-efficacious children managed their work time better and were more persistent in solving problems.

Regardless of whether children were of superior or average cognitive ability, those with a high sense of efficacy were more successful in solving conceptual problems than were children of equal ability but lower perceived efficacy. (Bandura, 1997, p. 215)

Perceived self-efficacy may thus be regarded as a better predictor of intellectual performance than skills alone. Furthermore, efficacy beliefs can predict enduring changes in lifestyle activity patterns. Belief in one’s physical efficacy has been found to be a better predictor of long-term engagement in everyday physical and social activity than physiological capacity, age, or perceived exertion (Bandura, 1997). Results from the Bunkeflo project (Ericsson and Karlsson, 2011) suggest that perceived self-efficacy as well as physical self-esteem is associated with success in school work and that they both might be positively affected by success in motor skills and physical activities.

V DISCUSSION

The MUGI model for motor skills training was found to be useful as a pedagogic model for improving motor skills (balance/bilateral coordination and eye-hand coordination) in school pupils. The conclusion and implications of the present findings are that the school has good potentials in stimulating all pupils’ development of motor skills, but two lessons of PEH per week are not enough as shown in the Bunkeflo project. The European Parliament (2007) calls upon all Member States to guarantee at least three PE lessons per week under supervision of specialised PE instructors for all pupils. Physical activity and motor training every day showed positive effects in this study.

How could one understand the relationships between motor skills and cognition and explain possible effects from motor training on learning? It is hard to find any good theories or models for total explanations. However, there are different attempts of explanations which can be divided into three different perspectives: a sensory-motor perspective, a neuropathologic and a psychological perspective. The sensory-motor perspective focuses on the importance of the child’s early motor experiences for the sensory and the perceptual development and also for cognitive processes. Deficits in motor skills might have a negative effect on self-esteem, skills to play, attention and other cognitive functions (Cratty, 1997; Gjesing, 1997). The hypothesis in a neuropathologic perspective is that motor training might affect the nerve system in a positive way. Studies have shown that the same part of the brain (the prefrontal cortex) is active in motor skill learning as in problem solving and cognitive learning (Jensen, 1998; Shephard, 1997). Physical activity also increases the blood flow and the metabolism in the brain, which could result in a higher grade of arousal and attention (Shephard, 1997). In a psychological perspective the explanations are focusing indirect relationships between motor skills and cognition. Changes in psychological functions as a result from physical activity, such as motivation, communication, social competence, self-esteem and general life quality, might lead to better learning skills with higher quality and fewer disturbances (Kiphard, 1979; Bandura, 1997).

Based on earlier research, concepts in the social cognitive theory, and practise of the MUGI model presented in this article, some theoretical assumptions regarding the relationships between physical activity and school performance can be outlined as: Improvements and automatization of fundamental motor skills lead to increased physical self-esteem, which give better prerequisites for attention and comfort in school, which lead to increased motivation to learn and to attend classes. An illustration of this positive spiral is shown in figure 1.
To combat declining physical activity levels there is a need for more knowledge about motor development in children and school pupils. The link between motor competence, physical and psychological health needs to be examined further. Early discovery gives opportunity for early interventions, which could be of importance when it comes to avoiding discouraging pupils whose fitness is poor. Teachers might need education in observing and stimulating children’s motor development and how to influence pupils to have a healthy life long lasting appreciation of physical activity. Teachers and school staff also need to know more about interventions and motor training that can stimulate and improve motor functioning, for all children and for those with disabilities. Motor training can preferably be conducted by PE teachers in the school’s regular PE programs. However, children with motor skills deficits often need special education in a smaller group, where extra motor training with focus on balance and coordination has proven to be successful. The MUGI observation checklist (Ericsson, 2008a; 2011b; Appendix 1) give an indication of which children may need extra gross motor skills stimulation. The purpose of motor skill observations, by the time children start school, is to make possible early identification of deficits in motor control, so that pedagogical remedial programs can start before motor deficits become a problem to the children.

Schools have an essential role in promoting health through adoption of physically active lifestyles. Many of the activities in physical education, however, are devoted to ball games and team sports rather than to development of motor skills and recreational activities that can serve lifelong fitness (Carli, 2004; Eriksson et al., 2003). Forms and content of the school subject PEH may thus be questioned and call for a reorienting towards motor skills and physical fitness activities that can be practised regardless of time.
and place and which are transferable to adulthood. Coeducational PEH classes, at all times, may be questioned, in line with Carli (2004) and Moreno, Gimeno, Lacárcel and Pérez (2007), since it makes physical development and knowledge in motor skills salient to everybody, which could contribute to an uncomfortable situation for many pupils. Teaching approaches that are directive and focus on the execution of skills may be questioned, since they can discourage the less skilled from participation by highlighting what they cannot do in front of all their peers (Light and Fawns, 2003). Research indicates that, when planning intervention programs to increase motivation and physical self-esteem through physical activity, school interventions should focus on improvements in fundamental motor skills. When focus in grading is more on quality evaluations of motor skills rather than measurements of sports performances, pupils are more likely to compare results to their own previous results rather than judging themselves compared to others (Larsson, 2009). This may in its turn have a positive impact on motivation to participate in PE, which most likely would result in an increase in pupils’ kinesthetic knowledge as well as their grades in the subject.

ACKNOWLEDGEMENTS

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REFERENCES


**Appendix 1. MUGI OBSERVATION CHECKLIST**

The checklist is intended for the use of school nurses, PE teachers, trained sports coaches/teachers, and special needs teachers, under the supervision of a trained PE teacher.

**Introduction and warm-up:** Individual play with a large ball
<table>
<thead>
<tr>
<th></th>
<th>MUGI task</th>
<th>Minor difficulty, insecurity, uncertainty</th>
<th>Major difficulty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Throw and catch a large ball 5 consecutive times</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Bounce large ball 5 consecutive times</td>
<td>right</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>left</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Skip in diagonal pattern forward 15 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Hop in one leg right 2x7 m</td>
<td>right</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>left</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Stand on one leg right 10 sec.</td>
<td>right</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>left</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Walk with toes pointing out 2x7 m Without big involuntary movements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Alternating ”ski hop” Rhythmically, 15 times</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Imitate body movements and positions game: “Simon says do this; do that!”</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a “Warm your knees”</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In diagonal pattern</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b Opposite arm and leg lifted to the side</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c Right hand on left ear and left hand on left hip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Obstacle course</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>a Jump with hula hoop, Moving forward with running steps</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b “Broad jump over a ditch” 1 m</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>c “High jump over a magic rope” 40 cm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Motorisk Utveckling som Grund för Inlärning MUGI www.mugi.se
SPEECH EDUCATION AS A TOOL FOR INCLUSIVE EDUCATION
OF PUPILS WITH DISABILITIES
Eva Zezulková
University of Ostrava, Czech Republic

Abstract

The paper refers to the circumstances associated with the change of educational conditions at the present-day school. It is focused on the communicative competence of pupils from the perspective of factors that effect the achievement of functional unity of spoken and graphic form of speech. It describes the risks of acquisition of the communicative competence of pupils with special educational needs.

Key words: language jurisdiction, communication, differentiation, factors communicative jurisdiction, pupil.

EDUCATIONAL CONDITIONS AT THE PRESENT-DAY SCHOOL

In the Czech school system there are currently registered significant changes both in terms of content, organisation and internal differentiation and also in terms of structure of pupils’ teams. The ongoing changes in the school system come out of the new education strategy, which emphasizes key competences, their interaction with educational content and use of acquired knowledge and skills in real life. The requirement to develop the key competences is based on the strategic plan adopted by the European Council at the beginning of the millennium. The crucial aim of this plan is to develop the key competences in the society based on knowledge of the principles of their implementation. Precondition for the achievement of this aim is the identification of the key competences and their integration into the curriculum documents of the education system. The development of the key competences is thus accessible to the general public including the students with special educational needs and adults in lifelong learning. The emphasis is placed on the transfer of knowledge and skills leading to the development of individual qualifications of key competences and thus their successful application. By supporting the validity and assessment of key competences by the public, there can be reached better success of the school graduates and better integration of them into the society.

The term competence in the general sense refers to a precondition or an ability to manage a function, activity or situation. (Jandourek, 2001) The key competences are defined as a transferable and universally applicable set of knowledge, skills and attitudes which are needed by each individual for their personal fulfilment and development. The quality of the acquired key competences increases the chance of new generations for universal success in the society regardless of the field of interest. (cf. Belz, Siegrist, 2001, Šíkulová 2008, Veteška, Tureckiová, 2008)

The acquisition of the basics of the communicative competence should be done during the pre-school and particularly during the compulsory school attendance. Therefore the system of curriculum documents in the primary and also in the secondary education sets the same key competences, which

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10 sc. Lisbon Strategy
meaningfully relate to each other and whose level rises gradually together with the maturity of pupils on the particular levels of education. In particular framework educational programmes the key competences represent an ideal condition which will the teachers aim to reach with the pupils. However, it would be a mistake to believe that the educational programmes require schools to focus only on development of the key competences and omit subject knowledge and skills. Also the key competences cannot be developed, or even “taught” in isolation. Each school may in its school educational programme choose such procedures, sc. educational strategies which are considered to lead to the development of key competences.

In common schools there meet pupils from diverse socio-cultural environment and more often there appear pupils with special educational needs (further only SEN) who has formerly been educated separately. At the same time into the education system is introduced a new system of curriculum documents for the education of children and pupils from the age of 3 to 19. The state level of education is represented by the framework educational programmes (FEP) that define binding frameworks of the education for individual stages (pre-school, primary and secondary education). Framework educational programmes support a comprehensive approach to the realisation of the educational content, including the appropriate connections. They also expect choice of different educational approaches, various methods, forms of teaching with the use of all compensatory and supporting measures in agreement with individual needs of pupils. They also allow modification of the educational content for education of pupils with special educational needs. The school level of education is introduced in school educational programmes (SEP). According to them the education by individual schools is carried out. The priority trend in the primary education is to maintain for as long as possible the natural heterogeneous groups of pupils and weaken the reason for exclusion of pupils into specialized classes and schools.

PROFESSIONAL COMPETENCE OF THE TEACHER

Increasing emphasis is placed on the creation of suitable conditions for education, therefore the hierarchy of teachers’ competences gradually significantly changes. The optimal educational conditions contain the choice of appropriate motivation to cognition, activation of thinking, creation of suitable social, emotional and working climate, ability to manage pupil’s processes of learning. The core of the professional competences of the teacher is thus placed on the teaching competence and psycho-didactic competence. From the whole of pedagogical psychological competences besides the diagnosis competence increasing demands are placed on the communicative competence, mainly with the teachers in pre-primary and primary education because they work with very diverse population, in which basic differentiation they are involved. The spoken speech is an essential means of pedagogical communication used by the teacher not only to transfer the knowledge to the pupils but also to form their personality. The high sophistication of a language should be the basic professional skill of each teacher. An important requirement is also the knowledge of the process of the ontogenetic development of the speech including its physiological peculiarities so as the teacher can informatively judge possible

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11 e.g. from socially disadvantaged families – Romani children, children from poor families, single parent families, foreigners’ children living in the Czech Republic, etc.

12 SEP is done by each school according to the rules given in the appropriate FEP. For the production of SEP the school can use sc. Manual for the production of school educational programmes (further only Manual), which is done to each FEP. The Manual introduces the process of the production of the SEP and introduces processing of particular parts of the SEP with actual examples.
speech deficiencies of their pupils. The level of teacher’s professional competence can significantly support the educational impact on the pupils, or otherwise it can weaken and disturb it. Many behavioural problems of pupils are in fact problems in communication and if a set of functional communicative system is established, the problems very often disappear. Communication is a basic means of the learning process in course of which there is formed a new psychological profile of a child. This proves the requirement for the quality of communicative competence of the teacher as justified. The teacher by the sophistication of his own speech influences the creation of language culture of the pupils, the teacher is a speech model for them, helps to form the social and emotional atmosphere in the class, influences the structure of pupil’s social relationships, teaches them mutual communication and coexistence in the school. Increasing demands on communicability are with the teachers justified as well. Not only because of the age variation of the children the teacher works with but also because of the tendencies to integration due to which the teacher more often meets pupils included in the system of special education. Especially children in pre-school age and the pupils of younger school age are very often strongly attached to their teacher. The teacher is for them one of the very significant model and an important authority that is yet not shadowed by the just built relationships with the children of the same age. Specific demands are on the teachers placed also in the sphere of the communication with the parents. Due to the undifferentiated population of the pupils the teacher needs to know how to deal with the parents from all social spheres and educational level and the teacher tries to gain them for cooperation. Communicability is a pillar in building the confidence in the teacher and his work, based on positive expectations. It is always an advantage when the parents are interested in their child’s progress in the pre-school and during the compulsory school attendance. (Mertin, Gillnerová 2003, Gavora 2005, Nelešovská 2005)

LANGUAGE AND COMMUNICATIVE COMPETENCE IN THE CONTEXT OF CONDITIONS FOR THE DEVELOPMENT OF SPEECH

Full appreciation of human speech in the process of communication is becoming more relevant in the present-day society. We use the term communicative competence to express the ability of a speaker to use language means in the realistic conditions of a communication context and for specific communication purposes. (Vybíral, 2005) “Most of the things we know and we believe in other people told us by the means of speech. Our ability to think without the phenomenon of speech would be very poor, comparable to the same ability of higher animals”. (Einstein, 1995 in Kohout, 2000, p. 7)

Acquisition of a language is a communication process and in the basis of a linguistic behaviour has to be seen a competence wider than just language, which means the communicative competence. Language competence is the ability to use certain language. To be able to communicate in certain language the person has to master it to some extent. Language competence is the precondition for utterance (performance). Therefore the linguistic point of view distinguishes between competences, which mean language capabilities and performance as an utterance. (Belz, Sigrist, 2001) The process of acquisition of language competence is the subject of scientific discussions and polemics up to the present time. However, it is certain that children obtain language competence by language practice, in other words by utterances (performances). From the pedagogical point of view, communicative competence is the accumulation of partial language capabilities within the social communication. At the same time

13 The differentiation of a competence or a language ability and a performance as an utterance was introduced by American linguist N. Chomsky. He studied mainly the relationship of competence and performance during the acquisition of language by small children. (Černý, 1996)
it is the ability to use the knowledge in the conditions of communication context. Therefore it includes language competences and also utterances. (Zezulková, 2011)

THE PROCESS OF ACQUIRING THE BASICS OF LANGUAGE COMPETENCE

Mutual relationships between the variables in the sensory, motor and intellectual areas are reflected in the development of speech in children. Sensory component is ahead of the motor one, however, intellectual performance is created by the cooperation of the whole brain cortex, therefore it is an individual expression and that is why the mentioned mutual relationships have to be judged individually. (Ohnesorg 1979, Sovák 1989) Sensory perception and motor aspect of speech (coordination of speech movements) create the precondition for higher performance, in which sensory signs features become the symbols of certain ideas, i.e. they are the precondition for intellectual activities. We consider auditory perception (in addition to imitation) the most important feedback during acquiring patterns for speech production, from the point of coordination of movements of speech organs we have to take into an account control kinesthetic area of the brain. The functional relationship between speech perception and production is then implemented by the common headquarter, kinesthetic brain area. According to Sovák (1989) the patterns of movements of speech organs are created and improved by gradual and repeated interaction of all the three mechanisms involved, so that their production exactly complies with their speech pattern. In the framework of the function of nervous system primary articulation circuit is created by the interconnection of proprioceptive and motor centre together with links that conduct the impulse from the speech organs and back to them. All the movements, including those of muscles of lips, tongue, pharynx and larynx during suction and intake of food and also the movements of muscles during production of voice, are registered in a way of feedback in the cortex area for muscle movement – so called proprioception. From its main centre the impulses are transmitted for the performance of motor cortex area and from there for the performance of executive organs. Based on the already performed movements that are registered in the proprioceptive centre, they are set examples for the repetition. Secondary articulation circuit creates individual motion-auditory articulation experience based on motor sense. The child gives out sounds and hears them at the same time during the movement of speech organs. Auditory stimuli reach the cortex area of an auditory analyser (auditory area). The sound heard is connected with the movement of speech organs that was perceived at the same time. By feedback this connection is registered in the motor (proprioceptive) centre. A stereotype is created, sound – movement, strengthened by repetition. We talk about imitated baby-talk, where the children can imitate sounds created by them. Apart from their own sounds they also can hear the talk from their surroundings, they see faces and the movements of lips, there are also gradually added and bound visual sphere and the tertiary articulation circuit takes effect. Heard and later also seen sounds of mother tongue are connected to their own already heard sounds and they adjust according to the sound of phones (phonemes of mother tongue). By the connection to the analyser of movement the movements of speech organs are assimilated to the sounds of mother tongue and the movement-motor patterns of articulation are stabilized. This basis for pronunciation gradually gets more accurate and improves. The quality of the speech as such depends on the relationships between the mutual variables that participate in acquiring language competence. It is not imitating individual phones but bigger, at least syllabic, units. The child probably imitates phones that have a noticeable pronunciation, sometimes at the beginning, sometimes at the end of the word. The functional relationships for a hand with the focus on writing are gradually created. Motion sense has the main role in anchoring and creating of speech in all the three articulation circuits. Changes of cortex area of proprioceptive (kinesthetic) analyser have negative effect on the development of speech because speech patterns are difficult to create and the ability to remember is damaged too. (Sovák, 1978) The consequences of immaturity of partial brain functions reflect in the quality of partial
capabilities of language competence. Damage to the function of central nervous system caused by organic changes of the brain has negative impact on the quality of mutual variables in the child’s psyche that is always externally presented with the deficit in the language and communicative competence.

AUDITORY DIFFERENTIATION OF SPEECH AS A PREDICTOR OF LANGUAGE COMPETENCE

With the process of maturing of the central nervous system gradually develops the ability of auditory differentiation of speech including phonemic differentiation, the ability to use auditory system to differentiate distinctive features of phonemes of mother tongue and recognize differences between their correct and incorrect sound version. If the child is to come to correct phonetic realisations, he / she has to learn phonological differentiation first. The differentiation of phonological features of speech is determined by the level of the two basic functions, i.e. phonemic perception and phonemic analysis.

Phonemic perception is formed in the early stages of ontogenetic development of speech. As soon as the children start to understand their surroundings, they perceive acoustic features even more sensitively than later when they get older. They hear the speech of their surroundings phonetically very precisely with the whole richness of sounds, from which some sounds are not important for the process of communication (these are often the ones that attract most attention). The differentiation of words according to their meaning happens on the basis of the perception of differences of separate phonemes (in Czech language it is e.g. pupen – buben) and also phonic sequences (in Czech language it is e.g. lípa – pálí), where the children do not understand the acoustic structure of the word, they do not divide the word into parts.

Phonemic analysis, as a more complex function, is formed in later stages of the speech development and it is completed during learning to read and write. With increasing intellectualization of speech the meaning of the word predominates the way they sound, therefore the child does not perceive speech with such phonetic precision and they gradually develop phonological understanding, so called phonological awareness. (Ohnesorg In Lechta 2002) In the process of phonemic analysis the word is recognised not only on the basis of the difference of phonemes but it is also divided into parts it is composed of, or possibly isolated phonemes. This way the acoustic structure of the word is analysed, and there gradually matures the perceptiveness and the ability of conscious manipulation with the sounds of human speech on the level of syllables, subsyllable units and possibly on the level of words. The child acquires the ability to analyse and combine the smallest units of distinguishable sounds (phonemes) in various ways without the usage of printed pattern. Phonemic analysis means also the ability to realise the phonetic structure of a word in one’s mind, the ability to consciously manipulate with phones, put them into words and also back in phones, name the first, the last or any other phone in such an order that it appears in a word, pronounce a word with added or omitted phones, pronounce a word reversely etc. The level of phonemic analysis, which represents understanding that words and phones are created by the sounds of speech being represented by alphabetical symbols or letters, is called phonemic awareness. Phonemic awareness is the most complicated level of phonological processes, in which gradual obtaining of speech patterns of adults takes place. Firstly, children differentiate very different sounds of mother tongue, then more and more similar sounds and then they learn to differentiate even

the slightest differences between phonemes in the context of phonic sequences by hearing. Phonemic awareness is logically considered as a necessary precondition to the ability to learn reading and writing. It is also concluded that low level of this ability is directly linked to the occurrence of dyslexia.15

In connection with phonemic awareness the ability of auditory analysis and synthesis is often mentioned. Phonemic awareness is a wider term than auditory analysis and synthesis (auditory differentiation). We must not confuse it with the term auditory perception that contains also auditory differentiation of sounds that are not phonemes (differentiation of the sounds of musical instruments, melodies, tones etc.). Auditory perception is already developing in the prenatal life, after the birth the child reacts to sound stimuli firstly by non-differentiated motoric reaction that gradually leads to more acuity. Auditory perception is the precondition initially for global perception of speech and gradually it leads to differentiation of its elements. (Zelinková, 2003) Auditory differentiation of speech develops in particular parts of the brain in several stages, it matures between sixth and seventh year and it influences the language competence mainly in these areas:

- differentiation of phones that sound similar
- orientation in phonetic and syllabic structure of a word
- learning grammatical rules of spoken language
- understanding the meaning of words
- transformation of spoken language into graphic form
- fixation of correct pronunciation of phones etc.

The acquired level of this ability is in a mutual relationship with the level of maturity of partial brain functions (e.g. auditory memory, auditory attention, auditory differentiation of speech etc.) and cognitive ability that guarantees systematic perception of speech. (Lebeer et al., 2006) Most children at the age of six are able to differentiate phonemes without problems, i.e. sounds of spoken language of their mother tongue. In this they have generally more experience than with visual appearance of letters that they do not know yet at this age. (Matějček, 1972) However, there is a certain amount of children that are not able to differentiate phones that sound similar at this age because of brain immaturity, especially those in the context of certain syllables or respectively words. As a result of a lack of feedback needed they are not even able to pronounce them correctly. In such a case it is not hearing impairment but perception dysfunction that has a central character. Corresponding centre of speech is located in the left hemisphere of the brain, its functional differentiation is ontogenetically slower than maturing of right hemisphere. During the preschool age a significant development of auditory differentiation of speech takes place and pupils learn more complex features of auditory differentiation of speech during the first year at school (cf. Matějček 1987, Zelinková 2001).

ASPECTS OF COMMUNICATIVE COMPETENCE

From a pedagogical point of view, a communicative competence is an accumulation of particular language capabilities within a social communication. At the same time it is an ability to use acquired knowledge and skills in conditions of a communication context. The term communicative competence involves language competences and utterances. (Zezulková, 2011)

When a child starts to attend school their way of life changes completely. The main activity starts to be the systematic learning, which is a result of a complex mental function. The whole education system is based on adequately developed speech abilities and skills – spoken and written speech, basic level of language and communicative competence, which the child already acquires in their preschool age. The basic tool for learning at school is a communication by spoken and graphic form of speech. In this way the teacher passes information to pupils who process it into a piece of knowledge, and then they reproduce it, read and write. In the process of mutual interaction between the teacher and the pupil all parts of the child’s psyche (perception, attention, memory, thinking and speech) are developed and transformed. Moreover, the abilities and personal characteristics that are essential for a transition to work activity are being formed. In the learning process a new mental profile of the child is being developed. Since this time the child uses communication more and more effectively in the contact with other people and gradually engages into a wider social interaction.

In the terms of acquiring particular capabilities of language and communicative competence the most demanding period for the child is, besides the early age and preschool age, the period of the beginning of compulsory school attendance. At this time other second signal functions are added to the still unfinished form of spoken language during acquiring written form of speech. And reading and writing are in relation to the spoken language considered more difficult skill\textsuperscript{16}. Children beginning their school education should master the spoken language as much as possible. Mastering of acoustic (phonetic) material of mother tongue is the starting point for a graphic record of phones by the symbols of the writing system. To understand the nature and principle of the graphic record of word by the children, they have to have besides understanding of the relationship between the phones and its graphic form developed not only visual and auditory perception and distinguishing skills but also appropriately developed fine motor skills. Particular mental, perceptive and motor performances must be coordinated. At the beginning of school education the development of particular brain functions including development and fixation of pronunciation is not finished completely. This needs to be considered and we have to respect the narrow mutual connection between phones (or phoneme) and its graphic form. Process of acquiring of written form of language (early reading and writing) retrospectively supports the development of spoken form of language including the final correction of pronunciation. Proof of mastering the language is a functional unity of its sound form (speaking and hearing) and graphical from (reading and writing). At the primary school there is rightly emphasised the communication skill which covers the development of language and communicative skills in the spoken and the written form. In the receptive sphere (perception) it includes activities when the children get information and ideas from the external sources. It connects listening and reading. In the expressive part it includes activities during which the children produce thoughts and information to share them with somebody else. It is a field of speaking and writing\textsuperscript{17}.

To learn to read, at first the pupil must separate the individual letters from the whole image of the written text (visual differentiation of figure and background), thus involve the visual memory and distinguish similarly shaped letters (visual differentiation of shapes, spatial orientation). However, this is not enough for the process of reading. Now, the pupil has to remember the sound of phones, or phonemes (auditory memory). Before that, they have to listen to the phones which the words are made of (auditory

\textsuperscript{16} the ability to acquire written form of speech, unlike the spoken form of language, begins to develop actively about the third year of age together with distinguishing a drawing from a script

differentiation of figures and background) and then they have to distinguish them (auditory differentiation of speech). To be able to read a meaningful word, the pupil must perceive the correct order of letters. The pupil learns to write according to the dictation when they are able to carry out the following individual performances or partial functions: to listen, to capture a word (auditory memory), to analyse the phones by hearing (auditory differentiation of figure and background), to distinguish the phones (auditory differentiation of the speech), to recall the letters, to distinguish the letters and connect the phones with the letter (visual differentiation of figure and background), to coordinate the hand and eye, to keep the sequence of the phones and letters, to organise the letters in the space (visual differentiation of shapes, spatial orientation). (Sindelar, 2007)

THE RISKS OF ACQUIRING COMMUNICATIVE COMPETENCE

To some extent the conditions for education are influenced by the informational explosion in the present-day society. Inadequate amount of auditory stimuli often leads to the activation of defence mechanism in pupils which results in the reduction of perception and processing auditory stimuli including the sounds of spoken speech. By this the perception of phonological features of speech is weakened and because of the fact that the ability of perception of spoken speech forms the basis for the development of communicative competence, it is an important risk signal. The awareness of the phonetic structure of a word is an especially important precondition for acquiring the graphic form of speech. Therefore there is a justified assumption that slower or strikingly uneven development of partial brain functions (e.g. in the area of auditory differentiation of speech) can signalise difficulties with meeting the requirements of the school especially at the beginning of compulsory school attendance. (Zezulková, 2009)

The level of acquiring communicative competence is individual and it depends on internal and external agents. From this point of view the risk group is composed of pupils with special educational needs (children from socio-culturally disadvantageous environment, children with handicap, etc.) that are often exposed to long-lasting unfavourable conditions for the development of speech. Unfavourable conditions result from negative influence of the external environment and also from the presence of dominant handicap, these two are often combined together. Unfavourable development of partial capabilities of communicative competence in the early and preschool age is enhanced by inadequate amount of auditory stimuli including various language messages. These pupils come to school with low linguistic abilities which causes primary communication barrier in the process of learning. The risk of school failure naturally rises in such cases.

The internal risk factors from the point of acquiring communicative competences are:

- low birth weight;
- disturbed development of:
  - long-distance analysers (hearing, vision);
  - speech-motor area in brain;
  - speech organs;
  - intellectual abilities;
- the inborn level of specific talent;
the deficits of partial functions:\textsuperscript{18}:

\begin{itemize}
  \item auditory perception (auditory differentiation of a figure and the background, auditory memory, auditory differentiation of speech);
  \item visual perception (visual differentiation of a figure and the background, visual memory, visual differentiation of shapes, etc);
  \item visual-motor integration;
  \item spatial orientation;
  \item the perception of time sequence, etc.
\end{itemize}

\begin{itemize}
  \item chronic infections of the middle ear;
  \item emotional disorders and personality disorders.
\end{itemize}

The external risk factors for acquiring communicative competences include:

\begin{itemize}
  \item the environment poor in stimuli or on the other hand surfeited with stimuli and information without the possibility to process them;
  \item the environment that does not lead the child to independence (they have little experience with evaluating certain situations);
  \item the lack of understanding and appreciation of success or effort, low motivation (frequent negative assessment when the child repeatedly has the feeling of failure, disrespect to verbal and nonverbal performances of the child);
  \item incorrect speech model from the adults;
  \item inadequate requirements on the child, creation of communicative barriers (insensitive way of making the child speak, disrespect to the child shyness, etc.);
  \item inappropriate usage of audio-visual technology from the point of time and content;
  \item insufficient attention paid to the development of skills needed for reading and writing;
  \item limited access to books;
  \item the environment where the child does not find safety, enough love and understanding (stress, tension, insecurity, domestic violence)\textsuperscript{19}.
\end{itemize}

Danger from the point of acquiring partial capabilities of communicative competence by pupils with risk expressions in communication is both in late or superficial diagnosis of partial capabilities of communicative competence, yet in the lack of speech experiences of pupils and also unfortunately not rarely in the weakened competence of teachers to lead the processes of learning for children with special

\textsuperscript{18} they can signalise specific developmental disorder

educational needs. For these reasons the period of younger school age stays wasted not only in the area of improving the orientation in the acoustic structure of the language. On the other hand by using aimed stimulation of auditory differentiation of speech can be improved understanding of speech, also can be specified meaning of words, expanded one’s vocabulary, learned grammatical rules of speech, or can be improved pronunciation. We assume that greater stress on auditory differentiation of speech can positively influence acquisition of reading and writing and at the same time the whole process of communicative competence including motivation for learning in pupils at the younger school age. (Zezulková, 2008)

LINGUISTIC EDUCATION AND AUDITORY DIFFERENTIATION OF SPEECH

During linguistic education the pupils learn the principles of standard written form of the Czech language, which at the same time supports the development of logical thinking as a basic precondition for comprehensible expression. Gradually their general intellect abilities deepen. Linguistic education equips the pupils with such abilities that enable them to perceive different language messages correctly, to understand them, to express themselves appropriately and to efficiently use and to implement the results of their cognition. Auditory differentiation of speech develops as the consequence of coordinated activity of analysers parallel with the development of higher cognitive functions. Elementary speech sounds are analysed by the child in an auditory way, the child differentiates them and moreover they have to be aware of them and understand the vocal structure of the whole speech unit. It is the ability to consciously manipulate with sounds of human speech on the level of words, syllables and phones. The perception of the features of speech is different from other kinds of auditory perception and so it is not guaranteed only by sufficient auditory sharpness. It is the result of complicated analysis and synthesis, which are used to choose basic phonemic features from a complex of vocal features so that the chosen ones have a signal meaning in the relevant language. Then it is not enough just to hear, it is necessary to distinguish the things that are heard, separate speech units and words according to specific features (distinctive features) in their acoustic structure. (Šlapal, 1996) Phonological processes are dependent on the schedule of physiological development, they blend and are demonstrated by the level of phonemic awareness. The development of auditory differentiation of speech is determined by the level of two basic functions, that is the phonemic perception and phonemic analysis. The phonemic perception is formed in the early stages of the development of child’s speech as a process of differentiation of phonemes and sequences of phonemes (words). The differentiation of words according to their meaning happens on the basis of the perception of the difference of individual phonemes (in the Czech language e.g. kosa – koza) and phonic sequences (in the Czech language pila – lípa). In this process the word is not divided into parts that it is made of, the child does not understand the acoustic structure of the word (Mikulajová in Lechta, 2002). Phonemic analysis is a more complex function, it forms in later stages of the development of speech and it is finished during acquisition of reading and writing. In the process of phonemic analysis the word is recognised not only on the basis of the difference between phonemes or phonic sequences but it is also divided into isolated segments (phonemes). This way the acoustic structure of the word is analysed. We understand phonemic analysis as phonemic awareness, therefore being aware of the phonetic structure of the word in mind, the ability of conscious manipulation with phones in a word, as the most complex level of phonological processes.

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20 the presence or absence of phone in the word, separation of the first or the last phones, determination of the number of phones in the word, order of phones, the position of the phone in relation to other phones

Firstly, the child differentiates very different sounds of mother tongue, later more and more similar sounds until they learn to differentiate by hearing even the slightest differences between phonemes. The standard for reaching the last stage is set to six and a half year, the upper boundary is seven to eight years. (Matějček, 1987) The child starts to understand that syllables and words are created from the sounds of human speech that are represented by graphical signs. Phonemic awareness enables to distinguish elements of speech and understand the content of the expression. It is the area of auditory perception that takes part in determining the phonetic structure of words and manipulation with the phones in a word.

The intentional influence on the development of partial functions of the brain in risk pupils from the point of acquisition of the communicative competence must be in the centre of attention of teachers taking part in their education. These pupils are exposed to inadequate requirements and frequent failures are demotivating for them. We assume that by stimulating auditory differentiation of speech and other partial functions of the brain it is possible to positively affect the process of acquisition of spoken and written form of speech. Therefore the speech education must be present in the whole educational process with the aim to reach the outputs set by FEP. School educational programmes provide wide space for including activities supporting the development of speech and linguistic abilities of pupils in all the subjects of the curriculum.

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DISCUSSING THE CHEATING PHENOMENA IN EXAMS AND INTRODUCING SUGGESTIONS TO REDUCE IT
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Abstract
Cheating is one of the worst habitats that some students use it to pass their exams, and the biggest challenge to teachers and invigilators during tests to control the class and prohibit cheating, but students always try to find and create new methods of cheating and invigilators try to find solutions for this phenomenon. Many Educators discussed this phenomenon and investigated the reasons of cheating, but they couldn’t stop this problem. In this research we investigated the reasons behind the cheating, methods of cheating and we introduced some suggestions to reduce cheating in exams.

As a part of this paper, we distributed a questionnaire contained 19 questions among the students in Qatar University to investigate the reasons behind cheating and introduce some suggestions to reduce it in the exams. Questions were grouped in 6 categories and several study hypotheses were then analyzed by using the Z-test. The study detected that the reasons of cheating can be divided into Physiological factors such as fear of failure and reprimand parents; and work related reasons such as large class sizes, the teacher, and Invigilator leniency. In addition, we introduced some recommendations to reduce cheating during the exams.

Key words: Cheating, Exams, Teacher, Invigilator, Student, Testing Hypotheses

1. INTRODUCTION
The relationship between student and invigilator during exam can be described as a cat-and-mouse relationship, they both wanted to be awakened from the second. Some students want to cheat and invigilator wants to prevent cheating in exam. With the development of technology, methods of cheating become easier and more spread, for example, minimizing the font size of the page, using wireless devices, mobiles and cheating from fellow student during the exam.

The student’s cheating in exam is a type of student injustice to himself, which is a moral crime, and if the invigilator indulge during his/her monitoring for the exam, then he is as student partner in crime. Cheating is usually go along with the student whenever he moved to a higher stage, and become as addiction. Therefore, we must find solutions for this phenomenon during the early stages of a student's life before increasing the problem.

In this study, and through a questionnaire targeted Qatar University students, we tried to categorize and analyze such problems and introduce some possible solutions that may contribute to reduce cheating during exams. Doing such studies will assist educators to better understand the Psychology of the student and will be beneficial to propose solutions that will improve the work’s environment. The organization of this paper is as follows: In Section 2, the study hypotheses are presented, analysis of the study and the results are given in Section 3, a real life example is considered in Section 4, and in section 5, a summary of the conclusions and recommendations is presented. Finally, Acknowledgment and references are introduced in Sections 6 and 7.
2. THE POPULATION AND THE SAMPLE
Qatar University is the only governmental university in State of Qatar. It consists of seven colleges and two programs. The colleges are: Arts and Sciences, Business and Economics, Education, Engineering, Law, Pharmacy and Sharia and Islamic Studies. And the programs are: Foundation Program and Honors Program. The mother language of the students is Arabic but the teaching medium in Qatar University is English except some colleges like Education, Law, Sharia and Islamic Studies and some departments of college of Arts.

In the academic year 2012/2013 Qatar University experienced an unexpected increase of almost 35% in student body. The average class size was also increased. Students were divided into male and female campuses.

<table>
<thead>
<tr>
<th>College</th>
<th>Females</th>
<th>Males</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arts and Sciences</td>
<td>60</td>
<td>16</td>
<td>76</td>
</tr>
<tr>
<td>Business and Economics</td>
<td>8</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Education</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Engineering</td>
<td>20</td>
<td>7</td>
<td>27</td>
</tr>
<tr>
<td>Law</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Pharmacy</td>
<td>6</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Sharia and Islamic Studies</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>Foundation Program</td>
<td>9</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Honors Program</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>All</td>
<td>115</td>
<td>31</td>
<td>146</td>
</tr>
</tbody>
</table>

Table (1) Survey Information on the College and Number of Students

3. THE PURPOSE OF THE STUDY
The purposes of this study are:
- To gather students’ opinions regarding the reasons behind cheating in exams.
- To explore some methods of cheating in exams.
- To recommend some possible solutions that may reduce cheating in exams.
- To introduce a real life example to reduce cheating in exams.

4. THE QUESTIONNAIRE
In this paper, we asked Qatar University students through a questionnaire to investigate their opinions about cheating in the exams, the reasons of cheating and how to reduce this phenomenon. The questionnaire consisted of 19 questions and was distributed by the end of Spring 2013 semester via the “Survey Monkey” software https://www.surveymonkey.com. The benefit of using this method of
distribution is to enable students to answer the questionnaire at their own convenience inside or outside campus. Also, “survey Monkey” will enable us to easily analyze the data for our study purposes.

Answering the questionnaire was optional and the answer key of the questionnaire is as the following:

Strongly Agree = 5,  Agree = 4,  No opinion = 3,  Disagree = 2,  Strongly Disagree = 1

We may categorize the questions of the questionnaire into six categories:

Category 1:  Physiological factors lead to student’s cheating

Category 2:  The role of the family and the community to reduce or increase the phenomenon of cheating

Category 3:  The role of the student for not good preparation for the exam

Category 4:  Invigilator leniency during exam

Category 5:  The role of the teacher: Teaching methods and the difficulty of exams.

Category 6:  The role of educational institutions and school administrations

Category 7:  Asking students about some cheating methods.

Category 8:  Some suggestions to reduce the cheating in exams.

4.1. Study Hypotheses

1) Physiological factors lead in student’s cheating

Hypothesis 1: The student’s fear of failure and reprimand parents because of the low level of school are some of the justifications for exam cheating.

2) The role of the family and the community to reduce or increase the phenomenon of cheating

Hypothesis 2: Weakness of the student's moral deterrent of cheating, and the role of community in growth of this phenomenon by justifying it in the exam as a cleverness of the student.

3) The role of the student for not good preparation for the exam

Hypothesis 3: Lack of adequate student's readiness for the test and don’t absorb the subject are reasons for cheating in exams.

4) Invigilator leniency during exam

Hypothesis 4: Indulgence invigilator during the exam make it easier for students to cheat.

5) The role of the teacher: Teaching methods and the difficulty of exams

Hypothesis 5: The difficulty of test questions, the teaching methods, and student’s hating for the academic material lead them to cheat in exams of that course.

6) The role of educational institutions and school administrations
Hypothesis 6: Increase the number of students per classroom, high rates of admission to enroll in universities, and raise the educational institutions of the minimum mark of success lead students to cheat in exams.

4.2. Analysis of the Study and the Results

4.2.1. Testing The Hypotheses Of The Study

To test the study hypotheses, we used one sample z-test with level of significant ($\alpha = 0.05$), the null hypothesis $H_0: \mu = 3$ and the alternative hypothesis $H_1: \mu > 3$.

By comparing the $p-value$ and the significant level $\alpha$:

If $p-value < \alpha$ then we reject $H_0$, otherwise we don’t reject $H_0$.

We summarized these tests in the following table:

<table>
<thead>
<tr>
<th>The hypothesis $H_0$</th>
<th>Mean</th>
<th>p-value</th>
<th>The Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>The student’s fear of failure and reprimand parents because of the low level of school are some of the justifications for exam cheating</td>
<td>3.616 4</td>
<td>0.003</td>
<td>Reject $H_0$. So the students agree with this hypothesis</td>
</tr>
</tbody>
</table>

Table (2): Test of the hypothesis 1

![Figure (1): Physiological factors lead to student’s cheating](image-url)

Figure (1): Physiological factors lead to student’s cheating
The hypothesis $H_0$ | Mean | p-value | The Result
--- | --- | --- | ---
Weakness of the student's moral deterrent of cheating, and the role of community in growth of this phenomenon by justifying it in the exam as a cleverness of the student. | 3.6199 | 0.002 | Reject $H_0$
So the students agree with this hypothesis.

Table (3): Test of the hypothesis 2

The hypothesis $H_0$ | Mean | p-value | The Result
--- | --- | --- | ---
Lack of adequate student's readiness for the test and don’t absorb the subject are reasons for cheating in exams | 4.0377 | 0.000 | Reject $H_0$
So students agree with this hypothesis.

Table (4): Test of the hypothesis 3
The hypothesis

<table>
<thead>
<tr>
<th>The hypothesis H₀</th>
<th>Mean</th>
<th>p-value</th>
<th>The Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indulgence invigilator during the exam make it easier for students to cheat.</td>
<td>3.890</td>
<td>0.001</td>
<td>Reject H₀</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td></td>
<td>So students agree with this hypothesis</td>
</tr>
</tbody>
</table>

Table (5): Test of the hypothesis 4

Figure (3): The role of the student for not good preparation

Figure (4): Invigilator leniency during the exam
The hypothesis $H_0$ | Mean | p-value | The Result
--- | --- | --- | ---
The difficulty of test questions, the teaching methods, and student’s hating for the academic material lead them to cheat in exams of that course. | 3.7192 | 0.001 | Reject $H_0$
So students agree with this hypothesis

Table (6): Test of the hypothesis 5

![Histogram showing the distribution of responses to the hypothesis test.](image)

The hypothesis $H_0$ | Mean | p-value | The Result
--- | --- | --- | ---
Increase the number of students per classroom, high rates of admission to enroll in universities, and raise the educational institutions of the minimum mark of success leads students to cheat in exams. | 3.6689 | 0.000 | Reject $H_0$
So students agree with this hypothesis

Table (7): Test of the hypothesis 6
4.2.2. Percentages Of Student's Responses on Certain Questions

The following table shows the percentages of student's responses on certain uncategorized questions:

<table>
<thead>
<tr>
<th>The Question</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>No opinion</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of focus on the written tests as the sole measure of the mark is a solution to reduce cheating</td>
<td>26.7%</td>
<td>66.7%</td>
<td>0.0%</td>
<td>6.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Oral tests and other activities lead to reduce cheating on tests</td>
<td>7.1%</td>
<td>57.1%</td>
<td>7.2%</td>
<td>28.6%</td>
<td>0.0%</td>
</tr>
<tr>
<td>The media contribute to the development of the phenomenon of cheating by showing it as normal Comedy template in programs and series.</td>
<td>14.3%</td>
<td>28.6%</td>
<td>28.6%</td>
<td>21.4%</td>
<td>7.1%</td>
</tr>
</tbody>
</table>

Table (8): Percentages of student’s responses on certain uncategorized questions
Also we asked the students to give a percent (out of 100%) on the following statements, their opinions are summarized in the following table:

<table>
<thead>
<tr>
<th>The Question</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you cheat as a student then you will cheat as an employee</td>
<td>72%</td>
</tr>
<tr>
<td>Cheating in exams leads to a lack of a sense of responsibility in the future</td>
<td>74%</td>
</tr>
<tr>
<td>Cheating in exams leads to kill the spirit of competition among students</td>
<td>76%</td>
</tr>
<tr>
<td>Cheating in exams reduce the importance of the tests in the evaluation of school achievement for students</td>
<td>75%</td>
</tr>
<tr>
<td>The student must be given enough time between tests to properly prepare for exams</td>
<td>95%</td>
</tr>
</tbody>
</table>

Table (9): Percentages of student’s agreements on certain statements

5. REAL LIFE EXAMPLE

MyMathLab is a series of online courses that accompany Pearson’s textbooks in mathematics and statistics. Since 2001, MyMathLab—along with MyStatLab and MathXL, have helped over 9 million students succeed at more than 1,900 colleges and universities. MyMathLab engages students in active learning—it’s modular, self-paced, accessible anywhere with Web access, and adaptable to each student’s learning style—and instructors can easily customize MyMathLab to better meet their students’ needs.

MyMathLab provides instructors with a rich and flexible set of course materials, along with course-management tools that make it easy to deliver all or a portion of your course online. MyMathLab provides students with a personalized interactive learning environment, where they can learn at their own pace and measure their progress.

During the academic year 2012/2013, Foundation Program in Qatar University started using this website to test the students for Math and English courses. All exams and quizzes are implemented through the MyMathLab site, the instructor can choose lessons, questions from each section, number of the questions and duration of the test. All tests are carried out in laboratories and have a different order of the questions in the order from one student to another, and even the values used in the questions are different from one student to another, and the student can know his mark immediately upon completion of the test.

By using this method, we are guarantee that no student will cheat during the test, where each student has a special computer with a sufficient distance between the student and the other, also there is at least an invigilator in the laboratory. In addition, all the computers addressed to the wall where the student can’t look at his neighbor or in front of him.
6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions:

The following conclusions may obtained:

1) 73% of students agreed that the fear of failure is a reason of cheating, while 60% of them thought that scolding parents for their children lead them to cheat in exams.

2) 67% of students agreed that the moral weakness of the student deterren him/her to cheat.

3) Students had also a diverse opinion regarding the role of the community in this phenomenon. 18.5% strongly agreed, 30.1% agreed, 22.6% disagreed and 4.1% strongly disagreed, while 24.7% didn’t have opinion about it.

4) Over 86% of students believed that students will cheat in exams if they didn’t study well, and more than 77% of students believed that “do not understand and absorb the subject is reason for cheating in exams”.

5) Over 70% of students believed that indulgence invigilator during the exam make it easier for students to cheat.

6) Over 80% of students believed that “The difficulty of test questions leads to cheating in exams of that course”, while 53% of students agreed that “the teaching method, and the student’s hating for the academic material lead them to cheat in exams of that course”.

7) 65% of students believed that increasing number of the students per classroom leads them to cheat in exams, 56% of them believed that the high rates of admission to enroll in universities leads students to cheat in exams, and 71% of students agreed with the statement “raise the educational institutions of the minimum mark of success leads to cheating in exams”.

8) Some of used methods of cheating by the students during the exam can be summarized as the following: using mobiles, small piece of paper, writing on the stationary like ruler, writing on the chair, table or the desk, writing on the hand or clothes, writing on the wall beside the student, cheating from his/her neighbor, using some of wrist watches or asking to go to bathroom during the exam to cheat from paper or other things he/she write some information on them.

9) 72% of students believed that “If you cheat as a student then you will cheat as an employee”.

10) 74% of students believed that “Cheating in exams leads to a lack of a sense of responsibility in the future”.

11) 76% of students believed that “Cheating in exams leads to kill the spirit of competition among students”.

12) 75% of students believed that “Cheating in exams reduce the importance of the tests in the evaluation of school achievement for students”.

13) 95% of students believed that the student must be given enough time between tests to properly prepare for exams.

6.2. Recommendations:

The following recommendations are introduced:
1) Educating students the negative effects of cheating on the individual and the community by holding seminars that promote moral deterrent to them.

2) Activating the role of the media to increase students' awareness of the need for self-reliance, also telling them that they are the pillar of the community and the hope of tomorrow.

3) Spread the spirit of competition between students and motivate them not to cheat through all possible methods.

4) Using Technology like MyLabsPlus or other packages as possible to reduce cheating cases.

5) Guiding students for optimal ways to study and prepare for exams by the teacher or family.

6) Reducing the number of students in the classroom, if possible, and raising the level of readiness of students for tests.

7) Lack of focus on the written tests as the sole measure to evaluate the student and finding other methods to assess students such as oral tests and classroom and homework activities.

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The site of *MyMathLab*, viewed 15 September 2012 <http://www.mymathlab.com>
LEARNING STYLES OF STUDENTS OF NON-UNIVERSITY HIGHER EDUCATION INSTITUTIONS

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Abstract

The following paper focuses on learning styles of tertiary students at non-university higher education institutions. We attempted to ascertain, by means of a standardized questionnaire, 6 basic variables that either promote learning (3) or cause difficulties in learning (3). Based on the statistical evaluation of the data, we are able to describe the way of learning of adolescents (or adults) even on the gender issues basis. We’ve focused on differences in learning styles based on a comparison of technically-focused students and students of economic fields. The questionnaire survey was based on a Likert scale and consisted of statements to which the respondent could choose an answer according to a five point scale from ‘strongly disagree’ to ‘strongly agree’. Median value was the answer ‘I do not know’.

Key words: learning styles, higher education, Likert scale

1. INTRODUCTION

Since the beginning of high school attendance, the student gets used to the new system of requirements which are presented to him in individual study programmes, study fields and courses. He gradually develops and establishes ways of coping with these requirements. Thus, he creates his own systems, strategies, tactics of learning, i.e. his own learning style. Learning styles are defined by the Pedagogical Dictionary (Průcha, Walterová & Mareš 2009, p. 236) as ‘the practices of learning that an individual uses in a particular period of life in most situations of an educational type; they are, to a certain extent, independent of the learning content and arise from a congenital basis (cognitive style) and co-evolving internal and external influences’. In Learning Styles of Pupils and Students (Styly učení žáků a studentů, 1998, p. 75), Mareš defines the learning style as a ‘metastrategy bringing together distinct educational tactics and learning operations’ and it ‘monitors, evaluates, orients in a certain direction and controls with regard to terms of learning conditions, individual learning curve, towards the achieved learning outcomes and the social context of learning’.

The styles lead the student to learning outcomes of a particular type, but at the same time they make it more difficult for him to achieve other (often better) outcomes. Usually, students are not aware of their own learning style and consider their learning practices as something that naturally suits them. The style can be diagnosed (although not easily) and it also can be changed. Švec (1998, p. 43) conceives the learning style as a personal characteristic of the individual which can be seen as an integral part of skills that the subject acquires’. According to him, the teaching style - a layer mainly obtained, influenced and linked to specific content and situations, predominantly initially spontaneous and later conscious - piles up on the deepest layer that is largely hereditary and is called the cognitive style (cf. Vlčková 2010; Mareš 1998).
In his monograph, Mareš employs the term ‘learning strategies’ (1998, p. 58) which is, in the Czech environment, often used as a synonym to ‘learning style’ (cf. Mareš 1998; Průcha, Walterová & Mareš 2009; Vlčková 2007, 2010). The term emphasizes the learning process and strategies necessary to it. Mareš defines them as ‘large-scale processes through which the student, in a peculiar manner, carries out a plan for solving the tasks it; at the same time he wants to achieve something and avoid something else’. ‘In the traditional approach, strategies are seen as potentially conscious and can therefore be performed automatically; evaluation, a necessary dimension of learning strategies, is associated with their use and depends on the style of learning strategies. Some students use it, some do not.’ (Vlčková 2010, p. 26).

According to Vlčková, ‘learning strategies support learning both directly and indirectly. Using the direct (primary) and indirect (support) learning strategies for learning is equally important. Direct (memory, cognitive, compensation) and indirect (metacognitive, affective and social) learning strategies support each other in many ways. Basically, any learning inevitably requires the involvement of certain learning strategies of the student, since learning is inherently defined as managed, goal-oriented process and learning strategies as individual processes leading to the goal’ (2010, p. 30).

Many definitions are consistent with the fact that learning strategies relate to different aspects of the student’s learning process (cf. Mareš 1998; Vlčková 2007, 2010; Cohen 2007; Oxford 1990; Hrušková 2008). Cognitive styles represent a special component of learning styles that is difficult to measure. They stand for largely innate characteristics of individuals. Mareš (1998, p. 50) defines cognitive styles as ‘characteristic ways in which people perceive, memorize information, think, solve problems, make decisions.’ The Pedagogical Dictionary defines the cognitive style (Průcha, Walter & Mareš 2009, p. 102) as ‘a peculiar way of perception and cognition, individually different way of perceptual, cognitive and intellectual processes’, belonging to the category of dispositions. According to Mareš (1998), the cognitive processes are rather a means of study that mediate the learning process and usually not the goal of study. The dispositional characteristics are manifested in the speed of solving tasks and error rate. On the basis of impulsivity and reflectivity, we distinguish reflective students who work relatively smoothly at the cost of extended time and impulsive students who have a rapid, hasty response, their inattentiveness causes mistakes and sometimes they even have chaotic written expression. The styles are related to the student’s personality, but is should be noted that external determinants work here too, and that they may be affected by the educator (teacher, lecturer, practitioner). These include the individuality of the educator, his teaching strategies (methods, techniques), methods of evaluation, testing, etc. ‘It is the teacher who decides the way of structuring the subject. And it is a usual teaching practice to highlight the most important subject matter verbally, textually and graphically so that the relationships, contexts, and perspectives are obvious’ (Hrušková 2012).

1.1. Types of learning styles

Basic distribution of students according to the type of information processing is into the analysis (analyzing) and global (generalising) type. The difference is reflected in their concentration on either differences or similarities of ratio field. Students with the analytical style are more accurate in detail but may omit certain important relations. In contrast, students with a global style prefer relations to the details but may underestimate the details and generalize prematurely. Follows a short description of some the many types of learning styles of students that are most widely used.

Bruner (1965) divides the learning strategies into holistic, where it comes to understanding of the essential ideas (generalization) and compositional, where the student ‘composes’ a map of learning material. Marton (1976) differentiates individual learning styles in terms of access to the depth (the effort to understand the meaning of the instruction) and further internally divides it into an active style
(the student wants to understand the meaning and understand the arguments) and a passive style (it is primarily about understanding the ideas and conclusions). Memory learning and memorization is typical of the superficial style - the active style is showed by an acquisition of principal key clues and the passive style demonstrated in an emphasis for memorizing isolated points. Similarly, Enwistle (in Mareš 1998) distinguishes styles shallow, utilitarian and in-depth styles and Mareš (1998) divides learning styles according to student’s attitude to learning in an surface learning style, utilitarian learning style and in-depth learning style:

- **Surface learning style**: the student understands learning as something externally-forced. Learning is no fun for him. His motivation for learning may be fear of teachers, parents, classmates reactions, anxiety, effort to please a teacher who insists on a literal reproduction. When learning he reads the text from his textbook or notebook trying learn the entire formulations by heart. He does not distinguish what is important and what is less important. He is able to recite the learned facts but do not understand the context and can not apply what he’d learned. This style may have two forms. It may be a passive surface learning style - the student does not appear to have any interest in the subject. He shows only slight effort. He focuses on the details, has no system in gained knowledge and is often missing the sense. The second form is an active surface learning style which is characterized alike with a slight difference in the level of effort and diligence in learning. Initially, this student appears to be successful, but soon it is discovered that his knowledge is superficial and descriptive without understanding the internal context.

- **Utilitarian learning style**: the student attends the school regularly; he seeks to achieve the best results, rise before his classmates, succeed in competition at all costs, even against his classmates. He adapts easily to different requirements of his teachers and effortlessly detects their weaknesses, level of their exactness and makes use of it.

- **In-depth learning style**: the student likes to study, he is eager to learn something new, eager for new knowledge, he wants to understand things and phenomena, wants to try using his findings in a practical experience. He finds a personal sense in learning, has clear learning objectives that are usually associated with his professional focus. Such students may be further divided into three groups. The first group are students that emphasize the acquisition of the facts, precepts, formulas, laws, etc. They learn systematically, logically, step by step. They constantly control their steps, development and results. They may get stuck in a myriad of details unable to make general conclusions. The second group is characterized by trying to understand the nature of the information and manage to learn general principles and basic ideas. They prefer a comprehensive, global learning. They seek to generalize knowledge which may cause them to jump to conclusions unsubstantiated by facts. The third group consists of students who apply flexible way of learning. First, they try to get an overall insight into the issues, and then they return to details. Such a student is able to learn the facts deeper and can readily apply his knowledge. (cf. Mareš 1998; Kalhous 2002; Hrušková 2009)

### 2. MATERIALS AND METHODS

In our research, we focus on learning styles and learning processes of students at The Institute of Technology and Businesses in České Budějovice (VŠTE). So far, very little is known about which personal processes students at non-university institutions actually use in learning. In some cases according to J. Mareš (1998), knowledge and diagnosis of learning styles may to help to improve the academic success of students. On the other hand, it may also serve as a warning that failure to respect
the individual learning styles of students and individual teaching styles of teachers may cause a loss of significant personalities, original thinkers or unconventionally thinking and acting individuals. 

500 full-time students were asked to fill out a standardized questionnaire IASLP by N. Entwistle and P. Ramsden, translated by Professor Jiří Mareš, Charles University in Prague, Medical Faculty in Hradec Králové (Czech Republic) in 1984 (Mareš 1998). 432 questionnaires were returned, i.e. 86.6 %. 287 questionnaires were from students of economics (EMB) and the rest of the questionnaires came from students of technical disciplines (building structures - KS, Construction Management - SM, Technology of Transport and Conveyance - DP), as showed in Table 1. During the evaluation of learning styles we were also interested in gender issues as an important variable that can affect the style. We proceeded from a number of studies (Oxford 1986; Oxford & Ehrman 1989; Oxford, Nyikos & Crookall 1987; Vlčková 2010; Hrušková 2010) where female respondents stated that they used diverse, more efficient and significantly different learning styles than men. Gender differences in college students were examined by Miller, Finley and McKinley (1990). Using three questionnaires (SPQ - Study Process Questionnaire, ASI - Approaches to Studying Inventory, ILP - Inventory of Learning Processes) they came to the following results: gender differences were found in sixteen cases from a total of twenty-six variables (e.g. prevalence of in-depth learning, orientation to understanding of the meaning and significance in men; by contrast, methodological attitudes, strategic approach and organizational strategies, surface learning and meticulousness in women). Figure 1 shows the percentage of females (F) and males (M).

Each questionnaire consisted of 45 questions. The students were allowed 15 minutes to provide answers. The students had to fill in all fields (truthfully). Each item described certain method of learning. Using the Likert scale, the students could choose to manifest total consent (4), complete disagreement (0) or inability to decide (2). The questionnaire ascertained six basic variables, three of them promoting learning and the remaining three causing difficulties in learning.

<table>
<thead>
<tr>
<th>Student data</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>432</td>
</tr>
<tr>
<td>M</td>
<td>199</td>
</tr>
<tr>
<td>F</td>
<td>233</td>
</tr>
<tr>
<td>EMB</td>
<td>287</td>
</tr>
<tr>
<td>KS</td>
<td>97</td>
</tr>
<tr>
<td>STM</td>
<td>36</td>
</tr>
<tr>
<td>DP</td>
<td>12</td>
</tr>
</tbody>
</table>

Table 1. Basic data
Table 2. Distribution of respondents in terms of the specialization

<table>
<thead>
<tr>
<th>Study Field</th>
<th>Frequency</th>
<th>Cumulative frequency</th>
<th>Relative frequency</th>
<th>Cumulative rel. frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration</td>
<td>287</td>
<td>287</td>
<td>66%</td>
<td>66%</td>
</tr>
<tr>
<td>Building Construction</td>
<td>97</td>
<td>384</td>
<td>23%</td>
<td>89%</td>
</tr>
<tr>
<td>Construction Management</td>
<td>36</td>
<td>420</td>
<td>8%</td>
<td>97%</td>
</tr>
<tr>
<td>Technology of Transport and Conveyance</td>
<td>12</td>
<td>432</td>
<td>3%</td>
<td>100%</td>
</tr>
</tbody>
</table>

2.1. Scientific assumptions

H1: The male students and female students differ in learning styles variables (it is necessary to define the variables and their character).

H2: Students of economics and engineering differ in learning styles variables (it is necessary to find out in which variables and in which way they are different).

3. STATISTICAL DATA PROCESSING

In our survey, we focused on learning style of tertiary students and took into account gender variables and study disciplines (technical and economic). We also differentiated between the technical disciplines.

Variables promoting learning included:

- Focus on performance
Focus on the meaning and purpose of learning
Systematic approach in learning.

Variables causing difficulties in learning included:
Tendency to reproduce the subject matter literally
Extracurricular orientation
Negative tendencies in learning

As for the psychometric properties of a standardized learning style questionnaire, we focused our attention on the reliability of the scales, factor analysis and correlation of scales and subscales. The following Table 3 clearly summarizes these variables.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Subfolders</th>
<th>Number of items</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on performance</td>
<td></td>
<td>9</td>
<td>0.5641</td>
</tr>
<tr>
<td></td>
<td>strategic approach</td>
<td>3</td>
<td>0.4166</td>
</tr>
<tr>
<td></td>
<td>effort to achieve success</td>
<td>3</td>
<td>0.7757</td>
</tr>
<tr>
<td></td>
<td>professional motivation</td>
<td>3</td>
<td>0.4407</td>
</tr>
<tr>
<td>Focus on the meaning and purpose of learning</td>
<td></td>
<td>8</td>
<td>0.6609</td>
</tr>
<tr>
<td></td>
<td>in-depth learning</td>
<td>5</td>
<td>0.5553</td>
</tr>
<tr>
<td></td>
<td>inner motivation</td>
<td>3</td>
<td>0.4694</td>
</tr>
<tr>
<td>Systematic learning</td>
<td></td>
<td>3</td>
<td>0.2224</td>
</tr>
<tr>
<td>Focus on reproduction of the subject matter</td>
<td></td>
<td>9</td>
<td>0.6728</td>
</tr>
<tr>
<td></td>
<td>superficial approach</td>
<td>5</td>
<td>0.4868</td>
</tr>
<tr>
<td></td>
<td>effort to avoid failure</td>
<td>4</td>
<td>0.5600</td>
</tr>
<tr>
<td>Extracurricular orientation</td>
<td></td>
<td>10</td>
<td>0.5236</td>
</tr>
<tr>
<td></td>
<td>unsystematic approach</td>
<td>4</td>
<td>0.3916</td>
</tr>
<tr>
<td></td>
<td>negative motivation</td>
<td>3</td>
<td>0.3810</td>
</tr>
<tr>
<td></td>
<td>social contact need</td>
<td>3</td>
<td>0.4933</td>
</tr>
<tr>
<td>Negative tendencies in learning</td>
<td></td>
<td>6</td>
<td>0.4689</td>
</tr>
<tr>
<td></td>
<td>reckless approach</td>
<td>3</td>
<td>0.3771</td>
</tr>
<tr>
<td></td>
<td>meticulousness, lack of perspective</td>
<td>3</td>
<td>0.2432</td>
</tr>
</tbody>
</table>

Table 3. Reliability of individual variables of learning styles
3.1. Focus on performance

As shown in Diagram 1, approximately 11% percent of female students and 6% of male students manifest above-average desire for personal responsibility, independence, effort to overcome obstacles, competition with other students and winning. In the training process the expect (require) fast feedback - immediate information how they are performing. These high-performance-oriented students prefer difficult tasks, determine own goals with a reasonable level of risk, avoid tasks both too easy and too difficult. This variable indicates that female students tend to high performance more than male students (by 5%). It confirms the assertion that the performance need is formed in early childhood when parents encourage children to complete tasks of adequate levels of difficulty (girls get harder tasks than boys because they are more mature and responsible).

Most students (63%; total gender coincidence: M / 64% l, F / 62% l) is the average performance-oriented, i.e. they are satisfied with work well done and a good grade or a credit means for them rather a confirmation of the fact that their learning efforts led to a successful result. As for the sector differentiation, 9% of economics students and 14% of Civil Engineering students count as high-performance-oriented students (no Technology of Transport and Conveyance students). Graduates with this feature could be employed mainly in the sales or establish their own business where they could well use own performance orientation to their advantage. On the other hand, it is worth a consideration that 42% of Transport and Conveyance students and Construction Management students are under-motivated to perform.

[Diagram 1. Focus on performance]
3.2. **Focus on the meaning and purpose of learning**

Absolutely tiny percentage of students is exceptionally focused on the importance of learning and purpose of learning. You could say that students are approximately the same as for gender and fields of study (divided into two main groups). Approximately 50% of students are focused on the meaning, or essence of learning, the second half fails to understand the meaning of learning. The focus on the meaning and purpose of learning also correlates positively with the subscale ‘efforts to achieve success’ and negatively with the ‘positive approach’ subscale.

![Diagram 2. Focus on the meaning and purpose of learning](image)

3.3. **Systematic approach in learning**

‘Systematic learning’ correlates positively with a ‘focus on reproducing the subject matter’ and ‘strategic approach’. It is the student’s systematic preparation, activity expected to learn subject matter from simpler to more complex substance and presence of an important requirement that the learning is logically linked. Students learn systematically and continuously.
3.4. Correlation of variables that make the learning process difficult

‘Focus on the reproduction of the subject matter’ correlates positively with ‘negative tendencies in learning’, and also with the ‘superficial approach’ and ‘meticulousness, lack of perspective’; ‘extracurricular orientation’ correlates with the main scale of ‘negative tendencies in learning’; ‘negative tendencies in learning’ correlate positively with the ‘superficial approach’, ‘an effort to avoid failure’ and the ‘reckless approach’; ‘shallow approach’ correlates positively with ‘meticulousness, lack of perspective’ and ‘inner motivation’ correlates negatively with both ‘shallow approach’ and ‘negative motivation’.

4. CONCLUSION – VERIFICATION OF HYPOTHESES

4.1. Female students and male students differ in variables of learning styles

We examined gender variances in the variables of learning styles using analysis of variance. We took into account the differences that were significant at the 5% significance level. The male students and female students differ in learning styles variables:

- Women have scored higher than men in the ‘focus on performance’ variable (M / 6%, F / 11%)
- Women have scored higher than men in the ‘strategic approach’ variable (M / 0%, F / 1%)

Diagram 3. Systematic approach in learning
women have scored higher than men in the ‘effort to achieve success’ variable (M / 4% /, F / 9% /)

women have scored higher than men in the ‘focus on the reproduction of the subject matter’ variable (M / 12% /, F / 24% /)

women have scored higher than men in the ‘superficial approach’ variable (M / 4% /, F / 9% /)

women have scored higher than men in the ‘effort to avoid failure’ variable (M / 13% /, F / 33% /)

Variances in other variables of learning styles were not statistically significant.

4.2. Students of economics and engineering differ in variables of learning styles

We investigated the variances in the variables of learning styles of students with different learning focus. Again, we took into account the differences at the 5% significance level and again we found variances at the 1% level of significance. Students of economics and engineering differ in learning styles variables. Among the students of different learning focus, the variances are as follows:

- in the ‘focus on performance’ variable the economics and civil engineering programme students scored higher than the transport programme students (EMB / 9% /, KS / 6% /, STM / 8% /, DP / 0% /)
- in the ‘systematic approach’ variable the economics and civil engineering programme students scored higher than the students of transport programme (EMB / 17% /, KS / 20% /, STM / 14% /, DP / 8% /)
- in the ‘focus on the reproduction of the subject matter’ variable the economics and transport programme students scored higher than the students of civil engineering programmes (EMB / 20% /, KS / 13% /, STM / 14% /, DP / 25% /)
- in the ‘extracurricular orientation’ variable the economics and civil engineering programme students scored higher than the transport programme students (EMB / 49% /, KS / 46% /, STM / 39% /, DP / 25% /)
- in the ‘professional motivation’ variable the economics and civil engineering programme students scored higher than the transport programme students (EMB / 16% /, KS / 21% /, STM / 19% /, DP / 0% /)
- in the ‘superficial approach’ variable the economics and transport programme students scored higher than the civil engineering programme students (EMB / 6% /, KS / 2% /, STM / 0% /, DP / 8% /)

Variances in other variables of learning styles were not statistically significant.

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THE ROLE OF MUNICIPALITIES IN THE PROCESS OF DECENTRALIZATION OF EDUCATION IN THE REPUBLIC OF MACEDONIA

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PAPS at SEE - University Tetovo, Macedonia

Abstract

Republic of Macedonia has entered the process of reforming the education system, particularly the primary and secondary education and is committed in its decentralization, considering it as a tool toward improving the quality of educational system. Decentralization of education consists in allocation of functional responsibilities in education between central and local government, cooperation between municipalities and school, increasing the responsibilities of school Councils and the Principal and local communities. The process of decentralization has its advantages and disadvantages, having a multi-dimensional access that requires: clear legal framework, fiscal decentralization, capacity building, school management, etc. The process of decentralization of education was divided in two phases of sharing responsibilities and practicing methods towards a continuous cooperation and qualification of central and local institutions, culture and tradition as elements of a successful decentralization process.

Key words: decentralization, education, management, school, municipality

1. INTRODUCTION

Educational transformations are always a result and a synonym of social transformations, with a language of which they must be explained. Since people in a given moment, feel the need to change its educational system, it is necessary to show new ideas and demands that the old system fails to meet. But these requests and ideas do not emerge spontaneously "... Emil Durkem

This saying of Dyrkem comes to expression in RM and European countries that have passed the period of political changes and embrace modern values of democracy which come in the respect of human rights and freedoms.

The process of decentralization of education should be treated in terms of the functioning of public institutions, municipalities and schools in the primary and secondary education, increasing the quality of education (teaching and learning), as well as greater involvement of parents and local communities as significant factor of efficient performance and functioning of schools.

The process of decentralization in education brought a clear distinction between roles, rights and responsibilities of authorities in central and local level, issues related to local government and education as relations and cooperation between schools, municipalities and state institutions, financial aspects, involvement of local communities and parents in school management, relations between school principals and school councils, etc.
2. LOCAL GOVERNMENT AND OPERATIONALIZATION OF THE PRINCIPLES OF LOCAL DEMOCRACY

Decentralization is a system of governance that supports the transfer of competences from central to local governance. Decentralization of power serves as a democratic standard and precondition for successful integration in the UE, and in this context decentralization of education in RM is planned and performed in the framework of decentralization and obligation toward international acts such as the European Convention for local government approved by the European Council in the year 1985.

The process of decentralization in education ensures the transfer of competences from decision–making authorities with professional expertise in education (education institutions) to bodies with political legitimacy (local government bodies). The Government is committed to achieving school autonomy through education reform in collaboration with stakeholders implementation of school autonomy in the areas of curriculum, funding, personnel and management at the school level and above is achieved by amending the legal basis and the relevant implementing agencies. The process of decentralization of education entered a qualitatively new stage, because not only changed the structure and operation of the schools, but the structure of the education system. The new policy introduced the system structure gradually, giving rise to a variety of schools, some of which autonomous, while others enjoy the schools status with restricted or conditional autonomy, we have schools managed by local authorities not to mention here private schools which now enjoy the status of autonomous schools.

In accordance with the National program (2006) and the Law on primary and secondary education, founders of schools are municipalities, respectively the City of Skopje. This means that schools are established and closed by municipalities with a consent of MES, while the municipality decides the increase of regional primary and secondary schools.

Changes in laws of education have restructured school councils, which have received considerable competences related to the approval of the annual financial plans of schools, the status school approval, appointment and dismissal of school principals.

For appointment of school principals there are presented new demands in terms of their qualifications through various seminars and workshops aimed at better management of the school by the directors.

With the decentralization of education, municipalities gained new responsibilities in the field of education:

- The establishment and closure of schools after approval by the MES;
- Opening and closing of professional courses upon approval by MES;
- Participation and activities of the School Board through municipal representatives;
- Appoints and/or dismiss the school principal, by the proposal of the school council;
- Appoints School Board members - two members in primary schools and three in secondary schools, in order to represent the municipality;
- Ensuring access to schools and full involvement of pupils in compulsory education;
- Ownership of school buildings (land ownership is not transferred)

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Maintenance of the facilities in good condition;
management of school network and elementary school zoning, including the network of satellite schools;
Distribution of funds from grants for maintenance of education at various schools in the municipality;
Approving the financial plans of schools for school maintenance, including heating costs (electricity and gas), water supply, sewerage, telecommunications, waste collection, hygiene materials, office supplies and small school repairs, etc.;
Approval of financial plans for schools to schools own resources;
Supervising the maintenance of schools;
- Planning and implementation of school repairs and small investments;
- Organizing and financing the transportation of students.

While the central government continues to:
- Diagnosing at what level there is the education (primary, secondary and higher education)
- Verifying what conditions must be met in primary schools;
- Registers the levels of school staff in schools;
- Brings decisions about the school plan and subject program and basic contents in primary and secondary schools as well as determines the grading system
- Manages and finances higher education.

Whereas in the second phase of decentralization municipalities take responsibility for the payment of salaries of teachers and non-teaching staff. Approval of all jobs for teachers and non-teachers in the school, payment of salaries for the school staff, the decision-making for the division of students in classes, management and financing of student dormitories.

New municipal responsibilities in the management of primary and secondary schools, provided a positive impetus to the process of bringing the primary and secondary education with local communities.

Task assignment in the field of education by central administration to local bodies, is considered to be a pulse generator to start strategic planning, but initiatives can be derived by the municipalities. Local authorities being under the influence of voters may conclude that educational status is not satisfactory. This concern is expressed most often by teachers who are interested for renovations in education.

The involvement of local communities in the processes of primary and secondary education increases the interest of the citizens for the authorization of public institutions in the field of education.
### Table 1

<table>
<thead>
<tr>
<th>Place</th>
<th>Cities</th>
<th>Villages</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not informed at all</td>
<td>39.80%</td>
<td>44.90%</td>
<td>41.20%</td>
</tr>
<tr>
<td>Sufficiently informed</td>
<td>36.10%</td>
<td>36.60%</td>
<td>36.30%</td>
</tr>
<tr>
<td>Quite informed</td>
<td>17.40%</td>
<td>16%</td>
<td>17.10%</td>
</tr>
<tr>
<td>Very well informed</td>
<td>6.60%</td>
<td>2.50%</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

From the table above, it can be concluded that the citizens are informed about the decentralization of education and that informing the citizens about educational issues is the highest level in urban areas than in rural areas.

As for the question asked to citizens in the municipality of Debar24 "What do you think of Debar Municipality, did it perform better or worse the process of decentralization of education", the majority responded that it could be better, while only a small proportion of respondents responded positively or negatively25.

### 3. FISCAL DECENTRALIZATION OF EDUCATION

The process of decentralization is accompanied by a fiscal decentralization which is developed gradually in two phases. The process provides for the imposition of municipal financing mechanisms that are transparent and which are established according to objective criteria and measures. Ministry of education and science distributes the funds to municipalities based on financial reports submitted by each school in advance. These reports were submitted to municipalities, and municipalities shall submit them to the Ministry.

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25 Ibid,
Means for education funding are provided entirely from grants dedicated, but municipalities sometimes intervened by means of its own budget that was not planned for education.

In order to improve the state of the education budget is necessary for the municipality to invest financial resources in education from its budget in accordance with its capacities.

It is also very important for the financing of educational institutions to be managed by a centralized system (control, unified) within the municipality.

Municipalities must constantly monitor school expenditures, and make the necessary comparisons.

Reforms are needed to change the institutions financing scheme. This requires governments’ new roles from only one provider of education to main funder, from funders of the institutions to funders of pupils. In order to achieve this it is necessary for:

- new responsibilities of the Government and the local government (funding of primary and secondary education and higher education);
- participation of families and children (some will pay, some will be supported);
- contributions from the private sector and society;
- managing, monitoring, auditing and evaluation of the use of the budget;
- "capacity building for financial management and procurement at all levels of management system according to international standards”

4. DECENTRALIZATION IN PRIMARY AND SECONDARY EDUCATION

Primary and secondary education became municipal competence since July 2005. Transfers involve municipal ownership upon the school buildings and other properties related to primary and secondary education, as well as responsibility for maintenance of such facilities, teaching staff recruitment, appointment and dismissal of directors of the school, payment of salaries for staff assistance along with the logistics of transport and placement of students in boarding schools.

Decentralized education includes participation and coordination of multiple stakeholders such as local government units (units), school principals, parents and students at the local level, and the Ministry of Education (MoE) and its subsidiaries in national level as is described in the aforementioned legislation.

With the Constitution of RM primary and secondary education is compulsory, whereas is higher education voluntary. Primary education lasts for nine years and according to rules is compulsory for all children from age 6 to age 15.

With the Law on Local Self-Government, the competences regarding primary and secondary education fall upon municipalities in cooperation with the central government, respectively both have joint authority.

The number of children who are enrolled in primary schools in the last 10 years has increased significantly, and the percentage of pupils reached up to 92.5% even though the economic and social situation is difficult. As a result of improved network of schools, transportation of students in rural areas, are factors that have contributed to an increase in the number of pupils in primary and secondary schools.
There are 1015 available primary schools in primary education. The total number of pupils in primary schools was 237,581, while the total number of teachers is 13,59026.

Macedonia is lagging behind compared to other countries of Eastern Europe when it comes to the issue of secondary education, although in recent times we have increase in the number of students who attend secondary school. The small number of students in secondary schools in urban and rural areas is not in line with European standards, while different ethnic groups score lower in terms of education, especially in secondary education. For example, girls with non-majority ethnic backgrounds are less involved in primary and secondary schools, compared to girls belonging to ethnic Macedonians. Students of ethnic Roma, Albanian and Turkish, are more involved in the primary schools than in secondary schools. Although the Albanians attendance of pupils in primary schools reaches 30%, while in high school about 16%. More drastic situation is noticed in the ethnic group of Roma, whose primary school attendance is around 3.3% while in second education at around 0.5%. Educational services are not of the same quality in urban and rural areas.

Starting from the analysis made, we can conclude that there is a good and successful development as in the primary and secondary education, particularly in urban areas, while in rural areas it remains to work more in school infrastructure and teaching staff.

Secondary education takes place either in public or in private schools. Secondary public schools are established by municipalities or the state. State may establish schools for certain categories of students or for areas which are of particular interest for the state (art, music, schools for children with special needs and other specialized schools).

From several surveys conducted, show that the number of students in rural areas (mountainous areas and remote villages) has been significantly reduced.

Secondary education is organized in 95 schools of which four private. There are 22 schools that provide general learning, 46 schools which are specialized (here participate schools of music, art schools, physical education) total 23 schools or different courses from which 4 are for students with disabilities. A total of 95,352 students and 5,772 teachers.

Learning takes place in native language in both urban and rural areas, which facilitates the learning of knowledge by students and creates a better perspective for their future.

The Principal organizes and manages school educational activities, adopts decisions, represents school in front of the third party and is responsible for the legal harmonization of work in schools. He/she plays an important role in school administration, insurance of teachers tutoring, applying new skills in working with students.

In fact, major organs in all cycles are school councils, their structure composed of representatives of teachers, lecturers and professional associations, parents, local government as well as representatives of the Ministry of Education and Science. To reinforce the responsibilities of all stakeholders at the school level and in the context of cooperation with the local government and the wider community, School Board (Council) should have a key role in school management, whose structure and functions are determined by Law 20. The legal framework is oriented to minimize political influence, considering that school boards operate effectively.

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27 ibid
Management and leadership in education must be addressed at two levels:

1. In a level within the school and its mode of governance by the Principal,

2. In a level outside the school respectively, system organization, carrying out inspections and supervision of schools.

It is imperative of the society, more efficient management of educational institutions which was intended to be addressed through the process of decentralization. Decentralization creates opportunities for the establishment of schools that will be better adapted to the needs of consumers. Autonomy – of the school emphasizes the principle of subsidiarity. Directors should be given the greater freedom. The surveillance system can not be based only on formal control, the most important is to provide expert assistance in school in order to diagnose their strong and weak sides. In education systems of many countries the discussion is done about the role of the school principal, is it a manager or a lecturer? However it seems impossible to avoid merging of two functions: the director must certainly be the manager, but with specific skills for management of a specific institution.

Decentralization of education increased efficiency and accountability of schools, community, and local requirements were met for participation of citizens in the management of schools.

But decentralization also has its disadvantages:

- Service quality may deteriorate because local agencies sometimes lack the necessary capacity to handle transferred duties.

- Increases the chance of developing a polarization due to socio-economic differences, ethnic and political.

- Central policy can be challenged by certain groups that have influence at the local level.

Decentralization process in education should be achieved through a balance between centralization and decentralization in its various forms, accompanied by the full awareness of the risks and opportunities for success.

5. THE ROLE OF THE MAYOR IN THE PROCESS OF DECENTRALIZATION OF EDUCATION

The process of decentralization in education brought a clear distinction of roles, rights and responsibilities of the authorities at central and local levels. This process allows greater participation of local communities in decision-making processes, active and transparent management of schools through a greater involvement of interested parties and effective control over the work and activities in schools and the quality of learning. So finally, that enables municipalities to manage the funds allocated to education.

This chapter covers several issues related to education and local government such as decision-making mechanisms in school level, relations and cooperation between schools, municipalities and state authorities, the level of access of information and communication by all parties concerned, the level of involvement of teachers and parents in school management, the relationship between school principals and school councils.

Political influence on management of education should be minimized and certain activities and tools should be undertaken in order to be neutralized. One of the arguments in favor of decentralized education refers to the efficiency and effectiveness of management and the de-politicization of the education
Before decentralization beliefs were that the education system is politicized and that decentralization will ensure de-politicization.

Education still remains a crucial issue of the society in general but also to the local communities. Municipalities in general pay attention on the topic and try to consolidate it in order to make better management at the local level and enable better services in the field of education, even though the results clearly distinguish between different units of local self-government. Citizens perceive education as a decentralized process that can ensure accountability, transparency, quality, equality and efficiency.

Most stakeholders (school employees, Mayors, members of electoral councils, principals, parents, teachers, students and others) even further show less understanding on their rights, roles and responsibilities in the process. There is a common feeling that members of school councils, parent councils, parents, teachers and citizens in general are marginalized by the municipal leadership where the same sentiment applies to local governments regarding their treatment by the central government (MoE).

Lack of access to information and communication between stakeholders has also been observed through the implementation of the process of decentralization.

6. CONCLUSION

In order to achieve the competencies determined by law in the field of education must necessarily have a close cooperation and interaction between all central and local bodies that deal with education issues. Interested parties should know the rights, roles and responsibilities, which was not the case before.

Local authorities should intensify their contacts and communications with school principals, school council members and teachers, so that the flow of information between all those involved to circulate continuously.

Decentralization of education, municipal management and school management should be given relevant dimension. Principals must manage their schools in close cooperation with school councils and other relevant factors.

Provision of educational services, from central or local agency, should focus on teaching and learning, to ensure high academic achievements and maximum development of the individual.

Autonomy in the field of education or its full decentralization, would create a positive climate for the qualitative promotion of teaching, having sufficient funds, our schools would have satisfactory infrastructure, professional teaching staff, while students will learn by pursuing new technologies. All this will facilitate the work of the principal, teachers and students and would lead to "democratization of education" or civic education.

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STUDENTS’ ABILITY TO ACT INDEPENDENTLY IN UNIVERSITY STUDIES

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Abstract

As modern society requires comprehensively educated specialists, development of generic abilities has become an extremely important part of study programmes. Generic abilities have significant importance for the four main purposes of higher education set by the European Union: the development and maintenance of a broad, advanced knowledge base; preparation for the labour market; preparation for life as active citizens in a democratic society; personal development. These purposes can be achieved by moving to a new content policy oriented towards the development of generic abilities and values as well as acquisition of competencies that a contemporary person should possess. Such education is based not on giving and acquiring knowledge but rather on the analysis of knowledge, its critical assessment and practical use while closely relating educational content and practice in various fields, arising problems and their solutions. This new approach emphasises the importance of generic abilities that stimulate students’ independence.

Key words: generic abilities, learning methods, higher education institution, independent activity.

INTRODUCTION

Modern world that is often described as the world without borders is associated with the development of science and technologies, integration of different states and opening markets. Therefore new organisational forms cause uncertainty, shorten the life cycle of products, services and companies, increase the demand for solutions, innovations and learning. Knowledge can also become outdated rather quickly. So changes in an organisation become a natural phenomenon (Zakarienė, 2011). Fast-changing work conditions and demand of lifelong learning prompted people to focus on such spheres of abilities that are important for the formation of specific work-related skills, employees’ personal responsibility, creativity, initiative and values. Highly developed generic abilities ensure better integration into the labour market and better acquisition of new experience, as well as help a person to easier change one’s specialisation and the nature of work. Therefore, future specialists’ education is focused not only on the development of knowledge but also on the development of skills, on interdisciplinary learning and better practical use of acquired knowledge (Valantinienė, Emeljanovas, 2010).

Upon successful completion of the entire study programme, its graduate develops a set of abilities (generic and specific abilities) that were planned in the study programme. Specific abilities are related to the study subject, reflect specific aspects of that study programme and are the basis of a profession. The basis of generic abilities is formed of abilities that all students should have, regardless of their study programme, if they want to complete their studies and get a qualification that enables them to find a job easier and then survive in the labour market, to continue their education and further development, to be
active members of the society and participate in various activities (Bulajeva, Jakūbé, Lepaitėtė al., 2011).

**Research problem.** Constantly increasing importance of generic abilities requires specifying components that are important in the system of higher education by encouraging independent activities. The process of developing generic abilities has to be planned and a learner has to understand the aims and tasks of this process, to monitor his/her progress, plan one’s activities and reflect one’s success and failures.

**Research questions used for revision of the research problem:**
What generic abilities should be developed during studies? What methods used in a higher education institution emphasise generic abilities and encourage students to act independently during studies?

**Research aim:** to identify main components of the development of generic abilities at a higher education institution by emphasising student-oriented learning and independent activity during studies.

**Tasks:**
1) To review the concept of generic abilities and highlight components relevant to a higher education institution;
2) To identify main teaching methods used in the study process and required for the development of generic abilities and independent activity.

**Research object:** independent activity during studies.

**Research methods:**
1) Scientific literature analysis
2) Questionnaire survey

**Research methodology.** The first stage concentrated on defining the concept of generic abilities and distinguishing generic abilities important in higher education. Then changes in organising the process of studies and teaching methods relevant to students were reviewed by taking into consideration independent activity during studies. This research stage was also devoted to the analysis of scientific resources. The second research stage focused on empirical validation of generic abilities that are relevant to students. This stage was also used for defining methods that encourage students to actively and independently participate in the process of studies. The questionnaire survey was performed in three Lithuanian universities in April – May 2013. 316 out of 500 distributed questionnaires were returned. Descriptive statistics and non-parametric criteria were used for data analysis.

**DEVELOPING GENERIC ABILITIES IN THE STUDY PROCESS BY EMPHASISING THE VARIETY OF TEACHING METHODS AND STUDENT’S INDEPENDENCE DURING STUDIES**

When organising the process of studies at higher education institutions it is now recommended to change traditional explanatory teaching-based methods into such methods that encourage independent activity (Daukīlas, 2008). However, highly qualified specialists, i.e. teachers, who directly offer didactic models, do not provide any clear solution how to do that. It has been noted that the assessment of programme aims and generic abilities developed during studies is structured around knowledge and actions at the theoretical level. Practical use and the development of values are missing. The author notes that in qualification descriptions and study programmes, knowledge relevant to professional activity is usually presented in the “epistemic” (Daukīlas, 2008, p. 43) form of knowing, leaving “the instrumental form of professional cognition” (Daukīlas, 2008, p. 43) behind. Emphasis is on knowledge that a graduate should possess, often forgetting students’ and graduates’ need to identify their own profession, their
ability to think critically, and independent activity and development. The author notes that having the aim to change this situation and preparing for the study process, teachers follow two directions:

1. Assumptions for students’ productive and independent learning are formulated;

2. Focus on different learning theories and various learning methods, as well as cognitive intellect;

The author (ibid) also notes that teachers often emphasise generic abilities and aim to develop them as the most important factors that help to get into and survive in the labour market. Juozaitis and Jakubė (2012) note that employers usually describe graduates as having a lot of theoretical knowledge but being unable to apply them in practice. Employers also note (ibid) that graduates lack communication and cooperation, teamwork and information management skills. However, the development of generic abilities during university studies should not be associated with only the labour market needs or employment-related expectations. Duoblienė (2011, p. 21) states that “the increasing influence of global capital requires education at all levels and spheres to be focused on life following the requirements of sub-rational powers”. However, university studies are not limited to preparing a person for the labour market and developing abilities required for professional activities. University studies help to formulate his/her values and attitudes and prepare a person for both personal life and life in the society.

Leonavičius and Rutkienė (2010) surveyed students from different study fields. The survey has shown that students from different study fields have different opinions about the need of certain generic abilities. For example, students of humanities distinguish communication and creativity abilities as important for their future professional activity while students from the sphere of biomedicine do not treat these abilities as important and significant. Students from the field of technologies also do not consider creativity abilities to be very important. Social science students emphasise communication abilities; however, these abilities are less important to physical science students. It is important to note that all students (humanities, social, physical, biomedicine) emphasise the importance of abilities related to decision-making, analytical thinking and independent self-development.

Laužackas (1998) conducted a research in order to find out what abilities employers of all professions are requested to possess. The research has shown that specialists should gain and develop such generic abilities that would help them to succeed in a variety of spheres and would allow them to successfully learn, work, communicate and cooperate, think critically, solve problems and take responsibility etc. Taking into consideration the development of the concept of generic abilities in the Lithuanian context, it has to be noted that the basis of generic abilities as well as any other specific abilities is knowledge, skills and ability to use them in activities in general. Thus abilities are defined as the level of performance of individuals’ physical and mental work that is applied in the majority of professions and creates preconditions for high-quality performance of specific professional operations. The review of the Lithuanian authors’ works has shown that the concepts of “generic abilities” and “generic competencies” are often used interchangeably (Jakiūniienė, Rekašiūtė, 2010, Bulajeva, Jakubė, Lepaitė et al. 2011, Juozaitis and Jakubė, 2012). The authors of this article use the concept of abilities that is widely used and clearly defined and understood by students and used in general-purpose documents.

Kohler (2004) reveals links between the expectations related to generic abilities in higher education and planned learning outcomes. The author analyses how these two elements intersect in terms of graduates’ employability. He identifies four possible spheres emphasising generic abilities, i.e. applying knowledge and skills in practical activity, work in a team or group and division of tasks, work in multicultural environment and continuous individual development both in personal and professional life (Table 1).

Table 1
Links among generic abilities – learning outcomes and expectations of a higher education institution (according to Kohler, 2004, Schaper, Schlömer, Peachter, 2012, Stasiūnaitienė, Norkutė, Rutkienėt al., 2013)

<table>
<thead>
<tr>
<th>Student-oriented expectations of a higher education institution</th>
<th>Generic abilities</th>
<th>Learning outcomes-oriented academic knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abilities that are oriented towards high-level results and innovativeness and involve basic professional and subject (basic) knowledge</td>
<td>Analytical thinking</td>
<td>Basic general knowledge</td>
</tr>
<tr>
<td>Continuous use of present knowledge and skills in practice while emphasising the nature of a problem, focusing on the complexity of problem solution and explanation of motives</td>
<td>Gaining basic general knowledge</td>
<td>Knowledge that forms the basis of a profession</td>
</tr>
<tr>
<td></td>
<td>Information management</td>
<td>Understanding concepts, systems and methods</td>
</tr>
<tr>
<td></td>
<td>Gaining and using knowledge that forms the basis of a profession</td>
<td>Identifying problems and generating possible solutions</td>
</tr>
<tr>
<td></td>
<td>Systematic / problematic perception</td>
<td>Recognising different facts and data, analysing them and grouping according to a chosen criterion</td>
</tr>
<tr>
<td></td>
<td>Being able to apply knowledge and skills in new or difficult situations</td>
<td>Planning research</td>
</tr>
<tr>
<td></td>
<td>Being able to transform present knowledge</td>
<td>Generating new ideas / creativity</td>
</tr>
<tr>
<td></td>
<td>Result-oriented decision making</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adapting to new situations</td>
<td></td>
</tr>
<tr>
<td>Work in a team / group, division of tasks and cooperation</td>
<td>Written and spoken communication in native language</td>
<td>Completing tasks in stages</td>
</tr>
<tr>
<td>Work in an inter-disciplinary team</td>
<td>Work in a team</td>
<td>Evaluating own potential / self-criticism</td>
</tr>
<tr>
<td></td>
<td>Project design and management</td>
<td>Explaining links between a chosen sphere (profession) and other spheres of activity and discussing possible consequences while solving inter-disciplinary problems</td>
</tr>
<tr>
<td></td>
<td>Management abilities</td>
<td>Intermediation and help</td>
</tr>
<tr>
<td></td>
<td>Communication with experts from other spheres</td>
<td>Transferring information to colleagues and community</td>
</tr>
<tr>
<td></td>
<td>Communication skills and mutual understanding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solving conflicts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Division and transfer of tasks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Motivation</td>
<td></td>
</tr>
<tr>
<td>Global professional activity</td>
<td>Understanding cultural variety and customs</td>
<td>Getting acquainted with cultural differences and understanding cultural variety</td>
</tr>
<tr>
<td></td>
<td>Understanding and accepting multiculturalism</td>
<td>Understanding multicultural aspects of life and integrating them into specific situations</td>
</tr>
<tr>
<td></td>
<td>Communication in a foreign language</td>
<td></td>
</tr>
<tr>
<td>Quality assurance and support</td>
<td>Being able to learn and continuous development</td>
<td>Constant thirst for knowledge and continuous professional development</td>
</tr>
<tr>
<td></td>
<td>Being able to criticise and self-criticise</td>
<td>Persistent pursuit of results and assuring results when circumstances change</td>
</tr>
<tr>
<td></td>
<td>Being able to work independently</td>
<td>Taking initiative</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Independent and regular assessment of the quality and state of completed works</td>
</tr>
</tbody>
</table>
As the table 1 indicates, generic abilities are important when developing a personality who can participate in dialogue and analyse changes at social, organisational, political and cultural levels. In this case acquisition of basic general purpose and professional subject knowledge in studies, constant development of social and personal abilities, independent decision making and the ability to plan one’s activity and future intertwine. It can therefore be stated that a graduate should be flexible, active and be able to adapt to the constantly changing needs of the labour market, to make right decisions, to cooperate in an intercultural environment and be in a continuous self-development. Thus generic abilities involve creativity, critical thinking, social (interpersonal, linguistic and cultural) communication, responsibility, cooperation, information and communication technology management, independence etc. It is difficult to identify several significant and relevant components of generic abilities that a higher education institution would treat as important.

Various study programmes and modules have recently emphasised orientation towards a student and links with learning outcomes. Following this approach, the aim has arisen for the content of a study programme to be determined by knowledge and abilities that a student should acquire during the process of studies. Learning outcomes and abilities are oriented towards not only subject requirements but also societal needs of employment and public spirit. However, a lot of study programmes are still oriented towards knowledge and a subject teacher. Thus it can be stated that programmes still focus on teaching material where attention is drawn to teacher’s achievements in a specific field and academic knowledge. Although the authors of the “Tuning” project agree that it is very important to use teachers’ academic knowledge potential, this aspect should not be the most important factor in the programme (“Tuning”, 2006). Poškienė (2011) agrees to this opinion and states that due to technological development and other reasons the paradigm of teaching has changed and is now student-oriented rather than subject-oriented. Peilakauskaitė and Varanauskas (2011) state that student-oriented learning helps students to find their own learning style, to understand their motivation and to gain effective learning skills that can be used throughout their life. If this approach was applied in practice, teachers should help students to set aims that could be achieved; to encourage students to assess themselves and their colleagues; to help them work in groups and ensure that they know how all available learning resources can be used.

According to Teresevičienė, Bulajeva, Čepienėtė et al. (2011), certain links between study methods and generic abilities were identified. However, Buivydiene (2006) notes that many education institutions in Lithuania use standard general teaching methods and do not experiment in order to optimise these methods to match learners personalities. Daugviliene and Ruževičius (2009) also express the need to change classical lectures into more diverse teaching methods. The following figure indicates the percentage of knowledge and skills that students acquire during lectures of different nature (Figure 1).

As the above figure indicates, the greatest part of knowledge is acquired during students’ active participation, i.e. when they discuss certain aspects, teach one another, analyse etc. The use of a variety of teaching methods and changes in the teaching paradigm, with emphasis being now put on student-oriented learning and holistic approach, have changed the nature of a teaching/learning method as a mediator between a teacher and a student. A method is not just a tool for understanding subject material or developing linguistic skills. A method has become a complex phenomenon that allows a student to adapt to learning material, to socialise in a group, to get to know and evaluate himself/herself, to think critically and creatively (Poškienė, 2011). Naoko (2000) states that due to the multi-dimensionality and diversification of the teaching process, old teaching methods have to be reviewed. These methods should help to identify what abilities students have and to formulate target abilities set in the description of a subject or module. For example, the method of oral academic presentation can create the event of speaking that helps a student to socialise in a group (Naoko, 2000). Bulajeva, Čepienė, Lapienėtė et al. (2011:82) also note that “a lecture is a relatively ‘cheap’ method as one teacher can work with a lot of
people and it can also be quickly adapted to particular audience, material and equipment”. However, this method is only helpful for short-time memorisation. The authors also distinguish other methods that help to develop specific abilities. For example, group discussions prompt analytical thinking, help to develop and evaluate decision-making abilities. This method helps to change one’s attitudes, to generate new ideas, to increase confidence and strengthen human relations. Yet another discussed method is subject-related games where certain roles have to be performed. When this method is used, learners are given both advice and criticism; they get to know other people’s attitudes and motives. Other methods involve case analysis which helps to exchange ideas about solutions related to work performance; games encourage active learners’ participation, help to solve problems more effectively, enable understanding interpersonal relations, encourage cooperation and motivate people; seminars help to develop abilities related to argumentation and preparing a presentation; brainstorming helps every learner to get involved into learning and contribute to the process, as well as helps to find new ideas related to the analysed theme and stimulates critical thinking; and finally, learning under agreements (agreements make learning more productive, increase students’ accuracy, improve work skills, attendance and social behaviour).

Fig. 1. The pyramid of learning: percentage of acquired knowledge and skills (Daugvilienė, Ruževičius, 2009).
Choosing the most appropriate and thought-out study methods and their coordination are an important precondition for organising successful learning. It helps to educate an independent, responsible and continuously developing personality (Jakubė, Juozaitis, 2012). A teacher can contribute to the development of generic abilities and learner’s independence by wisely coordinating and matching diverse methods that are used not only to revitalise the study process or to make a learner more active. These diverse methods are associated with learner’s self-control, responsibility, motivation, skills to regulate the process of learning, getting experience, planning of learning and creation of specific learning environment.

RESEARCH PRESENTATION

The majority of respondents were 1st year and 2nd year students (80.4 % - 1st year and 13.9 % - 2nd year), 94.7 % were bachelor students. The majority of respondents were female – 208 or 65.8%. Respondents’ age varied from 18 to 49; however, the majority of them were 19-21 years of age. Analysis of respondents’ distribution by age has shown that the majority of them were from the fields of humanities (48 %) and social sciences (28.9 %). Distribution by study fields is presented in Figure 2.

![Fig. 2.Respondents’ distribution by study fields](image)

The analysis of students’ opinions has shown that they usually understand generic abilities as the ability to act in a complex and constantly changing world, to match expectations and achievements in different spheres (Fig. 3). Half of the surveyed students agree to this statement (50.63 %).

One third of respondents understand generic abilities as the entirety of long-term knowledge, abilities, skills, approaches and values that determine versatile development and professional mobility of personality. About 90 % of all respondents (88.5 %) stated that it is important and very important to develop generic abilities at university.

Generic abilities that the majority of respondents emphasised and identified as being developed during studies focus on achieving high-level results and being able to apply present theoretical knowledge and skills (Table 2). Thus abilities identified as significant by respondents involve analytical thinking, being
able to use acquired subject knowledge, being able to transform present knowledge, to make decisions that focus on high-quality results and creativity.

![Bar chart](image-url)  
**Fig. 3.** Perception of the concept of *generic abilities*

<table>
<thead>
<tr>
<th>Generic abilities</th>
<th>Never</th>
<th>Usually no</th>
<th>Neither yes, nor no</th>
<th>Usually yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written and spoken communication in native language</td>
<td>3.3%</td>
<td>11.3%</td>
<td>13.2%</td>
<td>44.4%</td>
<td>27.2%</td>
</tr>
<tr>
<td>Communication in a foreign language</td>
<td>2.0%</td>
<td>16.6%</td>
<td>21.2%</td>
<td>36.4%</td>
<td>23.8%</td>
</tr>
<tr>
<td>Basic numeracy abilities</td>
<td>18.1%</td>
<td>26.2%</td>
<td>24.2%</td>
<td>18.1%</td>
<td>12.8%</td>
</tr>
<tr>
<td>ICT management</td>
<td>4.7%</td>
<td>12.7%</td>
<td>31.3%</td>
<td>40.0%</td>
<td>11.3%</td>
</tr>
<tr>
<td>Ability to learn/work independently</td>
<td>4.0%</td>
<td>9.3%</td>
<td>44.0%</td>
<td>42.0%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Communication and cooperation</td>
<td>4.7%</td>
<td>17.4%</td>
<td>45.0%</td>
<td>32.9%</td>
<td></td>
</tr>
<tr>
<td>Solving problems</td>
<td>2.0%</td>
<td>4.7%</td>
<td>38.0%</td>
<td>40.0%</td>
<td>15.3%</td>
</tr>
<tr>
<td>Orientation to results</td>
<td>1.3%</td>
<td>4.7%</td>
<td>31.3%</td>
<td>41.3%</td>
<td>21.3%</td>
</tr>
</tbody>
</table>
The second most important component for respondents is teamwork and cooperation. Other important abilities involve written and spoken communication in native language, teamwork and communication skills. Continuous learning and self-development are identified as an important component for assuring work/knowledge quality and maintaining skills. It has to be noted that the ability to act independently during studies is identified as relatively important; however, respondents’ answers do not prove this ability being intensively developed at university. Respondents agree that generic abilities related to global aspects of professional activity, i.e. understanding cultural variety and multiculturalism and communication in a foreign language, are partially developed during studies.

In order to reveal how important teacher’s position and emphasis on theoretical knowledge are when organising the process of studies, respondents were asked “What do you think teachers focus on in the process of studies? a) theory; b) practice; c) both on theory and practice; d) don’t know yet.” Answers are provided in Figure 4. It can be seen from this figure that teachers usually focus on the theoretical aspect and pay considerably less attention to practical use of knowledge.
The majority of respondents indicated that their studies focus on theory (56.1 %). Other respondents stated that their studies focus on both theory and practice (34.2 %). Thus the statement highlighted in the theoretical section is proved, i.e. certain stages of preparing programme and/or subject descriptions and organising the process of studies are based on the paradigm of knowing and understanding. The review of respondents’ opinions has shown statistically significant differences; the chi-square criterion $\chi^2=45.730$, $df=24$). Students tend to believe (Fig. 5) that teachers from technological sciences and arts (slightly less) focus on practical aspects.
Different aims were set for bachelor and master studies, i.e. master studies focus more on research and theoretical studies. However, research results have shown that bachelor students often indicate that their studies focus on theory. Statistically significant differences were noted (p=0.001, \( \chi^2 = 17.814, df=4 \)).

After reviewing various methods used in studies and taking into consideration Jėčiūviene’s (2008) methodological provisions, these methods were grouped into three categories focusing on the purpose and benefits of each method: a) productive technology, b) collaborative technology, c) sustainable technology. Productive technology methods involve explanation, instruction, demonstration, work with books, lecture, training and testing. Collaborative technology methods involve conversation, discussions, cognitive games, programming, problem-based learning, case study and practical learning. Finally, sustainable technology methods involve narration, the use of visual and auditory materials and observation. Jėčiūviene (ibid) notes that most effort should be put into productive technology as it requires independent learning and reasonable and argument-based defence and explanation of facts and numbers using present and newly acquired knowledge. However, focusing on the development of generic abilities as well as personal motivation and fundamental values during studies and taking into consideration new experience, more significance should be given to the use of collaborative and sustainable technologies.

After calculating the indexes of three methods used in university studies (productive, collaborative and sustainable technologies), the highest average was noted for productive technology (3.88), medium – for sustainable technology (3.42) and lowest – for collaborative technology (3.1). Statistically significant differences (p=0.000) were found after the application of Friedman’s criterion and comparison of technologies. Data are provided in Table 3.

<table>
<thead>
<tr>
<th>Study field</th>
<th>Productive technology</th>
<th>Collaborative technology</th>
<th>Sustainable development</th>
<th>Friedman’s p value</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>humanities</td>
<td>4.1</td>
<td>3.1</td>
<td>3.4</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>social sciences</td>
<td>3.8</td>
<td>3.2</td>
<td>3.5</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>physical sciences</td>
<td>3.8</td>
<td>3.0</td>
<td>3.3</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>biomedicine</td>
<td>3.6</td>
<td>2.7</td>
<td>3.1</td>
<td>0.115</td>
<td></td>
</tr>
<tr>
<td>technologies</td>
<td>3.6</td>
<td>3.0</td>
<td>3.7</td>
<td>0.074</td>
<td></td>
</tr>
<tr>
<td>arts</td>
<td>3.6</td>
<td>3.4</td>
<td>3.6</td>
<td>0.121</td>
<td></td>
</tr>
<tr>
<td><strong>KruskalWallis p value</strong></td>
<td><strong>0.017</strong></td>
<td><strong>0.415</strong></td>
<td><strong>0.201</strong></td>
<td></td>
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</tr>
</tbody>
</table>

The analysis of how different techniques are used in different study fields has provided statistically significant differences in the use of productive technology (p=0.017, KruskalWallis test, Table xx). No statistically significant differences were found in the use of other technologies.

The comparison of the use of different technologies in different study fields has shown that students from humanities, socials and physical sciences agree that often different technologies are used differently. The most frequently used technology is productive technology. Thus a statement from the theoretical section can be proved, i.e. some teachers use various methods but focus on the cognitive
learning paradigm. It should be noted that the field of technology sciences is the only field where sustainable technology is used more frequently than productive technology. No statistically significant differences were found after comparing the use of technologies in different study cycles.

Students were asked how often active teaching/learning methods that stimulate critical and creative thinking, collaboration, ability to analyse new situations and act independently are used in the process of studies. Their answers are presented in Figure 6.

![Fig. 6. The use of active methods during studies (frequency)](image)

The two most popular answers provided by students were once a week (29.5 %) and once a month (24.8 %). A slightly smaller group of students indicated that teachers use active learning methods several times a week. Thus an assumption could be made that active learning methods are used together with traditional methods and are integrated into the study process and/or individual students’ tasks.

It should be emphasised that the new paradigm of education is student-oriented and focuses on an active learner’s role in studies where they are encouraged to take personal responsibility and act independently. A learner should learn/be able to actively, responsibly and independently learn and develop. Respondents were asked to identify components that help to act independently during studies. According to students, independence in studies is linked to motivation and personal responsibility. Self-control is also one of the more important components (Fig. 7).
Respondents were also asked to indicate what activities would stimulate their independence during studies (Fig. 8). Students stated that their independence would increase if they were allowed to choose how to present their individual activities and if they had a chance to discuss and present their opinion and beliefs and received reasonable and competent criticism. Respondents expressed the need to use more diverse learning methods during studies. Thus it could be concluded that matching various diverse methods helps to develop an independent and creative personality who has the ability to think critically. For example, group discussions help to develop analytical thinking while subject-related games teach how to accept criticism and other individuals’ attitude.
Thus the idea that theoretical and cognitive paradigm of learning is important and relevant when organising the process of studies still prevails. Active methods only help to improve students’ active participation and enable them to apply theoretical knowledge in practice. Respondents’ answers have shown that prevailing methods belong to the group of productive technology and involve independent literature reviews, knowledge acquisition during training sessions and lectures; the most appropriate evaluation method is testing. The analysis of generic abilities that higher education institutions take into consideration when organising the process of study has shown that the majority of students define them as the ability to orient oneself and act in a complex and changing world, to match expectations and achievements in different spheres. Mostly developed generic abilities according to respondents are knowledge acquisition and practical consolidation; ability to transform present knowledge focusing on better results; analytical thinking and creativity. These generic abilities focus on acquisition and use of knowledge that forms professional background. It has also been emphasised that studies help to develop communication and cooperation abilities and improve continuous learning abilities.

CONCLUSION

Generic abilities in higher education involve subject knowledge that forms professional background and the ability to use acquired knowledge in various simulations and work situations. Emphasis is put on analytical and critical thinking, creativity, ability to apply present knowledge and making decisions that are result-oriented. Attention is also given to the development of teamwork and cooperation abilities focusing on written and spoken communication in native language, formation of cooperation-related skills and mutual understanding. Communication in a foreign language and continuous learning and self-development are also identified as an important component of generic abilities.

After reviewing innovative and relevant learning methods applied in the process of studies, it should be noted that the most frequently used methods belong to the category of productive technology and involve explaining, instructions, demonstration, work with books, lecture, training and testing. Lecture is distinguished as the most frequently used method. These methods are significant for the development of generic abilities and stimulation of independent activity as they encourage students to learn independently. However, they do not fully reflect and express the idea of independent activity and generic abilities. Collaboration and sustainable technologies and their methods would be more appropriate when focus in studies is on the development of generic abilities, individual motivation and fundamental attitudes and on constructing new experience. These technologies and their methods emphasise the process of constructing new experience and knowledge.

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ACTIVITIES DURING DOCTORAL STUDIES: DIVERSITY IN CHOOSING
AND APPLYING SCIENTIFIC RESEARCH METHODS
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Abstract

Discussions on doctoral studies mainly focus on preparing research and learning how to conduct this research. This is one of the most important abilities defined in the qualification portfolio for doctors in education science. Activities in doctoral studies involve both writing relevant research articles and participation in diverse projects where research is also conducted and the field of education is analysed. During their studies doctoral students either individually or when assisting their supervisor prepare lectures and seminars for students of 1st and 2nd cycle. Individual activity during doctoral studies is basically oriented towards conducting research, presenting research results in various scientific conferences, writing research articles, preparing and conducting lectures and seminars.

Key words: doctoral studies, early stage researcher, activities during doctoral studies, research, organising research, choosing research methods.

INTRODUCTION

Interdisciplinarity of education science and changes in the nature of research (close interaction between theory and practice) require researchers who analyse higher education problems from the theoretical perspective to also perform some practical work, i.e. to become lecturers in a higher education institution, organisers, scientific consultants, experts of the process of study and research (interdisciplinary, inter-university and international) (Jucevičienė 1998). To satisfy these requirements different activities are performed during doctoral studies (preparing and implementing projects, organising research, participation in conferences and writing research articles, preparing lectures, work with students of 1st and 2nd cycle). However, in order to be awarded a doctoral degree, i.e. to become a scientist, the stage of writing and presenting one’s dissertation becomes extremely important as public presentation and defence of the dissertation proves individual’s ability to discuss and defend presented arguments. Public defence of dissertation gives its author a possibility to enter the world of scientists.

Being a research, every dissertation should satisfy modern science requirements (Kardelis 1998, Voverienė 1999, Merkys 2000). The initial stage of writing a dissertation involves formulating an introductory section and preparing a research project. It also requires highlighting conceptions that present conceptual branches of science and scientific schools the theoretical and methodological approaches of which are used in the work (Gall, Borg, Gall 1996, Cohen, Manion, Morrison 2000). Methodology in dissertations is a structural yet essential part as it provides scientific integrity where ideas (theories) are empirically based on specific methods that correspond to the theoretical research logic. Kardelis (2002) states that it is necessary to present methodology as this might be the way to highlight theoretical conceptions and assumptions used when organising research. Subsequently, research itself is conducted, data are processed and conclusion and further insights are formulated.
Integration into European structures emphasises the demand for highly qualified specialists who are able to develop their research and in new situations are able to not only apply present knowledge but also to quickly get new knowledge required in that particular situation and use it accordingly. Although doctoral studies still focus on preparing and conducting research, a problem has been noted that research methods chosen and used while organising a research project are not diverse. This is an indication that early stage researchers do not possess sufficient methodological knowledge and knowledge of method groups.

**Research object** – doctoral student’s research method choice and application.

**Research aim** – to identify activities performed during doctoral studies and to present main research methods chosen and used when writing a dissertation.

**Research tasks:**
1. To define activities performed during doctoral studies and present main aspects that help to prepare for dissertation defence.
2. To reveal the variety of research methods used in dissertations by doctoral students in education science.
3. To identify the most frequently used research methods and their variety.

**Research methods:** literature analysis; analysis of dissertations in education science; questionnaire survey of doctoral students in education science.

**Research methodology:** analysis was performed in two stages. The first stage focused on the extensive analysis of documents and educational, sociological and philosophical literature. Received results allowed anticipating guidelines and steps for further empirical analysis. The second stage focused on the analysis of defended doctoral dissertations in education science and the questionnaire survey of doctoral students in education science. The survey helped to identify research methods that are most frequently chosen by doctoral students in education science.

**ORGANISING EMPIRICAL RESEARCH AND GETTING RESULTS**

206 doctoral dissertations in education science defended between 1995 and 2005 were selected for the analysis. This particular decade was chosen due to a number of reasons. First, dissertations written after the Lithuania’s declaration of independence were started to be defended in 1995. In 2009, Lithuania adopted the Law on Science and Studies which amended the regulation of doctoral studies. Thus dissertations that had been defended before 2005 had to be prepared in accordance with the old regulation without adapting to the changes in law. In 2009, doctoral studies in education science became joint studies. This research aimed to identify what traditions related to choosing research methods prevailed in different universities.

The questionnaire survey had been performed during the period between 2007 and 2011. Doctoral students in education science were asked to answer the same questions three times. The aim of this survey was to find out what research and data processing methods doctoral students plan to use, as well as to identify how doctoral students’ attitudes, method choices etc. change. The scale of methods was presented in the questionnaire after generalising research methods presented by Tidikis (2003: 5–6), Kardelis (1997: 4–6) and data processing methods identified by Tidikis (2003: 377), Čekanavičius et al. (2001, 2002) and used in social researches. Questionnaire reliability was tested by calculating Cronbach α=0.786. 87 doctoral students in education science participated in the survey.
Research data were processed by SPSS 16.01 and MS Excel programs adapted to the Windows operating system. Descriptive statistics elements were applied and nonparametric Friedman test was used to compare changes. An estimated error level was 5%, which indicates that the probability of type I error is no more than 5% \((p\text{ values are compared to 0.05})\).

**Variety of Activities Performed during Doctoral Studies**

The Law on Higher Education of the Republic of Lithuania and other European documents define doctoral studies as the studies of the third cycle where a person with extensive professional experience (bachelor or master’s qualification) gets involved in research activities led by hypotheses related to professional activity.

Reports on the structure, status and perspectives of doctoral studies in the European context that were delivered in the conference in Opladen, Germany, in 2006, agreed that doctoral studies are studies of the third cycle. However, it was suggested to treat these studies as the start of individual scientific activity because doctoral studies are closely related to developing research and learning how to conduct research. Köbler (2003), Kupfer, Moes (2003), Fröhler (2004), Kehm (2005, 2007), Moes (2007) distinguish two possible conceptions of doctoral studies. According to the first conception, doctoral studies are the third cycle studies and doctoral candidate is a student. Thus following this approach, a *doctoral student is a student* who attends lectures, takes exams and receives state-funded scholarship. In this case doctoral student’s main responsibilities are more related to completing a study programme and preparing research, i.e. passing exams, planning and conducting research, writing a dissertation, defending it in accordance with the set requirements. The second conception identifies doctoral studies as the first stage of scientific activity. A doctoral student in this case devotes his/her time not only to dissertation, even though final evaluation of his/her activity is writing a dissertation, i.e. research is conducted and presented. Following this approach it becomes apparent that doctoral student’s activity varies and involves teaching (lectures and seminars), student counselling, conducting research, as well as project development and implementation. In European countries doctoral candidates are usually identified as students or research doctorates. The Law on Higher Education of the Republic of Lithuania No. VIII-1586 (21 March 2000) defines doctoral candidates as students. Literature analysis has revealed that both Lithuanian and foreign authors (Kardelis 1998, Tidikis 2003, Fröhler 2004, Šalkauskis 2005, Betz, Klink et al. 2006, Bitinas 2006, Krull 2007, Schmidt 2007, Wintermantel 2007) tend to treat doctoral students as early stage researchers. Doctoral student’s activity is individual, complex and often changes. It involves not only studies, exams, writing a dissertation but also searching for literature and resources of already conducted researches in a particular field, presentations of own publications, participation in conferences, cooperation in projects, individual preparation for lectures and/or assisting one’s supervisor in preparing lectures for students of 1st and 2nd study cycles, training sessions, student counselling and other organising activities, i.e. organising conferences, participation in the activities of the training organisation committee, project organisation.

Šalkauskis (2005) states that these activities require both personal experience and professional maturity. The author defines doctoral student’s scientific maturity as an ability to individually act or express oneself in a particular field of science, i.e. scientific knowledge, critical thinking and systematic (purposeful) activity.

Milišiūnaitė (1998) emphasises that coordination of studies and scientific activity in the system of higher education helps to educate scientists and create new knowledge. Greisler (2007) states that performing the above mentioned activities doctoral students expand their knowledge and acquire abilities required for independent scientist’s activity. It is important to prepare for this activity. Šalkauskis (2005) distinguishes for types of tasks related to preparation for: a) scientific writing; b) work in a higher
education institution; c) cultural mission; d) international scientific cooperation. When describing a person who was educated in the university environment and chose to become a scientist, Milišiūnaitė (1998) uses the concept provided by Phillips and Pugh (1993). These authors emphasise an ability to choose a personal intellectual stance, i.e. to see relevant problems and describe them so that members of a specific academic community could acknowledge them. They distinguish the following stages of this process (see Fig. 1):

Fig. 1. Stages of the ability to choose a personal intellectual stance

| A) Getting to know the most recent researches in one’s field of science and their results |
| B) Being able to choose research problem that allows hugely contribute to the one’s field of science and science in general |
| C) Mastering main and most contemporary research methods and understanding their relativity |
| D) Ability to present research professionally |

In their discussions about doctoral studies several German authors (Wildt, Szczyrba 2006, Senger 2007) describe a doctoral student as a researcher who is able to organise, implement and describe relevant research. It is noted that irrespective of the status of doctoral studies (whether they are defined as the third cycle studies or as an individual process of activity) they require high competence and responsibility. Dissertation is the result of work towards a doctorate degree. Dissertation is not defined as simply the entity of scientific text elements but is rather based on knowledge of the researched sphere, linguistic traditions, i.e. the ability to use scientific language (both national and foreign) and join all the elements into one entity. When conducting scientific research a doctoral student should be able to choose appropriate theories that could be used as the basis of the theoretical section, to prepare arguments and defend them, to choose appropriate research methodology, to use appropriate research methods, to evaluate and interpret received results, to be able to present one’s work and defend own opinion. Tidikis (2003) and Fröhler (2004) state that this activity requires more than just mastering globally accepted operations of traditional logical thinking. It requires productive non-traditional and non-standard creative thinking that could prompt creation and presentation of original ideas. Šalkauskis (2005) states that a scientist should possess a high level of scientific critical assessment and organisation. Milišiūnaitė (1998) emphasises that the development of critical thinking is inseparable from the development of independent personal activity and character formation. Tidikis (2003) highlights the importance of thorough, consistent, patient and selfless work. The German Council of Science and Humanities (Wissenschaftsrat 2002), Enders (2005), Wildt, Szczyrba (2006) state that these abilities are developed through learning by doing or training on the job.
The use of mathematical methods is an integral part of contemporary research. A doctoral student learns to “create mathematical models, apply analytical and statistical probability methods, <...> learns main aspects of the theory of similarity, as well as how to apply criteria of similarity and adequacy of the model. Processing experiment data, graphical and analytical presentation of empirical data, evaluating accuracy of experiment and observation data are all integral parts of experimental and applied research” (Lujaniene, Valiulis 2003: 233). Doctoral students in education science apply diverse empirical research methods, and coordinate qualitative and quantitative research models. The latter are used more frequently. A limited number of statistical data processing methods are used when processing research data. As a result, possible data analyses are not used to their full extent and deeper interpretation of empirical data is often missing (Merkys 2000, Rutkienė 2008).

In her dissertation Tandegolskienė (2008) presents the activity model for individuals who have a doctorate degree in education science (Fig. 2).

Fig. 2. Activity model for individuals with a doctorate degree (according to Tandzegolskienė 2008, 2010)
The above model presents tasks for an individual with a doctorate degree and identifies abilities required when completing these tasks.

It can now be summarised that scientist education focuses on new knowledge, abilities to recognise, define, critically analyse and assess new / relevant problems in the sphere of education. Preparation for scientific research involves the ability to identify a research problem, as well as to prepare and implement a research project. Preparation for research and implementation of the designed research project involves a number of stages, i.e. choosing appropriate research methods, being able to organise set activities, collecting data, data processing and description, and presenting research results. Doctoral students’ activities should also involve the use of didactics during studies, project development and implementation, ability to communicate with colleagues about their field of interest and justify own opinion, cooperation with colleagues at both national and international levels. The process of writing a dissertation and its defence only reveal a part of abilities that a scientist should possess. Other abilities required in a particular field are usually developed through participation in projects, work with students in classes, preparing and writing articles, participation in conferences, planning and implementing scientific research.

**Empirical Research Methods Used in Doctoral Dissertations**

In order to identify research methods most frequently used in doctoral dissertations in education science, 206 doctoral dissertations in education science, defended between 1995 and first half of 2006, were selected for the analysis. A detailed analysis of these dissertations is provided by Zuzevičiūtė et al. (2006).

Quota sampling was used to select 90 out 206 defended doctoral dissertations in education science. Quota formation included two aspects, i.e. year and a higher education institution. Dissertations defended throughout the entire analysed period and from all the universities were selected for the analysis. Dissertations were analysed by recording methods indicated by authors without questioning whether they were used correctly and purposefully. Statistical methods for processing quantitative research were analysed separately.

Tidikis (2003) distinguishes theoretical and empirical research methods. Scientific literature analysis which is ascribed to theoretical methods was mentioned in all analysed dissertations (Fig.3). In addition to this method, the analysed dissertations mentioned a comparative historical method (8 dissertations), meta-analysis (18 dissertations). Questionnaire surveys were the most frequently used empirical method (70, or 78% dissertations). Half of doctoral candidates review various documents when writing their dissertations (47 dissertations out of 90). Approximately one third of doctoral candidates chose experiment, expert assessment, interview, and observation (4.1 research methods on the average). Various statistical data processing methods were used in 81 out of 90 analysed dissertations. Several dissertations analyse theoretical material, provide their comparison and analysis of historical resources. Therefore, no statistical data processing methods were used in them. 10% of authors defended their dissertations without using any statistical data processing methods. This does not indicate that the quality of these dissertations is worse. The choice of methods depends on the research problem and research methodology chosen by the author.
Researchers (in education science) analyse phenomena and processes that at least initially appear to be qualitative. However, comprehensive analysis of qualitative phenomena also requires quantitative researches. According to Bitinas (1998), quantitative analysis is an internal research component often completely irrelevant to the user of research results. However, it is important to provide results of quantitative research conducted in dissertations. These results should be validated so it is important for quantitative research to be conducted qualitatively. The purpose of quantitative analysis based on the methods of mathematical statistics is “to verify education related arguments” (Bitinas 1998). Methods of mathematical statistics are only a tool that enables researchers to support or deny provided arguments.

Descriptive statistics is the method of mathematical statistics most frequently used in dissertations. Diagrams and various numerical characteristics of data (mean values, distributions, modes etc.) were used in 81 dissertations (90%). Descriptive statistics that involves presentation, comprehensive description of information and graphical presentation of collected data is a very important stage. It allows making reasonable conclusion about the frequency of features and distribution of a specific feature. Descriptive statistics is necessary but insufficient for identification of causal relationships, interaction of different factors and certain trends. However, even 18 out of 90 (20%) analysed authors used only this method of mathematical statistics in their works.

Figure 4 presents the use of statistical data processing methods in dissertations. It could therefore be stated that dissertations in education science do not use a huge variety of mathematical methods. The following diagram indicates that about one third of authors aim to use half of methods mentioned in dissertations while other statistical analysis methods are used less frequently (less than 10% of dissertations).
Fig. 4. Use of statistical data processing methods

Fig. 5. Dependence between the number of methods used in dissertations and year
The analysis of dissertations and mathematical statistics methods used in them has shown that no statistical methods are used in some dissertations (qualitative research methods are used instead) while other dissertations combine 7 different methods for processing results (1 dissertation). Most frequently, 2–4 data processing methods are used in dissertations (average 3.4).

Calculations were done in order to identify dependence between year and the variety of used methods. Calculated correlation coefficient \( r = 0.379 \) \( (p = 0.000 < 0.05) \) does not indicate any major dependence; however, certain tendencies could be noted (see Fig.5). Other calculations prove this statement \( (\chi^2 = 47.25, p = 0.730 > 0.05) \).

It has been noted that the number of research methods tends to increase each year. Therefore an assumption can be made that authors of dissertations in education science tend to use a variety of both theoretical and empirical research methods. A rather large number of statistical data processing methods are used in empirical researches.

**Research and Data Processing Methods used by Doctoral Students**

Questionnaire survey helped to identify what research is most frequently chosen by doctoral students in education science. Survey results were then used for the review of data processing methods. 9 out of 87 doctoral students in education science (10.7% of respondents) participated in all three stages of the research. Some doctoral students planned to defend their dissertations externally and others were higher year students. So due to objective reasons almost a half of respondents could not participate in other stages of the survey, i.e. out of 55 respondents who participated in the first survey, 22 were third year of fourth year doctoral students and planned to defend their dissertations externally.

![Fig. 6. Use of research methods](image-url)
Doctoral students who participated in this research were asked to answer what research methods they plan to use in their dissertations. The answer scale consisted of four categories and varied from very important to completely unimportant. Certain trends are provided after calculating very important and important research methods. The following trends were noted when analysing results: second and third surveys have shown increased importance of document analysis, interview and case analysis; motivation to use meta-analysis and content analysis has increased evenly; the number of those who use experiment has increased in the third survey; however, the importance of observation and conversation has decreased and discussion has totally disappeared in the third survey while the importance of questionnaire survey has also slightly decreased (see Fig.6).

Similar trends were noted when analysing empirical research methods that respondents understand and plan to use. The most frequently provided answer was 6 research methods (see Fig. 7); in the first survey one respondent mentioned 11 empirical research methods that could be used in the dissertational research. In the second and third surveys, the biggest number of indicated methods was 9.

The smallest number of methods mentioned in all surveys was 3. This indicates that during the first survey one respondent had not yet planned his/her research or could not understand certain research methods. Friedman test results have not shown any major differences among conducted surveys ($\chi^2 = 0.065$, df=2, $p=0.968$, $p>0.05$).

Survey respondents were asked what statistical data processing methods they know and understand. Provided answers indicate that doctoral students know more than one data processing method (see Fig. 8).
Figure 8. Number of data processing methods

5 data processing methods were mentioned most frequently. Friedman test results for repeated calculations have not shown any major differences among conducted surveys ($\chi^2 = 0.960$, df=2, $p=0.619$, $p>0.05$).

Surveys have revealed that not all doctoral students in education science are able to clearly define their field of research during studies. Some doctoral students find difficulties when doing it even after a year or two years since the beginning of studies. The question about planned research methods proves this statement. Not all doctoral students are able to premeditate methods required for their dissertational researches. When maturing as scientists, respondents are faced with doubts about initial research arguments. Thus an assumption could be made that the stage of planning research is an important part of research. Respondents of a continuous research think that the most important research methods are literature analysis, document analysis, interview and experiment. Having knowledge of and being able to use a variety of data processing methods, doctoral students think that it is necessary to organise additional training related to statistical data processing methods in the first year or second year of studies.

CONCLUSION

1. In doctoral studies a doctoral student is identified as a student and/or an early stage researcher who when writing a dissertation should be able to: choose theories that validate theoretical section of the dissertation; prepare arguments and defend them; choose appropriate research methodology; use appropriate research methods; evaluate and interpret received results; present one’s work and defend opinion. Main activities during doctoral studies involve studies, teaching, counselling, preparing and implementing projects, preparation and dissemination of scientific research. These activities during
doctoral studies help to develop abilities necessary for independent scientist’s activity. Presentation of a dissertation focuses on an ability to reveal complexity of the analysed problem, to develop and implement a research project, to choose appropriate research methods, to interpret research results and make conclusion, to prepare results for dissemination.

2. When writing and defending their dissertations, doctoral students have to present their completed work. Therefore they use a variety of scientific research methods, including scientific literature analysis, survey, document analysis, experiment, interview and testing. Almost all doctoral students use descriptive statistics for processing research data. However, other statistical data processing methods are used less frequently. The use of different mathematical statistics methods could reveal more aspects of conducted research and could provide valuable information in the field of interest.

3. Questionnaire survey is an empirical research method that most doctoral students in education science planned to use. Other methods planned to be used involve document analysis, content analysis, testing, and expert assessment. Descriptive statistics and correlation analysis are statistical data processing methods best known, understood and planned to be used by doctoral students. No major differences were noted among methods that were planned to be used and that were actually used in defended dissertations.

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ACTIVE AGEING THROUGH INTERGENERATIONAL LEARNING –
NEEDS ANALYSIS OF SENIORS 60+ AND YOUNG 35-
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Abstract

The paper considers the findings of research conducted in five EU countries. The first section of the paper outlines the state-of-the-art of the demographic, economic and social processes and trends influencing active ageing and intergenerational cooperation. The second section of the paper summarizes the problems and difficulties seniors 60+ and young 35- come across when dealing with health promotion and disease prevention, healthy nutrition, physical and cognitive activities, ICT for social networking and intergenerational volunteering. Finally the paper makes conclusions and recommendations on the most appropriate training methods, types of classroom activities, form of presentation of the learning content and the balance between the classroom activities and self-study in the forthcoming learning materials.

Key words: active ageing, health self-management, ICT for social networking, intergenerational volunteering, seniors 60+, young 35-

1. INTRODUCTION

Ageing due to demographic changes severely affects Europe today. However, the challenge confronting the European countries now is not the very ageing but how to age actively so that ageing is considered a benefit rather than a burden for the individuals themselves, communities and governments. Ageing is one of the highest triumphs of mankind and at the same time it is the greatest challenge since this longevity should correspond to the possibility of ageing in a positive way, i.e. individuals should continue to be healthy, to participate in the society and to be able to take advantage of their age. Ageing is associated with maturity, wisdom, competence and respect. On the other hand, it is accompanied by some negative aspects such as worse physical and cognitive abilities, decreased vitality, lack of activity, loss of social contacts and dependency. Therefore, the priority of ageing should be healthy and active ageing and people 60+ appear one of the most vulnerable groups, which is reflected in a number of EU documents (Parliamentary Assembly 2010 Report, Recommendation 1796/2007, Council of Europe Publication on Active Ageing in Europe 2003, etc.). However, it should be taken into consideration that yesterday's child is today's adult and tomorrow's senior. Active ageing is a long process throughout the life course of an individual. To get active, healthy and independent older people in the future, we need intergenerational solidarity today, as well as to learn how to age actively.

Although active ageing as a term was introduced in 2002 by the European Commission, there is a limited number of studies on active ageing in Europe and targeted country-comparable data do not exist. Therefore, the present paper is an attempt to present a recent research in five EU countries - Bulgaria, Germany, Spain, Italy and Ireland, related to some active ageing aspects and respective learning in this area.
2. RESEARCH OBJECTIVES AND METHODOLOGY.

The research aims to identify and analyze the attitudes and disposition of 16-35 young people and 60+ elderly people to active ageing; their attitudes, disposition and opinion about three areas related to active ageing: Health Self-Management, ICT for Social Networking and Intergenerational Volunteering; the awareness of each age group about the attitudes, skills and knowledge of the other age group; the viewpoint of each group about the possibilities for reciprocal learning; and the learning needs and preferences of both generations. In addition, it aims to compare the attitudes, disposition and knowledge of young people and elderly in relation to active ageing and the three areas mentioned above on a cross-country basis.

The research methodology covers two research methods: focus groups and multiple-choice questionnaires. A focus or a debate group is a group of people that meet to discuss a topic or to perform an activity, where dialogue is an essential method or resource. The group uses communication that rises from the dialogue to promote and support friendly relations and personal development among all group members, i.e. it is a place for communication and entertainment. It should be small enough to allow participants to share their views on the topics and, at the same time, large enough to provide diversity of opinions. The work of the focus group is facilitated by a moderator.

Within the present research a focus group was organized in five EU countries - Bulgaria, Germany, Spain, Italy and Ireland. Each focus group consisted of 16-35 young people and 60+ elderly people, which actually promoted an intergenerational dialogue. Having participants from different generations allowed a good connection of the groups that otherwise rarely would come into contact, which lead to the creation of new networks where the age difference far from being a handicap was a junction point. The aim was that the group members learn to listen to the others and focus more on the ideas rather than on the people that express them thus avoiding rejection attitudes.

This qualitative method was used in order to collect detailed information about the attitudes, opinion, knowledge and preferences of the above mentioned two target groups, based on intergenerational discussion and dialogue. Data was collected by using two documents: Session Data Form and Video Analysis Form.

The focus group method was supported by a more quantitative method - multiple-choice questionnaires which were used to identify the learning needs of the two target groups in relation to preferred learning methods, forms and tools.

3. PROFILE OF FOCUS GROUP PARTICIPANTS.

Thirty seven young people and thirty nine elder people were involved in the focus groups within the partnership. Figure 1 and figure 2 show the age groups within each generation.
Figure 1. Age groups of elderly.

Figure 2. Age groups of young.

Figure 3 and figure 4 indicate gender ratios within each generation. Within both generations female participants prevail.

Figure 3. Gender ratio among elderly.

Figure 4. Gender ratio among young.

Figure 5 and Figure 6 show the occupation of both generations. Most of the elderly are retired whereas within young people there is a balance between employed and university students.
Figures 7, 8 and 9 indicate the previous knowledge of the participants in the three areas under consideration, respectively Health Self-Management, ICT for Social Networking and Intergenerational Volunteering. The participants know most about New Technologies, followed by Health Self-Management and Intergenerational Volunteering. A high percentage says they cannot judge, especially for Health Self-Management.

Figure 5. Occupation of elderly.

Figure 6. Occupation of young.

Figure 7. Previous knowledge in Health Self-Management.

Figure 8. Previous knowledge in ICT for Social Networking.

Figure 9. Previous knowledge in Intergenerational Volunteering.
4. RESEARCH FINDINGS

As mentioned above, the research covers three main areas related to active ageing: Health Self-Management, ICT for Social Networking and Intergenerational Volunteering. Within this section each of these aspects will be analyzed.

4.1. **Health Self-Management - attitudes, disposition, knowledge and skills.**

In general, it was observed that in every country both groups were very participative and collaborative with a very positive attitude from the beginning of the session. They even kept talking during the breaks or after the session. It must be highlighted also the high level of knowledge of all the participants (young and elderly) in Health Self-Management, which points to the fact that this is an issue very important for everyone.

In most partner countries some differences in the concept of “being healthy” were observed, depending on the respective generation. For the elder generation to be healthy means to be free of diseases, independent of their family (to be able to perform by themselves their routine daily activities), and is related to good mental function performance and positive thinking. For the young people to be healthy means not feeling physical pain, having a healthy diet, doing some exercises, not smoking or drinking alcohol. They also highlight the link between mental and physical function. In general both generations have different ways of actively coping with their health.

Predominantly both generations have some information about healthy habits and place an emphasis on the fact that nowadays it is very common to find information and suggestions about this topic in mass media. The Internet is cited by many of them as a good source of information to find out tips for healthy living as well as newspapers, books or even visiting an expert (dietologist).

Both generations from all partner countries agree that bad habits have an effect on health and may lead to different diseases. Nevertheless there are differences related to which habits most endanger their health. In the case of elder generation the habits that most affect health are: lack of physical activity, uncontrolled consumption of sugar, salt, fats, etc. In contrast, for the young generation the habits that most affect health are: alcohol and drug abuse, smoking, etc. In addition, social relationships and educational level also may influence health in a negative way. Both young and elderly from all partner countries think that changing unhealthy habits is quite difficult and depends not only on their own personality, discipline and will, but also on the support of their family or GP. In addition, when it comes to practice it is difficult for them to apply their knowledge (especially for seniors since there are certain factors influencing their way of life such as income and motivation). Both generations express they need for some practical advice on how to change unhealthy habits.

Actually all participants are aware of what a risk factor is, although some of them are not able to give a clear definition of it. They agree that risk factors are one of the main causes for most diseases.

With regard to preventive medical check-ups there are some disparities among partner countries. The participants from Spain, Italy and Ireland know their importance but they visit a doctor only when they are sick. On the other hand, Bulgarian and German participants are used to going and seeing a doctor on a regular basis even if they are in good health.

Both generations differentiate between the terms “health” and “quality of life”. Quality of life is perceived not only as physical wellbeing but also as psychological and emotional one. The participants share the opinion that mind affects body and the perception of being healthy. Quality of life is influenced not only by health status but also by income, employability, education, emotional enjoyment, family, social environment.
In general, dependence is perceived as a negative factor by everyone. According to the elderly to be dependent means not to be able to cope with the daily routine on their own. However, if it happens, then most of the participants prefer to be cared by relative at home rather than in institutions. The young also agree with this definition but have not been actively involved in the discussion. In the specific case of Italy, the definition of dependence is closely related to drug or alcohol dependence and their consequences. There is a huge lack of information about the measures the governments take to help or prevent dependence in most partner countries. Both generations give a lot of importance to the role of family in situations of dependence. Nevertheless in Germany young and elder people are aware of all government measures referring to different types of dependency, e.g. living without barriers or services such as “meals on wheels”. However, all participants are willing to receive more information on preventive health measures.

The participants have some information on healthy nutrition topics (e.g. following a healthy diet, fresh food, etc.) but they want know more about food components that appear on the labels of different products. There is a general feeling that more information could be provided in relation to the use and significance of additives, as well as to the impact of various foods along life, i.e. from infancy to adulthood. Both generations are aware of the influence of food on health, i.e. nutrition and health go hand in hand. All of them are willing to follow healthy diets but ones they can afford. They know that supernutrition and malnutrition lead to some diseases such as, respectively, overweight, high cholesterol level, arterial hypertension, cardiovascular diseases, obesity, diabetes, and anaemia, anorexia and lack of vitamins. However, the problem is to what extent they can integrate healthy eating habits into their daily routine. Therefore they want some training on motivation to follow healthy diets.

Both generations from all partner countries know that they should consume high quality food. However, Bulgarians cannot afford it due to low income. By contrast in Germany there are strict regulations related to food quality and therefore low quality products do not reach the market. As far as food quantity is concerned, except in the case of Germany, there is a general feeling that the proportion of food intake is not balanced and the reasons are different for different generations. For elderly excessive eating is a way of socializing whereas for young people it is a consequence of their brisk and stressful working days where they eat more at night to compensate the lack of food during the day. Both generations from all countries are able to differentiate between harmful and healthy food. However, there is a general lack of knowledge what the nutritional requirements in the different stages of life are

Not only healthy nutrition and eating habits are of great significance but also physical and cognitive activity. Therefore the participants are aware of the direct relationship between physical activity and health status or personal wellbeing. Nevertheless, the young generation highlights the physical benefits such as better respiratory and cardiovascular functions, lower levels of fat/cholesterol and increased longevity whereas the elderly focus on the psychological benefits such as lower anxiety and stress and better sleep and welfare. When doing physical activities, both age and health status are of paramount importance. Therefore the participants point out the need for medical check-ups and age-adapted exercises guided by professionals. However, motivation for doing physical activities is based on different reasons. For elderly this is disease prevention while for young – aesthetics. Physical activities preferred also differ according to age. Seniors prefer yoga, relaxation, walking, swimming, gardening and dancing whereas young prefer more vigorous forms such as fitness, body building and cycling.

According to the participants whether to practice individual or group physical activities depend on the personality and the sport preferred. Nevertheless the elderly think that group physical activities promote socialization and entertainment whereas the young people add that they stimulate motivation and competition and decrease drop-out rate.
Intellectual function performance is also considered important by both target groups. They indicate that it deteriorates with age but they also underline that it is closely related to individual him/herself. However, all agree that aspects such as experience and comprehension improve along life. Young people think that vocabulary, semantic knowledge and reasoning may increase in the course of life. The importance of mental activity in the prevention of dependence and memory disorders is recognized by all participants. The lack of mental activity causes a kind of degradation (social, physical and cognitive) thus leading to dependence, isolation and apathy. Therefore, there is a need expressed by both generations for cognitive training (e.g. attending memory workshops). The participation in intergenerational encounters may have a positive influence on how an elder person feels. The young people suggest the following activities for memory improvement: intellectual activities - reading, writing, learning languages, calculations, resolution of daily problems; leisure activities - puzzles, games, sudoku; cultural - debates, concerts.


Next figures present what methods, forms and approaches are preferred by the two generations if they attend a course in Health Self-Management.

Figure 10 indicate that both age groups prefer to have a combination of classroom activities if they attend a course in Health Self-Management, followed by only "workshops" and "projects". "Seminars" were least chosen.

Figure 10. Learning methods preferred by the two generations.

Figure 11 shows that both groups are willing to have a combination of forms of content delivery while attending a course in Health Self-Management. With regard to "games", they are more preferred by the young while "lectures" are more preferred by the elderly. The high percentage of project work pointed by the young should also be highlighted.
Figure 11. Form of content delivery preferred by the two generations.

Figure 12 indicates that both generations prefer to have 50% of classroom activities and 50% of on-line self-study activities when it comes to attend a course in Health Self-Management. Next follows a ratio of 60% to 40%.

4.3. ICT for Social Networking - attitudes, disposition, knowledge and skills.

In general, both generations were very participative and agreed on the benefits of new technologies and social networks. However, they mentioned that the latter should be controlled so that security and privacy can be ensured.
With regard to the meaning of the term ICT there is some disparity between countries. In the case of Italy none of the elder people seem to know what ICT exactly means whereas in Spain and Bulgaria most of the seniors have some idea of what this means and link it mainly with Internet and computers. On the contrary, in Germany and Ireland all participants are aware of the meaning and use of ICT and refer this concept to Internet, cognitive training computer programmes, mobile phone technologies, and especially computers.

In most partner countries the most widely spread information and communication technologies are mobile phones and TV regardless of the age, immediately followed by Internet and computers. However, in Bulgaria Internet, computers and TV are pointed as the most widely used by both generations. All German and most Irish participants have an e-mail account and are used to browsing the Internet for several purposes: social networking (Facebook or Twitter) or searching information. However, in Bulgaria elder people use mostly Skype and e-mails to keep in touch with friends and relatives overseas but they are not dependent on social networks for any of their social life contacts. In Spain, Italy and Bulgaria elder people rarely use computers and Internet applications because of limited financial resources, lack of information about free courses and lack of a PC and Internet access at home. It turns out that the use of ICT by seniors depends to a great extent on the fact whether they used ICT in their jobs before getting retired. Those who used ICT in their pre-retirement continue to use them within retirement and vice versa. All young people from all partner countries use Facebook for communicating with friends.

Most seniors from all partner countries think that they are prepared to use ICT but they feel that the learning process is longer for them and they need to be more patient than young people. They also believe that it is hard to find someone who can properly teach them how to use ICT and that family is not the best option. In addition, the young are not tolerant and patient enough to explain them how to use and work with the respective ICT. Sometimes teachers are too fast or don't take into consideration their pace of learning. On the contrary, Irish seniors think that most courses offered are for beginners and they need some advance courses. According to most young people seniors are afraid of using ICT because they could break something or do something wrong and this is the main reason why less people at this age get involved in ICT. Although there are a lot of computer courses offered, there is still a high percentage of elderly that do not use the new technologies since those courses are not adapted to them. Youtube videos and publicly funded courses are pointed out as an example of training.

Some differences are observed in relation to the ICT dependence level. Although all participants agree that ICT are very useful for daily living, it is highlighted that the level of dependence is different between young and elderly. Seniors declare that they can live without ICT whereas young need to be on-line everyday.

Young participants are used to studying through e-learning platforms but, except in the case of Germany (where the elderly are frequent users of this technology) and Ireland (where the elderly prefer on-line courses guided by a teacher), the elderly from the rest countries prefer personal contacts to e-learning.

Most participants know what social networks are and many of them use some. Everyone is aware of how dangerous Internet and social networks could be if they are misused. The intensity of using social networks is, however, different between generations and countries. The use of social networks by elderly is higher in Germany and Ireland than in the rest partner countries.

All participants agree that even though social networks facilitate social participation and allow people to reunite, they also contribute to some negative aspects such as increased isolation, an over-dependence on virtual connections with people, cyber bullying, on-line gossips. All of the young participants belong
to at least one social network. The most popular ones are Facebook, Twitter, Tuenti, LinkedIn, Google+, StayFriends. On the contrary, not many elder participants belong to a social network. However, some of them use Facebook. Thus Facebook seems to be the most popular one across all ages.

There are many common interests between young and elderly but they are not linked to the age. Both generations believe that social networks can facilitate intergenerational relationships and that they can learn from each other. Although social networks are not frequently used by the elderly, they think that they are helpful tools for discussions, debates and other intergenerational activities. Additionally, Irish participants propose the possibility of connections between schools and older people or mentoring where young people have the support of an interested older person outside their family.

4.4. ICT for Social Networking - preferred teaching/learning methods and forms.

Next figures present what methods, forms and approaches are preferred by the two generations if they attend a course in ICT for Social Networking.

Figure 13 presents that both generations feel more comfortable with a mixture of learning methods if they attend a course in ICT for Social Networking. Then follows the "workshop" option.

Figure 14 indicates that both target groups give preference to a combination of forms related to content delivery if they follow a course in ICT for Social Networking. Next comes the "game" option chosen by the young, and the "lecture" option chosen by the elderly.

4.5. Intergenerational Volunteering - attitudes, disposition, knowledge and skills.

There were some differences across countries in relation to the willingness of the participants to take part in this discussion. In Bulgaria the subject seemed not to be very interesting and did not provoke sharing of opinions while in the rest partner-countries both generations were very participative.

Both young and elderly are aware of the meaning of "being a volunteer". The word "intergenerational" in the word group "intergenerational volunteering" brings some confusion among Irish participants. Both generations from all partner countries agree that volunteering does not depend on age but on personal attitudes, education and social standing. Spanish participants determine different reasons for
volunteering - within elderly these are more altruistic whereas within young - they are linked to gaining experience and travelling abroad.

Figure 14. Form of content delivery preferred by the two generations.

Figure 15 shows that both generations prefer to have a balance between classroom and on-line self-study activities if they attend course in ICT for Social Networking. Immediately follows the 60%/40% option.

Figure 15. Ratio of classroom to on-line self study activities preferred by the two generations.

Both generations from Bulgaria, Ireland, and Germany think that the relations between young and all are positive. In Italy and Spain some improvement is needed. In the southern partner countries these relations usually happen within the family and they are not externalized to the public social life or among groups without family ties. Both generations add value to intergenerational relationships. Young people bring energy, new ideas, creativity, openness, ambition, innovations, ICT skills while older people -
wisdom, experience, tolerance, realism, organizational and management skills. However, though young and elderly have different hobbies and interests (e.g. ICT for youngsters and crafts for seniors), they could have some common ones but they may play different roles. A good example is given by the Irish participants, where in an athletic club the younger are athletes and the older are coaches or chairmen that help with organization. German participants suggest cultural and socio-political activities as possibilities for common activities.

All participants from all partner countries believe that there should be training and support in intergenerational volunteering from a very early age. In addition, relevant framework conditions should be provided to embed person's real life situations and to link these to the interests and needs of the younger and older generations alike. Voluntary intergenerational relationships can be promoted by first finding common interests, then defining how to work together and share knowledge and skills, then organizing intergenerational volunteer activities. Good examples are provided such as cooperation between schools and day care centres, grandparents' days in schools, swapping skills (e.g. young people show smart phones applications while old people show crafts), anti-litter days, etc.

Both generations in Germany, Spain, Italy and Bulgaria are willing to participate voluntarily in fostering intergenerational relationships and organize intergenerational volunteer events. In case of donation actions Bulgarian older people are willing to participate only if there is a financial transparency. In Ireland though all participants are interested in this matter, it is not very clear whether they will be actively involved in fostering intergenerational relationships on a voluntary basis. According to them intergenerational relations are by-products of something else and will suffer from it being forced.

4.6. Intergenerational Volunteering - preferred teaching/learning methods and forms.

Next figures present what methods, forms and approaches are preferred by the two generations if they attend a course in Intergenerational Volunteering.

Figure 16 shows that both generations prefer a combination of learning methods if they follow a course in Intergenerational Volunteering. Then follows the "workshop" option. The percentage given to project work by the young should not be neglected as well.
Figure 17 indicates that a combination of forms of content delivery is preferred by both generations. Then follow the “game” option chosen by the young and the “lecture” option chosen by the elderly.

![Form of content delivery preferred by the target groups](image)

**Figure 17.** Form of content delivery preferred by the two generations.

Figure 18 shows that young people prefer to have 60% classroom activities and 40% on-line self-study activities whereas the elderly prefer to have a more balanced training with equal representation of classroom and on-line self-study activities.

![Ratio of classroom to on-line self study activities preferred by the target groups](image)

**Figure 15.** Ratio of classroom to on-line self-study activities preferred by the two generations.
5. CONCLUSIONS.

The following conclusions could be drawn on the basis of the above analysis, which will be presented by each area under discussion.

5.1. Health Self-Management.

Both young and elderly very clearly define the concept of "being healthy" though they assign different attributes to it. They have general knowledge of health risk factors and the diseases they may cause. Although young people have better access to information on health issues due to their extensive use of ICT, elderly also know much about them relying mainly on TV and books.

Both generations can recognize unhealthy habits but they need practical training on how to change them, as well as on motivation. In some partner countries low income is also a barrier when it comes to healthy diets. Support by family and general practitioners is something very important as well. In general, all participants are willing to follow healthy diets but ones they can afford. The problem is whether healthy eating habits can be successfully integrated into a person's daily routine. Both generations have some knowledge of nutrition topics but they feel that they need more information about nutritional requirements at the different stages of life as well as use and significance of additives.

Dependence is recognized as a negative factor by both generations and, however, little is known about public measures to manage it.

Regular medical check-ups are preferred in Bulgaria and Germany whereas in Spain, Italy and Ireland both young and elderly go and see a doctor only if they are ill. More training should be offered on preventive health measures.

Physical activities are considered very important for our health. However, they should be adapted to the health status of persons. To be regularly practised, training in motivation is needed as well. Physical activities in groups bring additional benefits such as better socialization and higher motivation.

All participants agree that some cognitive aspects decline with age while other intellectual functions remain or even improve. Therefore cognitive training is important for preventing age-related disorders. Some suitable forms are suggested such as reading, writing, calculations, puzzles, games, debates, etc. Most seniors from all partner countries are willing to attend memory training.

Learning materials to be developed in this area should be more practice-oriented, focusing on group and team work. A combination of methods should be used, emphasizing on more interactive ones. The very content should be well visualized with short texts and more games, crossword puzzles, exercises, etc. There should be a balance between classroom and on-line self-study activities.

5.2. ICT for Social Networking

New technologies are positively perceived by both generations and mainly associated with mobile phones, Internet and computers. However, they seem to contribute to the individualization of society where personal contact is lost.

Internet, computers and social networks are intensely used by elderly in Germany and Ireland whereas in Bulgaria, Spain and Italy they are rarely used by this generation due to several reasons: limited financial resources, a lack of information about free courses, a lack of a PC or Internet access at home, low motivation.

In general, the opinion is that seniors are not well prepared to use ICT and different reasons are given depending on the country. In the southern partner countries the main reason is that, on one hand, elderly
need more time and patience to acquire ICT skills, and on the other hand, young people are not very tolerant and patient enough to explain to them how to use and work with the respective ICT. In addition, the young people from those countries think that elderly are not very willing to use ICT and not very persistent and motivated enough to work with them. In the two northern partner countries some frustration is expressed by the elderly that the ICT training is mainly offered for beginners thus not giving them a chance for further development.

The young generation from all countries is used to learning by using e-platforms. However, there is a big difference among elderly depending on the country. In Germany seniors are used to learning on the Internet. In Ireland older people also use e-platforms but they prefer to be guided by a person as well in the course of their e-learning. In Bulgaria, Spain and Italy the elderly prefer more personal contacts and are not very used to e-platforms.

There is shared awareness of the challenges that ICT provide, e.g. cyber bullying and on-line gossiping. Therefore matters such as privacy, personal responsibility, security come to the fore.

The most widely used social network by both generations is Facebook. Some other social networks such as Twitter, Tuenti, LinkedIn, Google+, and StayFriends depending on the country. Nevertheless, in Ireland some elderly have a very negative attitude to Twitter.

It seems that more attention should be paid to the motivation of elderly to use social networks in the future, especially in the southern countries of the partnership. Seniors should be offered such training in order to foster their social activity and way of life.

Learning materials to be developed in this area should be well visualized and written in a simple way with short instructions. For those who distance themselves from Internet applications, i.e. the so called “offliners”, information and motivation factors must be offered in order to raise their interest. The learning content should cover only a few most popular social networks. The most important thing here should be to demonstrate the possible functions of each network and the benefits for the user. In order to raise the motivation of elderly to use social networks, they should first know what a social network is and then be convinced that it will attach certain value to their life. In those countries where the elderly do not possess basic ICT skills, an introductory basic ICT training should be introduced in order to take into consideration learners’ interests and needs. Learning modules should be designed so that they stimulate cooperation and interaction with the young generation. It will be a good idea that a senior is supported by a youngster throughout the ICT training. This can encourage self-confidence, motivation and intergenerational dialogue. A combination of different learning methods should be used to keep learners’ interest and motivation. Moreover, a balance between classroom and on-line self-study activities should be provided.

5.3. Intergenerational Volunteering

Volunteering is quite a clear concept for both generations in all partner countries though motivation to perform it may differ between generations. Most participants are willing to participate in intergenerational volunteering and consider that setting proper preconditions for that as very important.

In general, intergenerational relations are positive but in Spain and Italy they need some improvement. Both young and old recognize that intergenerational volunteering should be promoted from a very early age and proper training is needed if we want to implement if successfully. In most partner countries, except for Germany and partially Ireland, intergenerational relations are mainly linked to family and therefore they need to be transferred to the community and society.
Both generations from all partner countries are interested in participating in intergenerational volunteering activities and are aware of the values that each generation could add to such actions.

Learning materials to be developed in this area should be practice-oriented thus including tips on how to organize an intergenerational volunteer action successfully. The learners should learn from each other in an environment that focuses on interaction between young and elderly. The interests of both young and older people should be considered in order to involve them actively. Therefore a combination of learning methods should be used to foster motivation and raise interest. There should be a balance between classroom and on-line self-study activities.

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REFERENCES


THE MONTE CARLO METHOD FOR DETERMINING
THE VISION SYSTEM CHARACTERISTICS

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Abstract

One of the Monte-Carlo algorithms for determining the point spread function of vision system is considered. Calculations using the method of local estimate for the spherical and plane-parallel models of the atmosphere are compared.

Key words: vision system, point spread function, local estimate.

1. INTRODUCTION

Such method of studies as the system approach has been intensively developed in different fields of science, industry, and social life in recent decades. System approach is defined to be that which considers any system (object) to be a set of interrelated elements (components), and to have output (purpose), input (resources), connection with environment, and feedback. System approach represents a form of applications in the theory of knowledge and dialectics to studying the processes that occur in nature, community, and thinking. It essentially consists of fulfillment of the requirements of the general system theory; in accordance to this theory, each object in the process of its study should be considered as a large and complex system and, simultaneously, as an element of a more general system. One of the applications of the system approach is the optics (Papoulis 1968) and, in particular, the atmospheric optics (Zuev et al. 1997). The main system characteristic in these fields is the point spread function (PSF); it is defined as the response $L$ of linear system to the input signal, representing a point mass $\delta(x - x_i)\delta(y - y_j)$, located at a certain point

$$(x_i, y_j): L[\delta(x - x_i)\delta(y - y_j)] = h(x, y; x_i, y_j).$$

An arbitrary object (function) $f(x, y)$ can be considered as a set of point masses. For instance:

$$f(x, y) = \int_{-\infty}^{+\infty} \int_{-\infty}^{+\infty} f(x_i, y_j)\delta(x - x_i, y - y_j)dx_i dy_j.$$  

Then, a result of the system impact (image) can be represented in the form:

$$g(x, y) = L[f(x, y)] = \int_{-\infty}^{+\infty} \int_{-\infty}^{+\infty} f(x_i, y_j)h(x, y; x_i, y_j)dx_i dy_j.$$  

Obviously, regularities of the image distortion due to impact of any system can be studied by analyzing the effect of this system on the point spread function.
We will consider a system “underlying system – atmosphere – receiving device” which can be regarded as a linear system (Zuev et al. 1997). These systems are conventionally called the vision systems. Image distortion in the vision systems may be caused by the properties of scattering medium and underlying surface, and by characteristics of receiving optical device. The available images of any objects should be analyzed, and possible distortions of object images should be predicted, by studying the point spread function of this system. One of the methods for the PSF determination in this case is to calculate the angular distribution of brightness of surface-based point source, measured with receiving device at the top of the atmosphere (TOA).

The purpose of this work is to study the dependence of the angular distribution of brightness of radiation at TOA on the geometrical and optical observation conditions, as well as to clarify the applicability conditions of plane and spherical models.

2. PROBLEM STATEMENT

Change in the brightness of radiation of point source in the medium in stationary case is described by the following integro-differential transfer equation:

\[
(\omega, \text{grad } I(\bar{r}, \omega)) = -\sigma(\lambda, \bar{r})I(\bar{r}, \omega) + \sigma_s(\lambda, \bar{r}) \int_{\Omega} I(\bar{r}, \omega') g(\bar{r}, \omega', \omega)d\omega' + \Phi_0(\bar{r}, \omega)
\]

(1)

Here, \( \bar{x} = (\bar{r}, \omega) \) is a point of phase space \( X = R \times \Omega \) of coordinates \( \bar{r} \in R \) and directions \( \omega \in \Omega \). \( \Phi_0(\bar{r}, \omega) \) is the distribution density of sources. \( I(\bar{r}, \omega) \) is the intensity (brightness) at point \( \bar{x} = (\bar{r}, \omega) \).

In the work, we consider two models of the atmosphere. The first model of the planetary atmosphere represents a plane-parallel layered-homogeneous medium, i.e., all quantities in formula (1) depend on just one coordinate, namely, the depth \( z \), while the intensity of the scattered radiation will be a function of the coordinate \( z \) and direction of radiation, characterized by the zenith angle \( \Theta \) and azimuth \( \Phi \) in the horizontal plane. Values of \( z \) vary from \( z = 0 \) at the bottom of the atmosphere to \( z = H \) at TOA, where \( H \) is the thickness of the medium. The source is on the Earth’s surface, and it will be assumed to be the origin of the coordinates. The receiver is at the upper boundary of the medium and has the coordinates \((0,0,H)\). The system has the circular symmetry; therefore, all can be thought to proceed in the YOZ plane corresponding to \( \Phi = 90^\circ \).

Layered-homogeneous plane-parallel model was chosen as a model of the medium: it consists of \( n \) homogeneous layers, the geometrical thickness of which is characterized by the coordinate \( z \) (Fig. 1).

The second model, considered here, represents the layered-homogeneous spherical atmosphere. In this case, all quantities depend on the distance from Earth’s surface \( h \), while the intensity of scattered radiation will be the function of \( h \) and direction of radiation \( \omega = (\theta, \phi) \).

The Earth’s center is assumed to be the origin of coordinates. The source is on the Earth’s surface and has the coordinates \((0,0,R_0)\), while the receiver is at TOA and has the coordinates \((0,0,R)\), where \( R_0 \) is the radius of Earth, and \( R \) is the outer radius of the atmosphere. In this model of the medium, the
atmosphere with the thickness $H = R - R_0$ is divided into $n$ spherical layers with radii $R_i$, $i = 0 \ldots n$, $R_n = R$ (Fig. 2) (Marchuk et al. 1976).

Fig. 1. Shematic representation of the plane-parallel model of the atmosphere.

Fig. 2. Shematic representation of the spherical model of the atmosphere.
The optical model of the atmosphere implies specification of the following parameters. 1) The coefficients of aerosol scattering \( \sigma_s(h, \lambda) \) and absorption \( \sigma_a(h, \lambda) \). Here, \( h \) is the height above the Earth’s surface, and \( \lambda \) is the wavelength. The coefficients \( \sigma_s \) and \( \sigma_a \) are assumed to be piecewise constant, since the atmosphere is divided into homogeneous layers. 2) The scattering phase function \( g(h, \mu, \lambda) \). Here, \( \mu = (\tilde{\omega}, \tilde{s}) \) is the cosine of the scattering angle.

The scattering phase function is specified by dividing the atmosphere into layers, in each of which the scattering phase function is assumed to be constant with altitude \( h \). One of the most universal methods for solving equation (1) is the method of imitation simulation, or the Monte Carlo method. This method is based on the integral transfer equation of the second kind with generalized kernel for the particle collision density:

\[
f(\tilde{x}) = \int_X k(\tilde{x}', \tilde{x}) f(\tilde{x}') d\tilde{x}' + \psi(\tilde{x})
\]

Monte Carlo method is usually used to estimate linear functionals of the form (2):

\[
I_\phi = (f, \varphi) = \int_X f(\tilde{x})\varphi(\tilde{x}) d\tilde{x} . 
\]

If \( \{x_n\} \) is a “physical” chain of collisions, then \( I_\phi = M \xi \), where \( \xi = \sum_{n=0}^{N} Q_n \cdot \varphi(x_n) \).

We single out two main algorithms of the Monte Carlo method.

1) The algorithm of direct simulation. This method is based on simulation of random trajectories of photon passage through the scattering medium. It is noteworthy that the characteristics of radiation process, necessary for analysis, are estimated in accordance with their physical meaning. A disadvantage of the direct simulation is that such characteristics as intensity, illumination, and others cannot be calculated with a sufficient accuracy. However, the direct simulation can be used to construct some other methods which make it possible to perform the required calculations.

One of these methods is the algorithm of local estimate.

2) Algorithm of local estimate.

The algorithm of local estimate consists of the calculation of the following functional:

\[
J(\theta_i) = \int_{\theta_i} \Phi(\tilde{r}^*, \tilde{\omega}^*) d\tilde{\omega}^* = \int_X l_i(\tilde{x}', \tilde{x}^*) f(\tilde{x}') d\tilde{x}' = M \sum_{n=0}^{N} Q_n \cdot l_i(\tilde{x}_n, \tilde{x}^*)
\]

\[
l_i(\tilde{x}, \tilde{x}^*) = \exp \left[ -\tau(\tilde{r}, \tilde{r}^*) \right] \frac{g(\mu^*)}{2\pi |\tilde{r} - \tilde{r}^*|^2} \Delta_i(\tilde{s}^*)
\]

Here, \( \tilde{s}^* = \frac{\tilde{r}^* - \tilde{r}}{|\tilde{r}^* - \tilde{r}|} \), \( \mu^* = (\tilde{\omega}, \tilde{s}^*) \), \( \Delta_i(\tilde{s}) \) is the indicator of the region \( \theta_i \).
\( \Phi(\hat{r}^*, \hat{\omega}^*) \) is the particle flux at a preset point of the phase space \( \hat{\mathbf{x}}^* = (\hat{r}^*, \hat{\omega}^*) \).

\( Q_n \) is the particle “weight”. We do not simulate the absorption, but multiply the “weight” by the scattering probability and, namely, by the single scattering albedo. It is noteworthy that the variance decreases, and the average time of trajectory simulation on computer increases.

This algorithm is used to calculate the angular distribution of brightness, which represents the following quantity: \( I(\Theta) = \frac{J(\Theta)}{\Theta} \), where \( \Theta \) is the value of the corresponding to \( \theta \) solid angle.

### 3. INITIAL DATA

We will consider the process of radiative transfer through aerosol medium, by neglecting the reflection from underlying surface.

In the work, we used the initial data corresponding to the wavelengths \( \lambda = 0.347 \, \mu m \) and \( \lambda = 0.694 \, \mu m \), geometrical thickness of the medium \( H = 30 \, km \).

In this work, we used the following data: optical depth \( \tau(\lambda) \); single scattering albedo \( \omega_0(h, \lambda) \); coefficients of scattering \( \sigma_s(h, \lambda) \), absorption \( \sigma_a(h, \lambda) \), and extinction \( \sigma_{ext}(h, \lambda) \); scattering phase function \( g(h, \mu, \lambda) \), which corresponding to the model of clear sky for midlatitude winter and summer (Krekov and Rakhimov 1986). There are examples of these models in Table 1 presented.

<table>
<thead>
<tr>
<th>h, km</th>
<th>( \sigma_{ext}(h, \lambda) ) for ( \lambda = 0.347 , \mu m )</th>
<th>( \sigma_a(h, \lambda) ) for ( \lambda = 0.347 , \mu m )</th>
<th>( \sigma_{ext}(h, \lambda) ) for ( \lambda = 0.694 , \mu m )</th>
<th>( \sigma_a(h, \lambda) ) for ( \lambda = 0.694 , \mu m )</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.1673</td>
<td>0.0144</td>
<td>8.826E-02</td>
<td>5.188E-03</td>
</tr>
<tr>
<td>1</td>
<td>2.573E-02</td>
<td>2.467E-03</td>
<td>1.620E-02</td>
<td>9.005E-04</td>
</tr>
<tr>
<td>2</td>
<td>1.303E-02</td>
<td>1.48E-03</td>
<td>8.107E-03</td>
<td>5.854E-04</td>
</tr>
<tr>
<td>3</td>
<td>6.414E-03</td>
<td>7.366E-04</td>
<td>3.883E-03</td>
<td>3.224E-04</td>
</tr>
<tr>
<td>4</td>
<td>3.683E-03</td>
<td>3.941E-04</td>
<td>2.188E-03</td>
<td>1.738E-04</td>
</tr>
<tr>
<td>5</td>
<td>2.128E-03</td>
<td>2.144E-04</td>
<td>1.261E-03</td>
<td>9.464E-05</td>
</tr>
<tr>
<td>6</td>
<td>1.240E-03</td>
<td>1.193E-04</td>
<td>7.408E-04</td>
<td>5.366E-05</td>
</tr>
<tr>
<td>7</td>
<td>9.849E-04</td>
<td>7.934E-05</td>
<td>5.383E-04</td>
<td>3.548E-05</td>
</tr>
<tr>
<td>8</td>
<td>7.926E-04</td>
<td>5.463E-05</td>
<td>3.967E-04</td>
<td>2.427E-05</td>
</tr>
<tr>
<td>9</td>
<td>6.427E-04</td>
<td>3.874E-05</td>
<td>2.945E-04</td>
<td>1.698E-05</td>
</tr>
<tr>
<td>10</td>
<td>1.015E-03</td>
<td>5.258E-05</td>
<td>4.240E-04</td>
<td>2.258E-05</td>
</tr>
</tbody>
</table>
We used for calculations the number of acceptance angles \( k = 10 \), number of trajectories \( N = 1000000 \).

In this work, we considered three models of sources of radiation: Lambertian, isotropic, and monodirectional sources.

4. NUMERICAL SIMULATION RESULTS

In the course of work, we obtained the numerical values of the intensity of total and single scattering for each model of the atmosphere with different input parameters; the obtained data were analyzed on the basis of the following statistical estimates:

- coefficient of variation \( V (\%) \);
- runtime of algorithm \( T (s) \);
- efficiency of algorithm \( E = V \times T \). It should be noted that the efficiency of the algorithm increases with decreasing value of \( E \).

Some results are presented in Table 2.

On the basis of the obtained statistical estimates, we can make the following conclusions:

For different input parameters, the variation coefficient for both spherical and plane-parallel models is very small (less than 1%), indicating uniformity and homogeneity of the obtained values of the angular distribution of brightness.

The main and considerable difference between the atmospheric models is observed in estimate of algorithm runtime. This is one of the most important parameters for model evaluation since time...
consumptions are very costly. Therefore, it can be concluded that the plane atmospheric model should be used to calculate the angular distribution of the intensity of single and multiple scattering under clear-sky conditions for a wide range of angles.

**Table 2.** Numerical simulation results.

<table>
<thead>
<tr>
<th>Input parameters</th>
<th>Type of atmospheric model</th>
<th>Coefficient of variation V(%)</th>
<th>Runtime of algorithm T (s)</th>
<th>E (efficiency of algorithm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=10000000; ( \lambda = 0.347 ), ( k=10 ); isotropic source</td>
<td>Plane-parallel</td>
<td>0.4280</td>
<td>36.36</td>
<td>15.5662</td>
</tr>
<tr>
<td></td>
<td>Spherical</td>
<td><strong>0.3900</strong></td>
<td>115</td>
<td>44.8546</td>
</tr>
<tr>
<td>N=10000000; ( \lambda = 0.347 ), ( k=10 ); Lambertian source</td>
<td>Plane-parallel</td>
<td>0.5228</td>
<td><strong>28.16</strong></td>
<td>14.7266</td>
</tr>
<tr>
<td></td>
<td>Spherical</td>
<td><strong>0.4903</strong></td>
<td>97.23</td>
<td>47.6776</td>
</tr>
<tr>
<td>N=10000000; ( \lambda = 0.694 ), ( k=10 ); isotropic source</td>
<td>Plane-parallel</td>
<td>0.3643</td>
<td><strong>26.21</strong></td>
<td>9.5523</td>
</tr>
<tr>
<td></td>
<td>Spherical</td>
<td>0.3864</td>
<td>92</td>
<td>35.555</td>
</tr>
<tr>
<td>N=10000000; ( \lambda = 0.694 ), ( k=10 ); Lambertian source</td>
<td>Plane-parallel</td>
<td>0.5974</td>
<td><strong>20.42</strong></td>
<td>12.2043</td>
</tr>
<tr>
<td></td>
<td>Spherical</td>
<td><strong>0.5657</strong></td>
<td>81.10</td>
<td>45.8859</td>
</tr>
</tbody>
</table>

**Fig. 3.** Relative error in the case of isotropic source for \( \lambda = 0.347 \) \( \mu \text{m} \) and \( \lambda = 0.694 \) \( \mu \text{m} \).
Calculations using the method of local estimate for the spherical and plane-parallel models of the atmosphere were compared by determining the relative error $\delta$ for each acceptance angle $\theta$. Certain results of calculations are illustrated in Figs. 3 and 4, which present the relative error of the angular distribution of intensity of single and multiple scattering for different source types.

It should be noted, $r$ is the surface distance from the source. For example, for the plane parallel model $\tan \theta = \frac{r}{H}$.

From the data presented in the figures it can be seen that, when used instead of the spherical model, the plane-parallel model of the atmosphere gives the relative error from 0.05 % to 40 %, depending on the acceptance angle. The relative error $\delta$ is less than 0.7 for central angle; and the error $\delta < 12\%$ for acceptance angle less than 80', indicating that the plane-parallel model is adequate.

4. CONCLUSION

The study performed here makes it possible to conclude that the plane-parallel model of the atmosphere is well suited to solve these types of problems because:

- the obtained values of the angular brightness distribution are homogeneous and uniform
- time consumptions are very small in comparison with the spherical atmosphere
quite good accuracy of calculations is reached for acceptance angles less than 80°.

Plane-parallel model of the atmosphere is suggested for use when high-accuracy calculations are required; while spherical model of the atmosphere is proposed for quite large (larger than 80°) acceptance angles and when sphericity of atmospheric layers should be taken into consideration.

REFERENCES.


INDIVIDUAL PERSONALITY DIFFERENCES BETWEEN FRESHMEN MAJORING IN TECHNICAL DISCIPLINES

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Abstract

Individual personality differences between freshmen majoring in technical disciplines were ascertained and described with the help of the standardized NEO Personality Inventory. The aim of this analysis was to define the correlation between students’ individual personality differences and their study results (study success) and factors included in this analysis are adolescence, process of socialization, university and non-university tertiary institutions, technical discipline study programmes.

Key words: adolescent, personality, freshmen, NEO Personality Inventory, tertiary education

1. INTRODUCTION

Currently, there is an ongoing debate in the Czech Republic on the future of technical disciplines. Over the last few years, technical subjects in secondary and tertiary sectors have showed a significant drop in the number of students. Concurrently, the diversification of higher education is in process, which should result in a segmentation of the tertiary sector into professional degree programmes, ie programmes with an emphasis on mastering the skills necessary for a profession while substantiated by the necessary theoretical knowledge, and research and academic programmes. Unlike the academic and research programmes, the existence of the professional degree programme is clearly defined and does not induce disagreement.

The Czech Republic was among the first signatories of the Bologna Declaration (1999). Since 2010, the Czech Republic has been a part of the European Higher Education Area.

In the past year, the Ministry of Education hold meetings with representatives of higher education institutions to discuss the changes that aim to improve the quality of tertiary education. According to the Ministry of Education, one way is to create such conditions for universities so that they can clearly profile and set the standards for the three types of programmes: vocational, academic and research. According to the Ministry, the debate should concentrate mainly on the fact that the higher education institutions are to be divided into three types according to what is their potential and what the society expects from them. It implies that there will exist comprehensive universities with research programmes and at the same time there will also be more vocationally oriented schools that will play an important role regionally. Companies are willing to better cooperate with universities, participate in education and provide practice placements for students, however, they expect system support from the state that would at least partially compensate the time and financial costs. The schools are often criticized by the enterprises that their teaching is separated from practice and that they do not enable students to gain practical knowledge and experience. It is also necessary to stimulate interest in the field and i t is...
important to nurture the interest in technical and scientific fields since childhood. In this regard, primary/elementary and secondary schools play the main role. Teachers should be prepared to know how to arouse attention and interest and change the form of teaching so that it is more interactive and thus more attractive to their students. The scope of this topic extends to / stems from political, legislative, social and educational areas.

As a representative of a vocationally-oriented higher education institution I would like to focus in the presented paper on students who have decided to study a technical field at a vocational institution of higher education. I aim to map certain personality traits of such students. These traits will be further monitored by our institution and the students will be confronted with their study success compared with study success of students of other non-technical fields.

The Institute of Technology and Businesses in České Budějovice (VŠTE) belongs among young public higher education institutions. It is one of only two vocationally oriented public higher education institutions offering technical degree programmes in the Czech Republic. Practical knowledge is achieved by connecting education and companies within the frames of the given field of study. The study programmes taught at the institute offer a well-balanced combination of theoretical knowledge and practical skills in accordance with the needs of the regional labour market. One semester-long work placement is a significant part of the degree programmes. Applied research, introduction of innovative technologies and knowledge transfer in areas that are up-to-date and crucial for the needs of the region are among other priorities of VŠTE.

According to the spokesman of SCIO Bohumil Kartous (2012), the number of applicants for technical study programmes has decreased in the last ten years but the real number of students has grown. In 2001, the technical schools reported to get 25.5 percent of all applications. In 2010, the number dropped to 22.3 percent. However, in real numbers it denoted 26,800 applicants a decade ago and 39,300 applicants two years ago, said the spokesman. The number of university students is increasing and currently three-fifths of the cohort of secondary graduates is admitted to further education. Previously, it was only a tenth or 15 percent of the secondary graduate cohort.

2. ADOLESCENTS

The higher education is reached by an individual at the stage of socio-psychological development known as the third period of adolescence, or late adolescence respectively. This period is approximately defined by an age interval of 17-22 years, or sometimes even by a longer period. Adolescents continue to shape their identity while they are in a specific transitional situation, neither children nor adults. On one hand, they want the advantages of adulthood, on the other hand, they refuse them and try to extend the transitional period between childhood and adulthood. (Čáp & Mareš 2007, p. 236) Most students at the tertiary educations feel more like adolescents than adults, especially because they do not want to give up the ‘benefits’ of adolescence. Among these ‘benefits’ are exuberance, freedom including freedom of choice, and detachment from stereotypes and commonplaces of everyday life. In adolescence, relationships with peers gain more importance than ever before. Adolescents socialize best during shared activities resulting from similar problems and eventually offering a common solution. This is also what appropriate forms of teaching should offer in frames of the given study programme, eg group or project based learning. Peer groups have a unique and irreplaceable role in getting a sense of self autonomy. Sometimes, it even substitutes parental support. It also stabilizes and anchors the teenager in the process of his own physical, psychological and social changes; the adolescents are aware that similar changes they experience are also experienced by their peers. (Hrušková 2008, p. 50)
According to Hrušková (2010, pp. 51-52) is the process of identity formation in adolescence and emerging adulthood multi-layered. In addition to the need of answering the question of ‘who am I?’, the sense of inner stability, competence and well-being are the most important qualities. In this period, interpersonal relationships are qualitatively new and they represent one of the very basic psychosocial characteristics of adolescence. From this perspective, it is necessary to clarify the concept of socialization as an important process of personality formation (and not just of an adolescent). Developmental influences that shape personality, work intensively especially in childhood, and most forms of ‘I’ are formed before the age of adolescence. It implies that a certain degree of personality stability is inevitable and even desirable. (Mareš 2013, pp. 31-32) An important process in shaping the personality of the adolescent is the socialization process, i.e. the process by which one gains entrance into society and professional sphere. And this process is also related to school success. His mental processes, ways of understanding, memorizing of the subject matter and his learning styles stand behind learning outcomes and achievements of this student. Any failure of the student school is reflected in his performance, activities, and also in an insufficient development of his personality. It should be noted that school failure is not just a problem of the student but it is a product of poor cooperation of all players in education process.

3. METHODOLOGY

In our research, we focus on the personality traits of freshman majoring in technical disciplines at the Institute of Technology and Businesses in České Budějovice. We decided to use a standardized NEO questionnaire by M. and T. Urbánek (Hřebíčková & Urbánek 2001). The manual contains Czech translation of the NEO Five-Factor Inventory compiled by Paul Costa and Robert McCrae.

We have chosen the questionnaire survey in an effort to ascertain what kind of students decided to study technical field at our institute. We wanted to unveil their motivation to learn, interest in the discipline, perseverance in learning, readiness to handle requirements of a technical field. In personality psychology, cognitive styles, goals, interests, motives, needs, personal projects, values are examined. According to psychologists, all of these dimensions are present in features that are the core of personality. They manifest themselves as ways of thinking, feelings and actions in which people vary from each other.

The NEO personal Five-Factor Inventory can be used in projects aimed at checking the individual differences and can be used with 15 year old adolescents or older. This method was created to measure five general dimensions of personality - Neuroticism, Extraversion, Openness to experience, Agreeableness and Conscientiousness (the so-called Big Five). The inventory includes a total of 60 items, 12 for each range.

The Big Five are five broad factors (dimensions) of personality dimensions. They are:

- Extraversion (sometimes called Surgency). The broad dimension of Extraversion encompasses such more specific traits as talkative, energetic, and assertive.
- Agreeableness. Includes traits like sympathetic, kind, and affectionate.
- Conscientiousness. Includes traits like organized, thorough, and planful.
- Neuroticism (sometimes reversed and called Emotional Stability). Includes traits like tense, moody, and anxious.
- Openness to Experience (sometimes called Intellect or Intellect/Imagination). Includes traits like having wide interests, and being imaginative and insightful.

Besides Openness to experience, all Big Five personality traits helped to predict the educational identity of students. Based on this, scientists are beginning to see that there might be a large influence of the Big Five traits on academic motivation that then leads to predicting a student’s academic performance.

Recent studies suggest that Big Five personality traits combined with learning styles can help predict some variations in the academic performance and the academic motivation of an individual which can then influence their academic achievements. This may be seen because individual differences in personality represent stable approaches to information processing. For instance, conscientiousness has consistently emerged as a stable predictor of success in exam performance, largely because conscientious students experience fewer study delays. The reason conscientiousness shows a positive association with the four learning styles is because students with high levels of conscientiousness develop focused learning strategies and appear to be more disciplined and achievement-oriented (Hrušková 2009).

As for school success, data on the rate of Openness to Experience and Conscientiousness can be used. It has been shown that Openness to Experience is a predictor of educational success and is related to the ability to learn and be motivated to learn. Purposeful, persistent and diligent students, who achieve high scores in Conscientiousness, have the potential to achieve higher education than students with lower scores in Conscientiousness. It has been proven (Hřebíčková 2001) that school success is correlated with Conscientiousness in a similar way as it is correlated with IQ. Conscientious people evaluate themselves as more intelligent.

4. STATISTICAL DATA PROCESSING

150 students of full-time study were asked to fill out the NEO Five-Factor Personality Inventory. 109 questionnaires were returned, i.e. 73%. These questionnaires were distributed among students of the following programmes - Civil Engineering, Mechanical Engineering, Technology of Transport and Communications (see Table 1).

<table>
<thead>
<tr>
<th>Student data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
</tr>
<tr>
<td>M</td>
</tr>
<tr>
<td>F</td>
</tr>
<tr>
<td>Civil Engineering</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
</tr>
<tr>
<td>Technology of Transport and Communications</td>
</tr>
</tbody>
</table>

Table 1. Student data
During evaluation of different personality traits we were also interested in gender issues, since they may influence success in technical studies. The total of 109 respondents consisted of 88 men and 21 women. The ratio is shown visually in per cents in the following Chart 1.

![Gender ratio chart](image)

**Chart 1.** Gender ratio.

In our study, we especially focused on two personality traits of college students. These traits are related to study success (Openness to Experience and Conscientiousness) and at the same time we wanted to take into account gender and study field variables.

The inventory was completed by the students individually and according to precise instructions. Preliminary instructions for completing the inventory were as follows: ‘The inventory contains 60 statements by which you can describe yourself. Read each statement and weigh up to what extent it is true for you. Mark your answer (x) on the connected Likert scale numbers’.

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Relative frequency in per cents</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>21</td>
<td>19%</td>
</tr>
<tr>
<td>M</td>
<td>88</td>
<td>81%</td>
</tr>
<tr>
<td>Total</td>
<td>109</td>
<td>100 %</td>
</tr>
</tbody>
</table>

**Table 2.** Frequencies according to gender. Source: author

<table>
<thead>
<tr>
<th>Degree programme</th>
<th>Frequency</th>
<th>Cumulative frequency</th>
<th>Relative frequency</th>
<th>Cumulative rel. frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineering</td>
<td>48</td>
<td>48</td>
<td>44%</td>
<td>44%</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>20</td>
<td>68</td>
<td>18%</td>
<td>62%</td>
</tr>
<tr>
<td>Technology of Transport and Communications</td>
<td>41</td>
<td>109</td>
<td>38%</td>
<td>100%</td>
</tr>
</tbody>
</table>

**Table 3.** Distribution of respondents in terms of study specialization. Source: author.
Openness to experience scale represents the interests and rate of passion for new experiences, feelings and impressions. Persons with high scores on this scale are studious, intellectual, gifted with imagination, willing to experiment, try new ways and they prefer a change. Low scores are reached by persons who tend to have conventional and conservative attitudes. They prefer the known and the proven. Openness to experience factor is determined to find out the pro-active approach to new experiences, tolerance to the unknown and exploration of the unknown.

*Characteristics of personality dimensions for Openness to Experience scale:*

People with high scores: curious, original, creative, innovative

People with low scores: conventional, narrow interests, analytic

Conscientiousness factor detects individual level in the organization, motivation and persistence in goal-directed behavior. It describes reliable, self-challenging people and distinguishes them from the indifferent and careless. Further, it expresses their attitude to work and their sense of duty or rejection of duty and inconsistency. These properties are represented by adjectives like diligent, hardworking, industrious vs. lazy, conscienceless, lax. Method performance of work tasks represent a thorough, systematic, meticulous vs. unconscientious, messy, distracted.

*Characteristics of personality dimensions for Conscientiousness scale:*

People with high scores: Reliable, hardworking, diligent, disciplined, tidy, demanding of himself

People with low scores: Unreliable, lazy, aimless, indifferent, free will, conscienceless, messy

Individual ratings for all items were calculated according to the given template. During this calculation, we averaged the results of the students of individual study areas and set the standard deviation (SV).

Because of the differences between men and women of different ages, it was necessary to compare the findings with standardized norms that were created in the form of percentiles. Gross scores are consistent with the proportion (percentage) of individuals of the same gender and age group that reach results of the same level or lower than the respondent.

The following tables show the results for two factors (Conscientiousness and Openness to experience) and for students of different study programmes.

*Table 4. Conscientiousness (C) and Openness to experience (O) factors – Mechanical Engineering*

<table>
<thead>
<tr>
<th>Degree study programme – Mechanical Engineering</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Age</td>
</tr>
<tr>
<td>--------</td>
<td>-----</td>
</tr>
<tr>
<td>M</td>
<td>19-21</td>
</tr>
</tbody>
</table>
Table 5. Conscientiousness (C) and Openness to experience (O) factors – Civil Engineering programme.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>C (ø)</th>
<th>O (ø)</th>
<th>SV</th>
<th>SV</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>19-21</td>
<td>28,57</td>
<td>4,6</td>
<td>22,28</td>
<td>3,8</td>
<td>51</td>
</tr>
<tr>
<td>M</td>
<td>19-21</td>
<td>28,93</td>
<td>7,1</td>
<td>23,8</td>
<td>6</td>
<td>62</td>
</tr>
</tbody>
</table>

Table 6: Conscientiousness (C) and Openness to experience (O) factors – Technology of Transport and Communications programme.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Age</th>
<th>C (ø)</th>
<th>O (ø)</th>
<th>SV</th>
<th>SV</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>19-21</td>
<td>32</td>
<td>6,3</td>
<td>27,21</td>
<td>6</td>
<td>69</td>
</tr>
<tr>
<td>M</td>
<td>19-21</td>
<td>31</td>
<td>6,3</td>
<td>24,3</td>
<td>4,8</td>
<td>71</td>
</tr>
</tbody>
</table>

Table 7. Summary of data - Conscientiousness factor.

<table>
<thead>
<tr>
<th>Conscientiousness</th>
<th>Points</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>28,6</td>
<td>28,8</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>-</td>
<td>27,8</td>
</tr>
<tr>
<td>Technology of Transport and Communications</td>
<td>31,4</td>
<td>30,9</td>
</tr>
</tbody>
</table>

In the study field Technology of Transport and Communications, the group of male and female students reached the same level in Conscientiousness factor (compared with the remaining two study fields). The
freshmen of Technology of Transport and Communications study field can be described as having a high degree of self-discipline, perseverance, ambition and strong will. They are in the best precondition to achieve study success and graduate. The two remaining study programmes reached levels slightly above 50, i.e. neither a low or a high score and the prognosis is very vague.

<table>
<thead>
<tr>
<th>Openness to Experience</th>
<th>Points</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>M</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>22,3</td>
<td>23,8</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>-</td>
<td>24,3</td>
</tr>
<tr>
<td>Technology of Transport and Communications</td>
<td>27,2</td>
<td>24,3</td>
</tr>
</tbody>
</table>

Table 8. Summary of data - Openness to Experience factor.

The conscientiousness factor reached higher than 50 percentile in all groups while the openness factor percentile values were rather lower in freshmen of technical fields (in all reference group it was lower than 50 percentile). This is surprising, given the nature of technical fields, where should properties such as curiosity, progressiveness, creativity, imagination and desire to experiment play a major role. Primarily the female students of Civil Engineering with a low percentile can be described as persons holding conservative positions, unwilling to experiment, with little imagination and often inhibited emotional reactions.

It is interesting that this survey’s resulting percentile values in women are lower than in men, and it is true for both the conscientiousness and openness factors. The reality is that it is the girls who, in the case of an unsuccessful study and generally drop the study of technical programmes to a greater extent than men, have less motivation, lack the will to perform complex tasks, are less self-exacting and less persistent with regard to the goal set. They merely gave it a try.

5. CONCLUSION

The aim of this analysis is the definition of the correlation of individual differences with study results of students (school success). This will require further time-lapse surveys. Students will be asked to fill out the Neo personal inventory at the end of their study. Further investigations will be focused on students’ learning styles, and their chosen study plans and academic performance will also be monitored.

Important values for this research may bring the table of percentages of students in various fields who drop studies after only one or two semester. These data of failed students could correlate with the degree of achieved percentiles in Conscientiousness and Openness to Experience factors.

However, already not the partial results show some interesting correlations between personality traits of students and their access to education and their school results. Time is an important factor, of course. It is during university studies when the period of adolescence and related socialization process is completed and, from the perspective of NEO inventory, students reach the age table ‘adulthood 22-75’ by end of their study and the percentile values, even if they would fill out the questionnaire the same way as this year, will be completely different.
REFERENCES


ONLINE PRESENTATION OF THE LIFELONG LEARNING

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Abstract

The paper deals with the analysis of the lifelong learning in the Slovakia. It describes the basic concepts related to the education and learning, the lifelong learning, the learners, and the concepts related to the online presentations. Furthermore it analyzes the current state of the lifelong learning in the Slovakia and in abroad. The last part of the paper is devoted to the performed analysis of the lifelong learning in the central Slovakia, specifically in region of the Banská Bystrica and region of the Žilina according to the set criteria for the assessment.

Key words: Lifelong learning, On-line presentation, Educational institutions, Educational programs, Courses, On-line Learning, Adult Education, Website, Learning strategy

1. INTRODUCTION

This time is according to the work situation difficult for the job retention and even more difficult to achieve career growth. Employers have more demands to employees than in the past, requiring constant education in order to achieve the best possible working results. Employees are aware of this matter, and therefore have to adapt to the requirements of their employers. To enhance the qualification of employees it is necessary to educate through all life.

The main objective of this paper is to analyze lifelong learning in Slovakia, particularly in central Slovakia in the Žilina region and Banská Bystrica region.

2. LIFELONG LEARNING

Lifelong learning is defined by the European Commission and the Member States in the framework of the European Employment Strategy, as all purposeful learning activity whose purpose is to continually improve the knowledge, skills and overall capabilities.

Lifelong learning is no longer just one aspect of education and training, it must become the guiding principle for provision and participation in education in the most diverse contexts. In the next decade, this vision must take place. All those living in Europe, without exception, should have equal opportunities to adapt to the demands of social and economic changes and to actively participate in shaping the future of Europe.

These features of contemporary social and economic changes are interrelated. Underlie two equally important aims for lifelong learning: promoting active citizenship and employability.
3. LIFELONG LEARNING IN THE EU

The term "lifelong learning" in EU countries marks learning throughout life. Includes public education in pre-productive age, which basis is in the education in schools and school facilities receiving an education grade passing elementary, secondary or university education. Its essential feature is the high-quality basic education for all. Basic primary education followed by vocational education should provide young people with new skills that are needed in knowledge society. At the same time, young people have to learn how to acquire a positive attitude towards learning. Lifelong learning also includes education of productive age, usually professional training, also education for unemployed and education in post-age. Permeability of these relatively independent subsystems of lifelong learning for citizens enables to start and finish learning at all ages of life, to choose the type and area of study or return to study again.

Education policy is focused on long-term strategic investment in education and in professions that are needed for the labor market now and in the labor market in the near future. Therefore in the financing of lifelong learning are involved cities, state itself or associations (unions, societies, associations, professional organizations, etc.), public institutions, foundations, employers and employees themselves. The support of lifelong learning focused to maintain and enhance employability and to be competitive in the labor market is included in the programs of political parties and social partners.

4. LIFELONG LEARNING IN SLOVAKIA

When analyzing the initial conditions there is an attempt to name and on the available data demonstrate the current situation in the areas of concern identified by the expert group for innovation of the strategy of lifelong learning. It is necessary to focus on the overall situation in the Slovak Republic with respect to actors of the strategies (citizens, employers, schools, educational institutions for further training, counseling centers) – how the current situation affects them, how they affect the current situation, what options are available, etc.

Citizen is a key element in lifelong learning. Based on the needs of employers requires the needed qualification through an educational institution, which enables to apply for the job market. In case of need for acquisition of a new or extension of an existing qualification the counseling center can help to find an appropriate educational activity to reach and update the needed knowledge, skills and competencies.

The employer communicates with educational institutions and provides them with information about the current and future need for skills and competencies that graduates need to have in order to perform work activities. The employer also carries out the training of the employees in the educational institutions.

Counseling Center is available to anyone who is interested in civil and career (professional) development. It provides consulting services focused on career counseling through individual consultations and group activities, it has got current information on the requirements of the labor market and training opportunities offered by upgrading knowledge, skills and competence. It uses the counseling methods for individual and group work with clients.

The educational institution provides education on the basis of the labor market needs and of the demands of citizens for their personal development. It is in close contact with the employer and counseling center to exchange knowledge for providing quality and demand-oriented services.
The state creates legal and economic conditions for other actors in order to develop lifelong learning. It creates conditions that all groups can have access to lifelong learning. Encourages cooperation between educational institutions and employers to achieve a high level of employment of citizens, which gives them a better quality of life.

Ministry of Labour, Social Affairs and Family has defined institutions that offer lifelong learning in Slovakia. They also defined the web sites that bring together educational programs for lifelong learning, these are: Association of Adult Education Institutions in the Slovak Republic (AIVD) - www.aivd.sk, Slovak Academic Association for International Cooperation (SAAIC) - www.saaic.sk, European Information Network for Youth - www.eurodesk.sk, Learning Center - www.ipservis.sk, Association for adult Continuing Education - www.kreditke.sk, Association for adult Education - www.generativ.sk. Lifelong learning provides in addition also some other national, public and private universities.

5. ANALYSIS OF LIFELONG LEARNING IN SLOVAKIA

The aim of the paper is an analysis of lifelong learning in Slovakia. The term analysis means the investigation of lifelong learning institutions that offer educational programs for citizens.

The object of the investigation are the lifelong learning institutions which operating on the territory of Slovakia. According to the given range of the studied topics, there was chosen the central region of Slovakia for research of lifelong learning institutions specially Žilina region and Banská Bystrica region, in which all districts were analyzed. The detailed procedure of surveys and scoreboards is not stated in the paper because of the given range, this can be sent on request.

Results of the investigation

Following are some of the findings from the research.

Figure 1. Number of institutions in the Žilina region (Source: author)
According to the number of institutions in the Žilina region takes the first place Žilina, which is also the largest regional city (Figure 1). The largest number of institutions in Banská Bystrica region is concentrated just in the largest regional city in Banska Bystrica where 36 institutions offers the lifelong learning education (see Figure 2).

Figure 2. Number of institutions in Banská Bystrica region (Source: author)

Figure 3. Number of educational programs in the Žilina region (Source: author)
Also according to the number of educational programs takes the first place Žilina. The change occurred on the second and the third place, where Liptovský Mikulas overtook Martin (see Figure 3). The number of educational programs again in the first place takes Banska Bystrica. Where about Banska Bystrica region can be said that the educational institutions and programs are mainly concentrated in Banska Bystrica (Figure 4). That is why this town is the most appropriate option when choosing institution of lifelong learning. The most appropriate place for the selection of the lifelong learning program is also a city of Žilina, which besides the largest number of institutions offers also the largest number of educational programs.

According to the data, we have found that in the Žilina Region 59 institutions have own website and 19 institutions do not have the website. This means in percentage 76% of the institutions have the website, and 24% do not have the website (see Figure 5). According to the data, we have also found that in the BB region 60 institutions have own website and 10 institutions do not have own website. This means in percentage 86% of institutions have the website and 14% do not have the website (see Figure 5).
According to the data, we have found that among all institutions offering lifelong learning in Žilina, it is possible to learn online only at 3 sites. This represents 5% of all institutions offering lifelong learning. We can say that this option is relatively low in central Slovakia (see Figure 6). At the same time, we have found that among all institutions in Banska Bystrica which offer lifelong learning and have also a website, it is possible to learn online only at 4 of them. This represents 7% of all institutions which offer lifelong learning (see Figure 6). We can say that this option is relatively low in central Slovakia as well as in the Žilina region.

Figure 6. Opportunity to study on-line on the website (Source: author)
Figure 7. Effectiveness of searching through google.sk (Source: author)

Figure 8. Effectiveness of searching through catalogues zoznam.sk azet.sk (Source: author)
When comparing the success of searching through google.sk and through catalogues zoznam.sk and azet.sk, came up as more successful in the Žilina region searching through google.sk, whose effectivity was 97% comparing with a catalogues which effectivity were smaller 64% (see Figure 7 and 9).

When comparing the success of searching through google.sk and through catalogues zoznam.sk and azet.sk, came up as more successful in Banská Bystrica region searching through google.sk, whose effectivity was 100% comparing with a catalogues which effectivity were smaller 76% (see Figure 7 and 9).

6. EVALUATION OF RESEARCH

We can say that the majority of institutions which offer the lifelong learning are concentrated in the larger district towns. This also indicates the quality of the observed websites. In smaller districts, we have found less websites of observed institutions and a number of institutions compared to larger districts was much lower. The same is true about the searching for the websites of the institutions through google.sk and catalogues. This is not problem in larger towns against the smaller ones. We can say that these institutions there, despite the modern times in which we live, are still working on the principle of “Public-folk advertisement,” where information about institutions finds out people through verbal communication. Regarding to on-line registration or on-line learning options both regions have relatively low percentage to register and study online. Companies still prefer a written application and courses in personal form.

7. CLOSURE/SUMMARY

People are often forced to learn even against their will. But nowadays the trend of lifelong learning is already part of everyday life. Through all life a person can learn even new things. Examples may include knitting, sewing and similar activities that you may not even include among the educational process. The paper deals with analysis of lifelong learning by examining different aspects. The main aspect of the investigation was to determine how many institutions of lifelong learning are in Slovakia. After finding out this aspect the central Slovakia was selected as a research area. In central Slovakia there are two regions which were examined – Žilina Region and Banská Bystrica Region. Each region was studied separately.

For an overall assessment of the state of online presentations of lifelong learning in Slovakia would be advisable to explore all regions, which are located in Slovakia. This could be material for the promotion of research. This research could be also associated with the population where we could count people per one educational program.

ACKNOWLEDGEMENTS:

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LEARNING OUTCOMES IN HIGHER EDUCATION: THE FACTORS WHICH HELP OR HINDER STUDENT ACHIEVEMENT - STUDENTS AND TEACHERS VIEWS

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Abstract

Bologna-driven reforms have influenced today’s higher education, but there is little information about what aspects help or hinder students to achieve the intended learning outcomes and what steps have been undertaken towards realising student-centred paradigm shift. The purpose of this study was to determine students’ and teachers’ perceptions about those aspects that help and hinder students to achieve the intended learning outcomes and to explore their responses from the perspectives of teacher-centred and student-centred learning paradigms. In this qualitative research, 287 students’ and 19 teachers’ perceptions from three Estonian universities revealed that teaching was perceived to be the most supportive factor for students’ achievement of learning outcomes. Student motivation, superficiality in learning and lack of time were perceived to be the factors that most hindered student’s achievement of learning outcomes. Students’ and teachers’ responses suggested a dominance of the teacher-centred paradigm.

Key words: Learning outcomes, student-centred learning paradigm, teacher-centred paradigm

1. INTRODUCTION

Today’s higher education in Europe has changed rapidly in the light of the reforms of the Bologna process. Student-centred learning has been recognized as one of the key elements for improving the sustainable quality of higher education according to the Leuven Communiqué of the Bologna process (Crosier, Dalferth & Parveva 2010). Therefore implementing this paradigm and building student-centred environments has attracted universities and research attention in the last decade. By fulfilling the suggestions of the Bologna process, universities, teachers and students have encountered a paradigm shift from a teacher-centric approach to an emphasis on student-centred learning (Barr & Tagg 1995; Biggs & Tang 2007; Lokhoff et al. 2010; Marsh 2007; McKeachie 2007). In Estonia the student-centred paradigm is being fostered to facilitate student learning. Outcome-based education has been compulsory since 2009; however there has been little research in the area of student-centred learning within the Estonian higher education context. This study contributes to the growing body of knowledge of the student experience following implementation of outcome-based education.

2. THE CHANGE IN PARADIGM

To better understand the fundamental changes in the processes of European higher education, it is necessary to clarify the principles behind those two paradigms. The student-centred paradigm sets students as the focus of learning (Barr & Tagg 1995; Biggs & Tang 2007; Lokhoff et al. 2010; Marsh 2007; McKeachie 2007). Barr and Tagg (1995) acknowledge that student-centredness means creating an environment, where students are able to construct their knowledge through gathering and synthesizing information and implementing it with their general skills of enquiry (for example
communication, critical thinking, problem solving). The student’s role is to be active and involved in the learning processes. For solving real-life problems, students should learn how to use and communicate knowledge effectively and how to learn from the mistakes they have made. Within the student-centred learning paradigm, students and teachers learn and evaluate learning together. The teacher’s role is to coach, facilitate and create a supportive, collaborative learning environment. Teaching and assessing must be integrated to ensure that students have the opportunity to experience complete learning paths. Assessment is used to promote learning. According to Sursock and Smidt (2010), student-centred learning is at the focus of the Bologna process as it embraces flexibility and choice in progression routes and in approaches to learning and assessment, as well as the use of tools that help to create sustainable higher education in Europe.

In contrast to the student–centred learning paradigm, teacher-centred approaches have been widely used for centuries. The teacher-centred paradigm occurs when knowledge is transmitted from teacher to students and learnt without a direct real-life context (Barr & Tagg 1995; Biggs & Tang 2007). Students are involved passively in the processes of learning. The teacher’s role is to teach, pass on the necessary information and evaluate whether students have achieved the correct answers. Teaching and assessment are considered separately. Assessment tasks are used to monitor learning; mostly in indirect ways. The teacher–centred paradigm is competitive and individualistic, where only students are viewed as learners. Although the paradigmatic shift to student-centred learning is the focus of today’s higher education, it is not absolute.

Sursock and Smidt (2010) suggest that the two paradigms are not necessarily mutually exclusive approaches in practice and most learning takes place somewhere along this continuum. Trigwell, Prosser and Waterhouse (1999) suggest that the paradigms chosen by the teacher affect students’ learning. Teachers who practice the teacher-centric approach are more likely to facilitate surface learning strategies. Teachers who adopt a student-centred approach are more likely to facilitate deep learning strategies (Biggs & Tang 2007). In the same way that students can change their approach to learning according to the subject content and teacher’s style, teachers’ approaches to teaching are changeable. Teachers tend to change their approaches to teaching depending on the context. This is acknowledged mostly within the student-centred approach, whereas teacher-centred approaches tend to be quite stable (Lindblom-Ylänne et al. 2006).

It might seem that the student-centred paradigm is clear and somewhat easy to implement, because the concepts of that paradigm have been recognized since the early 1900s (Dewey; Hayward; Plowden as cited in O’Sullivan 2004, p.585) and strongly supported with the Leuven Communiqué of the Bologna process (Crosier et al. 2010). In reality the evaluations and research still show that, because of its multidimensionality, the changes tend to be at the level of institutions, curricula and course program, rather than the actual learning process (Biggs 1999; Rauhvargers, Deane & Pauwels 2009; Sursock & Smidt 2010). Ruohoniemi and Lindblom-Ylänne (2009) found that students described their learning from the perspective of the teacher, but rarely commented about their engagement with the process of learning. These results indicate that students’ concept of learning was teacher-centric.

By focusing on learning instead of teaching, students and teachers need to transform their concepts of learning. Instead of deliberating over “How will I teach this?” teachers need to consider “How will students learn this?” (Hakel as cited in Huba & Freed 2000, p.5). Ramsden states that “The aim of teaching is simple: it is to make student learning possible” (Ramsden 1992, p.7). However changes in students and teachers’ concepts of learning take time, as they are required to rethink their roles in the learning process (Huba & Freed 2000). This is challenging when fundamental changes need to take place and previously acquired teaching and learning habits unlearned. A change from the traditional
transmissive method of teaching is needed in order to enhance student learning (Huba & Freed 2000) and requires an increased focus on developing new teaching methods (Virtanen & Lindblom-Ylänne 2010). However, in order for transformational change in teaching and learning to occur, students and teachers must have a reason for changing their approach and must perceive the benefits of change: without a real life need for change they tend to practice in ways in which they are most familiar.

3. LEARNING OUTCOMES

Learning is the main goal of the student-centred paradigm. In order to understand whether learning has happened, that is, what students have learned and how well they have learned, it is important to integrate assessment within the process of learning (Huba & Freed 2000). The achievement of learning outcomes is a fundamental principle of outcomes-based education where there is an expectation about the role of students in the education process. Students are challenged to be: 1) more active as learners rather than being passive recipients of knowledge, 2) independent as learners and 3) intrinsically motivated (McDaniel et al. 2000). Learning outcomes are clear, observable demonstrations of student learning that occur at or after a significant set of learning experiences. These demonstrations or performances will reflect three elements: 1) what the student knows; 2) what the student can actually do with what they know; and 3) the student’s confidence and motivation in demonstrating what they know (Spady 2001).

The most important feature of outcomes-based education is that all students are expected to be successful. A learning activity might be seen by students to be purposeful, useful and challenging but it should not be impossible (Killen 2000). Outcomes-based education shapes the way of designing, developing, delivering, and documenting the teaching and learning experience in terms of the achievement of pre-determined learning outcomes (Spady 1994). Teaching in an outcomes-based system requires the development of a clear focus on what is essential for learners to be able to do successfully, and then finding and designing strategies for students to achieve this (Spady 2001; Rauhvargers et al. 2009). Learning outcomes are at the heart of implementing student-centred learning. Constructive alignment is the model provided by Biggs and Tang (2007) that requires assessment, teaching strategies and learning experiences to be coherently aligned with the learning outcomes. Learning outcomes should be described independently of inputs and the context of learning to allow flexible learning and still result in the transparent achievement of learning outcomes (Sursock & Smidt 2010).

Learning is a multidimensional process, which is influenced by a complex network of factors that help or hinder students learning and how they achieve the intended learning outcomes. Previous research has shown that learning outcomes are dependent of teachers’ approaches to teaching, students’ approaches to learning, motivation, self-regulation, concepts of learning and teaching and perceptions of the academic environment (Biggs & Tang 2007; Entwistle et al. 2000; Prosser & Trigwell 1999). Ramsden and Entwistle (1981) also include the dimension of learning resources and support services as important influences of student learning. Their views have been expanded by Ruohoniemi and Lindblom-Ylänne (2009), who found planning of the teaching process, curriculum design and course overload to be important factors. Biggs (1999), Kek and Huijser (2011) suggested that students’ learning is also influenced directly by personal and family matters. All of these aspects should be taken into account when planning for student learning.

When reviewing the research literature in the area of learning outcomes and student-centred learning in light of what might influence their implementation, the results are either described in general (theoretical) ways (for example the work of Baeten et al. 2010) or through case studies, where two or three aspects and their influence is examined together (for example Kek & Huijser 2011; Lizzo, Wilson
& Simons 2002). As a result, it is difficult to distinguish which of the many factors has a true impact on learning and achieving the intended learning outcomes. From the teacher’s perspective it is very difficult to plan and create student-centred environments, because it is not clear which of those aspects are crucial for ensuring comprehensive and meaningful learning paths for students. It is also important to recognize that some factors might have an effect on each other therefore it is suggested that the learning process should be examined as a whole instead of individual aspects.

Student feedback on their experiences in higher education has largely focused on the role of the teacher and on the teaching rather than those factors that affect student learning (Marsh 2007; Spooren 2012). To date, only one published and validated student evaluation survey on teaching and learning has been developed based on an outcomes-focused approach to learning (Oliver et al. 2008). This survey comprising quantitative and qualitative items asks students to report their perceptions of what helps and hinders their achievement of learning outcomes, their level of motivation and engagement and overall satisfaction with the unit they have undertaken. Students are asked to give feedback on the most helpful aspects of the unit and how the unit might be improved. This focus on learning outcomes and the student-centred learning paradigm underpinned the research questions in this study. Note the term ‘unit’ refers to a discrete entity of a study that clearly defined forms part of a degree program (e.g. a subject).

To gain information and a deeper understanding of the changes in Estonian higher education, it is important to seek feedback from those who put the conceptions and ideas from the new reform into practice. In this study feedback was sought from teachers and students to gain an understanding of their perceptions about the aspects that might help or hinder students learning and achievement of learning outcomes. According to Virtanen and Lindblom-Ylänne (2010) harmony between students’ and teachers’ conceptions of learning and teaching is important for the successful achievement of the intended learning outcomes. Differences between their conceptions might lead to problems with learning. Nevertheless they believe that in reality there are differences in students and teachers beliefs in spite of them being in the same academic environment, because students and teachers experiences and concepts are different. The aim of this study was to compare students and teachers views about the aspects what help or hinder students learning and achievement of learning outcomes to determine whether there is a different understanding according to teachers and students perceptions.

A survey was conducted focusing on the teachers’ and students’ perceptions about the aspects that help or hinder students learning in light of their achievement of the intended learning outcomes. The results revealed the factors that affect student learning and provide insight to educators on the implementation of outcomes based education. This study sought answers to the following three questions:

1) What aspects help or hinder students in their achievement of the intended learning outcomes according to teachers and student views?

2) What are the responses about achieving the intended learning outcomes saying in light of the student-centred and teacher-centred paradigms?

3) Is there a difference between students and teachers perceptions on the aspects that help or hinder students to achieve the intended learning outcomes?

4. METHOD

The study was one part of a larger investigation; where a mixed type (open and closed questions) student evaluation survey, called eVALUate (Oliver et al. 2008), was implemented within the Estonian higher education context. The eVALUate survey asks student to report their experiences of their learning and
achievement of the intended learning outcomes in unit bases. The survey was translated from English to Estonian; additional items were added to ensure the translation was accurately reflected with the items. This preliminary study reports on the two open-ended items of the questionnaire.

4.1. Participants

Two hundred and eighty seven bachelor level students and their 19 teachers participated in this study. Subjects were recruited from three different faculties/departments and universities in Estonia: Estonian University of Life Sciences, Institute of Economics and Social Sciences (n=98; 7 units), Tallinn University Pedagogical College, Department of Youth Work and Continuing Education (n=127; 7 units) and Estonian Entrepreneurship University of Applied Sciences, Chair of Management (n=62; 4 units). Participants were invited to give feedback on their experiences on a voluntary basis and submission of the survey indicated their consent to the study. The data was gathered in spring 2012 and both teachers and students gave feedback on their teaching and learning experiences of their unit.

4.2. Instrument

A validated unit evaluation survey (eVALUate) consisting of open-ended and closed questions was modified and distributed to both students and teachers. Validation of this modified instrument into the Estonian context involved minor changes to the wording in the items to ensure the accuracy of translation. The full validation of the Estonian version of eVALUate is currently under review for publication (Kumpas, Tucker & Gupta in review). In summary, the questionnaire asked students to give feedback on their experiences of teaching and learning within their enrolled unit. In addition, teachers were asked to evaluate the same items, but from the perspective of how they thought that students were learning during the unit. This study focuses on the two qualitative questions from the modified eVALUate questionnaire.

The two open-ended questions that are central to this study ask students:

1. What helped you to achieve the learning outcomes in this unit?
2. What hindered you to achieve the learning outcomes in this unit?

Teachers were surveyed to gather feedback on the following questions:

1. Which aspects helped students achieve the learning outcomes in this unit?
2. Which aspects hindered students’ achievement of the learning outcomes in this unit?

4.3. Procedure

The questionnaire was embedded within an online survey environment LimeSurvey and sent out to the students and teachers a few days after the end of each teaching period for each unit. Prior to responding to the survey, students and teachers were informed that their feedback is anonymous and that the results would only be reported in an aggregated form. The survey was available for three weeks and during that time three reminders were sent to non-responders. The data was de-identified prior to data analysis.

4.4. Data analysis

Conventional content analysis was undertaken to categorise the comments from the two open-ended questions with the help of the MS Excel program. Using this technique, each comment was read and a code allocated to capture the thought or concept. For some comments, more than one concept emerged and each concept was independently coded. Codes were sorted into categories and subcategories and organised into meaningful clusters. Directed content analysis was then employed to identify whether each category related to either a student-centred or teacher-centred paradigm (Hsieh & Shannon 2005).
For example, comments related to ‘teacher activities’ (for example, presentation of information by the teacher, effort of teacher, student commenting on their passive learning approach, students not participating in lectures) were considered teacher centred. In contrast, comments related to ‘student activities’ (for example, student’s comment that they developed independent thinking skills, self-motivation to read more about the topic) were considered student-centred.

5. RESULTS

The total survey response rate collected from students was 27% (n=287/1071) and from teachers was 90% (n=19/21). The demographics of both students and teachers and response rates are shown in Table 1 and 2. Ninety percent of the students who responded reported that they attended all or most of the lectures in the units they evaluated.

Table 1. Student response rates

<table>
<thead>
<tr>
<th>Student subgroup</th>
<th>n (total n = 287)</th>
<th>Student response rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>40</td>
<td>14%</td>
</tr>
<tr>
<td>Female</td>
<td>247</td>
<td>86%</td>
</tr>
<tr>
<td>Age 19 to 22 years</td>
<td>186</td>
<td>65%</td>
</tr>
<tr>
<td>Age 23 to 30 years</td>
<td>68</td>
<td>24%</td>
</tr>
<tr>
<td>Age 30 to 58 years</td>
<td>33</td>
<td>11%</td>
</tr>
</tbody>
</table>

Table 2. Teacher response rates

<table>
<thead>
<tr>
<th>Teacher subgroup</th>
<th>n (total n = 19)</th>
<th>Teacher response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>7</td>
<td>37%</td>
</tr>
<tr>
<td>Female</td>
<td>12</td>
<td>63%</td>
</tr>
<tr>
<td>Age 25 to 40 years</td>
<td>8</td>
<td>42%</td>
</tr>
<tr>
<td>Age 40 to 65 years</td>
<td>11</td>
<td>58%</td>
</tr>
<tr>
<td>0 to 5 years of work experience</td>
<td>5</td>
<td>26%</td>
</tr>
<tr>
<td>5 to 10 years of work experience</td>
<td>5</td>
<td>26%</td>
</tr>
<tr>
<td>10-45 years of work experience</td>
<td>9</td>
<td>48%</td>
</tr>
</tbody>
</table>

The content analysis was based on the responses of 287 students and 19 teachers to the 18 units. There was no major difference in the students’ or teachers’ responses between the three universities therefore the comments were pooled and collectively analysed. Within the content analysis a number of categories and subcategories emerged and the frequency of students’ and teachers’ comments in each subcategory was calculated. The first category included personal factors associated with the student such as time management, motivation, previous work/academic or learning experiences, personal and family matters. The second category included those factors influenced by the teacher and teaching such as the
personality of teacher, methods and materials used in teaching and assessment. The third category included factors influenced by the university for example, hours of tuition dedicated to lectures, the timetabling of learning activities and unit order within the curriculum.

5.1. Factors that help students to achieve learning outcomes

Participant responses indicate that the factors which help students to achieve learning outcomes were mostly teacher and student related. The comments (including the percentage of comments related to the themes) from the participants are shown in Table 3. Students’ feedback indicated that teacher personality, good communication and clear teaching skills (using active teaching methods) were the most commonly named factors that helped them achieve the intended learning outcomes. Participating in the learning activities was mentioned by 29% of the students with students identifying homework, using different strategies to learn, participation in lectures and actively participating in class as important factors in helping them learn. Quality and informative learning materials were mentioned by 8% of the students and surprisingly only 6% of the students responded that their interest to the unit and motivation helped them to achieve the learning outcomes.

According to all the teachers comments (100%) the methods they used and teaching style in the lectures helped students the most to achieve the intended learning outcomes. Ninety percent of teachers believe that their planning of lectures and content, creation of a good environment, materials and assessment were important factors. Student participation in the learning activities was also mentioned by 84% of the teachers as a supportive factor for achieving learning outcomes.

<table>
<thead>
<tr>
<th>Comments</th>
<th>Students (n=287)</th>
<th>Teachers (n=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher personality and teaching methods</td>
<td>47%</td>
<td>100% *</td>
</tr>
<tr>
<td>Participating in the learning activities</td>
<td>29%</td>
<td>84%</td>
</tr>
<tr>
<td>Learning materials</td>
<td>8%</td>
<td>-</td>
</tr>
<tr>
<td>Interest in the subject and motivation</td>
<td>6%</td>
<td>-</td>
</tr>
<tr>
<td>Planning of teaching</td>
<td>-</td>
<td>95%</td>
</tr>
</tbody>
</table>

* Teachers mentioned only teaching methods.

5.2. Factors that hinder students to achieve learning outcomes

The students reported that the aspect that most hindered their achievement of the learning outcomes was their lack of motivation. Forty two percent of the students admitted that they did not have the motivation or time to learn, attributing this to the number of exams scheduled in a short period of time and work commitments. Another reason given by students for their lack of motivation related to their learning experience: that the lectures, materials and given assignments were either too boring or too difficult. Twenty four percent of students reported that they did not have any obstacles to learning and achieved the intended learning outcomes. Eighteen percent of the students indicated that poor organisation of their learning experience hindered their learning: they reported that were insufficient lectures given the amount of information, lengthy classes within a day and large student groups.
Teachers commented that student factors: their lack of motivation and surface learning (95%) were the main reasons that hindered students’ achievement of learning outcomes. Organisation of learning by the university was another contributing factor reported by the teachers (42%). Teachers also commented that student’s different level of prior knowledge hindered them in the process of learning (37%), indicating that it made it difficult for teachers to teach and students to learn. Table 4 provides a summary of teachers and students comments about the factors that hinder students’ achievement of the intended learning outcomes.

Table 4. Factors that hinder students to achieve learning outcomes

<table>
<thead>
<tr>
<th>Comments</th>
<th>Students (n=287)</th>
<th>Teachers (n=19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lack of motivation or time to learn</td>
<td>42%</td>
<td>95%</td>
</tr>
<tr>
<td>There was no obstacles</td>
<td>24%</td>
<td>-</td>
</tr>
<tr>
<td>Organisation of learning</td>
<td>18%</td>
<td>42%</td>
</tr>
<tr>
<td>Learners different level of previous knowledge</td>
<td>-</td>
<td>37%</td>
</tr>
</tbody>
</table>

The direct content analysis of students and teachers perceptions about the aspects that help and hinder students learning revealed that the majority of their comments reflected the principles of teacher-centred paradigm.

6. DISCUSSION AND CONCLUSIONS

This pilot study sought to investigate students’ and teachers’ perceptions of those factors that help or hinder students’ achievement of the intended learning outcomes, aiming to compare their perspectives viewpoints of student-centred and teacher-centred paradigms. Whilst the student response rate was low, this pilot study provides insight into student perceptions. Response rates from the eVALUate student survey conducted in Australia are typically around 43 to 46% (Tucker in press). In contrast the response rate from the teachers was considered to be excellent and the data obtained were representative of this cohort. Across the higher education sector response rates to student and teacher evaluation surveys vary (Virtanen & Lindblom-Ylänne 2010). The majority of feedback in this study was received from female students age between 19 and 22 years who also indicated that they were engaged through their attendance and participation in the lectures. This finding is consistent with those of Oliver, Tucker and Pegden (2007), however in contrast to their findings younger students were more representative within this Estonian study.

The analysis of students’ comments revealed that students described their learning mostly from the perspective of the teacher and teaching; students rarely commented on their own contributions to the process of learning. These findings are similar to those of Ruohoniemi and Lindblom-Ylänne (2009) within the Finnish context. In contrast to Biggs and Tang (2007), only 6% of the students commented that their own motivation and interest of the subject was a key factor for the achievement of learning outcomes. These results indicate that students may not recognize their role as active learners and appear to take little responsibility for their own learning; rather they evaluate what the teacher does, believing they are the recipients of the knowledge and skills imparted by that teacher. These student responses are at odds with an outcomes based approach to education and reflect the teacher-centric approach. A quarter of the students reported that there had been no obstacles in achieving the intended learning outcomes; this may indicate that these students had no barriers to learning or that they did not think about their
learning or consider how they might learn better. Further research is warranted to explore student engagement and their role in the learning process.

The analysis of teachers’ comments shows that they see themselves as facilitators who create the right conditions for learning. They indicated that their lecture style and teaching methods were fundamental to student learning. This finding may reflect the predominance of experienced teachers in the group who may be more likely to use more traditional methods of teaching, however, there was no major difference in their perceptions when comparing age or work experience. The teachers also perceived that student participation in the learning activities was critical for successful student learning. Irrespective of age and work experience none of the teachers mentioned student motivation or active learning strategies as aspects that might help their learning. These results are contrary to the student-centred paradigm (Biggs & Tang 2007; Prosser & Trigwell 1999) and are consistent with previous research by Ruohoniemi and Lindblom-Ylänne (2009) who found that teachers valued planning of the teaching process as an important factor for students learning. Universities require significant cultural transformation to successfully embed new approaches to teaching and learning (Tucker, in press, a). Whilst outcome based education has been implemented in Estonian higher education for some time, further measures may be required to fully implement outcome based education. The experience from Curtin University shows that this is achievable through leadership with focus on communication, education (particularly professional development for teachers) and involvement of all stakeholders (Tucker 2013). Teachers are the key to developing students’ way of thinking from perceiving that knowledge is absolute, contextual and constructed to the assimilation of new knowledge, problem solving skills and by creating their own meaning by using appropriate learning paths (Magolda 1992).

Students and teachers comments on the aspects that help or hinder student learning were surprisingly similar, although it was presumed that some differences would emerge, because of the different backgrounds and specialties, as reported by Virtanen and Lindblom-Ylänne (2010). Students and teachers reported that teaching was the most important factor, and to a lesser degree participation in the learning activities (doing homework, active participation in the lectures). This aspect might indicate that by actively participating, students learn and achieve a deeper understanding of the subject. Nevertheless none of the participants commented about their participation in the learning activities within the student-centred learning context. Lack of motivation was mentioned as the most significant reason why learning outcomes might not have been achieved. Contrary to the findings of other researchers (Biggs & Tang 2007; Entwistle et al. 2000; Prosser & Trigwell 1999) no teacher or student gave explanations as to why students lack motivation or how students learned or what concepts about learning might have had the effect of achieving the intended learning outcomes. The findings of this study indicate that there was minimal variation in students’ and teachers’ responses, which suggests that the questions might have been answered superficially. Given the diversity of the fields of study and different backgrounds (age, experience) of students and teachers the answers and experiences in this study were rather homogeneous across the sample. It also suggests that regardless of discipline background and the nature of university experience, students and teachers were in considerable agreement about what helped or hindered them to achieve the intended learning outcomes. The homogeneity in their answers may be a positive feature as it indicates that they experience and understand the processes of learning in the same way hence avoiding any conflicts around approach. By analysing the answers given by students and teachers and comparing them with the principles of student-centred paradigm and teacher-centred paradigm (Barr & Tang 1995) it was found that the perceptions of learning were concentrated on teacher-centredness, as the comments did not focus on the learner or learning, instead they described learning through the teacher teaching.

A limitation of this study is that the sample is small and may not be representative of all student and
teacher views; hence this research needs to be extended across the sector, and with more participants within each demographic. Caution is advised in interpreting these results as the sample demographics may skew results. Further research is recommended on each subgroup (particularly the teachers) to determine whether there is a difference in perceptions in relation to sex, age and experience. Previous research has shown that students who are more engaged and have high average grades are more likely to participate in unit evaluations (Oliver et al. 2007). The perceptions of non-responders need to be investigated to establish their experience in outcome-based education.

The results from this research indicate that students’ and teachers’ perceptions about their experiences provide useful information to universities. It is clear that, in the Estonian case, further action is needed to fully implement the principles of outcome-based education. To facilitate deep and meaningful learning, teachers need to rethink their role in education and develop or use teaching methods that lead to active learning. Further research is recommended to gain a deeper understanding of those approaches, which facilitate student-centred learning, and their achievement of learning outcomes and to determine barriers to implementing this learning approach.

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ROMA PUPILS ABOUT SCHOOL EDUCATION IN THE CZECH REPUBLIC
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Abstract
The presented study deals with chosen questions related to the education of Czech Roma primary schools. It interprets the opinions and attitudes of the pupils, which are then processed quantitatively and implemented into the research relationship of comparison. The article points to one of the ways how to explore the key pedagogical-psychological constructs that are in our and also in world's conditions in the sphere of education very often discussed.

Key word: Roma pupil, opinions and attitudes, education, primary school, social exclusion.

INTRODUCTION
Generally it is said and the specialized literature states that the Roma people do not consider education a value. We read various articles that highlight the relation of Roma pupils to education. However, so far there have not been any relevant studies that would confirm these statements in a methodologically factual and correct way. In the pedagogical-psychological context it is the analysis of the relationship with different variables. There are many determinants that are directly linked to the creation of pupils’ relationship to education. The main ones are the family, school environment and the individuality of the pupil himself / herself (Žolnová, J. 2012).

The point of the interest of our article is not an education as the outcome of the process of education but education as a journey, during which the value structure of a general character can be found – valid for a given group of Roma pupils and individual characters – valid for every pupil. This has become the subject of our investigation. We interpret the general nature of these structures as an opinion one and individual nature as an attitude one. Therefore we concentrated on the pupils’ opinions on education in the general conception and we also measured the attitudes of chosen pupils towards the implemented education. During formation of the strategy, approaches, possibilities of researching schemes we realized that such assessment can be understood in two ways (Tondl, L. 1999), and these are:

• the assessment as qualified or competent – here we analysed opinions,
• the assessment as the expression of value attitudes – here we analysed attitudes.

Roma pupils versus social exclusion
Surveying of the social exclusion in the conditions of the Czech Republic is taking place continuously. The Agency for Social Inclusion is a means of the Government of the Czech Republic to ensure the support in the process of social integration. Already, in 2006 GAC, Ltd. /in Czech spol. s r. o/ (2006) carried out a sociological study focused on the phenomenon of social exclusion. It says that in the given year there we approximately 310 socially excluded localities and nowadays we know that the number is only orientational. The trend of so called “modern poverty” (Svoboda, Z., Morvayová, P. et al. 2010) is progressing. In 2006 socially excluded localities were inhabited by approximately 120 thousand people, about 90 % out of them were Roma people. People living in these localities are characterised by social
exclusion, whose consequences are social, socio-economic and political. Exclusion on the general scale concerns groups that are in the analysis defined as “insufficiently educated individuals, long-term or repeatedly unemployed, people with mental or physical disability, people suffering from various kinds of addictions, senior citizens living alone, immigrants, members of variously defined minorities (ethnical, religious, connected with sexual orientation, etc.) people that are in a difficult life situation they cannot handle themselves …” (pg. 9). From the perspective of social politics and using the localised example of the Moravian-Silesian Region, according to Integration Strategy for the Roma Community in the Moravian-Silesian Region 2006-2009 (MSK 2009), that is supported by the revised governmental “The Roma Integration Concept 2005” and some other documents, we can observe the current state of social issues of Roma people in chosen socially excluded areas and areas endangered by social exclusion. The issues of Romani people (MSK 2009) are the following:

- unemployment, addiction to social support, low level of education, the offered work opportunities are rejected because the salary is low – there is a lack of motivation,
- high level of indebtedness of families (consumer credits, door to door loan, usury),
- distraint orders also on social support,
- drug addiction in children and the youth (sniffing toluene), youth criminality,
- little involvement in the social, sport and cultural events,
- the lack of positive role models in the families, general unawareness or no interest in information,
- the lack of alternative accommodation for those moved out of the city property,
- the lack of information in the area of caring about the health, healthy diet, registration of citizens at the general practitioner, bad hygienic conditions, mess in the surroundings and in common areas.

The above mentioned problems are the key determinants in the process of social integration and they also play a key role in the educational process of Roma pupils in primary schools. M. Rabušicová, L. Kamanová a K. Pevná (2011) highlight in their publication intergeneration learning. They appeal that all the family members are participants in the process of learning. In the family we learn the way to approach to oneself, how to behave in order to live well. The phenomenon of social exclusion therefore definitely determines the life development and fates of all the people living and growing up in social exclusion. Social learning is transformed by this phenomenon. In the family an individual obtains some kind of “directions” or “methods” for the existence of one’s own life. H. Ch. Y Cherri (2008) found out that the parents pass on their children mainly their own life experience; they teach them the values, principles and moral rules. Therefore it is primarily social learning in the family environment. D. Caloňová and M. Kravárová (in Mátel, A. - Janechová, L. - Roman, L. (eds.) 2011) say that every family has its own specific system of values and its preference influences the behaviour in mutual interactions with social environment. The value orientation generally changes quite rapidly in families and also in the society, which has a negative effect on the increasing rise of social-pathological phenomena. In the towns, where socially excluded localities are found and in which Roma ethnic group form the majority, so called “Roma schools” are established. The school appears in such a situation that most of the pupils are of Roma pupils (cf. Nikolai, T., Sedláčková, P. 2007, Kaleja, M. 2011). The professional public perceives such a school as segregational. The parents of the pupils of the majority society transfer their
children to different schools. T. Nikolai (2010) assumes that such a school gradually decreases the educational requirements for pupils, by which in our opinion they reduce opportunities in their educational trajectories.

From the sociological perspective education and educational inequality can be viewed in two different ways. “On one hand there is the equality of (relative) chances – usually called the allocation of education – on the other hand there is the equality in the final distribution of education in the society.” (Kreidl, M. 2008:30). The inequality in the allocation of education means uncertain relative probability of success in educational transition for those pupils and students that come from various social classes or have different given social status. The relationship between distribution and allocation in education in the society is very subtle and multi-layered (Shavit et al. 2007). According to the authors (Bar-Haim, E, Shavit, Y., Ayalon, H. 2007, Kreidl, M. 2008) balancing the distribution of education will not necessarily lead to the balance in inequalities in allocation of educational chances. The analysis from 2009 called Educational Trajectories and Educational Chances of Roma pupils in Primary Schools in the Surroundings of Excluded Roma Localities states that only 72 % of Roma pupils attend a school of the main educational stream, almost one third is educated outside this stream (primary practical school, special primary school). There is 3.5 times higher probability that a Roma pupil will be transferred to special education. The critical moments in their educational trajectories are entering the primary school and the transition from the first grade of the primary school to the second one. During the 3rd year pupils already have problems with the Czech language, in the second grade of the primary education the problematic subject is mathematics (GAC 2009).

The socio-economic status of a family has, according to OECD research, in the European context quite considerable direct influence on the level of success of pupils in the educational trajectories. It is known that if a pupil with low socio-economic status systematically shows unsuccessful in school tasks, his / her motivation and chances in education decrease proportionally (P. Van Avermeat 2006). At the same time, generally, the level of education with constantly increasing competitiveness on labour market, is increasing, both abroad (cf. Cantu, R. 2003) and in the Czech Republic. The document “The Frame of the strategy of competitiveness” (Mejstřík, M. et al. 2011: 123) says: “therefore grows the importance of education as the factor of economic and social success of an individual and the quality of life of the whole society.”, it further states (ibidem: 124): “… for the suggested complex changes there must exist adequate consensus about their necessity, their visions and sufficient political and social determination to implement the changes. The existing imperfect reformatory attempts were also caused by insufficient political and public interest in the problematic of education, insufficient understanding of the importance of education and still quite widely spread satisfaction with the current state that is kept by the lack of trustworthy information.”

The context of primary education of Roma pupils in the Czech Republic

The system of education in primary schools in the Czech Republic is based on the National Programme for Development of Education in the Czech Republic (so called White Paper from 2001), legislatively it is anchored mainly by the Education Act (no. 561/2004, on Pre-school, Basic, Secondary, Tertiary Professional and Other Education, as amended), in which primary education is provided by:

- primary school (school of main educational stream),
- primary practical school (school for pupils with a mild degree of mental disability),
- special primary school (school for pupils with high degree of mental disability, for pupils with multiple disorders and for pupils with autism spectrum disorder).
The Education Act (no. 561/2004, as amended) determines three basic categories of special educational needs of children, pupils and students (§16): health disability (mental disability, physical, visual, hearing impairment, speech impediment, autism spectrum disorder, parallel multiple disorder, developmental behaviour problems and learning disabilities),

- health disadvantage (i.e. health weakening, long-lasting illness or disorder leading to learning disabilities and behaviour problems),
- social disadvantage (family environment with low socio-economic status, ordered institutional education, the status of asylum seeker or a refugee).

Within primary education there is secured the pedagogical-psychological counselling and education of pupils with special educational needs. This is legislatively anchored in the regulations of MŠMT (the Ministry of Education, Youth and Sports) of the Czech Republic. The regulation no. 72/2005 Coll., on the provision of counselling services in schools and school counselling facilities, as amended and regulation no. 73/2005 Coll., on the education of children, pupils and students with special educational needs and of pupils and students who are exceptionally gifted, as amended. Pedagogical-psychological counselling can be, in the context of school education, generally divided into internal school counselling and external school counselling. Internal school counselling is provided mainly by an educational counsellor, a school prevention methodologist, a school special education teacher, and a school psychologist. The educational counsellor is involved in the field of counselling, methodical and information activities. The school prevention methodologist is involved in the field of methodical coordination, information and counselling activities. The school psychologist is involved in the field of diagnosis, screening, consultation, counselling and intervention work, methodical and educational activities. The school special education teacher is involved in the screening, diagnostic and intervention field, methodical and coordination activities. External school counselling is provided by pedagogical-psychological advisory centres and special educational centres. In individuals with combined disabilities the counselling is provided by special education centres. An interesting idea about internal school consulting comes from Čech (In Vlašťáková – Loukotová (ed.) 2007). In his article he claims that the competences of current post of an educational counsellor and a school prevention methodologist could be at schools transferred to the newly established post of a school social educator which will be anchored in the Education Act with all the legislative support. Tomáš Čech states that professional and personal skills cover the requirements for such a post, moreover the (school) social educator without teaching obligation would have sufficient space for creating and implementation of preventive programmes, cooperation with specialised institutions, communication with parents and teachers, identification of troubled children or groups and more intensive cooperation with other specialists within the school, mainly with a psychologist and a special education teacher. The author further states that the post of educational counsellor at schools survives in a rigid form and does not reflect sufficiently the current needs of the school and society. He assumes that an educational counsellor as well as a school prevention methodologist cannot, due to their high direct teaching practice, manage tasks imposed on the performance of these two posts well and effectively enough (Čech in Řehulka and others 2007). The above-mentioned problem is much worse when both positions are performed by one teacher. On the other hand, we should not confuse the competences of a (school) social educator with the competences of a school special education teacher. Nowadays, the professional society tends to discuss the scope of competences of these two professions. It is encouraged by the attitudes of the professional society in the world where the scope of competences of a school special education teacher (mainly specialised in ethopedy) is completely covered by competences of a social educator (e.g. in Bulgaria, etc.) or a psychologist (e.g. in Russia). On the other hand, if we compare the undergraduate preparation of these two professions (a special education teacher – ethopedic specialist and a social...
educator) in the Czech Republic and in Slovakia with the other countries we can realise that they are completely different. The orientation of a special education teacher – ethopedic specialist is mainly the teaching or counselling, whereas the orientation of a social educator is the non-teaching one.

In the context of education of pupils with special educational needs we talk about an individual or group integration, principles and objectives of special education, types of special schools, individual education plans and other supportive mechanisms. Amendment to regulation no. 73/2005 Coll. (147/2011) specifies the supportive and countervailing measures, defining precisely the social disadvantages specified in §16 of the Education Act. It says that as a socially disadvantaged pupil we can consider a pupil from an environment which does not provide enough support needed for a proper course of education, including cooperation of legal representatives with a school and a pupil which is disadvantaged by insufficient knowledge of language of teaching. From the above mentioned it is clear that the pupil’s ethnicity does not directly place them in the group of pupils with special educational needs. A pupil with special educational needs is a pupil who meets the criteria specified in the Education Act and in the related regulations.

Three years ago the Czech School Inspectorate (CSI) engaged itself in the problem of the social disadvantages through investigation at primary practical schools. In 2009 / 2010 CSI checked the accuracy of placement of pupils outside the main educational stream. It focused on the efficiency of using the diagnostic stays and on the possibility of returning (reintegration) of pupils into the main educational stream. Further the Inspection checked how the schools themselves take into account the language, culture and previous experience with learning in their evaluation of Roma pupils. During the inspection activity CSI visited 171 out of 398 primary practical schools. Results of the inspection showed that some Roma pupils were misdiagnosed as pupils with mental handicap and that the legal requirement for their inclusion into the special classes was not met in all cases and that the diagnostic stays of pupils were not always distributed in accordance with the rules (CSI 2010). MŠMT (The Ministry of Education, Youth and Sports of the Czech Republic) processed A Methodological Requirement for Ensuring of Equal Opportunities in the Education of Children and Pupils with Social Disadvantages (reference no. 27607/2009-60) for preschools and primary schools. It contains supportive and countervailing measures for supporting of an individual educational potential, for preventing placement of pupils into schools outside the main educational stream and for elimination of possible confusion of social disabilities and health disabilities (MŠMT 2009).

Education of Roma pupils during their compulsory school attendance is characterised by certain educational specifics. Even a project “Variants” from 2002 describes the main problems a Roma pupil deals with soon after the beginning of school attendance:

- insufficient time and space for home preparation;
- unwillingness [note: also inability] of parents to provide basic school aids;
- priority of working at home (taking care of brothers and sisters) than working at school;
- no strict daily routine, strict rules or activities that require long-lasting concentration;
- inability to make independent decisions and be responsible for themselves;
- no developed fine motor skills, lack of knowledge how to draw and read;
- lack of knowledge of terms that are needed in real life and which children get from books and encyclopaedias;
language barrier with children who do not speak Roma language any more but still use ethnolect of Czech language (Člověk v tísni, o.p.s./People in need, public service company/2002:2).

**Measuring the Opinions and Attitudes of Primary School Pupils to Education**

The research we carried out in 2012 applied quantitatively-oriented strategies, processing the data was done by a quantitative statistical procedure. The applied research means was a self-created questionnaire; it was addressed to pupils from Roma ethnic group, whose language competences reach lower level in comparison to pupils of the same age and from the same group pupils from the primary school. These facts were taken into consideration properly; the survey means was discussed with professionals (teachers with years of direct pedagogical experience(s) with this target group of pupils). The realization of the questionnaire investigation was carried out personally and also thanks to other people participating in the survey (four teachers teaching Roma pupils from altogether four schools involved in this survey). The goal was to provide assistance during completion of the questionnaires (if needed), especially on the level of language help to pupils (lower language competence, language sensitiveness, etc.). The primary task of collecting empirical data in relation to the respondents and to the survey itself was to secure, if possible, the largest amount of respondents in order to ensure the validity with the respect to the chosen research set. The basic set was formed by Roma pupils from the second grade of primary schools (aged 11-15) in socially excluded localities or in localities endangered by social exclusion in Ostrava. In such defined environment there are altogether eight primary schools in Ostrava. For almost all the pupils are from Roma ethnic groups, these schools are “labelled” as sc. Roma schools. We are in contact with all these eight schools either via the survey or in other professional ways. By a random selection we appointed four primary schools that will create the chosen set. There were 161 pupils who took part in the research. The pre-research was done with 19 respondents (from one primary school) so that the reliability of the whole research means could be secured. Individual methodological procedures result from a standard frame of a research of this type (cf. Punch, F. K. 2008, Chráska, M. 2007, Hendl, J 2004). The pupils’ ethnic origin was declared by the management of the school, pedagogical workers that are daily in contact with the pupils.

<table>
<thead>
<tr>
<th></th>
<th>PS (primary school 1)</th>
<th>PS 2</th>
<th>PS 3</th>
<th>PS 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>the total number of pupils at school</td>
<td>265</td>
<td>194</td>
<td>153</td>
<td>105</td>
</tr>
<tr>
<td>out of that the number of pupils with special educational needs</td>
<td>58</td>
<td>3</td>
<td>153</td>
<td>74</td>
</tr>
<tr>
<td>the number of pupils on 1st grade</td>
<td>153</td>
<td>108</td>
<td>84</td>
<td>34</td>
</tr>
<tr>
<td>Number of pupils on 2nd grade / taking part in the research(^{28})</td>
<td>112/63</td>
<td>68/56</td>
<td>39/19</td>
<td>56/23</td>
</tr>
</tbody>
</table>

\(^{28}\) The number of pupils present at school during data collection.
Table no. 1: *Primary schools in Ostrava involved in the research*

<table>
<thead>
<tr>
<th>PS (primary school) 1</th>
<th>PS 2</th>
<th>PS 3</th>
<th>PS 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>the number of pupils in the preparatory class of the primary school</td>
<td>0</td>
<td>18</td>
<td>30</td>
</tr>
<tr>
<td>the pupils are from these localities</td>
<td>Přívoz, Koblov, Hrušov, Vítkovice, Dubina, Poruba Michálkovice</td>
<td>Přívoz, Koblov, Hrušov, Vítkovice, Dubina, Poruba Michálkovice</td>
<td>Přívoz, Koblov, Hrušov, Vítkovice, Dubina, Poruba Michálkovice</td>
</tr>
</tbody>
</table>

Individual schools in their school educational programmes characterize their pupils as pupils that come from socially excluded localities or localities endangered by social exclusion. They state that those are pupils from socially disadvantaged environment (or socio-culturally disadvantaged environment), pupils that come from socially weak families that do not provide them with necessary means for fluent and proper development and that are directly influenced by socially pathological phenomena. They further say that many pupils belong to the category of pupils with special educational needs according to current valid legislative documents. Here we would like to emphasize that when it comes to pupils with special educational needs, mainly the category of health disability with respect to mental handicap, it always concerned the pupils with mild degree of mental disorder (not with severe degree of mental disorder) and from the beginning of the research intention we kept in mind these elementary research paradigms:

- To construct the research means so that it can be accessible pragmatically, clearly, comprehensibly and mainly methodologically optimally choose it also for pupils with mild mental disability.
- Consult the research means with external experts with long pedagogical experience with Roma pupils with mild degree of mental handicap and with pupils without damaged intellect.
- The research means firstly verify on a necessary amount of pupils from the chosen target group.
- In the centre of attention there are chosen pedagogical facts, i.e. opinions and attitudes to the education of a chosen target group, not special pedagogical views on pupils with special educational needs and without them, or the differentiation of opinions and attitudes of these pupils.

For measuring opinions and attitudes we chose the assessment according to L. Tondl (1999). We already had experience with it from the time when we analysed the attitudes of Roma pupils’ parents to education (for more see Kaleja, M. 2011). Moreover, it was clear that the structure of assessment from
the formal perspective has quantitative, qualitative, comparative, preferential and point aspect. For our research we chose the quantitative approach.

Measuring of individual opinions and attitudes was done on two levels; those were the general (opinion) and individual (attitude). General level focused on how the pupil themselves perceive given circumstances connected with the question of education in the context of all primary school pupils. The questions leading to the measurement were formulated generally, i.e. in such a way that they did not contain the immediate relationship of respondent to the given circumstance (e.g. Why do children go to school?). The aim was to measure their opinions, which represents the specific personal point of view of an individual that is usually subjective. Individual level focused on how the pupils themselves perceive given circumstances connected with the question of education in the context of their own personality. In this case the questions leading to the measurement were formulated individually, i.e. so that they included the immediate relationship of the respondent to the given circumstance (e.g. Why do you go to school?). The aim was to measure their attitudes because via their statements they declare cognitive, emotional and also behavioural components of the assessed relationship.

Quantitative processing of the learnt research data was done by coding, which represents matching them with symbols, numbers, codes according to the rules defined beforehand (Reichel, J. 2009). For the coding we chose the system of codes in the form of letters and numbers. After the data collection the research means with open items brought data of qualitative character, and because we worked with such data, we did not specify the observed categories in advance. Those were created based on the analysis of the research material. During the first phase we did the segmentation of the respondents’ answers according to semantic thematic units, after that we coded individual segments (utterances). By grouping individual utterances according to the synonymy of their meaning we arrived at 112 induced categories.

**Quantitative comparative analysis**

By the comparative analysis of opinions and attitudes resulting from the technique of the questionnaire we observed how the opinions and attitudes of pupils of the same dimension in all the years of all schools diverge (0) and whether we find agreement in any item in all the years (1). We were interested in how the individual applied research components (categories), which became a part of our research, change in relation to observing quantifiers in all the years involved (6th to 9th year) in all the participating schools. In the context of this analysis the selection of the categories (24 out of 112) was based on the following principles:

- out of all 24 items (the same dimensions, odd-even, opinion-attitude) we chose 1 category of the same dimension (e.g. Why do children go to school? – Why do you go to school?),
- this category was selected so that in all the years it reached the highest value or at least it reached the highest value in two years.

We wanted to create a comparison, in which it would be significant whether the values in all the years of a chosen category reach at least 50 % or more, whether the congruence appears in this (A – yes) or possibly a difference (N – no), while we always compared the opinion with the attitude of the same dimension. In our case we consider congruence (A – yes) the following situation: in the given research category the utterances of pupils in all the years reach the minimum value 50 %. In our case we consider
a difference (N – no) the following case: in the given research category the utterances of pupils of at least one year do not reach the minimum value 50%.

The statement about whether the opinions and attitudes of the same dimension converge (0) or on the contrary we find agreement (1) in them, is listed in the column (see below) “value”. Here the interpretation is the following:

- 1 = opinions and attitudes of the same dimension reached the value of the above-defined congruence, we find agreement in them (therefore A + A),
- 0 = opinions and attitudes of the same dimension did not reach the value of the above-defined congruence (therefore N+N) or they are mutually diverging (therefore N+A, A+N).

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>CODE</th>
<th>CATEGORY</th>
<th>OPINION</th>
<th>ATTITUDE</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2</td>
<td>K1/K56</td>
<td>Children go to school to learn. / I go to school to learn.</td>
<td>A</td>
<td>A</td>
<td>1</td>
</tr>
<tr>
<td>3/4</td>
<td>K5/K61</td>
<td>It matters to parents that children go to school. / It matters to my parents that I go to school.</td>
<td>A</td>
<td>A</td>
<td>1</td>
</tr>
<tr>
<td>5/6</td>
<td>K11/K67</td>
<td>Children like going to school. / I like going to school.</td>
<td>N</td>
<td>A</td>
<td>0</td>
</tr>
<tr>
<td>7/8</td>
<td>K17/K73</td>
<td>Marks are good so that pupils can continue studying. / Marks are good so that I can continue studying.</td>
<td>A</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>9/10</td>
<td>K21/K78</td>
<td>Only some pupils have good marks. / I am good at school sometimes and sometimes not.</td>
<td>N</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>11/12</td>
<td>K23/K80</td>
<td>Children like some subjects at school. / I like some subjects at school.</td>
<td>N</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>13/14</td>
<td>K31/K88</td>
<td>Children do not enjoy some subjects at school. / I do not enjoy some subjects at school.</td>
<td>N</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>15/16</td>
<td>K34/K91</td>
<td>At school teachers are looking forward to children. / At school teachers are looking forward to me.</td>
<td>A</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>17/18</td>
<td>K38/K95</td>
<td>Children have their favourite subject. / I have my favourite subject.</td>
<td>N</td>
<td>N</td>
<td>0</td>
</tr>
<tr>
<td>19/20</td>
<td>K43/K100</td>
<td>Children do not like some subjects at school. /</td>
<td>A</td>
<td>A</td>
<td>1</td>
</tr>
</tbody>
</table>
I do not like some subjects at school.

Teachers help children at school /
Teachers help me at school.

Parents help children with learning at home /
Parents help me with learning at home.

<table>
<thead>
<tr>
<th>ITEMS CODE</th>
<th>CATEGORY</th>
<th>OPINION</th>
<th>ATTITUDE</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>21/22 K48/K105</td>
<td>Teachers help children at school / Teachers help me at school.</td>
<td>A</td>
<td>A</td>
<td>1</td>
</tr>
<tr>
<td>23/24 K52/K109</td>
<td>Parents help children with learning at home / Parents help me with learning at home.</td>
<td>A</td>
<td>N</td>
<td>0</td>
</tr>
</tbody>
</table>

Table no. 2: Comparative analysis of opinions and attitudes

Legend:

- A = the value reaches 50% and more in all the involved years from all schools
- N = the value does not reach even 50% in all or at least in one year from the involved years from all schools
- 1 = congruence in opinions and attitudes
- 0 = no congruence in opinions and attitudes

From the above-mentioned research data processing it emerges that in four pairs of categories the utterances of pupils from individual years reach congruence, while the congruence is directly linked to:

- questions about why pupils go to school,
- to whom it matters that pupils go to school,
- what pupils are not pleased by at school,
- and who helps them in the school environment.

Table no. 3: Evaluating comparative congruence in opinions and attitudes
In eight pairs of categories (of) the utterances of pupils of individual years do not reach congruence, while a difference is directly linked to:

- questions about whether pupils like going to school,
- what marks are good for,
- what school results pupils reach,
- what pleases them at school,
- what does not please them at school,
- who is looking forward to them at school,
- what do they enjoy at school,
- and who helps them with learning in domestic environment.

Here exists a considerable variability between opinions and attitudes of the pupils involved. Some of them felt the need to introduce the reasons why they do not like going to school or who, according to them, contributes to it. Others only shortly expressed their negative relationship to school. They quite often said that they do not like going to school because it is an unfamiliar environment for them, teachers do not understand them, they did not find the sense in going to school. In the pupils’ opinions marks serve to e.g. enable them to continue in their educational trajectories, for parents to have certain results or for their teachers to have certain results too. The level of school results is naturally assessed subjectively. On the other hand, we were interested in how pupils themselves perceive their school work, whether it is successful in their opinion or not. The relation (positive or negative) in the school environment (what pleases pupils/ does not please them) is related to the classmates, teachers, subjects, phenomena appearing in the school environment (friends, bullying, etc.). At school pupils usually enjoy subjects that grant activation activities (Music Education, Physical Education, and Art Lessons), they do not enjoy the lessons of the Czech language and Mathematics. A large portion of pupils said that the parents do not show active interest in checking whether they did their homework, they do not engage in this direction.

In conclusion of comparative bivariate analysis it is possible to statistically state that in four cases the opinion and attitude of pupils according to the defined criteria are congruent, in eight cases they are not congruent. The data obtained in this way are provided in a descriptive way.

**CONCLUSION**

Discussing whether pupils from the Roma ethnic group perceive the process of education (or education) as a value is vague. A professional discussion focused on that, realized research investigations need much wider context. The questions connected to value constructs also in the area of education need more elaborated pedagogical, and in relationship to the pupils with special educational needs special pedagogical research orientation. The question of education carries several mutually mingling determinants, which need research classification. In this article we classified the problematic of the education of Roma pupil in relationship to the opinions and attitudes of the involved pupils.
REFERENCES


PSYCHOPHYSIOLOGICAL CHARACTERISTICS OF ANXIETY
OF MODERN STUDENTS.
Karimova Raushan, Kenesbayev Serik, Kazakhbayeva Gulnur, Avdeeva Raisa
Abai Kazakh National Pedagogical University, Psychological-Pedagogical faculty
The Scientific - Technical Laboratory of Preventive Suicidology, Kazakhstan, Almaty

Abstract
At the present stage the problem of anxiety becomes more and more actual. It is promoted by crises in the sphere of policy and economy, a problem in private life and professional activity. However, there are anxiety reasons which can be deeper and personal for everyone. The first of all is a lack of a consent of the person with itself, lack of psychological reference points and exit ways from a conflict situation. It is known that anxiety is connected with functional features of a brain of the person which conduct to increase of level of emotional alarm.

Key words: anxiety, anxieties level, student's age, EEG.

1. INTRODUCTION
The works of both foreign and local psychologists are dedicated to resolution of problems and issues associated with the study of the levels of anxiety. Anxiety was first described by Sigmund Freud in 1925 [1, p. 69]. Currently the prevailing is the point of view that, anxiety, having a natural basis, is forming in one’s lifetime, as a result of social and personal factors. Particularly urgent is the problem of studying the states and levels of anxiety in relation to training activities, where understanding of mental states and their management in the process of cognition and communication is one of the essential aspects of activity.

Anxiety is a personal trait, reflecting a decrease of the threshold of sensitivity to various stressor agents. Anxiety is expressed in constant sense of threat to own "Me" in all situations; anxiety is the propensity of the individual to experience anxiety, characterized by a low threshold of alarm reaction, one of the main parameters of individual differences [4, p. 473].

B.F. Skinner considers anxiety as a negative side effect associated with the use of punishment. Punishment tactics because of its threatening nature can cause undesirable behavior - "emotional effects." If a person acquired wrong skills and erroneous behavior patterns that are stored with the help of any reinforcement and do not know how to be friendly, how to talk, how to express anger appropriately, how to reject unreasonable requests. This social incompatibility can lead to anxiety [5, p. 103].

R. May considers anxiety as a presentiment caused by the threat to the value that the individual suggests necessary for its existence as a person. The threat may be directed to the physical or mental, or any other value that an individual associates with his/her existence (patriotism, love of another person, "achievement of success", etc.) [6, p. 87]. Cause for anxiety among various people can be as different as the values on which these reasons depend on.
In the opinion of Prikhojan A., on a psychological level anxiety is felt as stress, concern, restlessness, nervousness and worry as feelings of uncertainty, helplessness, powerlessness, insecurity, loneliness, impending failure, inability to make a decision [2, p. 249].

Anxiety as a signal of danger draws attention to possible difficulties, obstacles to achieve the goal set out in the situation, allows to mobilize strengths and thus to achieve the best result. Therefore, the normal (optimal) level of anxiety is seen as necessary for effective adaptation to reality (Adaptive anxiety) [3, p. 147].

Thus, we see that many psychologists were engaged in studying the issue of anxiety. Such as S. Freud, B.F. Skinner, R. May, A. Prikhojan and others. Summarizing views of scientists suggests that anxiety is a vague feeling, which is non-specific, "elusive", "non-figurative", and can be the result of wrong communication skills; special properties of anxiety - feelings of uncertainty and helplessness in the face of danger. Anxiety is most generally understood as a negative emotional experience associated with a presentiment of danger. The fact that anxiety along with fear and hope is a special, anticipating emotion, explains its unique position among other emotional phenomena.

Modern students are, first of all, young people aged 18 to 25 years. To date, no single approach to the age periodization, selection of phases of development of an adult. According to the international classification, end of youth and start of adulthood begins for women from age 20 and for men from 21. Consequently, most of the students complete their youth phase and go into adulthood during studies in institutions of higher education [7, p. 91].

The word "student" is of Latin origin, in Russian means "diligently working, studying", that is acquiring knowledge. "The student time is the central period of formation of the human person, personality as a whole, demonstration of variety of interests" - writes N.A. Zimnyaya [8, p. 65].

Student age is the period of complicated structuring of intellect, intense and active socialization of a human being as a future "personality", a professional.

Age 18-25 years is the period of the most active development of moral and aesthetic senses, formation and stability of character, mastering a full range of social roles of an adult. This age is characterized by the fact that this is a sensitive period for the development of mental and physical strengths.

The period of studying at the university coincides with the period of youth, which is noted for complexity of formation of personality traits.

Youth is the period of making responsible decisions that determine the entire life of a student: choice of profession and his/her place in life, vital position, choice of a life partner, starting own family. Entering university enhances confidence of a student in own strength and ability, generates hope for an interesting life. In this regard, in the second and third years of study often emerge questions about the right choice of university, specialty, and profession. By the end of the third year the issue of professional self-determination finally resolves [6, p. 125].

Summarizing the above we can conclude that student time is a very difficult stage in life. In this phase not only physical but also mental development of human personality of the student and the rest of his/her life is finally formed. The most important thing at that age is to be understood, accepted and be reputed, to be given an opportunity to express him/herself, and his/her emotions and feelings be reputed. The most important thing for the student is to feel him/herself important, to communicate with people and these relationships to be productive, qualitative.
High levels of anxiety can interfere to pass successfully this stage in life. After all, secluded, unsociable, with constant presentiment person cannot feel him/herself comfortable and organize productive and qualitative relationships.

Highly anxious students tend to perceive threat to their self-esteem and vital activity in a wide range of situations and react very intensely, with expressed state of anxiety [4, p. 139].

Anxious students generally do not enjoy general recognition in the group, but are not secluded as well, they often are among the least popular, as often are diffident, secluded, unsociable, or, on the contrary, hyper-sociable, obtrusive, or embittered. The cause of the unpopularity as well can be their lack of initiative due to their diffidence; therefore, these students may not always be the leaders in interpersonal relationships.

It is known that anxiety is associated with functional features of the human brain, which lead to increased levels of emotional anxiety. The studies of phenomena associated with the potentials of the electroencephalogram showed changes in the state of functioning of the brain and identified plasticity of the nervous system.

Modern EEG studies reveal the dynamics of the functional activity of the brain and plasticity of the nervous system. Recording of the EEG data is a reliable method for studying the response of the central nervous system to external influences.

The purpose of this study is to compare the results of the electroencephalogram data with the results of psychological testing of anxiety level among modern students.

2. RESEARCH METHODOLOGY:

1. Electroencephalographic study of electrobiological brain activity of students in learning activity with 21 - channel electroencephalograph "Neuron - Spectrum 4." Alpha rhythm was analyzed on the background EEG and using functional tests (hyperventilation and photostimulation).

2. "Taylor manifest anxiety test" (adapted by Nemchina T.A.) to detect the level of anxiety of students.

3. Correlation of obtained data with the results of the EEG.

An experimental electroencephalographic study was carried out in the laboratory of preventive suicidology of KazNPU named after Abay.

The study involved students of pedagogical major of 1st–4th years of study of psychology-and-education faculty – total 50 students (10 males, 40 females) aged 18-21 years.

EEG study was conducted in the unipolar mode with 16 symmetrical frontal, central, parietal and occipital regions of the brain with the electrodes under system «10-20 GJ Jasper» with an indifferent ear electrode with an "Neuron-Spectrum 4" electroencephalograph. The subjects were placed in a darkened room, isolated from the noise and electromagnetic waves. Sampling rate of EEG made 500 Hz, amplifiers bandwidth made 0.5-30 Hz. The study was conducted with the use of functional tests: background EEG, photostimulation and hyperventilation.

Prior to EEG study, Taylor manifest anxiety test adapted by Nemchina T.A. was used for quantitative and qualitative assessment of the level of anxiety of the investigated.

Reliability and accuracy of the information obtained during studies were ensured with valid methods. Subsequently, Mann – Whitney U test was carried out for mathematical treatment.
Table 1: Calculation of grade sum (right hemisphere)

High and low levels of anxiety

\[ n = 13 \text{ (high level of anxiety)} \]

<table>
<thead>
<tr>
<th>background record</th>
<th>grade</th>
<th>fotostimulation</th>
<th>grade</th>
<th>hyperventilation</th>
<th>grade</th>
<th>after hyperventilation</th>
<th>grade</th>
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<td>269</td>
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<td>282</td>
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<td><strong>1307</strong></td>
<td><strong>176</strong></td>
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</tbody>
</table>

\[ n = 12 \text{ (low level of anxiety)} \]

<table>
<thead>
<tr>
<th>background record</th>
<th>grade</th>
<th>fotostimulation</th>
<th>grade</th>
<th>hyperventilation</th>
<th>grade</th>
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</table>
### Table 2 Calculation of rank sum (left hemisphere)

**High and low levels of anxiety**

\( n = 13 \) (high level of anxiety)

<table>
<thead>
<tr>
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<th>Grade</th>
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<td><strong>1308</strong></td>
<td><strong>210,5</strong></td>
<td><strong>2547</strong></td>
<td><strong>212</strong></td>
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</tbody>
</table>

\( n = 12 \) (low level of anxiety)
### 3. RESULTS

**Table 1**

Overall 2 grades of background recording: $187 + 138 = 325$

Calculated sum:

$$\Sigma (R_i) = \frac{N \cdot (N+1)}{2} = \frac{25 \cdot (25+1)}{2} = 325$$

<table>
<thead>
<tr>
<th>background record</th>
<th>grade</th>
<th>grade fotostimulation</th>
<th>grade</th>
<th>grade hyperventilation</th>
<th>grade after hyperventilation</th>
<th>grade</th>
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<tr>
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<td><strong>732</strong></td>
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<td><strong>1456</strong></td>
<td><strong>113</strong></td>
<td><strong>1116</strong></td>
</tr>
</tbody>
</table>

Table 2

2 grades of background recording: $181.5 + 143.5 = 325$

Equality of the real and estimated sums has been complied. We can see that on the high level of results on the right hemisphere sampling took place (area $n = 13$).

The results of EEG test showed excess of alpha rhythm indicators amplitude in the right hemisphere after background recording by 23%, photo stimulation by 46%, and hyperventilation by 53%.

The conducted analysis of the results of Taylor manifest anxiety test (adaptation by Nemchina T.A.) revealed among 32% - high, 60% - average, and 8% - low levels of anxiety.
4. CONCLUSION

Thus, examinees with high levels of anxiety experiencing higher than the amplitude of the alpha rhythm indicators to the right hemisphere. These results make it possible to predict the appearance of high anxiety in individuals with high amplitude alpha rhythm. This underlines once again the role of the right hemisphere in the regulation of emotional and volitional among today’s youth.

The results showed that the current problems of anxiety in students should be considered in the light of psycho-physiological data to provide individual and personal approach to the promotion of mental health of every student in higher education.

REFERENCES

EVOLUTION OF THE ETHICS OF SOCIAL WORK

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Abstract

This article shares the understanding about ethics of social work as a critical reflection on the practice of social work and the community of social workers with its specific values. The ethics of social work is an approved subject in the curricula of universities that prepare students in the field of social work. The historical assessment of the development of the ethics of social work shows a transition from anxiety and concern for morality (or immorality) of poor people towards care about the moral dimensions of social work as a profession.

Key words: ethics of social work, values, principles, virtues

As an independent research and academic field, the ethics of social work has a short history - from the late 40s and early 50s of the 20th century. A large number of literature textbooks, scientific monographs and popular publications on ethics of social work were created during that period. Today, the ethics of social work is an approved subject in the curricula of European and American universities that prepare students in the field of social work.

The importance of values and ethical issues of social work in recent years has been widely recognized. Much of the professional knowledge on these issues has been published since the early 80s. Nevertheless, the issue of the ethics of social work has been a central one from the start. The historical assessment of the development of the profession indicates the crucial importance of the main (basic) values and ethical principles (respect for human dignity, well-being and social justice). In the years, it is the faith in the values of social work and ethical reflection in terms of practice that have served as the basis for determining the mission of the profession.

However, social work is a legally regulated profession and perhaps the most powerful normative nature from the other so-called helping professions. Unlike many professions, the historical roots of social work are firmly grounded in ideas and concepts such as fairness and honesty. Throughout its whole history, the mission of social work has found justification and meaning primarily in the concepts of what is fair and unfair and in the collective beliefs regarding the rights and obligations that individuals have towards each other in society.

Regardless of the durability of the topic about ethics and the values of the profession, the understanding of social workers about what these terms mean and what their impact on the practice is, have been changing in the years. The history of the ethics of social work apparently is associated with the history of social work itself and its values, as well as with the development of social policies, established throughout the various stages of development of society, with the professionalization and training of staff for the practice, with the development of the mission and methods of social work. In the context of this commitment, the development of the ethics of social work can distinguish several main stages (Reamer,F., 1998; Bouquet, B., 2003; Leleux, C., 2003).

The first stage began in the late 19th century when social work was formally constituted as a profession.
At the root of social work lies a strong tradition of charity, a result of the Christian religion that preaches love for others and personal commitment to help and support those in need. This is the principle of Christian love (caritas).

Secularization of society (which begins with the French Revolution) marks the concept of charity, which now appears to be a demand for good morals based on the principle of aid/care. This is not the Christian but rather the secular principle, always based on the postulate that the solution to social problems requires a transformation of the norms of behavior.

During this period, the attention and interest of social work is oriented much more towards the morality of the client than towards the morality or ethics of the profession and those practicing it. The two most important options of the mission of the profession are organizing aid and response to the "curse of poverty." This care often takes the form of paternalistic attempts to "strengthen" the morality of the poor.

In the early 20th century the aims and value system of many social workers changed their addressee - from anxiety and concern about morality (or immorality) of the poor towards an asserted need for radical social reform, intended for a better solution of a number of social problems, such as those related to accommodation, health care, hygiene, employment, poverty and education. This period, accompanied by the rise of the movement of settler homes and shelters for the poor, is also marked by another factor - the intervention of the government in helping the poorest and most needy. However, the researchers of this period warn that we should not delude ourselves - the support and assistance is given according to merit, evaluated primarily according to moral criteria.

Caring for the morality of the client continues to weaken and to shift from the attention of professional life. The practitioners focus their efforts on the development, establishment and improvement of their strategic support and techniques about its implementation, on training programs and training. Gradually, the care about the morality of the clients has been replaced by the debate on the future of the profession. The area of social work starts to focus on the importance of expertise (psycho-social and psychiatric) in the individual work with clients (so-called "casework"), the policy of social support and the administration of social organizations or social reforms.

Regardless of the formulation of priorities, the issue of the morally correct behavior of social workers is not compromised, as they have always shown great concern about the group of core values through which the profession can be stabilized. Such values are considered to be dignity, uniqueness and belief in one’s own personality, self-determination, autonomy, respect, justice, equality and individuality (Biestek F., 1961; Hamilton G., 1951; Joseph M.V., 1989). The efforts of social workers to put ethics on the agenda of their professional life, are famous, although being rather modest. In 1919, for example, there was an attempt to prepare a professional code of conduct (Elliott L. J., 1931) and in 1922 the American Association of Family Support selected and appointed the Ethics Committee in response to questions on ethical issues in this area.

Thus, in the years until World War II, the morality of social assistants was the result of either religious practice (caritas) or secular humanism in the form of charity, and finally of a social position expressed in the principle of solidarity. As always, here as well, during this period, social work is linked to the idea of justice and solidarity, combined with the desire to remove injustice. Still, the opportunity of implementing them comes in the form of rules, norms and education.

The second half of the 20th century - in the late 40's and early 50's, the concern about the moral dimensions of social work as a profession is growing, although in a different form. Unlike previous periods, the mid-20th century is much more focused on morality and ethics of the profession and those
practicing it. That was a remarkable change. Nearly half a century after the formal (official) emergence of social work as a profession, it began to establish and develop ethical guidelines and instructions about proper, inherent to the nature of social work, behavior of its practitioners. After discussions and public debates, which went on for several years, the delegates to the conference of the American Association of Social Workers in 1947 adopted a code of conduct. As a result of this, in the years to follow, a number of articles with analyses on the subject appear (Hall, L.K., 1952; Pumphrey, M. W., 1959). In 1948, Belgium adopted the first Deontological code with which social work formalizes and recognizes its own values and introduces the use of the term professional deontology rather than professional ethics. The core values of the identity around which social workers unite are: respect for the individual and the right of dignity, unconditional acceptance of the personality and the associated with it tolerance and inadmissibility of injustice, faith in the ability of self-determination, inadmissibility of coercion or the imposition of an alternative, the right of privacy, which imposes the obligation of confidentiality and freedom of action at all times.

This change takes place in the context of a series of events which in a sense support it. The interference in the system of support from the government already defined as a social government is transformed as a result of the great social movements which won a number of fundamental rights related to the working conditions and protection against unemployment. Social security is developed on the basis of labor incomes and the principle of solidarity towards those who do not work. Meanwhile, in 1948 the Universal Declaration of Human Rights was adopted by the United Nations. Social rights acquired universality, democracy was reflected in the proclamation of equal rights, i.e. they acquired legal status and legal protection.

In this socio-political context the attention of social work towards the client is now primarily as of towards a human being who has adopted new individual rights guaranteed by government policy through the system of social protection.

Equality and fairness become central values that determine the content and direction of development of social work.

So, it can be summarized that the late 40s and early 50s of the 20th century appear to be constituted as a turning point in social work when the topic about ethics becomes a subject of research and special knowledge.

It is no surprise that in 1960 social workers shifted their main attention towards such concepts of ethics as social justice, rights and social reform. The public and political mood of this turbulent period flows into the preparation and practice of social work a very important series of values, such as social equality, the right of welfare, human rights, discrimination and oppression (Emmet, D., 1962; Levis H., 1972; Plant, R., 1970; Reamer, F., 1994; Vigilante, J., 1974). In 1960 the first code of ethics of the American National Association of Social Workers was adopted. The most visible expression of the idea of the ethics of social work however is the emergence of numerous articles in professional journals, as well as ambitious conceptual discussions in scientific papers (Levy's book Ethics and Values of Social Work, published in 1976, is pointed out to be the first and most thorough comprehensive exposition). Since then the specialized knowledge of the ethics of social work has been following its way of a complete development.

Particularly important during the 70s are the comments of the core values of social work. Discussions on them are separated into three types (Timms, N., 1983):

- General descriptive overviews of the mission of the profession and the core values, such as respect of individuals, assessment of individual capabilities to experience a change, the right of self-
determination, self respect and dignity, responsibility for social change and social justice, service to others, professional competence, professional integrity, enabling individuals to realize their potential, striving to satisfy basic human needs of individuals, protection against discrimination, respect of diversity, willingness to share professional knowledge and skills with others;

- Critical analysis of the values of social work (Whittington, C., 1975; Wilson, S. J. 1978);
- Empirical studies of the values which social workers share or own.

Much of the specialized literature on social work focuses especially on personal values of social workers. This is based on the understanding that values and personal beliefs of social workers about people living in poverty, ethnic relations, sexual orientation, civil disobedience, drug addiction, strongly influence the approach and attitude towards service users.

One of the earliest and most influential categorizations (Pumphrey, M. W., 1959) puts the core values of social work in three groups. The first group shows the relationship between the values of the profession and the values of the culture. The second category examines its own, inherent to social work values and in particular the way in which they are interpreted and implemented, as well as the encouragement of ethical behavior. The third group outlines the relationship of social workers with the specific groups of users and individual servicing, understanding of the values of consumers and responsibility towards them.

An important contribution to the interpretation of the problem about the core values of social work is the typology of Levy C. S. (1973). The first group includes "the guiding concepts of humanity," such as the concepts, which are inherent to individuals as value and dignity, capacity for constructive change, mutual responsibility. The second group is associated with "the expected perspectives for the people" such as the belief in the obligation of society to provide opportunities for independent, individual development, to provide the necessary resources and services for supporting people according to their needs, to prevent problems such as hunger, lack of housing and access to education, discrimination; provide equal opportunities for participation in all spheres of activities of the society. The third group includes "preferred means of working with people", such as the belief that people should be treated with respect for their dignity and right of self-determination, they should be encouraged to participate in the activities of the society and their right of uniqueness should be recognized.

Since the late 70s and early 80s social work redirects its interests towards the topic of applied and professional ethics. Similar to professions, such as medicine, law, business, journalism, nursing, it pays continuous attention to this issue. The attention of many theorists of moral philosophy is directed towards practical and requiring rapid resolution problems under the influence of several main factors. Firstly, the public debate on human rights, particularly the rights of prisoners, patients. Second, the development of technologies related to health care issues, such as reproductive health, organ transplantation, abortion, and third, the increased publicity of cases involving violations of ethical standards in social and professional life.

Thus, in the early 80s, along with the discussions about the core values of social work as a profession, an active debate began about ethical issues in a variety of applied and professional areas from the perspective of traditional moral philosophy. The importance of three research studies during this period is widely recognized: Ethical Decisions for Social Work Practice (Loewenberg & Dolgoff, 1982), Ethical Dilemmas in Social Service (Reamer, 1982), and Ethical Dilemmas in Social Work Practice (Rhodes, 1986). Despite the different approaches, each of these authors explicitly recognizes the importance of the moral philosophy, of ethical theories and principles to analysis and resolution of ethical issues in social work. Thus, from the mid 80s, the number of problems subject to analysis
increases in the literature devoted to the ethics of social work. The following issues adopt an independent understanding: the relationship of ethical theories (theology, deontology/ study about rights, utilitarianism and ethics of virtues) and ethical dilemmas that social workers face in practice, making ethical decisions, resolution of moral conflicts, applicability of various ethical principles and more.

The period from the mid 90s to the present, reflects an increased interest towards ethical issues in the profession. This is primarily related to work on systematization, justification and ratification of national ethical codes, as well as expansion of the ethical recommendations and standards for the practice of social work.

The earliest attempt to formalize ethical standards and formulate a code is the experimental draft ethical code, attributed to Richmond (Pumphrey, M. W., 1959). The early history of social work knows the activity of some European and American organizations for social work devoted to the development of the draft codes. In the years this activity has expanded and as of the present moment the International Federation of Social Workers (IFSW) on its website (www.ifsw.org) has a publication of the national association of social workers (members of IFSW), which have created and ratified the relevant national ethical codes (Australia, Austria, England, Bulgaria, Germany, Greece, Denmark, Ireland, Iceland, Spain, Italy, Canada, Luxembourg, New Zealand, Norway, Portugal, Romania, Russia, USA, Singapore, Slovakia, Turkey, France, the Netherlands, Hong Kong, Croatia, the Czechoslovak Republic, Switzerland, Sweden, South Africa, Japan).

Viewed as a whole, the ethical codes suggest rather different options - in terms of size (about 1 page of the Association of Black Social Workers in South Africa to 27 pages of the National Association of Social Workers in the USA), and in specific details, especially to the extent that discusses issues of professional practice, such guidelines or rules for advertising, fees, user access to the databases. There are, however, many similarities. The code of South Africa is very impressive since it is the only one in the form of an oath. Most of the codes begin with a list of values or principles, which generally include variants of: respect for the unique value of the individual, self-determination of the user; social justice and professional integrity. There is a trend that codes become larger and now many of them have sections that comment the responsibilities of the social worker in different modules - to consumers, the agency colleagues, community and profession.

One of the reasons for these similarities is that professional associations exchange codes, adapt or completely adopt aspects of other codes, if they find them appropriate. For example, the British Code of 2002 was strongly influenced by the Australian Code of 1999, the Luxembourg one is very similar to the French version of 1981. Many countries have adopted codes of ethics that are versions of present or past ethical concepts of the International Federation of Social Workers, although adapted to the national circumstances - such as those of Spain and Portugal. Other countries have incorporated the principles and standards of the International Federation of Social Workers as part of their own codes - such as Norway and New Zealand. Some of the codes were revised or created in the middle or end of the 90s of the 20th century and the early years of the 21st century. The Russian Code explicitly recognizes its indebtedness to the ethical requirements of the Associations in Australia, Denmark, Finland, United Kingdom, Lithuania, Poland and the USA. The codes prepared by the professional association in Romania (2004) and Turkey are taken from the USA Code. These two factors – that some countries have used codes developed by others and only adapted them, and that some versions of the codes are more recent than others, means that the differences in the form and content of the codes do not necessarily reflect actual differences in the practice of social work, its legal basis or cultural norms in different countries. A typical example is the Code of the Bulgarian Association of Social Workers.
(1999), which explicitly states that it "has been developed in view of the traditional Bulgarian values", but follows the standard format covering various professional responsibilities of the social worker.

In some cases the ethical codes have remained the same for decades, with minimum revisions and minor changes - phraseological and formal; others have changed significantly in style and content. For example, the Swedish Code from 1997 is a completely different document than the one from 1991. One part of the documents now contains a commentary on ethical issues and potential conflicts with very short ethical guidelines.

The general trend is that the codes are becoming longer and more detailed over the years by trying to cover a wider range of ethical issues in social work.

The codes are predominantly based on principles and not on personality traits, placing greater emphasis on the Kantian type of rights and obligations than on utilitarian principles. However, there are codes that refer to the characteristics or qualities of practitioners ("virtues" in ethical terminology). For example, the U.S. Code states that the principles and standards have to be applied by "individuals of good character" and the Code of Slovakia mentions "honesty" as an important feature (1997). The Code of Hong Kong (1998, p. 6) contains the following statement, related to the characteristics of the workers: "the social worker should maintain honesty, integrity and responsibility for the professional practice". The Russian Code establishes the importance of self-denial (altruism) of the social worker (2003).

Many codes specify integrity and decency as a core value of social work - permanent feature in the Australian and American codes by the end of the 80s. The South African Code speaks of service to the profession with "dignity, diligence and faith" and need to be "conscientious, honest, altruistic (able to experience self-denial)." However, this code is very different in style, tone and format from any other, explicitly adopting the form of an oath similar to the Hippocratic Oath in medicine. The Swedish document, in its commentary on the ethics of social work (not its brief instructions), makes partial reference to character traits.

For example, the meeting between people in public space is described with terms such as "compassion, respect, responsibility, commitment, trust, caution, equality, humility, sincerity" and the "moral maturity" is defined with concepts such as "compassion, respect, truthfulness, attention to detail, humility, courage and generosity". As mentioned earlier, the Swedish paper is not typical, since most of it contains a discussion of ethical issues with very brief instructions at the end. It is the only Code which refers to "love" as a "central theme" of ethics.

So, this short review and comment on the ethical codes, shows both similarities and differences of a different nature among them. What is common in the reviewed codes is the presence of some key elements in them such as: ethical principles; basic, respectively guiding principles; values, bound to respect of every human being as a value; respect for one’s dignity; encouragement of self-determination of users; working on the implementation of social justice; professional integrity. The reasons for the differences are most often associated with national legislation, the specifics of culture and the government, the role of social work in society, the structure and status of the associations, which create ethical codes. With all the variety, however, the codes must meet certain general requirements.

The emergence of ethical codes in social work means strive of the specialists to accept decisions and act according the adopted by them ethical norms. For example, the development and adoption of a code of ethics of the American social workers turns to be an essential condition which the members of the professional groups had to observe also in their everyday practical activities.

However, in order for these norms to play an active role in decision-making and to provide a permanent impact on the behavior of the specialists, their interpolation is quite necessary, as well as their conversion into a permanent internal regulative factor of the professional activity. Namely, the need to regulate the
behavior and actions of the social worker as a whole and in separate, individual cases, determine the need to develop and implement an ethical code of the social worker, which gives the opportunity of determination, regulation and evaluation of the activity of the social worker in general, and in particular, ensuring the integrity and universality of the ethical approach towards professional activity.

Although morality is an individual quality, there are principles, moral norms and rules, which are common for the representatives of the professional group, and hence for the professional activity as a whole. Together they act as a kind of a framework, determining the activity in general. The ethical codes of social work have precisely this kind of role and character - they define ethical limits within which the specialists organize their activity. The Codes do not provide firm and unambiguous recommendations on how to proceed in one case or another, meaning that the social worker takes decisions, implements them in life, verifies his/her actions with the code of ethics, without losing the independence and freedom of choice. On the other hand, the existence of a code does not free the social worker from the responsibility to independently take decisions and the responsibility for the outcome, related to the decision. The freedom and autonomy of the social worker does not lie in the refusal of normative foundations of a community, embodied in the form of a professional code of ethics, but in the adoption of decisions and actions based on them.

The basis of the ethical code of the social worker is the moral norm – the general requirements towards the conduct and activity of the social worker in his attitude towards the subjects of the social work (including clients), fair in all situations and circumstances. The norms of professional morality in social work are not only a tool for achieving the goals, but also a means to regulate the behavior of the specialist.

The general rules of professional morality in social work cover a wide range of real relations of the specialist. For example, the requirement to be humane, to show love towards people, to pursue the public welfare and the welfare of the client (IFSW and IASSW (2004), Ethics in Social Work Statement of Principles) naturally appear to be norms by which the social worker should be guided in his/her daily activities. At the same time their content is too vague - in each historical stage they have a specific content, reflecting the system of values of the particular time, society or social group.

The private norms of professional morality of the social worker reveal the specifics of professional activity, specifying one common standard or another. They summarize only some group of identical relations of the specialist towards the subject of the relations, and therefore, to some extent determine the nature of the actions of the social worker. To these norms, for example, refer honesty in dealing with clients, etc.

Apart from moral norms, the code of ethics of the social worker contains moral rules as well - specific requirements towards the behavior and activity of the specialist in the course of his work. Moral rules are flexible and mobile, reflecting the dynamics of the development of social relations and the system of social protection of the population, constantly expanding with new requirements in terms of their content.

The Code of Ethics also contains principles that should guide the social worker in his/her daily work, for example, to assist in meeting the reasonable interests of the client, to be objective in the evaluation of his/her circumstances and personal qualities, etc. It must be considered that the principles in the Code are not absolute. In case of conflict with the norms and principles of public morality, public morality prevails.

Thus, for example, virtually all codes contain in one formulation or another the principle of confidentiality in accordance with which the social worker is authorized to release information obtained
from the client or about the client only with his consent, and only to those persons who participate in solving the problem of the client. At the same time, there might be situations when the social worker may have information about a crime committed by the client or other actions related to bearing responsibility. In this case the social worker must be guided not so much by the principle of confidentiality but by his/her civic duty, as far as respect for confidentiality in a particular situation is harmful to the public interest and public morality.

Along with this, the code of ethics of the social worker, especially if it is a code adopted by an association of social workers from a multinational country, reflects to some extent the customs and traditions created in the process of creation of the first forms of mutual assistance, charity and therefore - of social work as a specific kind of professional social activity (see Code of social Workers of Russia). In the tradition of Russian charity there are such forms of activity as providing assistance of anyone in need, municipal and public support in the form of shelters for the poor, etc. Taking into consideration the national characteristics is an important factor that influences the effectiveness of social work, its status and prestige in society.

Ethical codes, adopted in different countries by the associations and unions of social workers, necessarily contain requirements related to the quality of the personality of the specialist.

In all cases, social workers understand that the conformity of the personality with specific requirements, which are expected from the specialist in the field of social work - to be honest, good, able and willing to compassion and empathy, to have willpower, etc. - would be an evidence of perfection of a person, who will not be easy to find in real world. A professional selection is not always possible and effective when employing someone. The same goes for an educational establishment of the specific field. In this respect the codes emphasize the need of continuous professional and moral improvement of the specialist, his/her personal growth, which could be reached as a result of constant self development.

From all the above it can be concluded that the code of ethics of the social worker, in all its strength and integrity, is not a closed system. It is open and dynamic, and this is understandable: the moral relations, norms and requirements, reflected in the Code cannot and need not be unaltered, they are required to reflect not only changes in society, the dynamics of its development, the change of status of various social groups and individuals, but also the changes which inevitably take place in this regard within the professional activity itself, its nature and content, forms and methods. These changes must be reflected in the content of the norms and rules, set out in the Code. The introduction of the new justified rules and regulations to be implemented in everyday professional activity of each of the levels of social work shall be encouraged.

With all the difference of the professional codes of conduct, adopted by social workers from different countries, as discussed in the previous part of the analysis, they all have common goals and objectives, which is a reason for their similarity. Simultaneously, ethical codes do have differences related to the specifics of the mentality of different peoples, their national customs and traditions, the level of socio-economic development and the status of social work in society.

If the actions and behavior of the social worker in the everyday practical activity, the main features of his personality, meet the requirements of professional ethics, codified in the Code of ethics, it can be concluded that they correspond also to the concept of fairness and good, social and personal welfare. Such conformity means that the actions, behavior and morality of the social worker meet the requirements of the prevailing morality in society, society's expectations from the profession and its individual representatives. All this makes it possible to speak about social work as a major factor in raising the level of public morality. Similar function of social work is carried out thanks to its positive
moral influence - directly on the participants in the activity - of social workers themselves, their clients and their environment, as well as on the society as a whole.

CONCLUSION

Changes in the understanding and approach of social workers towards ethical problems outline one the most important events in the professional history of social work. The modest concern about morality in the late 19th century and early 20th century grows up into an ambitious attempt to identify and solve issues on ethics and values of social work. Today, the profession faces new challenges. The community of social workers reflects a situation of its self-determination. The search for a new professional identity is directly related to the attitude towards the professional ethical education. In order to match its social mission, the community of social workers must accept as its special care the cultivation of the values of professionalism. Questions such as “what for” and “in the name of what” and not just “for what purpose” and “how” are of fundamental importance when it comes to understanding and realizing the nature and value of social work.

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FACTORs UNDERLYING HIGH SCHOOL COURSES IN JAPAN
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Abstract
Decisions about the type of courses offered in elementary school through high school have been based
on ideas about what education is and what it should provide to students. But no studies have attempted
to show statistically how these courses might be essentially alike or different in terms of abilities used
in and/or developed by the courses. In order to investigate factors that might underlie high school
courses in Japan, records of more than 700 Japanese high school students were analyzed in a principal
components analysis. After the principal components analysis was conducted using nine high school
course grades, it was determined that these courses loaded on three distinct factors, which were labeled
language, numerical, and spatial factors. These findings are discussed in greater detail, particularly in
terms of curriculum planning.

Key words: curriculum planning, psychological content of educational activities, academic
experiences and best practice

1. INTRODUCTION
Courses required in Japanese high schools are very much like those offered in the West. Though, as
Reischauer (1964) explains, the early educational system in Japan mirrored that of China in fundamental
ways, Japan was later much influenced by the West. Reischauer (1965) explains that Commodore Perry
and Townsend Harris “unwittingly” played a role in undermining the Tokugawa shogunate and returning
Emperor Meiji to the throne (p. 128). After Edo was taken and renamed Tokyo, or the eastern capital,
“an amazing series of reforms” began to take place (p. 128). During the next 45 years of the Meiji period,
Japan expanded programs to study the West, and sent representatives to study the best that the western
world could offer. For example, Japanese envoys studied the navy and merchant marine in England, the
army and medicine in Germany, the law in France, and business methods in the United States. According
to Reischauer (1965), the United States particularly influenced Japan in terms of education. For example,
Fukuzawa Yukichi, the founder of what would be Keio University, went first to the United States in
1860, and again in 1867. Joseph Nishima, the founder of Doshisha University, studied secretly there in
1864. Many American scholars also came to Japan during this period and profoundly influenced
Japanese education. For example, Dr. David Murray of Rutgers University came to Japan in 1873 and
served as advisor to the newly created Ministry of Education; Edward Sylvester, the zoologist from
Harvard University, introduced the disciplines of zoology, anthropology, and archaeology to Japan;
Ernest Fenollosa came to Japan in 1878 and taught western philosophy; and starting about 1859, many
missionaries influenced Japanese education, including Dr. Guido Verbeck, who contributed to the
eventual founding of what would be Tokyo University.

As a result of the European and American influences on education, Japanese leaders chose to use a
model of education that came to increasingly resemble western models (Reischauer, 1965). For example,
the Educational Code of 1872 first referred to the concept of universal education, and the curriculum around this time included six years of compulsory co-educational elementary school. After elementary school, male students could continue on to a five-year middle school, a three-year higher school, and a three to four-year university. The female students usually did not advance much beyond the equivalent of the boys’ middle school. This system changed after World War II, during the American Occupation, to an American system; that is, three years of junior high school also became compulsory. Beyond that, there were three years of senior high school, and four years of university. During this time, courses were changed, texts were rewritten, and the overriding goals were to help students move beyond memorization to “independent inquiry and thought” (p. 268). Though the Occupation also made efforts to reduce the power of the Ministry of Education in prescribing the curriculum and texts, the Ministry continued to control the educational system, albeit with many of these revisions. Today, the Ministry continues to set guidelines for the curriculum and materials used in schools throughout Japan. For high schools, the focus of the current study, the curriculum is nearly uniform, at least in terms of a set of courses that students take. These nine courses include: Japanese, history, civics, mathematics, science, physical education, art, foreign language (almost always English), and home economics.

This set of courses in Japanese high schools is familiar to students in the West as well, because the subject-centered curriculum is also the standard in most schools there. Still, that is not to say that this set of subjects is necessarily the best that schools can offer. Carr (2007) discusses one well-known opponent to the subject-centered curriculum, the American philosopher, John Dewey. Dewey thought that subjects “encourage artificial division between bodies of knowledge” that might need to be understood together (p. 8). Dewey advocated “more integrated or thematic approaches” to the way that educators organized learning (p. 8). That is, he viewed “knowledge and understanding” as akin to “skills or tools (or sets of tools) for managing or negotiating experience” rather than “reported facts or information” (p. 9). In short, despite the fact that the subject-centered curriculum is so familiar that it seems to be a given, there may be other more optimal ways to educate students.

In addition to criticism of the traditional subject-centered curriculum, there is also much diversity, and sometimes ambiguity, in the thinking of educational theorists, which also influences curriculum planning and types of courses offered to students. As Haertel, Walberg, and Weinstein (1983) point out, there is a “vast research literature’ that includes “amazing diversity” in terms of ideas and definitions of terms used (p. 75). Some well-known educational theorists include, for example, Carroll, Bloom, Gagné, Glaser, Bruner, Guilford, and Krathwohl. Though these and other models can contribute to general curriculum objectives, they often provide rather abstract descriptions of student behaviors. Also, educational theories tend to focus most on the cognitive domain, and only occasionally on the affective domain. As De Landsheere (1988) points out, both the affective and psychomotor domains have been given considerably less attention than the cognitive. In short, the current curriculum in Japan and the West, based as it is on the traditional subject-centered curriculum, and on such a wide variety of often abstract theories of learning, most of which focus on the cognitive domain, may not provide each student sufficient opportunities to develop his or her individual array of abilities in an optimal way. Therefore, the purpose of this study was to first discover how many types of abilities the current set of high school courses In Japan taps into, and then to consider implications for revision of the curriculum.

2. THE STUDY OF HUMAN ABILITIES

According to Pohlmann (2004), Charles Spearman attempted to determine the structure of the intellect in the early 1900s, and was the first to use the technique of factor analysis for this purpose. Thomson and Sharp (1988) note that Charles Spearman used school grades for his analysis and found one large
general factor of intelligence, called g, and a number of smaller ability components for individual subjects. They go on to explain that L. L. Thurstone also used factor analysis in 1938 to analyze abilities and found that intelligence did not include this general factor of intelligence, but instead consisted of an assortment of “independent, primary abilities” which included verbal, numerical, spatial, perceptual, memory, reasoning, and word fluency abilities (p. 263).

Messick (1992) summarizes the contributions of a number of other researchers who also studied abilities through factor analysis. These studies, he says, all involve “a hierarchy of narrow abilities subsumed under broader abilities of increasing generality” and tend to be similar in terms of the types of abilities found (p. 366). In 1949, Cyril Burt, like Spearman, used factor analysis to determine a hierarchical structure of the intellect model, but in constructing it, also used other criteria, such as research findings related to language development, special abilities, and language pathology. In his analysis, Burt also found g, which he called the “integrative ability of the mind” (p. 373). Besides g, he found four levels of abilities subsumed under g, sensation, perception, association, and relation (p. 366). Each of these levels of abilities were further subsumed by abilities. For example, the association level had several content factors, which were verbal, numerical, kinesthetic, spatial, and imagery abilities, and two formal factors, which were memory and “productive association” (p. 367). At other levels, Burt identified abilities such as aesthetic/artistic appreciation and reasoning, but his model focused most on the cognitive abilities noted.

Another well-known researcher that Messick cites was P. E. Vernon, who wrote the first edition of *The Structure of Human Abilities* in 1950, and the third edition, in 1971. Vernon used knowledge of subject matter, including school grades, and cognitive ability in deriving a structure for educational achievement. His model was similar to Burt’s in that it was also a hierarchy with “broad and narrow factors” (p. 367). Vernon found g, as well as two major group factors that were each further subdivided. The first group factor was verbal-educational (v:ed) and included verbal abilities, such as those used in reading, literature, and languages, as well as numerical abilities, such as those used in calculation and “quantitative reasoning” (p. 381). The second group factor was spatial, mechanical, and practical abilities (k:m) and included abilities related to scientific subjects. In addition to cognitive abilities, Vernon found evidence for “sensory, perceptual, imaginal, aesthetic, practical, psychomotor, physical, athletic, mechanical, and occupational abilities” (p. 374).

J. P. Guilford, another prominent researcher, contributed a model of intelligence known as the Structure of Intellect model; Messick considers Guilford to be the “premier architect of content/form infrastructure” (p. 369). Guilford did not think that g was necessary to his model of the intellect. He used five kinds of content (visual, auditory, symbolic, semantic, and behavioral) and six information forms or products (units, classes, relations, systems, transformations, and implications) to create a five by six grid. The grid produced 30 categories of knowledge or information that, according to Guilford, could be processed by the human brain in five different ways, resulting in approximately 150 different human abilities. A number of these abilities are clearly similar to those found by other researchers; for example, visual-figural ability is close to spatial ability, symbolic ability is close to numerical, and semantic ability is similar to linguistic. According to Guilford, these abilities are developed through experience and practice, or “repeated use of the five inborn operations to process information in the individual’s environment” (p. 369).

Raymond Cattell, who wrote *Abilities: Their Structure, Growth, and Action* in 1971, and *Intelligence: Its Structure, Growth and Action* in 1987, created another model of intelligence. Cattell is known for his view that there are two types of intelligence, fluid and crystallized. Fluid intelligence refers to the ability to adapt and use intelligence to solve any kind of problem (similar to g); reasoning abilities are subsumed
under this type of intelligence. Crystallized intelligence is akin to knowledge and skills developed through learning; this intelligence subsumes abilities connected to content, such as verbal and numerical abilities. In addition, he did not place \( g \) at the top of the hierarchy; instead, Cattell conceived of intelligence as “triadic” with three levels of abilities: general capacities, “agencies,” and “provincial powers” (p. 368). These three levels are three kinds of mental processes that join together in acts of cognition. According to Cattell, abilities are developed and become stable through learning experiences.

In his discussion of these factorial theories of intelligence, Messick compares and contrasts the work of two contemporary psychologists, Howard Gardner and Robert Sternberg, both of whom “aspire to provide seminal theories of the intellectual sphere” (p. 365). Messick notes that both “appeal selectively” to research about abilities derived from factor analysis, while “ignoring or downplaying aspects of factorial research that challenge or extend their positions” (p. 366). In criticizing the results of factor analytic studies, both Sternberg and Gardner contend that the rotation phase of factor analysis and subsequent interpretation concerning abilities is “mathematically arbitrary” (p. 371). However, Messick points out that “this mathematical arbitrariness was long ago tempered by the psychological principle of simple structure, which underlies the vast majority of modern rotational techniques” (p. 371). Messick points out that, despite the fact that factor analytic studies have differed in a number of ways, their results have largely agreed in terms of types of abilities and the organizational structure of abilities.

Gardner, well known for his theory of multiple intelligences, wanted to create a more comprehensive view of abilities and his theory, as originally expounded in his 1983 text, *Frames of Mind*, proposed that eight intelligences exist: linguistic, logical-mathematical, musical, spatial, bodily kinesthetic, naturalistic, interpersonal, and intrapersonal; in addition, he has been examining the possibility of an existential intelligence, but has not yet determined whether it meets all the relevant criteria. Gardner and Moran (2006) explained that this theory has come out of a synthesis of research from many disciplines and that the focus of the theory is how these intelligences interact because such interaction illustrates the way that minds function (p. 228).

Sternberg (2004), in response what he sees as limitations of the \( g \) factor and lack of an adequate theory of intelligence, has researched and written extensively regarding his own theory of intelligence—the theory of successful intelligence. Successful intelligence is defined “in terms of the ability to achieve success in life in terms of one’s personal standards within one’s sociocultural context” (p. 186). The three aspects of successful intelligence, according to Sternberg, include analytical, creative, and practical skills (p. 187). These skills, he said, are central to universal processes underlying intelligence. In recent years, Sternberg (2007) has extended his model of intelligence to also include the reasoning and moral judgment that are essential to wisdom.

Sternberg (1998) makes the point that defining ability or intelligence, and differentiating it from achievement or expertise can be difficult. As he notes, many tests of ability include items that are similar to achievement test items. For example, tests of ability often include reading comprehension, analogies, and tests of reasoning, but these kinds of items also are used to measure achievement, and are taught in school, as well. In his view, intelligence is actually a kind of “developing expertise” (p. 11), a view that stands in opposition to what he calls the more conventional view that intelligence is fixed and determined by heredity. According to Sternberg, the most informed view is that intelligence has “genetic and environmental origins” and that these interact in ways that are not, as yet, fully known” (p. 13). Messick (1992) concurs, noting that a theoretical view that explains the interaction among abilities, knowledge, personality, and affect is still largely lacking. Emphasizing the importance of environmental origins of intelligence, Sternberg contends that there is “substantial evidence” that abilities can be modified to some extent, particularly through schooling.
Another theory of intelligence concerns the affective domain, the theory of emotional intelligence (EI). EI also does not characterize intelligence as a single factor. As Mayer, Caruso, and Salovey (1999) pointed out, this theory was developed in the 1990s and defines EI as an ability to recognize emotions, draw conclusions about them, and take appropriate action (p. 267). In addition, EI is characterized as a “hot intelligence;” that is, it is intimately tied to how the self deals with emotion (p. 268). Emotional intelligence was conceptualized as including four areas: the abilities to recognize, take in, understand, and handle emotions (p. 273). Mayer, Caruso, and Salovey also constructed a measure of EI, called the Multifactor Emotional Intelligence Scale (MEIS) (p. 273) and tested it. As a result, they concluded that EI was able to qualify as an intelligence because it met the necessary criteria of indicating mental ability, being like, but not the same as, other mental abilities, and growing with age and experience (pp. 269-270). Though these researchers said that we are only just beginning to learn about emotional intelligence, EI is probably another important component of general intelligence; accordingly, they suggested that defining intelligence in a way that includes EI will enable researchers to predict important achievements in life with greater accuracy (p. 295).

3. FACTOR ANALYSIS

As Pohlmann (2004) explains, factor analysis is a technique based on correlational analysis that has had a number of uses, including reducing a large set of variables to a much smaller set of components or factors. These components or factors are viewed as representing the latent or underlying structure of the measured variables. Green and Salkind (2011) explain that factor analysis involves two stages. The first is factor extraction; in this stage, one decides how many factors underlie the measured variables. Most often used for extraction is Principal Components Analysis (PCA). PCA produces a scree plot diagram and a number for each factor that represents its variability (called an eigenvalue). Researchers, considering their own hypotheses, examine the scree plot and the size of the eigenvalue of each factor, in order to determine the number of underlying factors. Some researchers suggest also using Maximum Likelihood Factor Analysis because it provides a statistical test to determine whether the number of factors extracted is correct. As Kline (1994) notes, usually the results provided by the Scree Test and the Maximum Likelihood Factor Analysis agree.

The second stage of factor analysis is factor rotation, a step that helps facilitate the interpretation of factors and allows researchers to make final decisions about the number of factors. This step is needed because, as Field (2005) explains, results from the first step of extraction typically show most variables loading highly on the first factor, and to only a small degree on other factors. Rotation allows researchers to see factors more clearly. There are two kinds of rotation used—orthogonal and oblique. Orthogonal is most used because it does not allow factors to correlate; therefore, it tends to create more independent factors. Varimax is an orthogonal method which is often recommended and probably used most. Field (2005) calls it a “good general approach” (p. 637). However, both Field and Kline (1994) agree that when dealing with human abilities and psychological constructs in the real world, it is unlikely that the factors will be uncorrelated. In the case that factors are regarded as correlated, the oblique method of rotation is preferable. Klein (1994) explains that the oblique method is much more complex than the orthogonal; nevertheless, one of the most common oblique methods, Direct Oblimin, is usually effective and can result in simple structure, meaning that factors have a few high loadings but zero or nearly zero loadings on other factors. This kind of pattern of loadings in the factor matrix means that the matrix is easily interpreted and replicable in future studies, both desirable outcomes. According to Carroll and
Schweiker (1951), Thurstone was the first to write about the importance of simple structure and said that oblique methods were usually needed to attain it.

After factor extraction and rotation are completed, names are given to each factor. As Green and Salkind (2011) note, the researchers must look at how measured variables load on each factor. Specifically, they look at the largest loadings on each factor and choose a label that best describes the construct that these items measure.

4. METHOD

The participants were members of five cohorts of students who enrolled from 2004 to 2008 in an English-medium university in eastern Japan. Of the 718 total participants, 217 were male, and 501 were female. When they entered as freshmen, they ranged in age from 18 to 33, though 95% were either 18 or 19. Participants were Japanese, and attended high school in Japan. Permission to conduct this study was obtained from the President of the university, after which high school grades were obtained from the Admissions Office.

High school seniors in Japan typically take the following nine courses: Japanese, civics, history, math, science, health education, home economics, art, and foreign language (English, and very occasionally, another foreign language). Students can also take elective courses in religion or other areas, but the majority of students do not. Individual high school course grades in Japan are in the form of a number from 0 (the lowest possible grade) to 5 (the highest possible grade).

The high school grade records of students were obtainable only by going through transcripts stored on paper in notebooks maintained by the Admissions Office. In order to obtain these records, I was given permission to view these transcripts and record these data. All data were checked and double-checked as they were entered. The work was done in the Admissions Office records office so that all material would be kept confidential; though the students could be identified in this phase of the research, the final records were labeled only with a reference number, and not with student identification numbers or names.

I evaluated the data to ensure that they were ready for analysis, according to recommendations of Tabachnick and Fidell (2007, pp. 60-92). High school grades were assessed for dimensionality. The principal components analysis of nine cumulative high school grades (in Japanese, history, civics, math, foreign language, science, health education, art, and home economics) resulted in a large factor with an eigenvalue of 5.01, accounting for 55.65% of the variance; a second factor with an eigenvalue of 9.23 that accounted for 10.26% of the variance; and a third factor with an eigenvalue of .70, accounting for 7.73% of the variance. According to Field (2005), any factor that has an eigenvalue of approximately .70 can qualify as a factor, according to the criterion put forward by Jolliffe. This conclusion, that three factors were present, was also confirmed by the scree plot produced by the Principal Components Analysis.

These results, that there were three factors underlying high school grades, agree with the work of others. Kline (1994) notes that researchers have consistently found three factors underlying intelligence, a more specific general intelligence factor, verbal ability, and spatial ability (p. 12). Messick (1992) also notes that results tend to be “imbalanced in favor of verbal, reasoning, and spatial abilities” (p. 374). Therefore, based on a consideration of such findings, as well as conjectures about individual high school grades, it was hypothesized that three academic factors underlie the high school grades.
A Maximum Likelihood Factor Analysis was then conducted using the high school grades, in order to confirm the presence of three factors. Based on the significance testing provided by the Maximum Likelihood Factor Analysis, it was determined that three factors were indeed present. The three factors were rotated using Varimax, an orthogonal method of rotation, because it is most commonly used due to the ease in creating and using factor scores, and in reporting results (Tabachnick & Fidell, 2007). However, as Field (2005) and others have noted, real-world abilities are usually correlated. Therefore, the oblique method of rotation was also carried out, using Direct Oblimin.

5. RESULTS

Results from both the Varimax and Direct Oblimin methods are presented, as recommended by Field (2005). The rotated solutions for each method are shown in Table 1 and Table 2 below. As can be seen, the results produced by the Direct Oblimin method present a clearer picture, one that is closer to simple structure, in which variables load clearly onto only one factor. Factor loadings that are generally considered important have a value of about .30, according to Field (2005), though smaller loadings might also have importance because of the large sample obtained for this study.

Results in both Table 1 and 2 reveal that four high school subjects load strongly onto the first factor: Japanese, history, civics, and foreign language. The results produced by Direct Oblimin show the desired simple structure as well. The subjects loading onto the first factor require a variety of abilities, but ability to work with language is of prime importance in each. Therefore, the factor was labeled Language Ability. As noted earlier, this factor accounts for the majority of the variance. As a result, some past researchers might have considered this large factor to be general intelligence, or $g$. However, as Messick (1992) notes, a heterogeneous sample tends to increase the size of this factor. In other words, the size of the factor may not simply be an indication of the importance of the factor, or an indication that it represents general intelligence; it may be more of a reflection of the heterogeneity of the sample. Considering the courses that load onto this factor, it is reasonable to label the factor Language Ability, and not $g$.

The second factor has two strong loadings: mathematics and science. The Direct Oblimin results show the desired simple structure. Subjects loading onto the second factor require numerical and analytical ability; therefore, the factor was labeled Numerical Ability. This factor accounts for 10% of the variance.

The third factor has three loadings from physical education, art, and home economics. Again, Direct Oblimin results present a clearer picture. (However, the picture for home economics is not as clear. This course comes close to also loading on the Language Ability factor as well.). The subjects loading onto the third factor require spatial, kinesthetic, and creative abilities. In order to include these types of abilities, the factor was labeled Spatial Ability. Gardner (1983) explains that spatial intelligence includes “loosely related capacities” such as being able to use and transform mental images and recognize objects and scenes (p. 176). This type of intelligence is also related to memory, in that it allows a person to relate patterns to other patterns previously met, and to make sense of and reuse this knowledge (p. 195). This Spatial Ability factor accounts for nearly 8% of the variance.
Table 1. Summary of Factor Loadings for the Three-Factor Varimax Solution
For High School Course Grades

<table>
<thead>
<tr>
<th>High School Course Grades</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese</td>
<td>.74</td>
<td>.32</td>
<td>.37</td>
</tr>
<tr>
<td>History</td>
<td>.66</td>
<td>.37</td>
<td>.26</td>
</tr>
<tr>
<td>Civics</td>
<td>.65</td>
<td>.39</td>
<td>.19</td>
</tr>
<tr>
<td>Foreign Language</td>
<td>.54</td>
<td>.26</td>
<td>.32</td>
</tr>
<tr>
<td>Mathematics</td>
<td>.36</td>
<td>.72</td>
<td>.22</td>
</tr>
<tr>
<td>Science</td>
<td>.47</td>
<td>.71</td>
<td>.29</td>
</tr>
<tr>
<td>Physical Education</td>
<td>.26</td>
<td>.29</td>
<td>.42</td>
</tr>
<tr>
<td>Art</td>
<td>.15</td>
<td>.10</td>
<td>.63</td>
</tr>
<tr>
<td>Home Economics</td>
<td>.41</td>
<td>.32</td>
<td>.54</td>
</tr>
</tbody>
</table>

Note. $N = 649$. Boldface indicates highest factor loadings.

Factor 1 = Language Ability; Factor 2 = Numerical Ability; Factor 3 = Spatial Ability.

In short, the Direct Oblimin results present the clearer picture, and indicate that abilities required for and developed by these nine high school courses, in order of the variance accounted for, are language, numerical, and spatial abilities. In general, the results confirm the notion that ability/expertise/intelligence is composed of separate kinds of abilities. These abilities were also derived by Thurstone, Burt, Vernon, and Gardner in their studies and are similar to the typical research findings reported by Kline (1994) (general intelligence, verbal, and spatial ability) and Messick (1992) (verbal, reasoning, and spatial abilities). Unfortunately, it is not possible to compare these results with other such studies in Japan because no other similar studies were found.

The findings contribute to the literature in a number of ways. First, to the best of my knowledge, this is the first study in Japan to derive factors from high school grades. These findings could potentially contribute to educational research in a number of ways. For example, educational researchers and curriculum planners in Japan and elsewhere might use this kind of information as a starting place for investigating how different kinds of abilities/intelligence are used in different types and levels of study, as well as in determining how the high school curriculum might be revised in a way that would provide students more opportunities to develop a wider range of abilities in school.
### Table 2. Summary of Factor Loadings for the Three-Factor Direct Oblimin Solution For High School Course Grades

<table>
<thead>
<tr>
<th>High School Course Grades</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japanese</td>
<td>.91</td>
<td>.09</td>
<td>.07</td>
</tr>
<tr>
<td>History</td>
<td>.76</td>
<td>-.07</td>
<td>-.04</td>
</tr>
<tr>
<td>Civics</td>
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<td>-.12</td>
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<tr>
<td>Foreign Language</td>
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<td>.02</td>
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<td>Mathematics</td>
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<td>.01</td>
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<td>Art</td>
<td>-.01</td>
<td>.01</td>
<td>.67</td>
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<tr>
<td>Home Economics</td>
<td>.29</td>
<td>-.15</td>
<td>.42</td>
</tr>
</tbody>
</table>

Note. *N = 649*. Boldface indicates highest factor loadings.

Factor 1 = Language Ability; Factor 2 = Numerical Ability; Factor 3 = Spatial Ability.

### 6. LIMITATIONS

As with any study, there are a number of potential limitations. First, the study concerns high school grades from hundreds of high schools across Japan. Because the grades resulted from assessments of individual teachers in many different high schools, these grades are very probably not completely reliable or comparable, therefore creating error, and affecting the results of this study to some degree. In addition, though the factor analysis results with Direct Oblimin were usually close to simple structure, making it plausible that the results here could be replicated in future studies, the results for home economics were not as clear cut. Therefore, results of future studies using this variable might be somewhat different than those of the present study. Another point worth discussing concerns culture. Since this study concerns Japanese students in Japanese high schools, some may question whether abilities underlying these courses differ in some regard from those derived by studies in the West. After all, as Sternberg (2004) points out, intelligence is always “displayed” in some particular context of culture (p. 1427). Nevertheless, he also notes that some elements of intelligence “transcend culture” (p. 1428). Despite the fact that these students are Japanese, in a Japanese context, it seems likely that the underlying abilities observed here are not bound by culture, but are representative of human abilities. Finally, according to Messick (1992) the abilities derived from one particular study using factor analysis can be limited, particularly to abilities in verbal, reasoning, and spatial domains. Despite this tendency, Messick does not think that factor analysis is necessarily limited “either in principle or practice” (p. 374); he says that one can see the wide range of abilities when one examines a number of factor analytic studies as well as program research. In this study, the abilities found were indeed limited—to only three; perhaps it is difficult for one study to derive more. On the other hand, is it also possible that the high school curriculum and courses are too narrowly focused on developing a small number of abilities, rather than a broad range of human abilities?
7. DISCUSSION

The results here show that the nine courses in Japanese high schools develop a limited range of abilities (language, numerical, and spatial). In other words, the results here seem to agree with Borland (1997), that the wide range of different intelligences have had “unequal treatment in school curricula” (p. 13).

What should schools aim to do instead? According to Sternberg (1998), schools should help students develop expertise by not only providing students a strong base of knowledge, but also providing opportunities to develop “reflective, analytical, creative, and practical thinking” through “purposeful and meaningful engagement in a set of tasks” that lead to expertise (p. 18). Borland (1997), discussing gifted education, says that schools need to develop “multifaceted programs” to help students develop each kind of ability (p. 14).

But how can Japanese (and western) schools develop the sort of curriculum that develops a wide range of abilities? As Borland (1997) says, there are many practical problems involved in identifying abilities and then creating curricula to develop them. In Japan particularly, where the Ministry of Education has historically retained tight control over education, there may be some resistance to revising the curriculum or courses to be required in schools. Nevertheless, rather than aiming for “the curricular lockstep,” schools in Japan and around the world can do more to help students “capitalize on strengths and compensate for or correct weaknesses,” what Sternberg (2008) considers essential to successful intelligence (p. 153). For example, teachers can experiment more with using different teaching styles with students. As Sternberg explains, teachers can ask students to “analyze, evaluate, compare and contrast, judge, and critique” at times; at other times, they can ask students to “create, invent, discover, imagine, and suppose,” or “apply, put into practice, implement, and use what they have learned” (p. 153). In addition, schools could make more effort to apply psychological theories in order to develop a wider range of abilities that extend into psychomotor, affective, and other domains. Such variation in teaching methods and application of psychological theories could take place within the curriculum as it now stands.

However, other, more radical changes could include changing the curriculum and courses offered. Taking ideas from Dewey, curriculum designers could consider changing from the subject-centered curriculum to one that is more integrative and also allows direct teaching of thinking and learning. In short, if schools in Japan and elsewhere were more open to revising the curriculum, even in small steps, and to applying psychological theories to education, it could potentially allow students to develop more abilities, and to buttress both their strong and weak abilities.

As Sternberg (2008) points out, schools that apply psychological theories to education can reap a number of important benefits. Theories lead to ideas for appropriate assistance to students, as well as assessments. In addition, by putting theory into practice, one can test the theory and later revise it, thereby improving not only the theory, but also the coherence and quality of the educational system for students. In this testing of theory, Spearritt (1988) notes, more and more comprehensive factor studies of abilities are needed because results are “highly relevant to the design of school curricula” (p. 654).

Finally, why should schools make these time-consuming and potentially difficult changes? According to Sternberg (2008), if the curriculum is tailored to students’ abilities, students will excel in school. The alternative, not responding to students’ abilities, puts students “at a disadvantage in course after course, year after year” (p. 155). Schools should aim to treat students fairly, as well. As Borland (1997) says, the ultimate goal is to provide the best education to every child. By doing so, schools help students realize their potential as adults, and thereby make “an investment in the future” (p. 15).
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DEVELOPMENT OF PHYSICAL TRAINING AND SPORTS DEPARTMENT

STUDENTS’ PERSONAL COMMUNICATION POTENTIAL

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Abstract

The article touches upon the question of students’ personal potential development which is regarded as
the core competence of the expert to-be in the sphere of physical training and sports; based on the
results of a theoretical research it expounds on the concept of personal potential; the communicative
aspect is singled out as an essential system-forming component of personal potential; the psychological
culture of communication, exercised in an educational institution, is defined as one of the most
significant factors in developing a student’s personal potential. Dialogic communication culture is seen
as an optimal communication style. The article offers a rather detailed description of the program for
developing a student’s communication potential as well as of the conditions which nurture such
development.

Key words: personal potential, professional competence, competency, communication potential,
psychological culture of communication.

The introduction of a new generation of educational standards is not only an important step on the way
of the Bologna process, but allows universities to turn to specific measurable indicators of the learning
process and its outcome. The new generation of federal state educational standards (GEF OP) declares
that the assessment of learning outcomes should be conducted on the level of competence achieved by
the student.

Competence is the ability (willingness) to a specific activity with the application of knowledge, skills
and abilities, which also include the personality. The formation of certain competencies serves as a basis
of the acquisition of graduate competence in the chosen field of professional activity. The implementation of the competence-based approach should include a broad use of new active and
interactive forms of training (computer simulations, business and role-playing games, analysis of
specific situations, psychological and other training) in the classroom, combined with extracurricular
work. In addition, the transition to the new system of standardization of basic educational programs
requires new methods of control (a set of assessment tools) and control (feedback elements) of the
learning process of students.

According to GEF OP a graduate of the Faculty of Physical Education and Sports should have a number
of common cultural and professional competencies [10], should own culture of thinking, the ability to
synthesize, analyze, process information, goal setting and a choice of ways to achieve it (OK-1), to be
able to logically correct, reasonably and clearly build oral and written language (OK-4), have the
willingness to cooperate with colleagues, work in a team (OK-5), to be able to critically assess their
strengths and weaknesses, and identify ways to choose the means of the strengths and deficiencies ( OK-
9), to realize the social importance of the profession in the field of physical culture and national interests,
the value of work and service to the Motherland, have a high motivation to perform professional activities and improve their cultural and professional level (OK-10), to demonstrate the fundamentals and techniques of social, humanitarian and economic sciences in addressing social and professional tasks (OK-11); own methods of communication and the ability to use them when working with a team and each individual involved (ПК-31).

The above-listed competencies are the basis of the communicative competence of the potential of an individual graduate and form his competence in the chosen field of professional activity. In science, the notion of personal potential is most often used in connection with the term "resource" (sometimes - "capital"), while it refers to the intellectual, personal, moral, spiritual, and other resources. Researchers (V.N. Kosyrev, E.F.Zeer, V.I.Noskov, A.M.Pavlova, T.P.Skrypkina) tend to view their personal potential as a structure, the components of which form two interacting factors. First, this is a real possibility of an individual describing the level of his current development. This includes knowledge, skills, abilities, physical and intellectual potential. According to the authors, it is realized at the expense of the components of two levels: the psycho-physiological and qualification. The second factor is the aspiration and the overall thrust of the individual, based on a system of relations and perceptions of an individual's self and the world, in the hierarchy of values and worldview (A.M.Pavlova). This is the third level of personal potential - motivational in nature and psychosocial in origin, an important psychological component of MDM is a feeling of self-sufficiency and self-belief.

V.N. Kosirev highlights another factor - the desire to expand their potentials in the structure of personal potential [28]. It manifests itself in the desire to test yourself and find new opportunities, making best use of existing individual inclinations and turn them into power. This is what Maslow called self-actualization [15]. As a result, we have a fourth level of personal potential, which is a consequence of the subjective experience of success and professional competence of the individual. So, if we sum up, from the point of view of V.N.Kosyrev, personal potential is achieved by a previous personal development opportunities to ensure receipt of personal and meaningful and socially-valuable achievements in different spheres of social functioning. Personal potential is based on some personal resource, but is not limited to it. Resources are a simple set of existing stock, taken by itself, without regard to what can be achieved with them.

The concept of personal potential is inseparably linked with the category of (transitional deployed in time of movement from lower to higher), which accounts for its systemic nature. Based on the analysis produced the following definition of personal potential. Personal potential of this system properties that form the basis of personal and professional and personal development of the individual (in the case of the development of the individual as a professional, as a specialist in any professional activity) and provide the appropriate level of achievement in training, follow-up, and in the development of self.

Personal potential consists of the following main components, each of which in turn may be considered as a potential systemic:

1. Epistemological (cognitive, intellectual) capability. This includes a system of professional knowledge, skills and ideas and worldviews held by the individual. Psychological basis and mechanism of formation of this substructure is the intelligence and mental capacity of the individual, perhaps professionally oriented.

For certain types of professional activity epistemological capacity can be extended by the highly specialized skills.
2. Axiological potential. It includes a system of goals, values, and orientation at values in the profession, and social attitudes of the individual. The highest value in this substructure has a total meaningfulness of life, understanding of the purpose of life, the emotional richness of life, satisfaction with its results (V. Frankl, D. Crumbo).

In the process of professional development of the individual, as well as in general education, special importance for the formation of highly motivated students learning and striving for professional achievement gain value orientation is closely related to their social and psychological attitudes to life and learning.

In axiological potential there may be included such social attitudes as set-orientation "altruism, selfishness," "process-outcome", "freedom is power", "labor-money" and others.

Social and psychological setting, on the one hand, defines the main target and values of the individual in his training and other activities. On the other hand, expressing some social significance and value of a particular orientation, socio-psychological setting conducts to the formation of achievement motivation and determines the value-laden done by the activity.

3. Creativity. In this substructure in accordance with the available modern psychological science the data include: 1) higher levels of cognitive processes, 2) the special structure of the need-motivational sphere, and 3) emotional profile, 4) the structure of voluntary regulation, and 5) I-concept of personality. All of these features offer an individual an opportunity to build, to create, to find something new, make decisions and act originally and outside the box.

4. Communicative potential is a system of properties, skills and abilities to ensure the success of its communication, understanding and mutual understanding with other people, and the ability to master the language skills of communication and communicative abilities and specific skills and communication skills.

5. Artistic potential includes a system of aesthetic tastes, preferences, artistic and creative abilities and possibilities of man, the severity of the identity of "aesthetic person" by E. Spranger.

6. Professional potential. Professional capacity of the individual is considered in relation to the analysis of training people with any physical activity. It can also be taken into account in the organization of core and preprofile education today having become fashionable in the general secondary education. In our opinion, this potential is reflected in the professional attitudes, inclinations, preferences in the chosen activities in their corresponding personality type. It is most vivid expression it finds in the level of motivation of professional achievement, as well as the orientation of motifs. And an important characteristic of a potential professional capacity is student-professional type of a person who has chosen the most relevant features of his profession. To assess the potential in this sense, personality typology of E. Spranger, J. Holland, D Selye, RM Ginsburg can be used.

It is assumed that a certain type of personality should match your type of professional environment that provides a full implementation of the individual in the activity.

7. Spiritual potential. It includes a system of spiritual and moral values and attitudes of personality, his value and meaning and life orientations, core beliefs and philosophies that define the human appreciation of their responsibility, freedom and transcendence.

Spiritual potential, or spirituality in a broad sense, expresses a person's ability to distinguish and choose the true moral values and put them in the bottom of his life. Spirituality is understood by us as a deeply personal way of reflection and understanding of reality, a deterministic orientation of knowledge and
human activities at human values. In this case, the key moral values are defined such as: goodness, beauty, truth, freedom, responsibility, personal transcendence. The unifying characteristic of spirituality is love.

The central component of personal potential, leading the development and all the other structural components, in our opinion, is the communicative potential of the individual. Communicative potential is a system of properties, skills and abilities to ensure the success of its communication, understanding and mutual understanding with other people, and the ability to master the language skills of communication and communicative abilities and specific skills and communication skills.

Professionally oriented consideration of the communicative potential suggests a certain level of development of the communicative competence of the individual. A high level of communicative potential, for example, in relation to the professional development and personal development, referred to as professional communication, which we define as a deeply personal level of competence can not be reduced to knowledge and communicative skills.

The analysis of the literature on communication skills and communicative potential of showing that their nature, structure and definitions of various authors are treated differently, both in terms of conceptual and essential basics. In all approaches, there is no element of complementarity, there is no single conceptual framework. The vast majority of existing approaches is differentiated in two areas: personal and subjective Procedure Procedure. Moreover, the selected direction does not determine personality-oriented spiritual plane of communication, presenting the communicative potential of the individual as an instrument of influence, influence, control, correction, etc., and not as a dialogic communication skills in the interpretation of interpersonal (Y.N.Emelyanov, S.W.Zhukov, L.A.Petrovskay, A.V.Rastmannikov, A.A.Kidron, etc.). In these studies, communication skills and communicative potential are considered to behave in a social dialogue, social, perceptual, Gnostic, expressive, information and communication, behavioral skills, communication skills [1, 2]. However, the idea of the high level of communication that meets the criteria of professional competence, it includes both personally and spiritually oriented dialogue.

This principle is particularly vigorously implemented using psychological type of dialogic communication culture of the educational institution [11].

Under the psychological culture of communication, we mean a system of norms, values, motivation and target setting, certain models, forms, methods and styles of behavior and relationships in a group of educational institutions that are practiced in the educational work and communication of teachers and students in the process of formation of professional competencies. We believe that this system has a significant influence on the formation of attitudes, assimilated by students in learning and communicating with teachers, values and personality traits of business graduates that develop their personal potential.

According to our study, the optimal condition for a full-fledged professional growth specialist, the development of his personal potential is student-oriented dialogic communication culture in educational institutions [5, 11]. The dialogic style of interaction and communication between people harmoniously integrates interpersonal orientation, benevolence and tolerance clan organizational culture of the educational institution; positive elements of stability and hierarchical culture, dedication and efficiency of the market culture, altruism, dedication and creative direction adhocratic culture. Dialogical paradigm in psychology is not just a certain approach to communication, but a deep
understanding of personality and its development (M.M.Bakhtin, M. Buber, G.A.Kovalev, A. F. Kopyev, V. A. Petrovsky, N.D.Pavlov, I.A.Zachesova, etc.).

The main signs and regulations of the dialogue are considered to be the following:
1. The dialogue implements active dialogic relation to the other party as both active and equal, regardless of age, level of intelligence and ability.
2. In the dialogue there realizes unconditional acceptance and recognition of the uniqueness of the partner and the uniqueness of his personality.
3. In the dialogue a partner is taken without an estimation.
4. The dialogue practices mutual goodwill and credibility in relationship partners.
5. The dialogue participants are emotionally and personally disclosed.
6. Mutual sincerity is typical for a dialogue.
7. The dialogue participants are free from stereotypes and prejudices against each other.
8. A dialogue is a creative communicative activity that can significantly enhance the creative activity of the partners.

Thus, combining the creative intellectual and communicative activity, a dialogue is essential to the realization of personal potential in any field.

The formation of the communicative potential of the individual students, meeting the requirements of the professional competence of the expert on the background of increasing student-centered dialogic communication culture in the educational institution has become an aim to develop a program for the development of personal potential of students of the Faculty of Physical Education and Sports, UNN named after N. I. Lobachevsky.

The basic principles of the program of development of individual potential of students, are considered as following:
1. Using this program is most appropriate and effective for targeted optimization of the organizational, cultural and socio-psychological training conditions prevailing in the educational institution. This naturally implies the second position.
2. The program of development of personal potential of students should be paired with purposeful work with the faculty and student teams to optimize the psychological culture of communication, its serial dialogization, enhancing the creative, business and moral value-orientations. In our opinion, the program development of personal potential of students should contain measures aimed at the formation of all its components: the epistemological, axiological, creative, communicative, artistic, professional, and spiritual. But obviously, this is the problem which is quite heavy and requires considerable attention. Its solution is a lengthy process, which one must devote his entire professional life to. Within the framework of a short-term study it is not possible to solve it, so we have to define the backbone component of personal potential. In our opinion, as we have already noted, this is a communicative component. A man who knows how to communicate, is able to establish contacts with people different in character, status, nationality, working towards the objective of the communication process, is able to grow spiritually and professionally, and personally.

On this basis, the central focus of the program of development of individual potential of students has been the development of the communicative component.
The basic form of this program is a socio-psychological training. Except this there have been used group discussions, seminars, brainstorming.

**EXCERPTS FROM THE DEVELOPMENT OF COMMUNICATION POTENTIAL OF STUDENTS.**

*Seminar on «Obstacles of personal growth»*

The purpose of the seminar: Introduction to the factors that are internal barriers to personal and professional development.

In this lecture and discussion session students are encouraged to get acquainted with the descriptions of barriers to personal growth based on the papers of James B. and A. Maslow's discussion and analysis of the material by example.

*Exercise «Objectives» (by W. James).*

Instructions for students: give this exercise for 15 minutes. Take four sheets of paper and a pen or a pencil. On one page write: «What are my goals in life?» Within two minutes, you should write the response to this question. Write down everything that comes to your mind, no matter how much it will seem generic, or abstract, or trivial. You can record personal, family, professional, social, social or spiritual purposes, and so on. Give yourself two minutes to review your list, to add or correct something. Then set the sheet aside.

Take the second sheet and write on top: «How I wish I could spend the next three years?» - Spend two minutes to answer, and then within two minutes of check, check, complete the list. This will help you clarify your goals, identify them more clearly than in the first question. Set this sheet aside.

To see their targets from a different angle, write on the third sheet: «If I knew that I had only six months to live today how I would live during them?» The purpose of this question - to find out if there is something that is important for you, but what you do not do and what is not even being thought of. Write also for two minutes and take two minutes to look through. Then set that sheet aside. On the fourth sheet write down three goals that you feel are the most important of all previously recorded.

Compare your lists. Are there any topics that pass through the various goals you mentioned? Do all your goals go for any particular category, such as personal or social? Are there the same goals in the first three sheets? Is something different from all the other three goals that you have chosen as the most important?

*Setting «The building of objectives»*

Instructions for students: try to outline their main goals in life, the direction in which you want to apply their efforts now and in the future. Do not forget about the need to develop yourself. Well, if you can make two plans: the long term plan and a plan for 2-3 years. Write down your ideas. In connection with the selected targets consider the following questions:

1. What will help to achieve these goals?
2. What will prevent the achievement of these vital goals?
3. What are the critical events possible on the way to achieving the objectives?
4. How can I alleviate the critical moments?
5. What do I need to achieve life goals, what resources (time, support of family and friends, money, health, etc.)?

6. Can I use these resources to achieve goals in life?

7. Do I need to change objectives?

It is desirable that the envisaged objectives of the different spheres of life (education, work, family life, social status, interpersonal relationships, physical health, mental attitude, spiritual life) were correlated with each other.

**Self-presentation**
Each participant is represented by a circle and calls any two qualities he is proud of.

**Exercise «Porter»**
Work on the situation in which there are obstacles in the communication process (failures, criticism, negative emotional attitude) toward the goal.

**Exercise «Naked come across Antarctica»**
A group of students voice the phrase «Naked come across Antarctica». The group's task is by asking questions to clarify the situation and to achieve the goal of finding out that «Naked» - in this phrase is not used as an adjective and as a noun, proper noun, denoting the name of the people who go across Antarctica.

**Exercise «Characters»**
Each member of the group is attached to the back sheet of paper on which is written the character of a fairy tale, cartoon, artist, politician, etc. The participants' task: to find out from other members of the group with the help of questions, who was written on the sheet. You need to record every question. When discussing the exercise analyze the number of questions, their type (open, closed), their degree of effectiveness.

**Exercise «Statements»**
Each group member is given a card on which there is written a particular utterance which is usually unacceptable by most people. The task of the participant: to prepare arguments in favor of this statement, and in dialogue with other members of the group to defend this view. In the discussion of this exercise, participants analyze themselves and each other according to the following criteria:

- is it difficult or easy to find arguments
- what was used in the dialogue and how it managed to convince his interlocutors.

**Role-playing game «Project»**
A problematic situation is voiced to members of the group that must be solved from the perspective of a manager. Each presents his version of the solution.

In the discussion of the exercise participants analyze each other according to the following criteria:

- the flexibility in the use of different communication strategies
- the ability to communicate at different levels (business communication, personal, etc.)
the ability to hear the other party and to understand its emotional state

the ability to establish a relationship of trust.

THE PROGRAM OF ENHANCING DIALOGICAL CULTURE OF COMMUNICATION OF AN EDUCATIONAL INSTITUTION

To enhance the formation of a communicative component of personal potential of students, to enhance the dialogic communication culture of the faculty, teachers of the faculty were involved into the work on the program. After presentations at scientific conferences, chair meetings, teachers of the faculty were aware of the issues of the study. The urgency of the problem developed by all members of the teaching staff was stressed.

At the same time, a number of objective difficulties for the process of optimizing the communication culture of the faculty were revealed. One of the sources of these difficulties, as it turns out, is a system of motivation of staff in higher educational institutions. The costs of high school teachers’ labour corresponding to the highest level of preparation of students for professional development in modern conditions, are extremely high and are not adequately compensated by the current payment scale and the system of qualification surcharges. It is obvious to additionally measure the psychological motivation of employees of the university. To address these issues a series of measures were carried out at the Faculty, briefly described below.

1. A training seminar for heads of chairs of the Faculty of Physical Education and Sport on the topic «Ways to enhance the capacity of staff».

2. Full time training seminars for teaching staff on «Modern lecturer in the field of physical culture and sports: psychological and pedagogical foundations of excellence and a culture of communication».

3. Training for teachers on the topic: «An innovative approach to the work of teachers in high school». Training goal: to enhance the communicative and creative potential of faculty members in solving professional problems, to focus on the development of their creative projects, in the framework of which they may realize and grow professionally, improve their financial situation.

4. A round-table discussion on «Improving the quality of work to prepare graduates for professional practice».

There all the proposals put forward by teachers and organized discussion were listened to. It was produced and supported the implementation of programs to optimize the preparation of students and to improve the psychological and organizational climate in the department. The ways of further work were outlined.

Working towards the study and development of the communicative aspects of personal potential students, as well as the conditions of its formation needs to be continued. The program can be expanded and used in the study and development of other aspects of personal potential, which will improve the professional competence of future specialists.

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DYNAMICS IN CULTURE AND MANAGEMENT

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Abstract

The present paper focuses on the change of cultural paradigm in multinationals and aims at exploring and illustrating the permanent dynamics that culture and economy have known lately, and the consequences that these phenomena had in the scenery of corporate management. The study focuses on a series of experiences and principles applied in Starbucks, a well known multinational, famous for its successful management, so far, at least apparently. Our own research results in the Starbucks shops from Romania come to confirm the creative management pattern approached by this corporation.

Key words: cultural paradigms, creative management, multinationals, knowledge worker, change

1. INTRODUCTION

Our society has changed from an industrially focused one, with nationalism and uniformity as its main values, to an information society concerned with internationalism and diversity, and on the way to the global society of the 21st century - preoccupied with environment and interconnectedness - the cultural paradigms as well as the school orientations have changed. Therefore, we will approach the process of corporate cultural change and its consequences in modern communication and co-operation, by presenting a holistic model of cultural diversity and unity.

In history, empires such as Spain, Portugal and England as well as more recent nations such as the United States of America, have dealt with diversity, usually for the purpose of exclusion, at both the institutional and the individual levels. Consequently, many institutions and communities have encountered diversity, but unfortunately, very many of them operated with exclusion and control as well. Multiculturalism, on the other hand, is seen as the art of understanding and managing diversity in an inclusive way, where no one is neglected, where the potential of all is maximized and everyone may benefit. In our age of change, multiculturalism helps to manage business communication effectively. It is the only option open to educators, leaders and administrators in a globalised world. Managing cultural diversity means taking responsibility for the corporate co-operation and communication success, by approaching a holistic model of cultural diversity in such settings (Rosado, 2003). This model is based on two dimensions, a horizontal one, containing visible aspects like age, gender, race, ethnicity, sexual orientation and disabilities and a vertical one containing usually invisible aspects, such as values systems, ethics, paradigms, worldviews and core intelligence. Maintaining the two dimensions of unity and diversity in balance is the key for a co-operative management of diversity. The management of cultural diversity may very well be part of an ongoing process which enables executives, managers and the workforce to become more responsible world citizens – persons who are able to transcend their own profile e.g. race, gender, culture and socio-political reality and identify with humankind throughout the world, at all levels of human need. They may be considered a new transcending community that know no boundaries, and whose most important value is co-operation. This is the principle that should be used
in corporate communication and management at all levels, in the process of living diversity. The challenge may be huge and hopefully so will be the reward.

The times of prolonged economic crises, of massive migration phenomena and of intercultural conflicts that we are living in generate explosive mixtures of societies and concepts. Therefore, the preoccupation of management education today is to equip the future professionals from the global market with those skills that would allow them to learn and critically analyze the ways in which globalization defines and positions the identities and communities, and to make them aware of the cultural changes that might influence business communication and ultimately corporate success.

Although at first sight it may seem that there is an abundance of results from the international research, realities are quite different, researchers being confronted with an extraordinary dynamics concerning corporate management and business culture nowadays, that which has brought quite an important change in the cultural paradigm shaped in multinationals lately.

As one of the present needs of the scientific community is to identify those elements of culture and management that may influence the economic growth in a knowledge-based society, we will focus on some of the dynamics in the area of employer-employee relationship, as well as in the business one, centered on consumers. Starbucks concrete example of understanding the customer and of rethinking the co-workers relationship will be an illustration.

Our suggested theme of the change of cultural paradigm in multinationals engaged us in a research endeavor, aiming at exploring and illustrating the permanent dynamics that culture and economy (basically through corporate management) have known in the last decades, and the consequences that these phenomena had in the scenery of corporate culture and business relations. We took into account the fact that in the process of cultural transformation that we are witnessing today, the management of a company should be ready to articulate projects, regulations, recipes and instructions concerning the new corporate culture, and more than that, should be explicit in matters concerning employees expectations (Osborne& Plastrik, 1997) and encourage the change of paradigm. And here, Starbucks seemed a good company to be explored, considering both literature review and our own in-company data collection.

Investigating the state and direction of this multinational company leaves one with the impression of a very successful company, that which makes one curious to find out why. This success story is about a coffee chain and a brand that changed the American (and not only) coffee and café culture. Since 1987, when this success story began, Starbucks has reached impressive growth results.

2. The new world of work –the change of paradigm

2.1. Research methodology

The theories applied in our research are based on a cultural approach. We are thus applying theory within this paradigm. The research and subsequent conclusions of the present study will focus on the following theories which will function as an explanatory foundation for Starbucks current situation.

Khun’s arguments contributed substantially to the vision of cultural transformation: when the new realities push them, we may say that people lose their trust in old paradigms, opening themselves to new ones, and here, the role of the corporate leader is to come with a clear strategy that would define the new paradigm, giving the employees sufficient time for the transition from the old paradigm to the new one, and clarifying their ambiguities. Is Starbucks one of the multinationals that found their success in this
way? Many would give a positive answer to this question, maybe because in their attempt of attracting the right workforce, they were quite successful. There are two main issues that the corporate management is confronted with, in general, namely the changing profile of the knowledge worker and the subsequent strategies needed in the workplace, as to happily meet the new attitudes of employees concerning work and life. In the case of Starbucks the formula seems to have met success.

2.2. Literature review

In his book *The Rise of the Creative Class*, Richard Florida describes the new generation of workers and the way in which they take decisions, criticizing the ones that are stuck in old paradigms. The idea is that “more and more businesses understand that ethos and are making the adaptations necessary to attract and retain creative class employees-everything from relaxed dress codes, flexible schedules, and new work rules in the office to hiring recruiters who throw Frisbees.” (Florida, 2002, 19).

Another author who focused on modern shifts in employees’ expectations and the way in which management answered that issue is Matthew Gilbert in *The Workplace Revolution*. He states that: “the problem stems from a relentless work ethic, the tireless pursuit of profit, and the conflict between business values and human values. Today more than ever, people are waking up to the fact that they are not getting back what they give to their employers. While they are dedicating an inordinate amount of themselves to their work, their jobs offer little to meet their needs for community, self-expression, and service, and many have simply abandoned the possibility that self-serving, profit-driven companies can offer more than a paycheck” (Gilbert, 2005, 37).

Barbara Brannen, who worked for about 30 years in the corporate world, offers a new vision of the workplace, using the power of humour in communication and identifying problem solving methods through humorous exercises, in her fable *Office Peace*.

Engaging employees in ways that embrace these changes is a proof that cultural paradigms in multinationals are changing towards a probably more encouraging corporate culture.

The Starbucks corporation story has been approached in various articles, books and TV shows, but only few of these have undertaken serious academic research, among whom, Thompson and Arsel (2004), in their study focusing on Starbucks’ brand and consumers. In general, most of the authors agree on the fact that the brand strategy in Starbucks is mostly emotional. And in this sense, Michelli (2007), after an internal analysis of the corporation, states that Starbucks revolutionized the coffee industry, gaining high growth rates, and success worldwide. It seems the key to this experience is to create a connection between the producer and the customer and through this connection to create a relation that emotionally attaches the customer to the brand.

On the other hand, the rise of knowledge economy, as well as the times of prolonged economic crises and of massive migration phenomena have brought essential shifts in the area of employer-employee relationship. The main directions are the changing nature of loyalty, in the sense that employees expect more from their employers, the information technology and the diversity of culture. The new issues raised by workers today are connected more with their relation to the community than with the one to the salary. They are concerned with their life and with the decisions taken at the corporate level that might change their lives. In other words, people want a life in addition to a career nowadays. The level of connectivity that the access to information has brought is much higher and the possibility of displaying information online helped companies management become more involved with millions of customers, taking a more and more active role in the change of cultural paradigms. The change has to do with who is in charge now. And in this new paradigm, the customers are the ones in charge, because they have access to information and they can decide if and when they need a supplier – and here,
Starbucks company is known to have had very friendly messages for the customers: “Looking for something to make your at-home coffee experience more enjoyable? Or looking for something to make a coffee lover’s day brighter? Your local Starbucks store is an excellent place to start.” (Starbucks, 2011).

Consequently, two important dynamics have developed, that have to do with corporate management: a business one, centered on consumers, that we have mentioned above, and an employees one, underlining their right and freedom to choose. The information era provides employees with a growing number of networks and free blogging, as well as with other such instruments of information and communication, emphasizing their growing importance within the context of corporate economy.

Therefore, everything matters in the workplace now, starting with the employees’ education and training, their access to the company vision, their involvement in this vision, and going to the rewarding of a well done job. The new paradigm is different from the old one of providing the security of a lifelong employment and pension. It is more personalized, including being recognized beyond years of service for contributing to the team’s success and feeling one’s ideas matter to the organization. If it is to find
an illustration of this new vision, the mind map\textsuperscript{29} used by Starbucks\textsuperscript{30} multinational, among others, is a good example as you can see in Figure 1.

Specialists consider that mind maps are ideal for staff meetings and brainstorming sessions (Figure 1 is such an output), because ideas can flow freely during a conversation, and then they can be recorded. Once being recorded, people can focus on one or more of the ideas, and participants can drill down to fill in the details. Mind maps function very well in building organizational charts, job descriptions and many other corporate directions, as well as creative design (see Figure 2). “Everything we do we do in context, in a particular situation at a particular time and place. It is then not just the quality of the coffee, but the quality of the service. Because the mind of the server is actually a very significant aspect of the work and whatever goes on in the life of the server and in their mindsets affects all other things, including the quality of the coffee.” says Howard Schultz, CEO and founder of Starbucks, in his book \textit{Onward} (Schultz, 2011, 25-26).

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{starbucks_mind_map.png}
\caption{Creative Design}
\end{figure}


\textsuperscript{29} Mind map = a mind map is a diagram that usually shows a key word or idea in the center of a page and then expands on it by linking other words, ideas or tasks to it. A mind map can help generate, visualize, structure and classify ideas. It also may help with study, organization, problem solving, decision-making and writing. (Joel Bruckenstein, in \textit{Financial Adviser Magazine}, April 2008).

\textsuperscript{30} Starbucks is the biggest chain of coffee shops in the world. There are now more than 11,000 outlets in 37 countries--five new ones start pouring coffee every day.
2.3. Results of research

Our own results of research, with data from the questionnaires (see Appendix) applied in some of the Starbucks shops in Romania, as well as from the already existing literature on this particular company, led us to the Starbucks philosophy, which seems to rely on the idea that the more fully integrated and embodied people become the more they have to give and the more they are able to serve. Because it’s not just about how employees physically turn up for work, but how they feel there, how they advance from the aesthetical, moral, psychological, cognitive and even spiritual point of view. Their success may also be explained considering the following principles used in Starbucks and stated by Schultz in the above mentioned book:

1. *make it your own*, which means that workers are no longer called like that, they are “partners”, that which gives them a feeling of belonging to a common plan, constructed around five ways of being:, namely being welcoming, genuine, considerate, knowledgeable and involved;

2. *everything matters* can be explained by two other principles stated by Starbucks’ creative management: “retail is detail” and “all business is detail”, after all, meaning that the interconnections created among stores, coffee and customers will have to function perfectly in this context;

3. *surprise and delight* is another way of approaching business, based on professional dedication, rather than on mercantilism;

4. *embrace resistance* completes the previous principle of surprise and delight, looking at criticism in a constructive and open way, and learning out of it;

5. *leave your mark* has to do with creating products that would observe environment care, would respect human resources and would generally contribute to the integrity of the environment.

3. CONCLUSIONS

Investigating on the development of Starbucks corporation and its creative management, we found that the new cultural paradigm manifested at the level of multinationals can very well be expressed by what some authors said about the future of corporate business, namely that if the opportunities and challenges of the last 20 years in business have been driven by the application of information technology, the next 20 years will be driven by the application of consciousness. (Michael Rennie, 2009). It becomes more and more obvious that companies are learning to use information, not simply aiming at company efficiency, but also at company responsibility and culture. Such companies, relying on a creative management, have built their cultures on new principles, as Starbucks did. In this sense, Shultz’s vision was meant to attract, motivate and reward both employees and customers, suggesting a new cultural paradigm, in which the above mentioned aspects contribute in shaping all of us, and the more we communicate the more we can succeed as fully functioning integrated citizens, keeping the pace with the recent dynamics of culture and economy.

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Appendix

Questionnaire 1

Public Image of Starbucks

Please answer the following questions:

1. What is your age?
   Under 18
   Between 18-24
   Between 25-29
   Between 30-34
   Between 35-40
   Between 40-49
   Between 50-59
   Between 60-69
   Over 70.

2. Do you visit Starbucks shops and consume Starbucks products?
   If the answer is yes, how often?
   More than 3 times a week
   1-2 times a week
   1-2 times a month
   Several times a year.
   If the answer is no, why?

3. What do you appreciate more in Starbucks?
   The coffee
   The food
   The drinks
   The atmosphere
   Surfing the internet
   Socializing
   Meeting business partners
   Experiencing American culture
   The fact that it is a symbol of middleclass
   Because it is fashionable
The management
Other, please specify.

4. How do you find Starbucks as a brand?
A high brand
An upper-middle brand
A middle brand
A low brand

5. Score the Starbucks shops you have been to on a scale from 1 to 5 (1= lowest; 5= highest) for the following:
Quality
Service
Atmosphere
Overall performance

6. How do you find the prices in Starbucks?
Very expensive
Expensive
Average
Cheap
Very cheap

7. What suggestions would you make to the management team?
Thank you!

Questionnaire 2

Starbucks Staff

Please answer the following questions about your place of work.

1. How long have you been working for Starbucks?
2. Do you enjoy working for Starbucks? Motivate your answer.
3. What do you think about the management, is it top management, creative management or other, please specify.
4. What suggestions would you give to the management team?

Thank you!
THE RESPONDENT – SECONDARY SCHOOL AND UNIVERSITY STUDENT
AND THE PRIMARY BIOLOGICAL EDUCATION

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Abstract

The significant problem in natural sciences education is decreasing number of students interested in this field. A comparison of attitudes to biology and biology education among the various groups of students according to different age groups and gender was drawn within the questionnaire survey. The data were analysed by standard statistic methods. We focused on assessment of teachers’ personality, their qualities and popularity, teaching methods and activities in the biology teaching. Among main factors which influenced the popularity of biology were ranked the attractive topics, useful and practical biology knowledge, excursions and stay in nature. There were found no significant relation to both age and gender of respondents.

We realized that students haven’t got experiences with new teaching methods in biology as the inquiry based scientific education is. This methodological approach has not been very common yet, but using and promotion of it promises better students’ attitude to the biology and natural sciences.

Key words – Secondary school and university respondent, Natural science education, Inquiry based scientific teaching, Approach to biology

INTRODUCTION

In recent years we have seen a falling interest of secondary school and university students in the study of nature science subjects. This trend is characteristic not just for the Czech Republic, but for most of European countries.

In the Czech Republic there has been a significant fall in interest in nature science fields apparently due to the inadequate educational paradigm. Up to the 1990s what was characteristic for science education in Czechoslovakia was the so-called scientist paradigm (Skoda & Doulik, 2009). This approach to teaching science subjects was marked by a high degree of abstraction, generalisation, mathematisation and atomisation. Zankov (1975) used the term “developing teaching” for this concept of teaching. The characteristic features are strict curriculum, collective teaching, cognitive objectives, use especially of the spoken word and unstructured texts, mechanical teaching of facts and over-sized curriculum (Skoda & Doulik, 2009). These facts could result in the unpopularity of science subjects which began to appear unnecessary and useless to students.

We describe a contemporary paradigm as a so-called multidisciplinary paradigm of nature science education. However this paradigm is not yet completely formed so that its features are being constantly formed and changed. Its objective is that the pupil understands scientific terms and laws which will help him to get a better understanding and knowledge of the real world that surrounds him. The student should also acquire scientific knowledge which is applied in practical life or in orientation in environmental problems. As part of the change of the paradigm this resulted in the adequate reduction in the range of the curriculum which enabled better compilation of individual subjects placing greater
stress on the daily life of students. This also led to the development of new methods of scientific research of natural phenomena which lead to the development of the pupil’s skills (e.g. Inquiry Based Scientific Education – IBSE).

**Attitudes of students in research works**

Many authors in various countries are engaged in the attitudes of students towards the subjects of biology at secondary schools and natural history (= biology at second grade of primary school). Prokop, Tuncer and Chuda (2007) tested factors (such as gender, age and grade) influencing the attitude to biology in Slovak secondary school students. The study results showed that most students believe in the importance of knowledge of biology, but often cannot imagine the way it can be applied in ordinary life which reduces the importance of this knowledge. In conclusion the authors state that a positive relationship towards biology was established in students from selected Slovak schools. But students have little interest in combining their future career with this field. Prokop, Prokop and Tunnicliffe (2007) virtually reached the same conclusions in further research, this time at Slovak primary schools. Natural history was considered less attractive among older students. The most popular was the subject associated with the human body, the least popular was botany.

Trumper (2006) is engaged in the attitude of students towards natural history at Israeli primary and secondary schools and stresses the quality of teaching as one of the significant determinants of the attitude towards the subject. In his work he mentions that students were most interested in the subjects associated with their personal life (especially the human body). He suggests adjusting the curriculum so it is as attractive as possible to students and enables students to a certain extent to choose new topics together with the teachers. Students should have the option of discovering the legitimacy and satisfy their own needs for knowledge. The research also showed the adequacy of introducing topics which would be equally attractive to boys and girls – especially subjects applying to personal life and the needs of students. Students also described laboratory work and experiments as a more interesting method of learning than copying notes from a blackboard during traditional teaching.

Knight and Wood (2005) mention the interesting results of research in which they test whether modern approaches (e.g. cooperative education or inquiry based scientific education) in education may influence the attitude towards the examined subject, but also the standard of learned facts. During their research at the University of Colorado they attempted to use the practical work of students (laboratory work and experiments) and the stated modern approaches to education and discovered that when introducing these methodical procedures pupils learn more. The research also showed that during traditional teaching (lectures and working with textbooks) the efforts of pupils was greater, but the study results were lower. Wilke (2003) conducted an experiment at the University of San Angelo in Texas during which the results of active teaching in an experimental group were compared to a control group which was taught using the traditional method. In the experimental group students could suggest their own hypotheses, get involved in various activities closely associated with science and generally greater emphasis was placed on the student’s independent discovery, formation of new values and trust in this type of teaching. This study showed that students with good results had a greater interest in wanting to study this subject further.

**METHODOLOGY**

Data was acquired from the questionnaire survey. A Likert questionnaire was compiled which contained open and closed scale questions. The introduction of the questionnaire contained questions concerning demographic data about the respondent (e.g. gender, age, type of school, university subject and
qualification, year, completed secondary/primary school). Individual questions in the questionnaire were divided into three interest areas: (1) Primary school and their popularity, (2) Personality of the teacher, (3) Natural history as the taught subject. After a test version was created the questionnaire was tested in a pre-survey in which 25 student teachers took part from the Faculty of Education of the University of South Bohemia in České Budějovice, and 20 respondents from secondary schools. Subsequently a final version was compiled which contained 29 items.

The survey sample consisted of 321 students. The university students (U) were represented by 169 respondents (men = 44, women = 125). These were mainly students of the University of South Bohemia in České Budějovice – specifically the Faculty of Agriculture, Faculty of Education and Natural Science Faculty. Students of the Faculty of Medicine of Charles University in Prague, Czech University of Life Sciences in Prague and the University of Economics in Jindřichův Hradec were also questioned. 152 secondary school students (SS) (men – 29, women 123) also participated in the questionnaire survey from three secondary schools in České Budějovice – specifically students of the Secondary Nursing School, Czech-English Grammar School and the Secondary and Higher Vocational School of Tourism.

The respondents were divided into two groups according to age which corresponds to the type of school attended (secondary school/university). The age of the secondary school students ranged from 15 to 20, for university from 21 to 26.

The acquired data was analysed using statistical methods (Mann-Whitney test, Kolmogorov-Smirnov test and chi-square test). The age of the respondents and in some of the questions also the sex of the respondents was used as the variable. During the statistical tests we worked at the significance level p = 0.05.

ANALYSIS

In the introduction of the questionnaire we asked about the overall relationship towards primary school attendance. Most respondents expressed a positive relationship (Fig 1). Half of university respondents (53.5% men and 60% women) liked going to primary school throughout their time of study there. There was a lesser number of secondary school respondents that stated this fact (37.9% men and 34.1% women), but this also concerned the most common answer. When carrying out the statistical test using the Mann-Whitney test, it was discovered that gender does not influence the attitude of pupils to primary school attendance (p = 0.1025, U = 7799, nmen = 72, nwomen = 248). However we subsequently discovered that the age of the respondents has a significant influence on the attitude to primary school attendance (p = 0.000087, U = 8523.5, nSS = 152, nU= 168). University students had a more positive relationship towards primary school attendance than secondary school students.

The following questions showed that this positive relationship towards primary school attendance stemmed especially from being able to be with their fellow pupils. University respondents stated that the second reason for the popularity of attending school was the most common popularity of studying science subjects.
We then focused specifically on a natural history. Among the university students natural history was not an unpopular subject among them and unpopular only among 4.1% of female respondents. On the contrary, 70.5% of men described natural history as a very popular subject and 63.1% of female respondents chose this option. Among secondary school students 34.5% of men and 32.5% of women described natural history as very popular. The popular option was chosen by 37.9% of men and 56.1% of women found natural history unpopular. We monitored whether the unpopularity of natural history could also influence attitudes towards other nature science subjects (chemistry, mathematics, physics). Respondents could choose the following options: “yes, a lot”, “yes a bit” and “no”. During the statistical analysis no significant differences were found in the answers of the men and women (p = 0.4720, U = 8515.5, n\_men = 73, n\_women = 247). Statistically significant differences in the frequency of answers were not found even among both age groups of secondary school and university respondents (p = 0.8210, U = 12580, n\_SS = 152, n\_U = 168). Among university men and women the most frequent option was “no” (43.2% in men, 54.8% in women). Among secondary school students the results were similar – the “no” option was chosen by 55.2% men and 54.5% of women.
Another examined area was the personality of the natural history teacher. We firstly examined the situation in terms of the gender of natural history teachers. Both SS and U students stated that natural history teachers were always women (U – 64.1%, SS – 69.1 %). The differences between the groups of respondents were not statistically significant. We also monitored how many teachers taught respondents at the second level of primary school or at the lower level of grammar school. The most frequent answer in both groups of respondents was one teacher throughout the study (U – 48.0%, SS – 46.1 %).

During the research we examined whether the teacher could arouse the interest of pupils and motivate them towards more in-depth study. This question did not show a statistically significant difference between the answers of men and women (p = 0.107445, U = 7929.500, n\textsubscript{men} = 73, n\textsubscript{women} = 248) and among secondary school and university respondents (p = 0.203187, U = 11787.00, n\textsubscript{SS} = 152, n\textsubscript{U} = 169) regarding interest in the teaching of the teacher and the subsequent motivation towards more in-depth study of natural sciences. Respondents could choose from 4 option: “definitely yes”, “sooner yes”, “sooner no” and “definitely no”. The most frequent answers were option “sooner yes” which appeared in 43.2% of men and 45.6% of women of university respondents and 37.9% of men and 43.1% of women of secondary school respondents. The positive results was the fact that the “definitely no” option was only chosen from the university respondents by a mere 2.3% of men and 8% of women. In secondary school students this answer appeared in 7.3% of women, but in men the percentage was higher (20.3 %).

University respondents chose the qualities and abilities of the teacher which they thought were ideal. Of the number of frequency of individual answers the following order was compiled of the qualities and abilities (corresponds to the falling number of frequency): educated, able to explain the subject matter, fair, able to recognise the products of nature, patient, friendly, amusing, able to advise, able to organise excursions and an interest group.

In the next question the respondents were asked about the actual abilities and skills of their natural history teachers at the second level of primary school or the first cycle of an eight-year grammar school. In the university respondents the most prevailing ability of the teacher was to name and determine animal and plant species. The next skill which students considered important about their teachers was the willingness to answer questions and the ability to explain the function of the human body. Of the properties that teachers lacked, the biggest percentage was the ability to involve students in an inquiry scientific approach to nature. In secondary school respondents there was the same situation when the most frequent quality of the natural history teacher was the ability to name and determine plant and animal species. What again was lacking was the ability to involve pupils in the inquiry scientific approach to nature, as well as inadequate education pupils to appropriate relationship with animals.

As part of research into the attitudes of students to natural history, we focused on the popularity of the methods and teaching procedures applied. In university respondents the most popular was fieldwork (62.1%), demonstration of experiments and aids (57.4%) and work with the products of nature (45.6%). Secondary school students described the most popular work as being in work groups (50.0%). The least popular method of teaching natural history was described by university students as working with works sheets (28.4 %). Secondary school students described work with works sheets as unpopular.

We found that most students have no experience of inquiry based scientific education which uses activation elements and has been promoted in recent years (Fig. 2). No significant influence of age to the answer was shown (p = 0.79512, U = 12643.00, n\textsubscript{SS} = 152, n\textsubscript{U} = 169), as both secondary school and university respondents answered alike.
Just under half of secondary school respondents (43.4%) did fieldwork during natural history lessons. 36.8% of secondary school respondents occasionally went into the field. What is an alarming fact is that more than a quarter of respondents did not go into the field at all during natural history lessons (SS – 26.3%, U – 15.1%).

Positive results were found in the question whether respondents learned anything during their natural history lesson which they used in practical life. A significant difference was found between the answers of secondary school and university respondents (p = 0.001479, U = 9884, nSS = 152, nU = 164). The greater majority of university students (87.8 %) answered that they gained practical knowledge (Fig. 3). Among secondary school students the number of positive answers was higher than a half (67.1%). We also asked respondents about specific knowledge which they subsequently used in practical life. The most frequent answers were practical knowledge of plants, animals and minerals (36x), knowledge of human biology (18x), first aid (8x), sorting of waste (2x), growing flowers and breeding animals (2x). Respondents also stated several specific answers which always only appeared once.

DISCUSSION

Our study showed that throughout the entire period of primary school attendance more than one third of respondents liked going to school. The most frequent reason for the popularity of primary school attendance was contact with fellow pupils. The studies of Ondruskova, Pajkrt and Svestka (1996) and Ondruskova, Pajkrt and Ungr (1996) reached the same results. Learning with those of the same age is far more attractive for a pupil than learning at home, as it is proved that pupils need to have social contact with their fellow pupils. Almost none of the respondents (0.6%) stated the reason for the popularity of school attendance as due to popular teachers making one wonder about the present role of the teacher whose position in the education process is very important and irreplaceable.
The school subjects were divided into three categories “very popular”, “popular on the whole” and “unpopular”. In their research Ondruskova, Pajkrt and Svestka (1996) and Ondruskova, Pajkrt and Ungr (1996) discovered that the most popular subject at primary school is physical education. The research agency STEM/MARK (2011) reached the same conclusion. In our research physical education was described as a popular subject by half of secondary school respondents (57.5%). In secondary school students the most popular subject was natural history which is a surprising result. Most authors mention a falling interest in science subjects (Kekule, 2008). Nevertheless it is shown that the popularity of natural history falls with the increasing age of pupils (Prokop, Prokop & Tunnicliffe, 2007), so that at primary school respondents can still have a positive attitude to natural history. We can attribute the popularity of natural history also to the fact that a great part of university respondents consisted of students of biology so their relationship towards natural history was positive.

When comparing science subjects women had a more positive view of natural history than men. Kubiatko and Vlckova (2011), Prokop, Tuncer and Chuda (2007) and Höfer and Svoboda (2005) stated the same conclusion in their work. On the contrary, Pavelkova (2004) states that the attitude towards
natural history does not significantly differ in men and women. In university respondents none of the men described natural history as unpopular but in women this was only a mere 4.1% of respondents. On the contrary, the absolute majority of men and women described it as very popular. In secondary school students natural history was regarded positively in almost three-quarters of respondents. On the contrary, Kubiatko and Vlckova (2011) in their research discovered a neutral attitude among pupils to this subject. Physics became the least popular subject among secondary school and university students. This conclusion is confirmed in a study by Kekule (2008) and by Ramsden (1998) who points to the low attractiveness of physics and chemistry for primary school pupils. In secondary school respondents chemistry was chosen as the least popular subject which corresponds to the findings of Rusek (2011) who in his research conducted at secondary vocational schools not specialising in chemistry revealed that a mere almost half of students stated chemistry as being useful in daily life. Veselsky and Hrubiskova (2009) also examined the attitude of students towards chemistry. During the research they discovered that pupils showed the most positive attitude to mathematics and then to natural history/biology. An interesting finding was the negative attitude towards the subject of non-living nature/geology which had the worst assessment together with physics.

The popularity of natural history stems from the interesting topics, good teacher or from the fact that the respondent was successful in this subject. It is shown that students assess the subject better if they feel that they learn practical information which they can use in future (Anderson, 2002, Campbell & Lubben, 2000, Trumper, 2006). However a quarter of SS students marked the option that natural history was not their favourite subject. Only 5.4% of university respondents chose this option. In the next item of the questionnaire we also focused on the reasons for the unpopularity of natural history. Only respondents who had chosen the option of unpopular subject answered this question. University students marked the main reasons for the unpopularity of natural history as the unpopularity of the teacher, unpopularity of laboratory exercises and uninteresting subjects. A surprising finding was the unpopularity of laboratory exercises. Most studies (e.g. Hofstein & Lunetta, 2002, FitzPatrick, 2004) state this approach attractive to pupils and students which, however, was shown in our research. Given that the university students were divided into biology and non-biology fields, we could follow whether the studied field has an effect on their attitude to laboratory exercises. However we found that laboratory work was an unpopular activity even among students of biology. This finding shows that it would be better to focus on laboratory exercises and make them more attractive for pupils. SS students chose as reasons for the unpopularity of natural history difficulty of the subject matter, unpopular teacher and uninteresting subjects. The situation concerning laboratory exercises was not repeated among secondary school students as only 7.7% of respondents answered in this case. It was shown that the popularity of the subject depended mostly on the teacher and the subject matter which was also shown in the study of Ondruskova, Pajkrt and Svestka (1996) and Ondruskova, Pajkrt and Ungr (1996). Kekule (2008) states that apparently a relationship exists between the demanding nature of the subject and its popularity. In his study he focuses on physics and chemistry where he found that 80% of students who assessed these subjects as easy also described them as popular. Kubiatko and Vlckova (2011) describe as the most significant negative factor affecting the popularity of natural history to be its difficulty.

It is shown that throughout Europe interest has fallen in the study of science subjects (Rochard et al., 2007, Jimenés-Aleixandre et al., 2009). The starting point for increasing interest in science subjects is the implication of new approaches in the education process. We focused on the Inquiry Based Science Education (IBSE) method which is greatly promoted in recent years (e.g. Papacek, 2010, Bybee, 2004, Pirrami, 2010). For example, Michaels, Shouse and Schweingruber (2008) and Jorde (2009) argue in favour of the introduction of IBSE for pupils who stress the strengthening of the ability of pupils qualified to solve problems. We found that the IBSE method is not applied regularly at almost any
primary school which the respondents attended. This finding is not that positive, but is not surprising either. Inquiry based education is one of the modern approaches to science education and some teachers avoid it intentionally. This need not be just a question of personal distaste, but it often concerns insufficient materials, insufficient time granted or also limits in the training of teachers for this type of teaching (Papacek, 2010). The lack of information of teachers about this approach can also limit the degree of its spread. The starting point is to present this method more often to teachers and familiarise student teachers at faculties of education with it.

More than half of university respondents stated that they greatly enjoyed fieldwork. This option was positively assessed also by secondary school respondents. Chuda (2007) mentions that pupils during natural history lessons enjoy direct contact with nature, observing animals in their natural environment and nature walks in general. However there was an alarming conclusion from the next question that more than a quarter of all respondents did not go into the field during lessons. Pupils would spend more lesson hours in the field, but teachers do not give them this option. This can be attributed to the lack of time granted and the over-sized curriculum. Experiments and aids were very positively assessed by university students (57.4%). Precisely half of respondents of secondary school students stated that teamwork was the most popular form of teaching. Teamwork allows pupils to assert their idea and be an important member of a team when processing an assigned task. During teamwork pupils are also preparing for their future professional life and teamwork so this is a suitable method of teaching which should be included in the education process which is also included in the general education programme (RVP ZV). The least popular method among secondary school students became work with work sheets which corresponded to the finding among university students. Here this conclusion can be explained by the frequent inadequate quality of these materials, or by a certain dose of “trivialisation”, if work with work sheets is applied to a great degree in teaching.

CONCLUSION

The results of our study show that secondary school and university respondents had a positive attitude towards subject of natural history and described it as their favourite science subject. The reason for the popularity of natural history was the interesting topics and good teachers. The most popular educational forms were teamwork and fieldwork of which, however, a quarter of the respondents stated that they had not gone into the field at all during their school attendance. The least popular form was laboratory work.

It is clear from the results that the teaching of natural history at primary school level needs to be enriched by new methods of approach to the taught topics. Pupils particularly lack opportunity to gain practical knowledge and skills which they could use in daily life. This could be provided by inquiry based scientific education which is not that extensive in the Czech Republic as yet. Most respondents stated that they had rare or no experiences with this approach at all. One of the tasks of experts in didactic biology will be to acquaint present teachers, student at faculties of education as well as the general public with this modern educational approach.

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FORMATION OF META-COGNITIVE LEARNING STRATEGIES THROUGH MIND MAPPING

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Abstract

In the present article we indicate the possibilities of metacognitive learning strategies’ formation in higher mathematics teaching. It is done with the help of mind mapping application, i.e. by implementation of mind, conceptual and cognitive maps in the teaching process as parts of a metacognitive strategy SQ4R. A pedagogical experiment, whose results are stated in this article, was realised during the academic year 2010/2011 when Mathematics 1 was taught on the Faculty of Special Engineering, University of Žilina in Žilina. It consisted in the inclusion of mind maps in mathematics teaching, observation of their influence on metacognitive learning strategies’ formation and enhancement of the teaching process efficiency.

Key words: mental maps, metacognitive learning strategies, pedagogical experiment, method SQ4R

1. INTRODUCTION

Present fast developing information society fundamentally influences both teaching and learning methods of teachers and students. Changes can be observed predominantly in the increasing quantity of information offered to learners who are consequently forced to devote a lot of time to reflection, classification and selection of available learning material (Leláková, 2008). We are aware of the need to analyse our learning techniques, reveal and define optimal ways of learning which reflect the needs of a modern information society. An Internet phenomenon by its huge information potential changes radically the way of teaching and learning. We are often the witnesses of the fact that university students have not got adequate study habits – they do not know how to learn, they miss the ability to manage their own learning process in a constructive and goal-directed way. They acquire and master knowledge only chaotically and nonsystematically and do not coherently and consciously follow their study aims.

Reasons can be seen inter alia in a favourite method “attempt - mistake“ which was brought into the process of acquiring knowledge and information especially by the Internet. A typical example is a student who in his/her attempt to acquire an important piece of information (knowledge) uses preferentially an Internet search engine and finds several hundred (not reviewed) references to the required topic and consequently tries to select and hierarchize them. But this can be sometimes very demanding. We also understand that the present mission of a teacher cannot be only delivering knowledge from a specific subject but first of all formation of students’ competences for learning effectively. Our society changes very fast and present students have to reflect this trend and accept new information and knowledge all the time. A substantial competence of a present student is his/her ability of metacognition, ability to monitor, revise and check his/her own learning and cognitive processes.
In this paper we hint at the possibilities of formation of metacognitive learning strategies during teaching higher mathematics in the first forms of technical universities. One of them is the application of mind mapping – implementation of thinking, conceptual and cognitive maps into the teaching process – this is a part of a metacognitive strategy SQ4R.

2. METACOGNITION

Metacognition is a component of human mind indicated also as “cognition about cognition“. It involves control and regulation of cognitive processes. A person with developed metacognitive learning skills reduces rote learning and uses active learning (e.g. problem-based learning). Studying mathematics requires development of student’s productive and constructive thinking. Rote learning of facts, terms and definitions is not sufficient and revealing of interconnections among terms, i.e. cognitive structures formation, becomes more substantial. Teachers can improve learning abilities of their students by asking suitable questions, visualisation of cognitive structures and synthesis of information. These are the ways through which a student can observe his/her thinking process. Structural learning material and mind maps included in the teaching/learning process before and after explaining individual topics of mathematics curriculum have proved to be a good way both for metacognitive learning strategies formation and increasing efficiency of the teaching/learning process (Turek, 2003).

Metacognitive learning strategies are helpful for those who have a problem to analyse, apply, remember and recall the obtained information. It is good to know several learning strategies for a person to be able to choose the one which is the most convenient for him/her. Activities such as planning the procedure of the learning task performance, monitoring the curriculum understanding and evaluation processes during finishing the learning task are metacognitive in their essence (Blaško, 2010).

2.1 Metacognitive learning strategies

A term metacognition is connected with the name John Flavell. According to him (Flavell, 1979) metacognition consists of metacognitive knowledge, experience and regulation. Metacognitive strategy is understood as the ability to analyse and recognize our own learning procedures and seek for optimal ways of their organisation and management. When we want to improve the quality of our universities, we have to appeal to the development of the mentioned learning strategies of our students. Metacognition deals with cognition about cognition, with “learning to learn“. If metacognitive interests are supported, learning competences of students (i.e. an ability to know how to learn) are developed, too.

Strategies are mentioned because they represent a complex of procedures pursuing a fixed aim – efficiency in learning. We are presenting one of the most famous strategies written by Thomas and Robinson (1982) and indicated under the acronym SQ4R. The results of our pedagogical experiment have shown that implementation of cognitive mind maps during SQ4R realisation is an excellent way how to improve learning and teaching efficiency.

SQ4R means:

S – survey – the first step in the learning process is a fast and preliminary summary of the basic order of the learning material. A learner has to orientate himself/herself in its overall composition and he/she should have a rough idea about the aim and development of the concrete topic as well as about the procedural steps essential for the problem solution. A perfect tool which can help him/her is a mind map focused on the introductory and well arranged presentation of study material (discussed topic).
Q – questions – a learner should ask himself/herself what s/he knows and does not know about the topic. Three basic lines: “what?”, “how?”, “why?” should be followed in this context. Mathematical education is continual and it is often necessary to recall facts and information related with the discussed topic as this recalling in the mind of a student is an essential condition for understanding the curriculum. And revision of necessary terms and facts can be realised right through a mind map.

4R means:

- **read** – a learner coherently reads the study material, continuously makes the notes and perceives the occurred problems,
- **reflect** – a learner thinks about the study material in a way to be able to put it in the context with already known facts; designates key terms and principles perceived as relevant for the stated topic,
- **recite** – if the learner understood the material and adopted the knowledge, he has to store it in memory by the suitable form of recitation,
- **review** – a learner is able to summarise pertinently everything he has learned (Flavell, 1979).

During a careful observation of individual phases of the learning strategy several possibilities of including mind maps in the teaching/learning process can be noticed.

The essence of our pedagogical experiment realized in the academic year 2010/2011 (when teaching a subject Mathematics 1 on the Faculty of Special Engineering, University of Žilina in Žilina) was to include mind maps in the contents of lectures from the stated subject. The priority functions of the mind maps were the following ones:

1. the function of the “connecting bridge”; the aim of the mind map was to remind students of the facts and knowledge from the secondary school. This knowledge is necessary for the topic understanding (a phase **reflect**),
2. cognitive maps mediated a **recapulative overview** of the curriculum (a phase **review**).

With the help of the implemented mind maps students were pertinently “navigated and guided“ in their own learning process.

### 3. MIND MAPPING

Mind mapping is a method of learning and knowledge testing and detecting whose essence lies in acquiring interconnections among terms. It is also a way how to formulate and regulate metacognitive learning strategies of students.

#### 3.1 Mind mapping and metacognitive learning strategies

The beginnings of Mind mapping are connected with the name of Tony Buzan who in the late 70s of 20 century proposed mind maps as a technique of note taking. According to Fisher (2004) it is an indication of “all procedures denoting thinking by the means of some projection”. It is a visual denotation, which consists of words, concepts, ideas, symbols, pictures and essential junctions expressing interrelations between them. It is an effective tool for capturing ideas, notes and information, identification of key terms, projection of facts into the overall and meaningful structure, an
aid for creating associations which could otherwise get lost. Like a cartographic map it is a good way how to make thinking visible (Majovská, p. 2009).

In fact the idea of the mind maps creation is much older. Also a great philosopher René Descartes in his *Discourse on the Method for Reasoning Well and for Seeking Truth in the Sciences* states the following rules of the so called Cartesian method: the rule of analytical procedure – to decompose complicated things into the simplest ones; the rule of synthesis – to proceed in the correct order from the simplest to the most difficult, to sum up relations and dependences from the simple ones up to the learning of the most complicated phenomena; and the rule of control – when solving the problem, pay attention to its different connections and aspects.

Mathematical knowledge has a character of the net. Mathematical terms, definitions, theorems, algorithms and rules are interconnected both between themselves and with the world outside. If we want our students to understand mathematics and make progress in it, we have to present it in relations (mathematical terms among themselves, mathematical terms ↔ real world).

From the stated facts it is evident that the visual depiction of cognitive structures can be very useful. Application of mind maps can significantly deepen individual understanding of the problem and make the whole learning process more valuable.

Advantages of mind mapping:

- **for a student** – it makes easier
  - curriculum understanding,
  - its recoding to a more memorable form,
  - distinguishing its nature and internal structures,
  - its remembering,
  - its restoring,
  - its reconstructing if new pieces of knowledge add up, and
  - creating “mental models“ of the world.

- **for a teacher**
  - application when a teaching process is planned, when the curriculum is explained and summarised,
  - it is a suitable tool for entrance diagnosis as well as diagnosis during or at the end of the educational process.

3.2 Mind mapping in mathematical education

A mathematical world is a net of interconnected facts and terms and knowledge of all correlations among them is necessary for entering this wonderful world of mathematics (Bačová, 2011). Mind maps will enable students to orientate themselves in the web of mathematical terms and they are also:

- an aid when identifying key terms, relations among them, creating a meaningful structure and making necessary links and relations understandable,
- they enable to implement new information in a broader context,
• combinations of words and a picture integrates both brain hemispheres in the learning process and makes the learning of mathematics more effective,
• they help cognitive skills development, ability of analysis, classification and synthesis of terms,
• they enable and stimulate convergent, divergent, critical, strategic and complex mathematical thinking,
• they are an effective mnemotechnical aid (memory aid); the shape, colours, structure of a map will enable better remembering of information,
• they develop holistic and complex understanding of mathematical terms and characteristics, and
• they support the development of metacognitive skills – learn to learn and think about knowledge.

Functions of mind maps:

• **Autodiagnostic** (for a student) – a mind map enables a student to know explicitly his/her own realizing and cognitive arrangement of the discussed topic. It also offers a possibility to monitor his/her own learning procedure – it develops metacognitive abilities of a student.

• **Diagnostic** (for a teacher) – a mind map is a tool of identification the situations for making decisions about the character of pedagogic intervention. It is also a diagnostic tool of identification on which level of understanding a student accepts new concepts.

• **Intervention** – a mind map becomes a content-organised pillar of the learning procedure which guarantees a meaningful integration of new pieces of knowledge into already existing cognitive structures.

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**Fig. 1:** An example of a mind map – Powers
The stated functions of mind maps clearly indicate their important role in the formation of metacognitive learning strategies of students. Let us deal with two concrete examples:

In Figure 1 there is a mind map whose aim was to remind students of power counting rules. The stated pieces of knowledge were important when we were dealing with the topic \textit{Functional derivative} which required a successful and correct use of derivative formulas. A mind map (see Figure 2) presents all relevant facts about the equation of a line in a slope form. A stated map was an essential prerequisite for informal understanding of the topic \textit{Geometric meaning of functional derivative}.

3.3 Pedagogical experiment

After creating and implementing several mathematical mind maps in the teaching process of the subject Mathematics 1 we approached carrying out a pedagogical experiment whose aim was to find out if this implementation would have a positive influence on the study results of students. On the basis of formulation of the pedagogical experiment’s aim the following hypothesis was set:

$H_0$: \textit{Students educated with the support of mind and conceptual maps will obtain at the end of an experimental teaching process at least an equal standard of knowledge in comparison with students educated without mind mapping use.}

When choosing experimental subjects we tried to find two groups which would be equivalent as much as possible. Finally we decided for a random sample of the first year students of the Faculty of Special Engineering, University of Žilina in Žilina. During the winter term of the academic year 2010/2011 they passed the exam from the subject Mathematics 1 whose content is: basics of linear algebra, analytical geometry and differential calculus of real-valued functions of one variable.
When selecting control and experimental groups the agreement in the teacher competence was crucial (in both groups three-hour seminar and lectures were conducted by the same teacher), agreement in the content and range of curriculum and in teaching plans. The number of respondents in both groups was identical – 28. For an experimental group the work with mind maps was included in the teaching process every week. A control group attended traditional mathematics classes organised in the form of seminars.

After curriculum completion both groups solved an equivalent knowledge test which contained 10 tasks. The maximum number of the received points in the test was 30. Doing the experiment to verify the hypothesis H1 was conducted according to an experimental plan without a pretest. The following table presents the percentage success rate of a posttest in individual groups.

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
<th>( \bar{X} )</th>
<th>( s_x^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experimental group</td>
<td>28</td>
<td>69,1%</td>
<td>23,5</td>
<td>26,8</td>
</tr>
<tr>
<td>Control group</td>
<td>28</td>
<td>60,1%</td>
<td>20,4</td>
<td>23,7</td>
</tr>
</tbody>
</table>

**Table 1: Basic statistic characteristics of files**

To verify the hypothesis H1, we selected a significance level \( \alpha = 0.05 \). The outcome of an experimental method (obtained results when teaching mathematics with the support of mind mapping) we considered to be a random sample from a normal distribution \( N(\mu_1, \sigma_1^2) \). The outcome of the second method (tests results when teaching mathematics traditionally) we considered to be a random sample from a normal distribution \( N(\mu_2, \sigma_2^2) \) where \( \mu_1, \sigma_1^2, \mu_2, \sigma_2^2 \) are unknown parameters. We had two independent files \( n=28, m=28 \). We calculated sample characteristics and by using an \( F \)-test we found out that the difference between their distributions is not statistically significant. For this reason we tested the difference between the two groups by a two-sample location Student’s \( t \)-test with equal distribution.

We tested the hypothesis concerning the fact whether the effects of both teaching methods are the same:

\[
H_0: \mu_1 = \mu_2 \quad \text{versus} \quad H_1: \mu_1 \neq \mu_2.
\]

The value of test statistics is \( T = 2.276 \) and \( p = 0.01313 \).

When comparing it with the critical values of a \( t \)-test we obtained:

\[
T = 2.276 > t_{0.05}(54) = 2.0048.
\]

\( H_0 \) hypothesis was rejected. Selective average on the selected significance level differs from the value of the average of the basic file.

When using the stated teaching methods different study results were obtained. If we apply the one-sided hypothesis

\[
H_0: \mu_1 = \mu_2 \quad \text{versus} \quad H_1: \mu_1 > \mu_2,
\]

then \( H_0 \) is rejected on the significance level \( \alpha \) if \( T > t_{2\alpha}(n+m-2) \). This was confirmed in our case as it is true that

\[
2.276 > t_{2\alpha}(n+m-2) = t_{0.1}(54) = 1.676.
\]
The one-sided hypothesis was rejected and the difference between mean values for the stated selective file was considered statistically significant. With the help of statistical methods it was confirmed that students educated by an innovative teaching method with the use of mind maps achieved better study results than the students educated by a traditional method.

4. CONCLUSION

The described pedagogical experiment convinced us about the positive influence of implementing mind maps in the process of teaching mathematics. Students perceived positively especially the fact that mind maps enabled them to bring a system into the amount of information, facts and terms and receive a detached view of the studied topic. Mind maps enabled them also to observe, revise, control and guide their learning process and thus develop their metacognitive learning strategies.

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IMPLEMENTATION OF NEW METHODOLOGIES FOR THE ARCHITECTURAL SURVEY IN THE CREATION OF VIRTUAL ENVIRONMENTS FOR VIDEO GAMES

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Abstract

The architectural survey carried out with new technologies, such as laser scanning and photogrammetry, allows the creation of a three-dimensional virtual model of the original, built from millions of measurements of reality (point clouds). If the precision set in the measuring equipment is high enough and we have color information, the point clouds already can be considered a realistic virtual representation of the object. With a further processing of data will get textured surfaces generated as a triangulated Irregular network. This textured surface allows to do numerous studies of diverse nature, in addition to being much more suitable for realistic visualizations than the original point cloud. The objective of this study demonstrate how this new digital reality, representation of the registry of the architectural heritage, with an adequate processing of the data serves as ideal matrix for the creation of virtual scenarios in the design of video games.

Key words: Virtual environments, video games, point clouds.

1. INTRODUCTION

The main characteristic of the language used in video games is the development of a virtual world with which we interact in an interactive way. Thus, the architectural representation in the video game, becomes the place where the action takes place so that the relationship between players and the game causes an immersion experience that determines its spatial perception. Thanks to the graphical interface the player forgets that he is accessing into a place through a computer system, assimilating the experience as if it were physical, so in the design of these environments, interfaces are more and more intuitive.

Therefore, to facilitate the process of immersion, video games tend to copy the rules that govern the space in the physical world.

When a player recognizes the represented space enhances its interest in exploring the environment and can project their knowledge about represented architecture, completing the atmosphere and accelerating the process of immersion. Thus, for example, when he is looking at a stone construction, supported by piers on which rest amazing arches, can recognize it or not, as the interior of a Gothic Cathedral, as a tourist enclave, a display of the engineering used by the master masons of the middle ages, the monument which visited last summer, etc.

In general, the industry has given back to game development in 2D. Once the technological constraints in the past have been already surpassed, situating the action of a game in a 3D environment or make a 2D one, is currently simply a design option. Only those devices in which there are still technological display limitations, as in mobile devices, there is a certain prominence of graphic two-dimensionality. Frequently, the market has been favoured even forcing the use of 3D in video games inside an element...
of commercial claim that actually addressing visual needs requiring the mechanics of each game in every moment.

However, it wouldn't be until the mid-1990s, when the graphics, images, animations and sound improved significantly resulting in programs of adventure where the essential role were the graphic aspects, of which simulation games served to show closer to reality.

Until then, the resources used to generate spatial effects were very limited: overlapping of elements, decrease in size to try to generate feeling of depth, flat shadows and very basic attempts of degradation of colours due to technical constraints and forcing some lines of perspective.

Constant technological advancement, has allowed video game developed an own spatial language, marked by a progressive search for greater realism. However, the technical limitations make scenarios work as simple backdrops, until the end of the 1990s.

Thereafter they have improved in detail. Forms of geometric blocks are softened, the number of textures are expanded, filters have been applied which help to unify the image and different types of illumination through the placement of fixed lights. In recent times, it is implemented automatic processing of light in every scene, contributing to increase realism. The visual appearance is accompanied by a parallel evolution of sound and interactivity.

In addiction, it has been developed the adaptation of the games to teams that enable 3D sound or envelope witch has been used occasionally as a resource to give us information of what is happening in our environment, even if it is outside our field of vision. Meanwhile, the controls have evolved, involving the sense of touch and enhancing immersion; controls trembling responding to nearby explosions or the use of the body itself as a control, so thanks to a camera or a command, for example, our avatar plays our movements.
With the arrival of graphics cards, with 3D acceleration and the 5th generation consoles, three-dimensional models were gaining even greater prominence. The techniques involved from then have been contributing new forms of shading or texture, representation of terrain mapping, water, reflections, lighting, etc.

Video games that use architectural scenarios can be divided into open and closed spaces, although in general, almost every video game has closed spaces. Invisible walls delimit the range in them and tend to connect with each other through tunnels or corridors that consume few resources.

In spite of this, thanks to the new technical resources, scenarios have been growing, creating representations of broader areas, retailers and complex, within a growing trend towards open architectural renderings.

The games do not seek a naturalistic, but realistic representation, because they try to adapt its scenarios to its ultimate goal, the fun; to do so, they eliminate everything that is an obstacle in the dynamism. Thus, architectures are adapted the narrative needs and action game. And although there are various aesthetic tendencies when it comes to represent architectural scenarios in the video games, the most widespread and accepted is one that seeks to convey an image faithful to the reference physical, allowing that the veracity of the experience feeling increases.

Nowadays, this recreation of the architectural reality can be achieved thanks to new data for architectural surveys systems. Thus, we obtain information of an enormous amount of points by means of a system with laser scanner in a relatively short time. In addition to the location of these thousands of points, this system gives us information on the brightness and color of each, depending on the degree of definition of this model of the density of the clouds and points gaps or shadows that occur to get the data.

It is also possible to determine the geometric and radiometric properties of an object by Photogrammetry, however, in this case the data are obtained only from photographic images, although in this case the data processing work is more elaborate, but unlike the laser scanner data are not obtained directly but that it is necessary to obtain them through specific software, so it has to invest a greater number of hours of work to get clarifications similar to which offers us the system by laser scanner.

2. METHODOLOGY AND PAPER STRUCTURE

The work is structured in three parts. First part is an introduction to the topic of video games, specifically with regard to the graphical aspects, its evolution and current goals. In the second part are presented and analyzed the main aspects of the creation of architectural scenarios from virtual models for architectural surveys data collection systems. The third and last section corresponds to the conclusions which have been obtained, as well as possible new lines of research to be carried out.

To obtain virtual models it has been combined the use of systems by means of laser scanner data and by photogrammetry, thus maximize both geometric and colour of data accuracy.

The subsequent process for the creation of the stage is developed with Blender software because, in addition to being a powerful design and 3D animation suite, it is a software developed in open source and free, which allows not only to download the application, but also access to the source code, allowing for modification and improvement.
3. SPATIAL BUILDINGS IN VIDEO GAMES: ARCHITECTURAL STAGES FROM VIRTUAL MODELS.

Regardless of the system chosen for the construction of a virtual stage, the process to follow is always the same, it can vary the order of any of the phases not so much by the platform used as because of the purpose and use that the stage will take once completed.

The first thing we need is to create the object or objects on which to work. Of course, they must be created both objects and elements in the stage to build. Each of these objects has to modify and shape to achieve the desired geometry. In our case, it is getting properly identifying it with the corresponding architectural element.

Once all the elements involved in our stage have been generated, we should characterize them. To do this, we must set materials and textures to be applied to the elements and decide lighting that will appear in every scene. Furthermore, it should be incorporated cameras which, as if it were a real stage, they will show the final result. At the same time, these cameras will serve us to decide the degree of definition which must be different parts of the stage.

To create models so complicated as those are required in current video games it would be impossible if we had to define each point within the code. To fix this, there are 3D modelling programs that allow to work in a way much more intuitive and visual for the creation of these models then we can use in our project.

Blender allows us to easily model objects 3D working directly with edges and faces of polygons. In addition the program also implements tools of lighting, materials, textures and animation...

3.1 Creation and modelling of a stage

Usually, different elements make up a stage of a video game are created directly with software of 3D modelling from a few predefined solid ready to be edited and so to begin the object modelling. Thus, it manages to give the stage with an appearance that allows the user to identify it with the reality.

A greater rapprochement with the physical reality that represents the virtual stage is achieved making the virtual models based on planimetric information obtained from a data collecting of the architectural object to represent, with measurements that ensure us the geometry and photographs which serve as reference in the process of creation of each of the elements that compose the stage.

In this case, although the result respond more faithfully to the original of what we can achieve in the former, not let be an approximation to reality, both the final volume and its texture and material are entrusted to the interpretation that the developer of the stage made about this reality.

With the use of virtual models created with new measurement systems by laser and Photogrammetry which are used in architectural heritage, the correspondence with reality is fully guaranteed, both in what refers to the geometry of the elements represented and to the appearance of the material that surrounds it.

3.1.1 Virtual model creation from indirect measurement system by laser scanning

Due to the limitations of the equipment which has limited their viewing angle in one of its axes, and by the geometry of study construction, it is necessary the parking of the scanner at different points. It is therefore necessary to make several sweeps with the scanner laser to obtain the necessary information from the surfaces of the elements to analyze. At the same time, the passage of each of these sweep mesh
is previously defined depending on the distance and density of points that are interested in obtaining in each sweep.

The result is a set of point clouds composed each of hundreds of thousands of individual measurements according to a Cartesian coordinate system (x, y, z) and a different density of records on the basis of previously determined resolution.

As a particular rule, the resolution used for the scans of general views is less than the case of the element details because as mentioned above this setting is performed depending on the level of definition that we want to get in each case. In the studied cases, general sweeps have been used as frame of reference of the particular element of study, to place it in its context, that is in the interior of the building and therefore without the need of a great detail but with the objective of maximizing the registered surface with the minimum number of required parking, and making the reading of the corresponding control points or targets to do possible linking of the resulting point clouds.

Otherwise occurs with the point clouds of detail, in which it is more important the definition of detail than the extension scanned, in a way that the small distance between points (less than 1 cm) allows to represent unambiguous geometries of the smaller elements.

In this way is achieved optimizing the time of scanning process, since the time of scanning process is determined by both the resolution and the registered surface. Hence the time invested in each one of the sweeps will be similar.

In addition, thanks to the high resolution camera which the scanner includes, the point clouds will be able to appreciate altogether as a virtual representation of the scanned item, after link each registered point with the colour of the corresponding pixel in the reference picture.
Depending on the results which are required, the processing of point clouds can be more or less elaborate. Thus, for this case data are processed to create textured surfaces which are generated as a triangulated irregular network (TIN).

This process is carried out by means of the specific point clouds processing software. A first data is treated with own programs of the laser scanner, Topcon ScanMaster and ImageMaster, which scanner data are imported and are transformed into the corresponding point clouds which can be linked thanks to the checkpoints. In this way, it is possible to view, measure, and edit a first model of three-dimensional data directly from the point clouds.

If it is also applied to each point its texture, linking the points with their corresponding pixels of the photographic information, we get a first virtual model which we could extract orthophotos (Fig. 1) that help and enrich the layout of the traditional planimetry: floors, elevations and sections.

Next phase is to export these first results in different consistent with several software as Blender, which allow to make 3D representation. For this software OBJ format is the most suitable for generating and treating mesh surfaces.

To obtain a whole three-dimensional model of the studied building, although it should be noted that to carry out it is necessary linking the different point clouds, thanks to the use of targets or control points, furthermore to fill inevitable gaps or shadows which are produced by this system of laser-scanning, using the information from photographs

3.1.2 Virtual model creation from indirect measurement system by Photogrammetry

For this system data collecting is determined by the position and number of pictures, as well as the resolution of each of them. Then, the correct position of the camera and the appropriate number of photographs allows us to ensure the necessary continuity between the different photographs that run through each studied element image.

To achieve this, between photo and photo camera position must be moving between 0.15 and 0.25 the distance that they keep with the object. For example, placing the camera to 3.5 m from the being photographed object, between a camera position and the next should be between 0.5 and 0.9 m, this is about a step. In this way, the shortest is the distance from the object, the greatest number of pictures is made and therefore the geometry of the element is recorded in greater detail.

In addition, the resolution of each photograph depends on the used values in each different photographic parameter, such as the opening of the diaphragm, degree of ISO sensitivity and shutter speed fundamentally.

Unlike the system with laser scanner, in photogrammetry cannot be results without processing registered data, photographs, using specific software, which means not having the point clouds directly, but it is necessary to generate textured 3D surfaces at the first moment.
At the same time, thanks to this characteristic, the more work the data the more accuracy we obtain, just to contrast with the laser scanner. This is because in photogrammetry, the amount of points are determined when processing the data, not when they are captured, so it is possible to generate different resolution three-dimensional models of the object to analyze, without making new records.

Then, as for the subsequent analysis on the material and pathologies surface as for structural and therefore geometrical construction analysis data are processed to create the corresponding textured surfaces (Fig. 3), although with a higher density of points for the geometric study, looking as above to minimize the possible deviations in the representation of the layouts, and generating sections of the several elements which make up the building.

Different specific programmes of Photogrammetry are used for the treatment of images, among them Photomodeler and Asrix, which provides three-dimensional additional models of the unique elements of the construction system of the building, as well as orthophotos (Fig. 4) that help and enrich the layout of the traditional planimetry: floors, elevations and sections.

As in the case of the laser scanner, it is also possible to export these results in OBJ format to be able to work with the software Blender.

Nowadays, thanks to the breakthrough that Photogrammetry has suffered in recent years, it can be found online software for processing images that, as usual, offer basic services for free. This is a great savings of time and costs, and even though they are not recommended for a final result, the precision obtained with them is very useful for the first three dimensional readings of the object to analyze.
3.2 TEXTURED ON THE STAGE

Once the process of creation of the virtual model has been finished, it is the turn of the surface texture of the object and the application of the corresponding materials. In our case, both works are already defined because, as mentioned previously, thanks to the precision and high degree of definition that used collecting data systems we provide, the resulting surfaces are not abstract geometric definitions of reality but exact copy of the original.

However, it should review these surface finishes, to test its application on whole of the element. With the different editing modes available in Blender it is possible to rectify the parts we think necessary to make. In particular, digital sculpting mode allows to carry out this work until you get the desired result.

It applies the same to the application of materials, because the inserted object in Blender already has them. They are photographs taken for the treatment by photogrammetry, so again, the result is totally faithful to reality. Thanks to the orthophotos made during the modelling phase, applying them as procedural textures, it is possible to redefine those parts that are considered necessary to obtain different effects.

![Fig 4. Church of San Mateo. Orthophoto of the Omni plant obtained from the textured surface after processing of data with the 123Dcatch of Autodesk software.](image)

It should take into account that the final representation of the surface is determined by the kind of material and its behaviour with light, so the material parameters must be defined together with light parameters.

3.3 STAGE LIGHTING

The lighting together with cameras are the two only new elements that we must introduce on stage, because as we have seen both the geometry and the surface finish of the objects are determined from the beginning phase of data collection.

This work is done directly from programs of 3D modelling, entering the type of lights needed to achieve the desired effects.
Blender incorporates five basic types of light sources, whose properties of intensity, distance to the object, angle of incidence, etc can be determined. Each of them has associated functionality linked to different kinds of scenes. In this way, we have onmidirectional lights, pointed, to simulate the Sun and even that does not produce thrown shadows.

The aim is to provide to the stage the most realistic appearance as it was possible, used lighting must respond to environmental conditions of the represented architectural stage. So, in addition to introducing the appropriate types of light sources, it is necessary to simulate reflection and propagation of light that occur in each stage.

To do this, each program has its own method of rendering which relies heavily on the resulting realism. Thanks to it, we can establish the limit of detail of the stage that we want to simulate, defining the number of maximum interactions of light with surfaces (number of bounces), the spatial resolution of the image... As a result, much more accurate are the rendering method, greater realism will be in the simulated stage, but it will be also greater time to generate it.

Fig 5. Blender interface to introduce lights.

Blender incorporates two methods of simulation of lighting in its rendering engine to attempt to estimate the largest number of interactions of light with the surfaces of the scene.
The first of them, ambient occlusion technique or ambient light, is a very fast method to simulate the contribution from ambient light, a kind of light that comes from all directions. This kind of lighting, despite not being physically correct, allows to get right results in relatively short times. Therefore, this technique is very useful for those complex stages used in interactive applications such as video games.

The second method, radiosity technique, calculates light exchange between different surfaces which make up the stage, dividing the model into small units that uses for the final light distribution. The calculation is done regardless of point of view so both the time spent and the final file size are significant in comparison with the previous method. However, the result achieved is a much more realistic appearance.

The use of one or another method is determined by the result that we want to achieve in each of the stages, so they can be considered as complementary methods as applied to video games scenarios.

4. CONCLUSIONS

Using three-dimensional models, obtained by means of the latest technologies in data collection for the architectural surveys, the building of stages represents a breakthrough for the industry of video game, thanks to the detail and precision that offer which allow to represent reality with the smallest detail.

In addition, it also supposes several saves of time and resources because phases of creation, modelling and textured of the objects which make up the stage are replaced by the work of collecting data and further processing, so we only have to work lighting.

Moreover, the use of Blender as a platform for creation of stages, allows to develop all of the work relating to the final creation of the stage with the same program which avoids possible compatibility problems and loss of definition that involves the use of different programs. Furthermore, because of Blender is developed in open source and free software, changes and improvements are facilitated by developers who use it.

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Development of Thermal Uncooled Cameras for Day and Night Vision

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Abstract

Due to strong international demands for new types of thermal cameras with higher features infrared detectors market continues to grow steadily. Thermal cameras are now present in a wide range of applications - military, commercial and space. This paper presents the development of uncooled thermal camera with polarization filter that can provide enhanced images after calibration. The polarization filters allow selective transmission of thermal radiation from the scene taking into account that the polarization of natural objects is different from those of artificial targets in the scene in question. Uncooled thermal camera developed it’s a multifunctional device designed to see or monitor the target in a scene of interest, driving vehicles safe in the night or unfavourable weather condition, with high efficiency on targets or reflecting obstacles or being in scenes with high reflection, night scenes with much foliage, with metal objects or with parasitic reflections.

Key words: uncooled thermal camera, day/night vision, polarization filter

1. INTRODUCTION

Thermal imaging is one of the technologies of paramount importance for military and security sector. Thermal imaging has found also numerous applications in a civilian sector. Therefore, it is not strange that there is a lot of effort to improve existing technologies of manufacturing thermal imagers and to develop new technologies. It can be distinguish several trends in thermal imaging technology:

a. low cost, low/medium resolution non-cooled thermal imagers
b. high-resolution cooled thermal imagers with improved surveillance capabilities
c. dual band thermal imagers
d. multi-sensor systems

Technology of non-cooled thermal imaging experienced extremely rapid growth during the last decade (Chrzanowski 2010). Parameters of non-cooled imagers improved so much that non-cooled imagers dominate the actual market of short range surveillance thermal imagers in both military and civilian applications. The critical factor on this market is the price. Therefore, now, the technology efforts concentrate on a decrease in manufacturing costs but still keeping or even improving the image quality and reliability. Critical areas are two modules of non-cooled thermal imagers: infrared focal plane and infrared optics. The top end of non-cooled thermal imagers offers 640x480 image resolution and is directed mostly towards more demanding military applications. Non-cooled thermal imagers of 320x240 image resolution are typically targeted to general surveillance and radiometric applications. Imagers of 160x120 or lower resolution are targeted to mass applications in low-cost intruder detection systems or as non-contact imaging thermometers. [1]
2. TECHNICAL DESCRIPTION

Uncooled thermal camera developed it’s a multifunctional device designed to see or monitor the target in a scene of interest, driving vehicles safe in the night or adverse weather condition (noise of clutter), with high efficiency on targets or reflecting obstacles or being in scenes with high reflection, night scenes with much foliage, with metal objects (landmines) or with parasitic reflections (areas with lakes and rivers). This device has a lot of capabilities as:

- continuous observation of targets of interest both day and night, with a high probability of finding targets even in natural unfavourable weather conditions (thin mist, smoke, dust, rain) or artificial avoiding conditions (masking by specific countermeasures: smoke curtains, paint, vegetation, etc.);

- maintain the level of location camouflaging where is situated, his functioning being passive and having no design elements that emit detectable radiation.

Uncooled thermal camera provides acquisition of thermal radiation in the spectral domain LWIR (long wave infrared) in the analyzed scene, which it’s displayed on an external monitor in the video format that can be analysed by the human eye.

Fig. 1. Overview of the camera front in working position with polarization filter

Fig. 2. Overview of the camera front in working position without polarization filter

Fig. 3. Overview rear camera with the power input data communications on USB miniport (left connector) and analogue video output system (plug right) to display the image.
The uncooled thermal camera consists of the following basic components:

- Infrared lens with a focal length 25 mm, relative aperture 1.4;
- Detection matrix (where are fixed and aligned infrared lens) of 640 x 480 pixels with pixel size of 17 μm;
- Protective case of aluminium alloy;
- Polarization filter of zinc selenide, grid type, set in a 360° folding mount; the filter operates in the spectral range of 8-12 μm and is designed to bring out, in case of weak thermal radiation and drowned by clutter, potential dangers that go unnoticed without it; the camera operates with or without the filter as needed;
- System for positioning / keeping polarization filter on the optical axis of infrared lens;
- Electrical interfaces for external connection;
- Detector assembly software correction.

a) The infrared lens (figure 5) is with fix focal length and is designed to collect infrared radiation from the observation scene. Infrared lens provides the following functions:

- Collect infrared radiation from observed scene;
- Concentrate collected infrared radiation on FPA (focal plane array)

Fig. 4. The block scheme of uncooled thermal camera.
b) The detector assembly contains an array with microbolometer detectors (FPA), a mechanical modulator (rotational or translational motion) and its FPA interface with the rest of electronic modules to which it is connected and provides image processing and communication with the FPA (frontal analogue module, image processing module and external connection interface, including embedded software) as follows:

* Frontal analogue module, which is composed of three sub-modules:
  * Power supply;
  * Analogue / Digital Converter;
  * Thermoelectric cooler.

* Image processing module, which contains four sub-modules:
  * Digital Memory RAM and Flash Memory;
  * Digital signal processor;
  * User-configurable integrated digital circuit;

The detector assembly provides the following functions:
* temperature differences transformation from the scene in electric signals through FPA;
* generation of all internal power sources;
* input interface for external synchronization of readout electronic module;
* input interface to control and command readout electronic module;
* specific inputs of types "biases" and "clocks";
* ensures multiplexing of analogue output signals from the FPA and achieve digitization of analogue signals through ADC (analogue/digital converter);
* uniformity correction on 1 and 2 points;
* replacing defective pixels;
* integration time adjustment;
* histogram equalization;
• adjusting the contrast and brightness;
• digital zoom;
• converts electrical signals into video signals;
• receiving incoming data signals;
• providing output a digital video signal.

c) External electrical interfaces connect presented modules with image display system (monitor), receive external power supply and deliver video signals (analogue NTSC / PAL and / or digital) and data.

d) External mechanical connection interface connects modules listed above with the system where are placed (platform, etc.) depending on the beneficiary's request.

e) Detector assembly correction software improves image quality and ensures rapid transfer abroad;

The polarization filters allow selective transmission of thermal radiation from the scene taking into account that the polarization of natural objects is different from those of artificial targets in the scene in question. Polarization filter blocks light radiation of any wavelength but the light has to oscillate in a specific plane, and let go just the light from perpendicular plane. Polarization filter consists of a polymer layer with long molecule oriented parallel in one direction through specific manufacturing processes. Diameter parallel with polymer fibers it is called passage axis because the incident light that oscillates in this plan goes unabated. Perpendicular diameter to the precedent is called blocking axis because the light that oscillates in the perpendicular plane of the passage axis is stopped (almost) entirely.

f) The fitting / positioning system of polarization filters provides coaxial axes between polarization filters and optical axis of the infrared lens LWIR and FPA matrix;

g) Protective casing ensures uniform and constant temperature for infrared lens LWIR and detector assembly.

Technical characteristics of prototype:

- Visual field: 25°(H) x 20°(V) ±10%;
- Working spectral domain 7.5-13.5 μm ± 0.1 μm;
- NETD (without polarization filter)<100 mK ;
- Power supply: 4 – 6 V;
- Power consumption: ~ 1 W;
- Operating time entry: ~3 sec;
- Analogue video output;
- Serial remote control: RS 232;
- Electronic zoom: 2x, 4x, 8x;
- Range of aligning: 10 m...∞;
- Observation distance of targets with size – 1.5 x 0.5 m: 400...800 m detection, 100...200 m recognition, 50...100 m identifying;
3. RESULTS OF EXPERIMENTS
To test uncooled thermal camera features the following parameters were analysed:

- MRTD (Minimum Resolvable Temperature Difference)
- MTF (Modulation Transfer Function)
- SRF (Slit Response Function)
- NETD (Noise Equivalent Temperature Difference)

3.1. MRTD
If temperature measurement is not as critical as imaging, then the MRTD may be more useful. As with MDT (Minimum Detectable Temperature), to assess this parameter the infrared imager views small slots of equal width whose temperature is gradually changed to that of the background. The temperature difference at which the slots are no longer discernible is the MRTD. [2]

![MRTD diagram without polarization filter.](image-url)
Fig. 7. MRTD diagram with polarization filter.

Fig. 8. MTF diagram without polarization filter.
Fig. 9. MTF diagram with polarization filter.

Fig. 10. SRF diagram without polarization filter.
3.2. MTF

MTF is the scientific method used of describing lens performance. The modulation transfer function is a measure of the transfer of contrast from the subject to the image. In other words, it measures how the lens reproduces detail from the object to the image produced by the lens [3].

3.3. SRF

Thermal resolution can be expressed as the SRF in terms of a subtended angle or the number of resolvable elements in a longitudinal line. The SRF may be different in the vertical and horizontal planes. The percentage of SRF indicates the size of a slit when the temperature shown is that percentage of true. A 50% SRF will not be acceptable if accurate temperature measurements are to be made, 90% or more would be needed. Systems may be similar at 50% by quite different at 90%, so it is useful to know the temperature at which the SRF is quoted when comparing systems [2].

3.4. NETD

NETD takes account of the electronic noise, which vary depending on the temperature of the object. Usually, NETD is smaller as temperature rises. When the subject is extremely small, the spatial resolution of the system must be considered.
Fig. 13. NETD result with polarization filter.

![Fig. 13. NETD result with polarization filter.](image)

Fig. 14. Pictures taken with day camera (a) and with uncooled thermal camera (b).

![Fig. 14. Pictures taken with day camera (a) and with uncooled thermal camera (b).](image)

### 4. CONCLUSIONS

After analysing the results obtained during laboratory experiments it’s obvious that the main parameters that characterising image quality of the thermal uncooled camera have an improvement when polarization filter it’s used. The polymer layer from the polarization filter it’s sensible and can be easy damaged. The measured parameters of uncooled thermal camera can vary significantly when the imager heats up.

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STUDENTS’ PERCEPTION OF THEIR PARTICIPATIVE ROLE IN THE UNIVERSITY

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Abstract

Students are at the core of the University’s education mission. Therefore, in addition to their academic performance, they must also be responsible for building their university and social communities. This suggests that students’ participation in university life is a key element in their education, but frequently it remains at a symbolic level. The purpose of this study is to ascertain the meaning and significance that students attach to their active involvement in university life, identifying their interests, needs and difficulties in taking on such a role. The results derive from the application of a 60-item questionnaire answered by students from diverse courses at the University Ramon Llull in Barcelona, and from a focus group conducted with these students’ representatives. Following the analysis of these data, we suggest several factors that can enhance students’ involvement in priority areas such as information and communication, internal participation and external representation, personal achievement and training.

Key words: higher education, student representation, university participation

1. INTRODUCTION

As part of the European Higher Education Area, students, as the main protagonists of universities’ educational mission, are not only responsible for their academic performance but also for building their university community and serving society, as stated by Bergan (2004, 30). In this sense, participation, viewed as a kind of intervention that allows people to recognise themselves and be recognised as actors within a given society, is a tool for building university life, and as such it falls within students’ competence to develop it by strengthening their representation and promoting initiatives that match both their own interests and those of the community. In short, participation is an open, dynamic process that entails a shared project and requires commitment and involvement.

In Bergen in 2005, the European governments accepted the document drafted by the European Association for Quality Assurance in Higher Education (ENQA) entitled “Standards and Guidelines for Quality Assurance in the European Higher Education Area”, in which it asked quality agencies to include students in their evaluation and accreditation processes.

Based on this recommendation, the ANECA Working Group for Student Participation Quality Policies (GATPEPC) was established to study the situation in Spain and the European referents with the goal of achieving student participation in the different spheres of university quality evaluation.

There are three necessary factors for active student participation in university life: motivation, or wanting to participate; training, or knowing how to participate; and participative organisation, or being able to participate.
Motivation is a totally necessary condition for participation to occur. De la Riva (1994) defines motivation as the entire set of drives, needs, wishes, interests and motives that are capable of mobilisation action, in this case, participation. To motivate students, their participation must be encouraged in all the different areas around them; they must be encouraged to get information and become aware of the value and importance of participating so that they share their vision of the university in an ongoing, systematic fashion, express their concerns and plans and help to optimise the services offered to them collaboratively and constructively. Boqué, Alguacil and Pañellas (2011) stress the communicative dimension, one of the most fundamental aspects in that it affects students’ motivation, their ability to participate and improvements in the understanding of both students and their university.

With regard to training for participation, we mean not only the more technical, strategic or managerial dimension but also building a true participative culture as part of the university’s social capital. In this sense, all spaces of participation that the institution already has serve as an important foundation for the experience of democratic commitment, from classroom management, curricular learning processes, educational and evaluative methodologies, joint knowledge-building, the roles of teacher and student and positive conflict management to participation in social, cultural or political actions through the channels set up for this purpose.

As we can see, student participation can be channelled towards specific topics, such as improving university quality, or to other spheres related to the roles of the representatives which require the development of generic and specific competences related to the jobs they perform, including communication, participation in clubs and organisations, conflict management, charitable and development cooperation projects, the organisation of cultural events, promotion of the values of peaceful coexistence, approximation of university regulations, exchanges with other universities, management of the job placement service, defence of gender parity and equality, promotion of disabled students’ rights, attention to students, collaboration with the university union, sustainability and healthful activities, scholarship programmes, national and international participation, project management, organisation of debate and reflection sessions and more.

The organisation of channels and venues for participation is partly determined by the Statute on University Students (BOE no. 318 dated 31/11/2010), approved by the Ministry of Education. It assumes a democratic structure of the institution, a clarification of the venues of participation, the positioning of the different stakeholders and the determination of the university-community ties. According to Oraisón (2009), participation is related to factors such as the interpretations of the management team, the leadership style it implements, the degree of social distance that teachers establish with students, the different stakeholders’ representations of each other and the institution’s acceptance or rejection of innovation. Participation can be managed asymmetrically via a social distance legitimised by knowledge or, to the contrary, symmetrically based on recognition of the students and the other members of the university community as valid, autonomous interlocutors.

As noted above, even though the issue of participation in the different spheres of community life has gained ground in recent years, the university community has barely joined the debate on participation in its operations (Michavila and Parejo, 2008; Pérez and Díaz, 2005). Student participation has been merely symbolic, and still is in the majority of cases (Giménez 2001; report Urraca (2005); Soler et al, 2011).

In order to improve participative action, in this study we set out primarily to identify the motivations of and difficulties in student participation in university life and representational bodies as a way of providing guidelines for the design of a student participation and representation programme.
2. **RESEARCH DESIGN**

The study outlined below is empirical and both descriptive and interpretative within the field of the social sciences. It combines quantitative and qualitative data analysis. To describe the design, we have followed the in the footsteps of Bisquerra and Sabariego (2004) and Hernández Sampieri, Fernández Collado and Baptista (2003).

We shall describe the social phenomenon that is the focal point of this study based on the subjective experiences of the individuals involved, namely university students from the Blanquerna Faculty of Psychology, Education Studies and Sports (FPCEE Blanquerna) at the University Ramon Llull (URL) from the perspective of its professors and from the standpoint of the heads of the different programmes of study.

The quantitative analysis refers to the data obtained on the students’ perceptions of their own participation in the university.

The qualitative analysis consists of an assessment of the results of the quantitative study performed by a representative of the course delegates.

### 2.1 Participants

Given the nature of this study, the means used to obtain the information on student participation and representation included a variety of different measurement instruments. We planned to use two samples: Sample A made up of 374 students in their third year of diploma courses and fourth year of Bachelor’s programmes at FPCEE Blanquerna, that is, students in the last year of their initial university training; and Sample B, made up of two student delegates or representatives from each of the programmes, one from the first cycle and one from the second cycle.

### 2.2 Instruments

To carry out this study, two instruments were designed specifically to gather the data for this research:

- A questionnaire targeted at the students in Sample A, which refers to the standards of student participation and representation at the university.

Given that we found no instruments that met the psychometric requirements of our study, the questionnaire for students was designed specifically for our research.

This instrument asks questions about the following dimensions: information and communication strategies; meaning and importance of internal participation and representation; social commitment and external representation; motivation, satisfaction and personal involvement; profile and educational background.

The questionnaire consists of an introductory part which briefly explains the rationale for the study. It then continues with 60 different kinds of items: closed-ended questions on a Likert scale ranging from one to four; closed-ended multiple choice questions; and open-ended questions in which respondents had to complete a sentence.

The variables on the respondent profile were: v1, studying in their last year of a diploma or Bachelor’s at Blanquerna’s FPCEE; v2, gender; and v3, having served as a student representative at the university.

- A script for a group discussion with student representatives (Sample B).
3. RESULTS AND DISCUSSION

In this section, we present the results of the student questionnaire broken down into the five dimensions studied.

3.1 Dimension A: Information and communication strategies

The first item refers to the channels of communication through which the students receive information. Figure 1 shows that half of the students claim that they receive this information via websites. Lower numbers mentioned that they receive it from professors and classmates. Worth noting is that almost 20% do not seek information on how to participate in the university.

If we compare the results of item 1, “Channels of communication through which students receive information” and item 11, “Channels which the students consider the best for receiving information” (Figure 1), we can see that students prefer first the websites of their department and the university, and secondly the faculty.

![Figure 1](image-url)

**Figure 1.** Comparison between the channels of communication through which students usually receive information on participation and those which they consider the best for receiving information

The data on the responses on the remaining items from this dimension are in Tables 1 and 2, below.
### Table 1. Results of the items in Dimension A (Items 2 to 9)

<table>
<thead>
<tr>
<th>Dimension A: Information and communication strategies</th>
<th>M</th>
<th>σ</th>
<th>Sig.v1</th>
<th>Sig.v2</th>
<th>Sig.v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 I am aware of the job that the class delegate does on behalf of the group.</td>
<td>2.54</td>
<td>0.904</td>
<td>&lt;0.001</td>
<td>&lt;0.0001</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>3 I am aware of the functions of the delegate of my programme and the activities of collective interest that the Student Council promotes.</td>
<td>2.05</td>
<td>0.888</td>
<td>&lt;0.001</td>
<td>0.002</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>4 I am aware of the proposals to improve the academic dynamic implemented through the URL’s Student Council.</td>
<td>1.69</td>
<td>0.795</td>
<td>0.005</td>
<td>0.008</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>5 I am aware of the charitable action project and how I can participate in it.</td>
<td>1.24</td>
<td>0.559</td>
<td>0.534</td>
<td>0.500</td>
<td>0.088</td>
</tr>
<tr>
<td>6 I am aware of the range of free-of-charge sports, physical and leisure activities offered by the university.</td>
<td>1.63</td>
<td>0.734</td>
<td>0.905</td>
<td>0.502</td>
<td>0.593</td>
</tr>
<tr>
<td>7 I am aware of the spaces of reflection, cultural entertainment and religion offered by the Pastoral Department of the faculty.</td>
<td>1.40</td>
<td>0.571</td>
<td>0.023</td>
<td>0.017</td>
<td>0.086</td>
</tr>
<tr>
<td>8 I have information on the recognition of academic credits for engaging in student representation.</td>
<td>1.71</td>
<td>0.753</td>
<td>0.032</td>
<td>0.762</td>
<td>0.011</td>
</tr>
<tr>
<td>9 I am aware of “The Statute of the University Student” and in particular chapter VIII, “On student participation and representation”.</td>
<td>1.20</td>
<td>0.450</td>
<td>0.407</td>
<td>0.708</td>
<td>0.026</td>
</tr>
</tbody>
</table>

### Table 2. Results of the items from Dimension A (Items 10 to 12)

<table>
<thead>
<tr>
<th>Dimension A: Information and communication strategies</th>
<th>M</th>
<th>σ</th>
<th>Sig.v1</th>
<th>Sig.v2</th>
<th>Sig.v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 I have information on student associations, student networks and social movements currently operating, such as the ACE (Catalan Student Association), the ESU (European Students’ Union) and the EUA (European University Association).</td>
<td>1.26</td>
<td>0.485</td>
<td>0.546</td>
<td>0.866</td>
<td>0.013</td>
</tr>
<tr>
<td>12 I am aware of what the class delegate does on behalf of the group.</td>
<td>2.04</td>
<td>0.816</td>
<td>0.062</td>
<td>0.020</td>
<td>0.007</td>
</tr>
<tr>
<td>13 I am aware of the functions of the delegate from my programme and the activities of collective interest that the Student Council promotes.</td>
<td>2.12</td>
<td>0.886</td>
<td>0.032</td>
<td>0.254</td>
<td>0.192</td>
</tr>
</tbody>
</table>
We would like to stress that the students feel fairly ill-informed about the participative activities available to them, including what their representatives do, given that even though Item 2 has the highest average, the highest percentage is not found in the “strongly agree” bracket; rather the values are distributed equally in the “somewhat disagree” and “somewhat agree” categories. There is even less knowledge about the activities of the Student Council, since the sum of the percentages given for “nothing” and “little” is 73.3%, and this total is even higher, 86.8%, regarding the activities stemming from the URL’s Student Council.

With regard to the different activities offered by the department (items 5, 6 and 7) which are outlined on the website, the students show a broad lack of awareness (96.2%, 88.4% and 95.7, respectively, adding the percentages of “nothing” and “little”). The fact that they can receive credits for being a student representative also earns very low percentages in terms of awareness. Thus, 88% say that they have no or little information, both answers with similar percentages.

A full 98.4% and 97.9% of students are unaware of other issues that affect students but are not an inherent part of the department’s internal life, such as the recent approval of “The Statute of the University Student” and student movements and networks.

Percentages near 30% indicate that some students know how to forward complaints or suggestions to their department. However, a few months after completing their degrees, 60% of the students are still unaware of how to do this.

We accept that there is no evidence of significant differences in the items referring to knowledge of the charitable actions or different sports and leisure activities. Nor did we find statistically significant differences in the items on knowledge of “The Statute of the University Student”, on student associations and on how to forward suggestions to the university.

In contrast, we do have indicators of significant differences in the items on the roles and jobs of the class, departmental and university delegates, recognition of credits to serve as a representative and knowing how to forward a complaint to the university, as well as in the information received on the spaces of reflection, cultural entertainment and religion.

In these items, the average among the diploma students is higher than among the Bachelor’s students; that is, it seems that although the differences are slim, the future diploma graduates are better informed on these issues than the future Bachelor’s graduates.

For the “Gender” variable, females show a greater knowledge of the roles and jobs of the student class, departmental and university delegates, the spaces of reflection, cultural entertainment and religion and how to forward a suggestion to the university. For the other items, there were no significant differences in the information held by males and females.

We can observe that the student representatives have greater knowledge of all the topics questioned than their classmates, except for the sports and leisure activities and how to forward a suggestion to the university. This is shown by the results of Items 6 to 13 in which the representatives show more knowledge, although the difference is not significant.

3.2 Dimension B: Meaning and importance of internal participation and representation

The first five items in this dimension refer to the definition and characteristics of student participation, the next two to student competences in terms of strengthening involvement in the university and other contexts, and the seven remaining to the university’s actions to facilitate and encourage processes of
student participation and representation. The sentence to be completed asks for actions that could improve student participation.

Tables 3 and 4 show the results on the respondents’ definition of the model of participation.

<table>
<thead>
<tr>
<th>Dimension B: Meaning and importance of internal participation and representation</th>
<th>M</th>
<th>σ</th>
<th>Sig.v1</th>
<th>Sig.v2</th>
<th>Sig.v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 Participation is a learning process, a means of education and not only management.</td>
<td>3.21</td>
<td>0.596</td>
<td>0.069</td>
<td>0.035</td>
<td>0.329</td>
</tr>
<tr>
<td>15 Participation implies sharing a common goal.</td>
<td>3.27</td>
<td>0.599</td>
<td>0.224</td>
<td>0.001</td>
<td>0.166</td>
</tr>
<tr>
<td>16 Participation is a form of intervention that enables individuals to recognise themselves and be recognised as stakeholders within a given society.</td>
<td>3.28</td>
<td>0.626</td>
<td>0.009</td>
<td>0.001</td>
<td>0.513</td>
</tr>
<tr>
<td>17 Participation means having real decision-making power, and therefore it is linked to terms like responsibility, commitment and involvement.</td>
<td>3.32</td>
<td>0.643</td>
<td>0.611</td>
<td>0.060</td>
<td>0.232</td>
</tr>
<tr>
<td>18 Participation is a right but also a responsibility of all students.</td>
<td>3.27</td>
<td>0.689</td>
<td>0.036</td>
<td>0.007</td>
<td>0.438</td>
</tr>
<tr>
<td>19 It is students’ responsibility to develop student life by strengthening the representation of the delegates and promoting initiatives that reflect their own interests.</td>
<td>3.03</td>
<td>0.611</td>
<td>0.018</td>
<td>0.045</td>
<td>0.316</td>
</tr>
<tr>
<td>20 The Bologna Process offers a new paradigm in which education is student-centred. Therefore, students have to get actively and effectively involved in university organisation, in quality processes, etc.</td>
<td>2.78</td>
<td>0.819</td>
<td>0.415</td>
<td>0.041</td>
<td>0.827</td>
</tr>
</tbody>
</table>

Table 3. Results of the items from Dimension B (Items 14 to 20)

<table>
<thead>
<tr>
<th>Dimension B: Meaning and importance of internal participation and representation</th>
<th>M</th>
<th>σ</th>
<th>Sig.v1</th>
<th>Sig.v2</th>
<th>Sig.v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 A high-quality university has to include participation in its quality plans.</td>
<td>3.29</td>
<td>0.633</td>
<td>0.713</td>
<td>0.023</td>
<td>0.243</td>
</tr>
<tr>
<td>22 In order for participation and representation processes to take place as elements to improve the quality of education, they must be promoted by the university itself.</td>
<td>3.33</td>
<td>0.632</td>
<td>0.668</td>
<td>0.016</td>
<td>0.107</td>
</tr>
<tr>
<td>23 The university should develop mechanisms to recognise and certify student representation.</td>
<td>3.28</td>
<td>0.615</td>
<td>0.158</td>
<td>0.179</td>
<td>0.624</td>
</tr>
<tr>
<td>24 The educational community has to generate institutional venues of dialogue</td>
<td>3.28</td>
<td>0.562</td>
<td>0.003</td>
<td>0.019</td>
<td>0.388</td>
</tr>
</tbody>
</table>
and critical thinking where students can actively participate.

<table>
<thead>
<tr>
<th></th>
<th>Participation would improve if there were clear norms that encourage it.</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>3.08</td>
<td>0.746</td>
<td>0.926</td>
<td>0.625</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Participation would improve if there were a group that promoted it in the department.</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>3.30</td>
<td>0.687</td>
<td>0.933</td>
<td>0.019</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Participation would improve if the channels of communication were truly communicative venues between students, professors, non-teaching staff, administration, etc.</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>3.39</td>
<td>0.593</td>
<td>0.479</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Table 4. Results of the items from Dimension B (Items 21 to 27)

The students recognise the value of participation as a means of education, as a shared responsibility in a shared project and as a source of possibilities for being active agents in society. They also recognise their inherent right to participate with decision-making powers, and they know what commitment to and involvement in the university and society in general entails. We can make these statements after analysing the results of Items 14 to 18, since the agreement range is always between 87% and 93%, although there may be some nuances when we examine the more qualitative part of the study, as between 50% and 60% of the students claim to “agree somewhat”.

With regard to the students’ vision of their own involvement in the university, we can see that the highest values come in the “somewhat agree” category, and that almost 30% of the students think that they should not effectively get involved in university organisation, quality processes or other issues linked to their learning process. In turn, 15% believe that it is not within students’ sphere of competence to promote initiatives, even if they are related to their interests.

With regard to the university’s responsibility and actions to encourage and motivate student participation, the students think that it is important for the university to create participative processes, but that the educational community should primarily create spaces of dialogue and foster critical thinking (95.4% agreement). They also believe that the university should include student participation in its strategic plans as a quality factor and that it should recognise and certify student representation.

It should be noted that in all the items in this dimension, disagreement accounts for less than 10% of the responses except in items 25 (20.1%) and 26 (10.3%). The latter result indicates that a large group of students believe that regulations and a promotional group would be effective ways to encourage participation.

However, the students resoundingly state (94.8%) that participation would mainly improve if the channels of communication among the members of the educational community were real spaces of communication.

Of all the responses to the open-ended sentence “Participation would improve if...”, the four most common answers are illustrated in Figure 2.
With regard to the variable “Studying their last year in a diploma or Bachelor’s”, we found significant differences in the degree of agreement with items 16, 18, 19 and 24. That is, students in diploma programmes agree more than students in Bachelor’s degrees with two aspects that define participation: recognition as active agents in society and participation as both a right and a responsibility. This also holds true with regard to students’ competence to promote initiatives and strengthen the representation of their delegates, as well as in the need for the educational community to create spaces of dialogue that foster students’ critical thinking. With regard to the other items, the differences are not significant.

By analysing the results by gender, females show a higher level of agreement with all the items, and almost all the differences are significant except Items 17, 23 and 25. That is, males and females express similar degrees of agreement that participation entails having a real decision-making power, that the university should recognise and certify student representation, and that participation would improve if there were regulations that facilitated it.

For the variable “having served as a student representative at the university”, even though there are slight differences in the degree of agreement in favour of the student representatives, none of these differences is statistically significant.

3.3 Dimension C: Social commitment and external representation

This dimension is divided into two parts of three items each. The first (items 28, 29 and 30) examines the benefits of student participation and representation in institutions of sociocultural development or in educational administrations, while the second (items 31, 32 and 33) examines the role of the university as a spearhead of its commitment with society as an educational institution.
### Table 5. Results of the items from Dimension C

The scores were divided almost identically in the first three items. The highest scores are for “somewhat agree”, with percentages between 63% and 69%. The “totally agree” option earned percentages between 21% and 28%, and the sum of the answers expressing disagreement is less than 10% in both cases.

Given these results, we can say that students value external representation as a contribution to sociocultural development, as a means for achieving closer ties with institutions and as a means of identifying with the process of managing these institutions.

In the last three items, the highest percentages also came in the “somewhat agree” response, but the percentages of respondents who “totally agree” rose compared to the items in the first part, achieving similar values in showing that students believe that the university should be a part of the sociocultural milieu around it.

The answers that show disagreement earned very low percentages, reaching only 10% in the item that stated that the university should promote student participation in clubs and social movements.

In all the items in dimension C, the differences are only significant in item 33, in the sense that the students in diploma courses value the university as a part of the sociocultural milieu around it more than Bachelor’s students do.

If we bear in mind the gender variable, we see that females agree more with the statements in this dimension than males, a result which also obtained in the previous categories. All of these differences

<table>
<thead>
<tr>
<th>Dimension C: Social commitment and external representation</th>
<th>M</th>
<th>σ</th>
<th>Sig.v1</th>
<th>Sig.v2</th>
<th>Sig.v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 Participation and representation contribute to the sociocultural development of the university, which allows for greater interaction between the university and society.</td>
<td>3.18</td>
<td>0.547</td>
<td>0.134</td>
<td>0.026</td>
<td>0.143</td>
</tr>
<tr>
<td>29 Student participation contributes to their education and to their identification with the process of institutional management in general.</td>
<td>3.11</td>
<td>0.570</td>
<td>0.339</td>
<td>0.229</td>
<td>0.991</td>
</tr>
<tr>
<td>30 Social projects can be an effective means of achieving a closer tie between institutions and students.</td>
<td>3.19</td>
<td>0.576</td>
<td>0.523</td>
<td>0.025</td>
<td>0.044</td>
</tr>
<tr>
<td>31 To enable students’ voices to be heard, their representatives and the faculty and non-teaching staff must formulate contributions to the public discourse on issues that affect the university itself or the community.</td>
<td>3.32</td>
<td>0.621</td>
<td>0.218</td>
<td>&lt;0.001</td>
<td>0.810</td>
</tr>
<tr>
<td>32 The university should promote student participation in clubs and social movements.</td>
<td>3.29</td>
<td>0.647</td>
<td>0.494</td>
<td>0.015</td>
<td>0.328</td>
</tr>
<tr>
<td>33 The university should be a part of the sociocultural milieu around it.</td>
<td>3.41</td>
<td>0.566</td>
<td>0.026</td>
<td>0.013</td>
<td>0.541</td>
</tr>
</tbody>
</table>
are significant except when discussing the fact that student participation contributes to their education and identification with the process of managing the institutions, where the differences are minimal.

The opinions of the student representatives and the students they represent barely differ, as the differences in averages are not significant in five of the six items. Only in item 30 can we consider the differences significant, and therefore we can claim that students who have represented their peers agree more than the other students that social projects can be an effective means to achieve closer ties with institutions.

3.4 Dimension D: Motivation, satisfaction and personal involvement

This dimension contains 17 items and three sentences to be completed. Of the 17 items, 13 ask for answers on a Likert scale with values from 1 to 4 which correspond to a gradation that ranges from total agreement to total disagreement. They refer to the benefits for students of involvement in university life, the reasons or causes behind a lack of motivation to participate, the factors linked to personal satisfaction at participating and whether the students feel well-represented by their delegates and whether they feel that they have a voice at the university.

The remaining items are multiple choice and indicate the kinds of activities in which the students participate and the reasons why they do or do not participate or serve as a representative.

The three sentences to be completed appeal directly to the students in the first person and ask them to explain the reasons why they participate in university activities or why they choose to represent their classmates.

<table>
<thead>
<tr>
<th>Dimension D: Motivation, satisfaction and personal involvement</th>
<th>M</th>
<th>σ</th>
<th>Sig.v1</th>
<th>Sig.v2</th>
<th>Sig.v3</th>
</tr>
</thead>
<tbody>
<tr>
<td>34 Participation in university life strengthens the ties among students.</td>
<td>3.34</td>
<td>0.652</td>
<td>0.685</td>
<td>0.549</td>
<td>0.095</td>
</tr>
<tr>
<td>35 Involvement in participative activities improves communication among students.</td>
<td>3.41</td>
<td>0.610</td>
<td>0.694</td>
<td>0.827</td>
<td>0.182</td>
</tr>
<tr>
<td>36 Motivation is a necessary condition for participation to occur.</td>
<td>3.67</td>
<td>0.520</td>
<td>0.970</td>
<td>0.166</td>
<td>0.904</td>
</tr>
<tr>
<td>37 Students are not motivated to participate because their opinions have little effect on decision-making.</td>
<td>3.45</td>
<td>0.680</td>
<td>0.293</td>
<td>0.376</td>
<td>0.383</td>
</tr>
<tr>
<td>38 Students’ low levels of participation are related to their lack of interest and information.</td>
<td>3.24</td>
<td>0.819</td>
<td>0.877</td>
<td>0.954</td>
<td>0.526</td>
</tr>
<tr>
<td>39 Representation boosts students’ social projection.</td>
<td>3.06</td>
<td>0.559</td>
<td>0.066</td>
<td>0.086</td>
<td>0.066</td>
</tr>
<tr>
<td>40 Participation in university projects boosts the feeling of belonging to the university.</td>
<td>3.17</td>
<td>0.724</td>
<td>0.262</td>
<td>0.190</td>
<td>0.020</td>
</tr>
</tbody>
</table>

Table 6. Results of the items from Dimension D (Items 34 to 40)
Almost 70% of the students totally agree that motivation is a necessary condition for participation to occur, and the remaining 30% somewhat agree with this statement. Of the remaining items, we have reached the conclusion that almost 50% of the students are convinced that participation in university life improves communication and fosters ties among them, and another 50% somewhat agrees with this statement. However, a similar percentage “totally agrees” that a lack of interest and information, along with the scant attention paid to their opinions, are the causes of low levels of participation. Almost 40% are somewhat certain that the lack of participation stems from these causes.

With regard to personal satisfaction with getting involved in participative and representative activities, percentages between 60% and 66% show that the students agree considerably that the satisfaction of participating is linked to personal recognition, to the ability to influence decision-making and to getting involved in a shared project. Around 30% state that they totally agree with this, while the remaining 7% disagree.

The idea that participation increases the feeling of belonging to the university is supported by 85% of the students. The highest percentage of disagreement (20%) of all the items in this group came with the topic of social projection linked to representation.

The students are divided in their opinions on whether they feel well-represented by their delegates. With regard to knowing what these delegates are doing, the answers lean towards the negative, since 57% of the students surveyed stated that they are not well informed. And they disagree even more vehemently with the university responding to their needs as students.

If we analyse the differences between the students in their last year of a diploma course and those who are finishing their Bachelor’s degree, in the responses to the first 13 items in Dimension D, we can see unanimity in the opinions of students from both programmes, given that there are no significant differences in hardly any of the items.
We can only find differences in the representation of the delegates and in their knowledge of what these delegates are doing, aspects that future diploma graduates rate more highly than their counterparts earning Bachelor’s degrees.

If we analyse the gender variable, the average results are somewhat even. We can only find significant differences in items 44 and 45, in which the females feel better represented.

If we study the differences with regard to the “having served as a student representative at the university” variable, we have eliminated items 44 and 45 because this group includes the delegates themselves.

We have noted that there are no significant differences in any of the items between the ratings of the students and their delegates except in item 40, where these differences show us that those who have served as representatives rate the fact that participation boosts their feeling of belonging to the university more highly than their classmates.

Another group of items in Dimension D is the multiple-choice items which try to capture the students’ interests and difficulties in participating in activities that are not exclusively linked to the educational curriculum. These correspond to items 47 to 53, and the results are summarised in Figures 3, 4 and 5 and in the last paragraph of the section on this dimension.

The activities in which the students participate are illustrated in Figure 3.

![Figure 3. Activities in which the students participate](image)

The activities in which the students participate are primarily academic, as they account for the three most popular ones which total 78.84% of the responses.

With regard to the motives for not participating in university activities (Figure 4), the students mainly state that they find it hard to combine them with their work timetable, which totals 33.03% if added to the third motive: participation in other activities outside the department.

The second and fourth causes revolve around the university setting itself: they find no activities in which they are interested in participating, and they are discouraged because they think that their opinions are not important. The fifth response refers to their dependence on transport given the distance to their homes, while the other responses yielded considerably lower percentages.
Figure 4. Reasons for not participating

When the students state their stances regarding the activities in which they would like to engage, Figure 5 shows that one-third chooses exchange and cooperation programmes, while 12.9% prefer social programmes, and almost 25% choose free-time activities. It is interesting to note that activities that directly affect them, linked to the structure of their academic programmes, improvements in academic-teaching quality or forums of student representation, attain much lower values, perhaps because these activities have not been sufficiently promoted.
The most popular answer to the question as to why the students are not representatives of their classes mentions the incompatibility of academic responsibilities and representation. The second and fifth answers show that perhaps the students would become representatives if they felt they were capable of doing it and if they truly knew what their role would be. The third answer, which is worth noting, is that the students believe that the delegates do not have enough support from their classmates.

3.5 Dimension E: Profile and educational background

Dimension E contains seven items. Six of them (from 54 to 59) are Likert scales with values from 1 to 4 which correspond to a gradation from total agreement to total disagreement, and one item (60) is a multiple-choice question.

The first four refer to the training of student representatives while the other three discuss qualities that these representatives should have.

Table 8 shows the results of the first six items in category E.
In the four items on training, the percentages of agreement range from 80% to 88%, and the highest level of agreement is for the statement that a student representative should be aware of the structure of the new degree programmes.

The statements referring to the characteristics of a student representative show lower percentages. Half of the respondents believe that student delegates should be in the last years of their degree because of their maturity and knowledge of the programmes, while the other half disagrees with this. Students disagree even more on whether their representatives should belong to political associations or parties, with only 30% in favour.

We can note that there are no significant differences between future diploma and Bachelor’s graduates with regard to whether they consider the training of student representatives important and whether these representatives should be aware of the structure of the new degree programmes, the bylaws, the organisational and functional norms, the quality policy and the governing bodies of the university, as well as whether they should be aware of the forms of club membership both inside and outside the university.
In contrast, we can see differences that can be regarded as significant in the items that describe the characteristics of the representatives. The Bachelor’s students agree more with the characteristics we listed than the diploma students.

Just as with the “A student representative should be someone in the last years of their degree” variable, there are no significant differences for the gender variable in the items referring to the training of representatives, although there are differences in the characteristics of these representatives.

For the “having served as a student representative at the university” variable, we found no significant differences between the opinions of the delegates and the students they represent in any of the items in category E.

In item 60, the qualities that students consider important in their representatives are interpersonal skills such as teamwork, empathy and leadership ability, which were chosen as the most important ones by more than half of the respondents. They are followed by personal traits, such as inspiring trust, credibility and reliability. The respondents attached little importance to management skills, communicative skills, training (even though they admitted the need for training in the previous items) or the professional ethics of their actions, although we should note that they were only allowed to choose one of these items.

4. CONCLUSIONS AND SUGGESTIONS FOR IMPROVEMENT

We found shortcomings in the information that students receive on the spaces of participation at the university and in the communication both between students and the university and among the students themselves in terms of knowing the roles and work performed by their representatives.

We also noted that students in the last year of their degree programmes do not know enough about either the laws that directly affect them or student associations.

The channels of communication are not clearly outlined in terms of encouraging participation in university life, although the virtual world and faculty are the channels the students prefer.

With regard to suggestions and complaints, we perceived student disorientation as to the way and place to forward them, even among the student representatives.

The first key factor in understanding the low levels of student participation is their degree of knowledge of the spaces and mechanisms of participation. As analysed above, the students themselves are often unaware of their opportunities for participating and making their voices heard both in their own university and outside the university system.

However, university institutions offer information that is accessible to anyone who is truly interested in finding it. The problem exists because the information is not presented in a format that is attractive to students or because not enough of students get beyond their own ennui.

The different languages that the institutions and young adults may speak is thus a major factor for the university to bear in mind, as we believe that it should make an effort to bridge this distance and motivate the students.

A good communicative strategy is crucial in encouraging participation, although it is not the only factor. In this sense, creating spaces of dialogue among the members of the educational community must be a primary avenue of action to be included in universities’ strategic plans, if we view student participation and representation as a right and duty, and as part of students’ educational process. Students ask to make
their voices heard more and to be able to participate in decision-making in matters that affect them direct or indirectly. The efforts made to date to collect student initiatives in a variety of spheres may be positive, but they are not enough.

Likewise, clear rules on recognition of student representation and a group to promote participation would help students to play a fundamental role in rethinking their role with regard to the community, in choosing the strategies that the university may make available to them, in designing the annual action plan, and obviously in taking decisions. Designing motivating proposals that spark students’ interest and are recognised for credits or grants is considered essential in promoting student involvement.

The results of capturing the students’ opinions on the external projection of the university in terms of its intervention in the public discourse on topics that are relevant and contributing to forging ties with educational institutions, sociocultural actions and club movements express students’ desire to make themselves heard and to establish a commitment with society. The same students also position themselves as transformative agents of university education, but they ask the university to exercise leadership to expand and systematise their participation in the university’s own external activities and projects which have a direct impact on the student body. Encouraging and strengthening this involvement and fostering mechanisms to promote the culture of external participation could be one valuable component to prompt an overall improvement in the participation of students who believe it is important to be present in decision-making on topics that affect them and that affect the society in which they live.

However, the university is not the only agent that should make headway in this sphere; rather all the institutions involved in university education must make changes and undertake actions that enable them to move forward in this direction.

Both students and the university, as well as the institutions associated with the quality of the university system, concur on the need for students to be included in decision-making actions outside the university. However, this need must be made visible by creating promotional mechanisms that reach the students and encourage them to be present in a variety of spheres, both sociocultural and in processes that ensure university quality, as well as in national and international cooperation projects that promote the culture of peace, sustainable development and respect for the environment, along with any others that might be of interest to them.

Nevertheless, if we evaluate the results of this study, we can see that students state that they are not motivated because their opinions have little bearing on decision-making, and they also state that the lack of information prevents them from getting more involved in university life. Likewise, participation in university projects is recognised by 85% of the students as a factor that boosts the feeling of belonging to the university and personal satisfaction. Therefore, it is important for universities to become the spearheads of student participation and representation processes with motivating, innovative actions that connect with the students’ interests and are held at times that are compatible with their jobs. This is corroborated by the students’ answers to the question of what would make them participate in activities in their department. The three most frequent responses are related to the kind of activities offered and the lack of time to participate in activities that are not strictly academic. Likewise, when asked the reasons for the low degree of participation, they once again stress the lack of time and the fact that they hold down jobs or take part in activities outside the department, not to mention their lack of interest in the activities and the unimportance of their opinions.

Today, almost 80% of the student body participates only in academic activities, yet they ask that other activities be enhanced, specifically exchange programmes, in which 3% claim to participate but in which
33% would like to participate, along with leisure activities, in which 6% currently participate but 24% would like to. Fifty-three percent of the students say that they would participate if the activities on offer were targeted at improving their professional training.

As a factor that needs improvement, after analysing the results we suggest speaking with the student representatives in order to ascertain their interests, and offer a range of programmes, primarily in a timetable that is compatible with other activities, that motivates participation, strengthens exchange programmes and encourages leisure or social activities that can attract a large number of students.

An interesting question, also, is how to effectively get students to take co-responsibility for the strategic policies of their department via their delegates. In this sense, encouraging student involvement in the decisions that affect them, both academic and organisational, creating specific discussion groups and giving them a greater presence on collegial bodies would be good way to listen to and respond to their requests. The best way to motivate students is by showing that their actions and contributions influence the educational model they receive.

Another issue worth consideration by the university is providing students with a permanent space for participation bearing in mind the different spheres of academic, professional and personal life, with a programme of activities and ideas targeted at improving and enriching students’ cultural and social life, something like a Student Centre. From this venue, relationships can be forged with student groups, proposals on events from students themselves can be received and advised, and issues of interest for students can be managed. This would also be a good place to disseminate information of interest and to participate in social networks.

This physical space for the representatives could also be used to share information on their roles and actions. In this way, the perception held by 53% of the respondents that their interests are not being defended by their delegates and that they do not know what they do could be improved. However, despite this, very few students (only 4%) claim that they do not consider representation to be either important or necessary.

Perhaps particular attention should be paid to creating student clubs as an engine for participation and as the university’s expression of its coping with present and future challenges.

Once again, a good communicative strategy is decisive in improving the motivation to participate.

Interacting skilfully is largely the ability to trigger feelings in others. This skill is the foundation of popularity and leadership. Therefore, this skill in interpersonal relationships should be borne in mind in the training of student delegates, since the second reason for participating noted by the students is the possibility of interacting and fostering socialisation.

Another action is the recognition of credits; this already exists for the delegates, but it could be extended to anyone who promotes and performs actions that encourage their classmates to participate and that benefit the community.

In order to be able to lead student representation and motivate students to commit themselves to activities at the university and the institutions involved in university education, it is important for the representatives to be informed and trained in the legal frameworks that govern representation and participation, in the structure and content of the degrees they are studying toward, in the rules and organisation of these degrees, in quality policies and in the role of the governing bodies. Likewise, they must know how to make the outcome of their actions reach the students they represent and they must ascertain their interests and needs in order to channel them to the proper authorities. This requires
personal and interpersonal qualities involving leadership, empathy, conflict-resolution, credibility and reliability, which are the qualities that the respondents valued above all the others, including training. However, fairly high percentages of students themselves recognise the need for training, and therefore the university should offer this training through informational documents, courses or workshops. It should also facilitate and establish avenues for the student representatives to project themselves in inter-university and social forums.

The proposals outlined and commented on above could lower the 77% of students who believe that the university does not respond to their needs.

In short, the goal is to promote positive participation experiences in which both critical thinking and the ability to reach consensus to the benefit of the university community and its ongoing transformation are valued. All of this must also affect students’ commitment to their own education, their acceptance of responsibilities and their legitimisation as active co-participants in university life.

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STUDENTS' PERCEPTIONS OF THEIR INTERNSHIPS IN SCHOOLS
CONTRASTED WITH UNIVERSITY PROFESSORS’ VIEWS
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Abstract
Students' internships in schools have special importance in the Teacher Training undergraduate curriculum. Schools provide the ideal setting in which students can link theoretical knowledge to direct experience, giving them the necessary contact with a genuine professional environment. In this regard, the role of the school’s teacher is crucial in monitoring and giving students guidance, along with coordinated action with the university. Therefore, in this paper we first analyze the perception of undergraduate students in Early Childhood and Primary Education at University Ramon Llull in Barcelona, regarding mentoring practices at schools, and then we compare it with the university teachers' view. For this purpose two ad hoc questionnaires have been developed. The perceptions of students and teachers complement one another and might serve to shed light on the curriculum assessment process in order to help improve student internships.

Key words: internship, university education, experiential learning, mentoring

1. INTRODUCTION
Throughout the last few school years we have been in the midst of a period of reflection on the currently prevailing model of university teaching, a process that has put increased emphasis on the more active role of the student, while professors’ role is to provide them with advice and guidance. Until recently, the chief function of the university was to plan, coordinate and transmit knowledge, but in the first two decades of the 21st century, these objectives have undergone a transformation as teaching has been reformulated and based on a system of competencies. The current organizational changes affect not only teaching methodologies, but also have consequences for learning and assessment processes (Olmos Miguelánez and Rodríguez Conde, 2011).

There are numerous authors (Goñi, 2005; Hernández, Martínez, Fonseca and Rubio, 2005, and Zabalza, 2003) that have offered reflections on competencies, but of all the contributions to the field, the competencies defined by the Tuning Project are the ones that have been used for the drafting of white papers for degree programs (ANECA, 2005).

This commitment to specific competencies that are professionally oriented (Pañellas and Alguacil, 2008, and Quintanal, 2006) calls for the creation of appropriate learning environments that foster assimilation, growth and the comprehensive development of future teachers, while at the same time laying the groundwork so that in the future these students can create socially constructive classroom scenarios and bring about the corresponding improvement in educational practice in schools.
That’s why we believe that the Internship modules represent an ideal means to this end, in that they allow for a combination within a single educational experience of the theoretical aspects of the various fields of study and an immersion in a real professional space (Alvárez, García and Iglesias, 2007). Thus, we believe it to be one of the most vital parts of the training future educational professionals should undergo (García, 2007), in that the experience requires students to confront complex situations that not only require them to apply the knowledge and skills that they have acquired in other modules within their studies, but also to display and exercise other skills that have not been acquired in the other modules (Navío, 2004 and Carson, 2004). It should also be noted that the students themselves are well aware of this (Armegol, Castro, Jariot, Massot and Sala, 2011) and cite the Internship as one of the parts of their studies that is most important to their professional future.


Others have discussed the spheres of professional growth for teachers. In this sense, we can refer to the reflections of Marhuenda (2001), Barquín (2002), Altava and Gallardo (2003), Romero (2003), López and Romero (2004) and Pérez and Gallego (2004).

Another group has considered the efficiency of the Internship and the areas in which this part of the degree program proves lacking in its contribution to the initial training of future teachers. We can cite Hativa (2001), Mayor (2001), Rubia and Torres (2001), Cannon (2002) and Michavilla and Martínez (2002).

Finally, another group of researchers has delved into the topic that is most directly the concern of this paper, namely education students’ expectations, perceptions and assessments of their Internships. Among other authors, we can make reference to Toja, González and Carreiro (2001), López (2003), Salvador and Molina (2003), León and Lateur (2004), López and Romero (2004) and Aparicio (2007).

In recent times, internships have taken some substantial steps forward. No longer are students allowed to rely on a certain period of time at a school, but rather there is a real interest in monitoring students, as well as prior coordination with the teachers guiding the interns for the purposes of planning and assessment.

In order to be an effective internship advisor, the school teacher should take part in the drafting of the internship plan and help determine the conceptual foundation underlying the internship student’s training, as well as ensure that the training program is well-structured. This means that the institutions involved share the responsibility for guiding future teachers (Palau and Pañellas, 2012). For this reason, the university should help to facilitate and strengthen the process through coordinated action that should be the fruit detailed planning of the corresponding Internship program so as to avoid the risk of disorganization that stems from the fact that this guidance is carried out by more than just one person and institution.

In the present moment, as this academic year will see the end of the implementation of the new education degree programs, coordination between internship advisors has been reinforced through meetings of
advising university professors and teacher-advisors from schools, meetings of school coordinators with
the university internship coordinator, monitoring reports from students, work plans from the schools,
and the assessments from both school-based advisors and university advisors requested by the Education
Department of the Catalan government.

For this reason, Internship programs need careful planning, good execution and intensive follow-up and
assessment. Just as with any other activity subject to improvement, assessment is especially important
in that it represents an opportunity to reflect on the experience and to study it in light of the knowledge
that the student has acquired. This is what makes for a learning experience and allows learners to gain
advantages from the situations they have faced (Molina, 2004).

For the student, exposure to the reality of a school has a positive impact. Mèrida (2001) reminds us that,
for the most part, Internships are highly enriching experiences that broaden educational horizons and
allow students to experience new kinds of relationships. However, on occasion these encounters with
the real practice of teaching are not always beneficial because students may observe and reproduce
professional attitudes and practices that bear little resemblance to a comprehensive educational model
(Blanco i Latorre, 2008).

For this reason, we believe it is important to analyze students’ perception of the training they receive in
the educational centers where they carry out their internships, because in the literature we have consulted
assessment of internships is nearly always approached from the point of view of assessing students’
progress, but it fails to take into account the contribution of the students themselves, who are the target
of the training process.

In addition, the point of view of university professors who serve as academic advisors to interns will
complement the students’ perspective on the school-based advisors, and the combination of the two
perceptions could be a key factor in decisions that may need to be made in the creation and revision of
Internship program plans.

Thus, the objectives of this paper are as follows:

- To study the students’ degree of satisfaction with the organizational aspects of their internships
  and with the work environment in their schools.

- To determine students’ assessment of the reception they received at the center where they
  completed their internships, the monitoring of their activities by the teachers and the guidance
  they received from teachers with respect to the areas in which they should improve their
  professional conduct.

- To compare the students’ assessments with the assessments of the educational centers by the
  university’s academic advisors

- To study the repercussions of the impressions gathered on the future improvement of schools’
  internship programs and on the design of Internships by the university.

We believe that academic and professional concern for the quality of the practical training of future
teachers is reason enough to carry out research and analysis with an eye toward achieving excellence in
the training of students, and that for this reason it is a subject worthy of study for those of us who wish
to contribute to the quality of degree programs in education.
2. RESEARCH DESIGN

The focus of the research outlined in this paper was on determining and analyzing the degree of satisfaction among education students with the training they received in schools during their internships, as compared with the assessments of university academic advisors.

The methodology is based on quantitative descriptive research using a survey addressed to students in their second and third years of degrees in Early Childhood Education and Primary Education who are enrolled in Internships. This technique was complemented by a qualitative analysis of the evaluations offered by students in the additional open questions on the survey and through the assessments of the interns’ academic advisors at the Facultat de Psicologia, Ciències de l’Educació i de l’Esport Blanquerna (FPCEE Blanquerna) of the Universitat Ramon Llull (URL), who answered another survey. Thus, in accordance with the principle of reflexivity, objectivity is reconsidered as a dialogue between subjectivities, which together can come to a point of view that was lacking when the two were considered separately.

The two techniques allow for the information obtained to be corroborated and validated.

2.1 Participants

For this project, there are two sample groups:

Sample group A is made up of students who have completed the second or third year of degrees in Early Childhood Education and Primary Education at the FPCEE Blanquerna during the 2011-12 academic year. The subjects in this sample group completed survey A, which was conducted on-line. Of all the second and third-year students enrolled in internships, 379 responded to the survey, representing 56% of the population.

Sample group B is made up of 309 professors who served as academic advisors for interns from the FPCEE Blanquerna during the 2011-12 academic year and who were responsible for assessing the schools, and who answered survey B. This survey was completed in writing.

2.2 Measurement Instruments

A survey, addressed to students who have completed the second or third year of their education degree programs. The survey was drafted by the university’s Internship Department (Instrument A).

The choices of responses to the survey are arranged according to the Likert Scale, from 1 to 4, with 1 being very little, 2 being a little, 3 being somewhat and 4 being a lot.

There is also a section in which students can complement their quantitative answers with qualitative reflections regarding their assessment of internship training.

Four variables were considered: v1, academic year (second or third); v2, degree program (Early Childhood Education or Primary Education); v3, type of school hosting the internship (private or state-subsidized school, public school or municipal school); and v4, location of the school (Barcelona city or other municipalities of the province of Barcelona).

It should be noted that for second-year students the Internship period is concentrated in the second semester of the school year, while third-year students have two internship periods, one in each semester, for a total of 12 ECTS credits.

Students are placed in centers of their own choosing, and in cases in which multiple students compete for the same position, the student with a better academic record takes precedence.
Each student has a main teacher-advisor at the center at which he or she is carrying out the internship, as well as an academic advisor at the university, who is a professor from the department of Early Childhood Education or Primary Education.

A survey, addressed to professors serving as internship academic advisors to students in education degree programs at the URL. This survey was drafted by the Education Department of the Catalan government. (Instrument B).

The items on this survey, just as those from Instrument A, were to be answered according to the Likert Scale, with the above options.

The variables considered for Instrument B are the same as those for Instrument A.

3. RESULTS AND DISCUSSION

Below, we detail the results of the survey given to students and professors, broken down by item.

Results of the student survey

The results of the student survey are displayed in Table 1.

<table>
<thead>
<tr>
<th>Items</th>
<th>Percentage score</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did the organization and working environment help you to successfully complete your internship?</td>
<td>1.8% 5.3% 32.7% 60.2%</td>
<td>3.51</td>
<td>0.684</td>
</tr>
<tr>
<td>2. Was the reception you were given satisfactory and did it help you settle into your school and your classroom?</td>
<td>1.3% 6.3% 21.6% 70.7%</td>
<td>3.62</td>
<td>0.666</td>
</tr>
<tr>
<td>3. Did the teacher in your classroom appropriately monitor your activities?</td>
<td>2.4% 7.4% 28.5% 61.7%</td>
<td>3.50</td>
<td>0.736</td>
</tr>
<tr>
<td>4. Did the teacher in your classroom satisfactorily guide and monitor your learning process?</td>
<td>2.4% 10.6% 28.8% 58.3%</td>
<td>3.43</td>
<td>0.775</td>
</tr>
<tr>
<td>5. Did the teacher in your classroom give you regular reports on your performance in the internship and provide guidance on areas with need for improvement?</td>
<td>7.9% 17.2% 31.1% 43.8%</td>
<td>3.11</td>
<td>0.958</td>
</tr>
</tbody>
</table>

Table 1. Results of the student survey
We can see in the table that in the results of the survey answer number 4 received the highest percentage score, over 50% for the first four questions, which is an indication that the students gave high marks overall to the organization of their internships, the reception they received in the schools and the monitoring, guidance and assessment of the teachers there. This point of view is also borne out by the arithmetic mean of the data, which in all cases is above 3. In addition, about a quarter of respondents’ scores are accounted for by number 3. This figure tells us that despite the high degree of overall satisfaction, around 25% of the students believe that there are some areas with room for improvement.

In order to analyze whether students have similar points of view regarding the various aspects of the internship training they received from their schools, we have studied the correlations between the scores, which we present in Table 2 below.

<table>
<thead>
<tr>
<th>Items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>------</td>
<td>0.623</td>
<td>0.540</td>
<td>0.552</td>
<td>0.436</td>
</tr>
<tr>
<td>2</td>
<td>------</td>
<td>------</td>
<td>0.513</td>
<td>0.525</td>
<td>0.422</td>
</tr>
<tr>
<td>3</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>0.808</td>
<td>0.648</td>
</tr>
<tr>
<td>4</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>0.722</td>
</tr>
<tr>
<td>5</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
<td>------</td>
</tr>
</tbody>
</table>

All correlations are significant to 0.01 (bilateral)

Table 2. Correlations between the items on the student survey

We can see from the results of the correlations in Table 2 that all of the correlations are significant and that they indicate quite a large degree of correlation in that they are at or near the level of 0.5. It is worth highlighting the correlation between students’ scores of the monitoring of their activities by the teacher-advisor with the score for guidance and monitoring of the learning process by these teachers, with a figure of 0.808. On the other hand, there is a lower degree of correlation between the assessment of the organization, reception at the center and the work environment and that of the information provided by the teacher-advisor to the student on his or her performance in the internship. This could be an indication of certain differences between the elements that the school in general, and the teacher-advisor in particular, contribute to the Internship.

In Table 3 below we examine the differences between the means for each item related to the training as broken down by the four variables analyzed.

The results for the significance of the differences for the variables with only two groups were determined by choosing the corresponding method: in cases in which there was a normal distribution, the t-test for comparison of means of independent samples was used, and when the distribution was abnormal, the nonparametric Mann-Whitney U-test was used, taking into account the degree of equality of variances,
confirmed using Levenne’s F-test. For the type of educational center variable, which had three defined groups, one-factor ANOVA was used, followed by the DMS test for multiple comparisons.

<table>
<thead>
<tr>
<th>Items</th>
<th>Bilateral significance of the differences in means</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Did the organization and working environment help you to successfully complete your internship?</td>
<td>v1 0.012  v2 0.952  v3 0.241  v4 0.144</td>
</tr>
<tr>
<td>2. Was the reception you were given satisfactory and did it help you settle into your school and your classroom?</td>
<td>v1 0.871  v2 0.377  v3 0.658  v4 0.021</td>
</tr>
<tr>
<td>3. Did the teacher in your classroom appropriately monitor your activities?</td>
<td>v1 0.038  v2 0.758  v3 0.172  v4 0.135</td>
</tr>
<tr>
<td>4. Did the teacher in your classroom satisfactorily guide and monitor your learning process?</td>
<td>v1 0.173  v2 0.607  v3 0.243  v4 0.203</td>
</tr>
<tr>
<td>5. Did the teacher in your classroom give you regular reports on your performance in the internship and provide guidance on areas with need for improvement?</td>
<td>v1 &lt;0.001  v2 0.158  v3 0.012  v4 0.016</td>
</tr>
</tbody>
</table>

Table 3. Statistical significance of the differences in means of the items on the student survey, considering the four variables studied

Regarding variable 1, the academic year, we can perceive significant differences for items 1, 3 and 5. Third-year students, who complete a longer internship period than those in their second year, give higher scores to the organization and work environment, the monitoring by the classroom teacher and the assessment and information on areas for need for improvement than do second year students.

With respect to variable 2, the degree program, we don’t perceive any significant differences between Early Childhood and Primary Education students in any of the items on the survey.

Nor does the type of educational center influence students’ responses, with the exception of item 5, for which the results show that in the opinion of the students teachers from municipal schools did a better job of informing them as to their performance in the internship and the areas they needed to improve than did teachers in state-subsidized, private or public schools, as is apparent from the significant differences in the means. The analysis failed to show significant differences between state-subsidized or private schools and public centers.

The location of the center, in other words whether it is within the city of Barcelona or in another municipality in Barcelona province, does not cause significant differences in students’ scores for items 1, 3, and 4. For item 2, we can see that students who complete their internships outside the city of Barcelona give higher scores to the reception they received in the school then those who did their work
within the city. For item 5, the means also display significant differences, in the form of a higher score given by students completing their internships in municipalities outside Barcelona for the item regarding information provided by the classroom teacher on the students’ progress and on areas to be improved, with students working inside the city again giving a lower score for this item.

Interns cited both positive and negative assessments of the training they received in the space provided to them on the survey for their additional observations and suggestions. On Table 4 below, we list the positive aspects in descending order of percentage of the students who expressed them, while in Table 5 we list the negative aspects in the same descending order. We include some comments on each of the tables that shed light on some of the elements with the highest percentages.

It should be noted that of the 379 students in the sample, 30.9% cited positive aspects of their internship in general, and the training received from classroom teachers in particular. 7.8% cited negative aspects.

<table>
<thead>
<tr>
<th>Positive aspects</th>
<th>Percentage of all positive aspects cited</th>
<th>Percentage of subjects in the sample overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>The good reception from the school and the teacher</td>
<td>34.2%</td>
<td>10.6%</td>
</tr>
<tr>
<td>I was treated more as a colleague than as an intern by the teacher in my class and others. They made me feel like a member of the family. They trusted me.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfactory learning</td>
<td>26.5%</td>
<td>8.2%</td>
</tr>
<tr>
<td>I learned a lot about being a good educator. The teacher was a role model, and the experience was really enriching. Working at a school gives you a chance to learn about all aspects of the teaching profession.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The support and monitoring of the teacher</td>
<td>20.5%</td>
<td>6.3%</td>
</tr>
<tr>
<td>The teacher gave me help and advice at all times and supported me in my activities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good work environment and good organization of the school</td>
<td>6.8%</td>
<td>2.1%</td>
</tr>
<tr>
<td>At the school there is a good environment and it’s well-organized, from the administration to the services. There is an abundance of resources and materials.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The methodology of the school</td>
<td>6%</td>
<td>1.8%</td>
</tr>
<tr>
<td>An active methodology that corresponds to the model we study at the university</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good relationship with the teachers</td>
<td>3.4%</td>
<td>1.1%</td>
</tr>
<tr>
<td>The response of the children</td>
<td>1.7%</td>
<td>0.5%</td>
</tr>
<tr>
<td>The chance to take part in the life of the school</td>
<td>0.9%</td>
<td>0.3%</td>
</tr>
</tbody>
</table>

Table 4. Positive aspects of the internship and of the training from the teacher-advisor
Negative aspects | Percentage of total negative aspects | Percentage of subjects in the sample overall
--- | --- | ---
Lack of dialogue, support and guidance from the teacher-advisor | 48.3% | 3.7%
Lack of guidance and dialogue with the teacher. Not enough involvement in monitoring the activities conducted by the intern. | 48.3% | 3.7%
The methodology of the school | 17.3% | 1.3%
Behaviorist, authoritarian and/or traditional methodology | 17.3% | 1.3%
Lack of variety in working dynamic. |  | 
Poor reception from the school | 10.3% | 0.8%
The teacher’s assessment was not a reflection of reality | 7% | 0.5%
Lack of monitoring of classroom work by the center | 3.4% | 0.3%
The presence of students from other universities in the same classroom | 3.4% | 0.3%
The coordination of the center failed to respond to the requests of the university | 3.4% | 0.3%
Poor organization of internships by the center | 3.4% | 0.3%
The barrier between interns and the rest of the center’s staff | 3.4% | 0.3%

Table 5. Negative aspects of the internship and the training from the teacher-advisor

As is evident from the two tables above and from the total percentages of positive and negative aspects, despite the existence of some problems rate their internships very highly and report that the experience changes their ideas about teaching and schools and allows them to view their future profession as teachers more realistically.

An analysis of the positive comments by internship students shows that the three highest percentages (for a total of 81.2%) refer to the relationship with classroom teacher and the atmosphere of trust that is created in the classroom, which is an influence on the view of the teacher as a role model. In addition, this good relationship, along with the teacher’s monitoring and guidance makes the student feel well received. Barquin (2002) also comes to the same conclusions in a paper that highlights that relationships between internship students and teachers are characterized by a mix of trust and respect and vary depending on how much opportunity is given to interns to carry out personal activities and on the limits to their involvement. Furthermore, González Riaño and Hevia Artme (2011) point out that internship advisors at both the school and the university are highly valued by students and are considered to be two
important bases of support throughout the course of the internship, as well as sources of the practical and theoretical foundations necessary to ensure positive results for these internships.

With regard to the negative aspects, we can see that the highest percentage, 48.3% of negative student responses, refers to a poor relationship with the classroom teacher and a feeling of being forgotten and not guided in their learning. The second most common negative answer from students was their observation of a very traditional, unchanging methodology, based chiefly on working with worksheets that were identical for all the children. In addition, some interns reported having problems due to changing teachers during the internship period.

The rest of the answers were given by a very small percentage of participants and were not representative of the overall perceptions of the students.

3.1 Results of the survey of university professors

The results of the survey of university professors are displayed in Table 6.

<table>
<thead>
<tr>
<th>Items</th>
<th>Percentage score</th>
<th>Mean</th>
<th>Standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>1. Assistance to students in the development of their work plan</td>
<td>0.7%</td>
<td>2.6%</td>
<td>35.3%</td>
</tr>
<tr>
<td>2. Providing educational and teaching advice to students</td>
<td>0%</td>
<td>4.9%</td>
<td>36.2%</td>
</tr>
<tr>
<td>3. Creation and monitoring of students’ strategies of participation in the center</td>
<td>0%</td>
<td>3.2%</td>
<td>37.9%</td>
</tr>
</tbody>
</table>

Table 6. Results of the university professor survey

The results obtained from the survey of academic advisors display a high degree of uniformity between the three items analyzed. Most of the scores fell in the upper levels, in other words values 3 and 4 on the scale, with these responses making up over 95% of the sample in all cases, an indication that very few professors express a negative assessment of intern training in school and that those who do give negative scores represent isolated cases.

A comparison of the results obtained in this survey and those from the students in Table 1, bearing in mind that the survey questions are not directly comparable, nonetheless shows that the professors’ assessments are even higher than those of the students in terms of the assistance, advice and guidance offered by the teachers in the classrooms.
We can observe a large degree of consistency in the assessments of classroom teachers. This means that when a teacher scores highly, he or she does so in all categories, and the same is true for low-scoring teachers. This is evident from the high degrees of positive correlations between the items in the survey, as seen in Table 7.

As to the four variables in the study, we don’t observe any significant difference in any of the three items analyzed, a fact that indicates that the differences between groups are minimal, which is to say that the university professors’ assessments did not vary by academic year, by degree program, by type of school, nor by the location of the school.
4. CONCLUSIONS AND SUGGESTIONS FOR IMPROVEMENT

In this study we have confirmed that both internship students and their academic advisors give very high ratings to the teachers who serve as internship advisors in schools, a fact that is apparent in that the average scores for all the items in the study were above 3 on a scale of 1 to 4. These perceptions were also consistently just as positive for all the sub-groups in the study, both of students and teachers, whether the students were in the second or third year of their degrees, whether they were studying Early Childhood Education or Primary Education, whether they worked at a public school or a state-subsidized or private one and whether their work was done at a school within the city of Barcelona or elsewhere in the province. While it is the case that, as indicated in the results section, there were some significant differences between different groups of students in their responses to the survey when broken down by variable, it is also true that none of the groups had a mean score of under 3.

This assessment is important in that it is a reflection of the organization and working environment in schools, the reception of the internship students and the guidance and monitoring of their learning process, all key elements to consider in the context of the relationship between schools and the university and for the purposes of designing a teaching plan for Internship modules.

As part of their training, students especially value regular monitoring from their in-school teacher-advisors, feedback about the activities they perform and the usefulness of these activities and correction of mistakes. They appreciate teachers’ interest in students’ learning and like being guided through the process. Finally, they place fundamental importance on a good reception at the school and on getting help from teacher-advisors to fit in well with the center and the professional staff.

On the other hand, the chief difficulties arise from the absence of the aspects we have highlighted as being positive. This means a lack of clarity and monitoring of the tasks carried out by students, insufficient time devoted to advising students by school teachers and an inadequate relationship with the teaching staff, causing students to feel that they are not fully a part of the school and thus to be unsatisfied with the treatment they receive.

In many cases, students complain about the organization of the center, the coordination of internships at the school or the assessment they receive from the teacher-advisor.

However, it should be noted that the aspects that students highlight as the most important factors when evaluating their internship training, namely the interest in the student displayed and the assistance given, are associated with the feelings and emotions that arise out of the relationship with the teacher-advisor and the rest of the professional staff of the school. This means that these assessments can sometimes be lacking in objectivity and may obscure the reality of the classroom, the content and subjects taught, classroom management, etc.

University academic advisors are also prone to this type of bias in their assessments of in-school training due to the close relationships that often form between professors and teacher-advisors in schools.

In light of what we have gleaned from the above results, we suggest several areas that could be strengthened:

- Reinforce the links between school-based teacher-advisors and the university, and their shared responsibility for the student’s training plan. Therefore, there should be opportunities to come together and truly collaborate on a plan for the work to be done at the school and other related tasks, as well as on the expectations for students’ learning. In addition, assessment should be continuous and shared.
- Foster real and relevant reflection on theory and practice and on the balance between the two, placing an emphasis on the professional specialization that can be achieved through Internship programs. The in-school teacher-advisors should be familiar with the internship plan and the competencies it is designed to teach.

- Clarify expectations and the job profile. Students have to be aware of their responsibilities as interns and should be provided with information on their professional environment, the operations of the center, the philosophy of the school, the curricular plan and the methodological approach. This enables students and their teacher-advisors to communicate about issues that are important to the assessment process, bearing in mind the expectations of both the students and the center.

- Promote students’ access to faculty meetings in schools, as well as to meetings with families and to other aspects of the life of the school, and gradually allow interns to take more initiative and to have more autonomy to carry out their tasks.

- Promote the assessment of internship training in four areas that can be empirically studied using various measures. The areas should be as follows: reception and involvement of the student in the center, guidance and supervision of the student’s educational activities with the children by the teacher-advisor assigned by the school, participation of the student in classroom management and other teaching duties and the scope and transparency of the assessment process.

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DIMENSIONS, ELEMENTS AND STANDARDS OF STUDENTS’ REPRESENTATION AND PARTICIPATION IN UNIVERSITIES

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Abstract

Students’ participation in the management of socio-cultural institutions through the promotion, organization and collaboration in the activities offered by these institutions is a contribution to the cultural development of the university community and society in general. In order to foster co-responsibility and civility, awareness towards participation should be encouraged at all levels and amidst different agents. In this article, we select and define the dimensions, aspects or elements and standards that must be taken into account in a university programme aiming at effective students’ participation and representation. Such a programme should promote a closer relationship between institutions and students resulting into mutual social, political, economic and cultural benefits. Analyzed dimensions refer to information, communication, internal and external participation, motivation, satisfaction and personal involvement and training.

Key words: higher education, student participation, student representation, dimensions and standards of student participation

1. INTRODUCTION

Students are the heart of university and, for this reason, promoting student participation results in an improvement in university quality, as well as being a valuable educational experience. The fact of doing university studies should imply the students’ being involved in different projects and spaces of their respective colleges, both formal and informal, thus creating a civic sense of belonging, solidarity and responsibility. Then, the availability of spaces for the permanent and continuing dialogue between university and students contributes to the cohesion and progress of the university community.

Nevertheless, student participation seems to be rather blurred at present. The deficit in student participation could be explained, partly, by similarity to the current context of citizen participation, where, according to García Pérez (2009, 6), the relaxed usual development of citizenship in our “democratic” societies does not seem to contribute very much to the construction of this kind of really participatory and universalist citizen, given the particular deficiencies of the traditional representative democracy that seems to have run out of resources. This same author considers that individuals have no clear idea of their role when participating, as they think that they have been given rights whereas in reality their rights are the result of a long democratic conquest. This would imply, in our case, that
students feel more like clients or users of goods offered by the university, rather than actors and active member of the institution.

The “political” training of human beings, in the Greek sense –being able to take on social responsibilities- has been a concern in the different educational systems, including the university system of course. But, with the praise of individualism, the social dimension has become less and less powerful. This could be one of the explanations for the difficulties to actively participate in college life.

In any context, though, the capacity to efficiently participate is directly influenced by the degree of support given by the academic institution, by mutual respect, trust and confidence in the people’s capacity to participate –in this case, the students’-, and the opportunities they are given to take on greater responsibilities. And some other capacities are also required, as the ones developed by Kouzes and Posner (2006) in their student leadership practices inventory.

2. THE SENSE OF PARTICIPATION AT UNIVERSITY

In the functioning of the educational system (compulsory and post-compulsory), participation refers to the necessary cooperation and coordination among the sectors in the educational communities, both within them and among the different sectors.

In this framework, participation can be understood as the capacity of the members of an organization, group or community to accede to decision-making processes affecting this organization; that is, it refers to the possibility of sharing the power to decide of educational institutions among all the members of the educational community. But, in education, participation is not only a performance mechanism to manage the organization; it is also a learning process, a means of training for students, teachers and other educational agents.

The implementation of the new degree studies in the framework of the European Higher Education Area involves a necessary process of transformation, which is at the basis of the current model of university teaching style, where the student’s leading role and the guidance nature of the teacher’s task merge in a constructivist vision of the teaching-learning process that has to enhance the development of cognitive competences and social and professional skills.

The key point is to identify significant and relevant competences to be developed and to take on the epistemological change that involves a new way of understanding knowledge, how and who constructs it in order to apprehend its authentic dimension.

In this sense, the methodological change in higher education implied by the emphasis on specific competences of a professional profile requires the creation of appropriate learning spaces that promote the students’ assimilation, growth, and integral development, by incorporating proposals of participation and intervention in the educational institutions.

Within this paradigm, student participation and involvement in university life is understood as a key element not only for the university itself but also for the student’s and the citizen’s education.

Therefore, we consider the participatory model as a high quality model, which implies the condition of subject of the participating people in an open process of citizenship construction. A process where social and political innovation is produced, by going further in the way of democracy and the consolidation of human rights. A model that is able to build new social alternatives.
Haeberli and Audigier (2009, 28) distinguished two ways for the individual to participate in the group whether it has an inclusive role or a decision-making role: in an inclusive role, participation is closely linked to the constitution and maintenance of the group’s life. In the decision-making role, participation is linked to the construction and consideration of every individual’s point of view and opinion.

Then, participation is seen as a voluntary practice built in the framework of a social relationship where subjects relate and interact in a situation of equality. This implies, thus, the possibility of getting involved in and committing to the group—what we understand as “being part”—, the option of being able to decide about issues of their concern, that is, “taking part”, and the awareness of their own rights and duties and of what can be achieved and lost, which means “having part” (Hernández, 1994 as cited in Oraisón, 2008, 40).

Participation is a learning process, a training means, not only for management (Montalbán, 2006) and, as such, besides being a right, it is also a responsibility. It is a process where values are promoted, attitudes are developed, strategies are learnt, and procedures and behaviours are regulated. At the same time, it is on the interest of the university that there is really enough student representation in their managing and governing boards with two clear aims: firstly, to ensure the presence of students in university life and, secondly, to have permanent student interlocution with some guarantee of continuity.

Developing student representation enhances learning and putting into practice skills connected with: organization, direction of working teams, planning of activities offered, or dissemination of this offer. Participation also improves student satisfaction, the quality of decisions and reduces resistance to change.

In conclusion, participation, from this perspective, could be defined as “feeling that you are part or being part” of an institution. That is, something that has to do with the fact that every person finds a feeling of belonging to the educational institution in many different ways.

3. THE NEED TO PROMOTE AND ASSESS PARTICIPATION

A policy of university quality has to consider student participation and representation as a fundamental pillar and, therefore, from the different educational spaces a real participatory culture has to be promoted and facilitated that includes the capacity to present proposals, for dialogue, for joint work, to understand the differences, to reach operational agreement, and to find appropriate mechanisms and channels to solve conflicts (Miller & Nadler, 2006).

In this concern, we will have to set up a democratic and favourable university context where students can develop a participatory role.

The new framework Strategy University 2015 is promoting the students’ social participation and their participation in university policies, and the development of different channels of participation in different fields such as: the university’s governing bodies, the university’s strategic projects, the syllabuses of the different degrees, the processes to assess teaching quality, institutional representation. And it also considers participation to be important for the student’s integral education.

This implies a set of actions to promote and increase the students’ involvement in university life, with the aim of having the students involved as real partners in the decision-making structures in higher education and in the political debates about the issues that directly affect the university community.
These mechanisms have to do, mainly, with defining policies to promote participation, with establishing participatory spheres, with recognising participation, with giving institutional support to these participatory spaces, and with training to participate. In order to regulate these policies, in December 2010 the Student Statute was passed, which also set up the State’s University Student Board, the direct channel of representation in front of the Spanish Ministry of Education.

As a result, universities have to ascribe to all these strategies, always considering the singularity of every university, but moving forward to guarantee student participation in the university’s management, their involvement in the community, and to promote that their voice is heard in the institutions and administrations where they can have representation, always from the perspective of university excellence.

With the aim of promoting excellence at university, assessment is one of the tools that can help us put into practice all the ideas about excellence. That is, there are some notions about excellence, and in order to specify them we have to put them into action and develop an assessment process to critically discuss them.

The will to excel in promoting university participation is also part of the promotion of university excellence. The latter, despite all these efforts, is still limited to a low percentage of students (Giménez, 2001; Urraca, 2005; González, 2007; Martín, 2007; Francés, 2008; Merhi, 2011; Soler et al., 2011, 2012). For this reason, we think that the university should be provided with a model to assess the mechanisms to tackle the progression and effectiveness of the implementation of such actions and in order to regulate them.

4. METHOD

Given that there were no references about a tool with the specific purpose of assessing the quality of student participation in the university field, we created our own instrument (instrument A), organized in hierarchical levels, based on that by Plewis and Preston (2001).

The instrument was validated by experts. But before its application, we considered it convenient to ask students from the last years in the studies offered at the Blanquerna Faculty of Psychology and Educational and Sports Sciences, Ramon Llull University, Barcelona.

In this sense, we developed a questionnaire (instrument B) arranged in the six dimensions to be assessed, which are described in section 5 of this article.

Instrument B was applied to a sample of 374 students in the degrees of Education, Psychology, Sciences of Physical Activity and Sport, and Speech Therapy.

From the contributions of experts and the results of questionnaire B, we adjusted instrument A. Results from instrument B are not presented in this article due to limitations of space and because they have been already incorporated in the final version of instrument A, which is our focus of attention as in it we define dimensions, elements, and standards of student participation and representation at university.

In the final instrument A, we proposed a quality model to assess student participation and representation, with a level-based structure.

At the first level, there are six dimensions identified, which are the big blocks on which to base assessment and which refer to:
5. DIMENSIONS, ELEMENTS AND STANDARDS OF STUDENT PARTICIPATION AND REPRESENTATION AT UNIVERSITY

In this section, we select the dimensions, aspects or elements and standards that have to be considered in a student participation and representation programme at university.

The structure encompasses all the sections present in Figure 1, except for the section of evidence or indicators and norms. A further study, which should include interaction of different agents, would allow us to propose evidence or significant indicators for the elements and standards considered here.

5.1. Dimension A: Information and communication strategies

A first key factor to understand the low participation of students at university is to find out whether students know their possibilities of participation to express their own voice and contribute to create a model of university where all the agents involved can feel identified. In this sense, it is necessary to analyse the information that students get, how they get it and what communication channels are appropriate for a real participatory culture in the university field.

5.2. Dimension B: Meaning and significance of internal participation and representation

Participation in the university process is a responsibility and a right of all the members that make up the university, and implies sharing a common project. Nevertheless, proper participation has to imply being really able to make decisions, not only at a formal level. Therefore, it is necessary to move towards the transformation of current structures so that participation can become a norm and not an exception.
Figure 1. Global structure of dimensions

Table 1. Elements and standards of dimension A

<table>
<thead>
<tr>
<th>Elements or objects</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information provided to students about possible spaces of participation in university life.</td>
<td>Students are provided with and know information about spaces of participation at university and proposals to improve academic (university) dynamics.</td>
</tr>
<tr>
<td></td>
<td>The university institution has established actions to let students know the “Norms of organization and functioning of Ramon Llull University” and the “University Student Statute”, and these documents are known by students.</td>
</tr>
<tr>
<td></td>
<td>Students are informed about the existence of student associations, student networks, and social movements.</td>
</tr>
<tr>
<td></td>
<td>All the members of the student group know the role and tasks of their representatives to help their voice to be heard and to collaborate in the creation of a satisfactory university model for all the agents that interact in it.</td>
</tr>
<tr>
<td>Channels of communication between the students and the institution.</td>
<td>The channels of communication, as a key element to improve the dissemination of information two-directionally between students and institutions involved in university education, are clearly defined and known by students.</td>
</tr>
<tr>
<td>Specific actions by the university to disseminate information among students.</td>
<td>The institution has a procedure to collect, assess and integrate students’ suggestions and claims.</td>
</tr>
</tbody>
</table>
### Dimension B: Meaning and significance of internal participation and representation

<table>
<thead>
<tr>
<th>Elements or objects</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theoretical dimension of the concept of participation.</td>
<td>Participation is understood as a right and responsibility of all the students in a common project of university and society. Participation is considered by students as a training process and not only as a managing mechanism.</td>
</tr>
<tr>
<td>Strategies of the university as a promoter of student participation and representation processes.</td>
<td>The university promotes participation and representation processes in its strategic plans in order to involve students actively in the organization, quality processes, etc., and collects initiatives derived from students’ demands and interests. The educational community sets up spaces for dialogue and critical thinking where students actively intervene. The university has approved rules of organization and functioning where student participation in the university’s and the centre’s governing bodies and in service commissions is established.</td>
</tr>
<tr>
<td>Elements to improve internal participation.</td>
<td>Different elements to improve internal participation have been identified.</td>
</tr>
</tbody>
</table>

**Table 2. Elements and standards of dimension B**

5.3. **Dimension C: Social commitment and external representation**

Responsible participation at university is important but not sufficient. There is a need for a commitment with society, and society has to listen to students. Thus, it is necessary to offer possibilities of participation through dialogue and work with institutions in the management of public policies. In this sense, the university has to promote new spaces beyond academic activity that can give response to a society in transformation facing new situations and new challenges. In this framework, students are active agents-subjects, not only with the possibility of choosing but also with capacity to set up alternatives through processes of innovation and social creativity.

5.4. **Dimension D: Motivation, satisfaction and personal involvement**

Motivation is a necessary condition to have participation and, therefore, an unavoidable task of the university is to increase students’ awareness to participate, by informing them about the existing channels and possibilities, and the values associated to participation. However, to motivate students to participate, they need to feel well represented and heard, and that their actions have a real repercussion in the university educational model.

An important factor to be analysed is the variety of aspects that lead to satisfaction and personal involvement in participatory processes, as well as demotivating aspects or difficulties that students face.
### Dimension C: Social commitment and external representation

<table>
<thead>
<tr>
<th>Elements or objects</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mechanisms of interaction between university and society.</td>
<td>The university promotes the participation of the members of the university community in activities and projects of national, international cooperation and solidarity, and activities and initiatives that contribute to the culture of peace, sustainable development and respect for the environment. The university promotes means that facilitate and complement academic activity to contribute to the public discourse on issues that affect the university itself or its surrounding socio-cultural fabric.</td>
</tr>
<tr>
<td>Strategies for the university socio-cultural development.</td>
<td>The institutions involved in Catalan university education make it possible for students to be protagonists in different fields of action and decision-making spheres.</td>
</tr>
</tbody>
</table>

Table 3. Elements and standards of dimension C

### Dimension D: Motivation, satisfaction and personal involvement

<table>
<thead>
<tr>
<th>Elements or objects</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actions of motivation to participate.</td>
<td>Students are motivated to get involved in participation and representation activities. Involvement in representation activities increases their feeling of belonging to the university.</td>
</tr>
<tr>
<td>Expressions of personal satisfaction in participation or representation processes.</td>
<td>Students are satisfied when their contributions have an influence on decision-making processes and on their educational model. Students feel well informed and represented by their representatives.</td>
</tr>
<tr>
<td>Types of participatory activities for university students.</td>
<td>Students often participate in activities of the university. The university recognizes the task of students to promote and carry out actions and activities that increase participation. The university listens to the voice of students in decision-making processes in the different fields of their concern and creates spaces and necessary resources.</td>
</tr>
<tr>
<td>Difficulties for participation and representation.</td>
<td>Students express difficulties to participate in activities of the university and in being part of the group of representatives.</td>
</tr>
</tbody>
</table>

Table 4. Elements and standards of dimension D
5.5. Dimension E: Profile and training

In order to have participation, it is not enough that students want to participate, but they have to have knowledge, skills and capacities necessary to take part and to intervene in the participatory proposal. Thus, preparation becomes a crucial element in the training of a real participatory culture, which implies presenting proposals, speaking, working in teams. From the university, there have to be proposals of training programmes or actions for students with the aim of contributing to the university socio-cultural development.

<table>
<thead>
<tr>
<th>Dimension E: Profile and training</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elements or objects</strong></td>
</tr>
<tr>
<td>Training actions of the university for student representatives.</td>
</tr>
<tr>
<td>Types of qualities of a good student representative.</td>
</tr>
</tbody>
</table>

Table 5. Elements and standards of dimension E

5.6. Dimension F: Model of participation and representation

The last dimension to be considered is the model of representation and participation that we have at university. If people know and want to participate, they should find spaces and mechanisms that make this possible and this requires effective organization.

We talk about participation of students in academic bodies, in cultural, leisure or logistic activities, and in student organizations, as well as the relationship established with educational institutions and administrations and political parties.

<table>
<thead>
<tr>
<th>Dimension F: Model of participation and representation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Elements or objects</strong></td>
</tr>
<tr>
<td>Principles and organization of the different ways of participating in the university field that imply mutual learning.</td>
</tr>
<tr>
<td>Programmes and campaigns to shape a real participatory culture that includes capacity to make proposals,</td>
</tr>
</tbody>
</table>
to dialogue, to work in teams, and to generate operational agreements.

<table>
<thead>
<tr>
<th>to dialogue, to work in teams, and to generate operational agreements.</th>
</tr>
</thead>
<tbody>
<tr>
<td>The university establishes the position of the different actors, so that the social distance legitimated by knowledge does not inhibit the recognition of all the members of the community as valid interlocutors.</td>
</tr>
<tr>
<td>The university promotes positive strategies of participation where both critical thinking and capacity to reach agreements to the advantage of the university community and its continuing transformation are valued.</td>
</tr>
<tr>
<td>The university determines the links with the community, creating new spaces that promote dialogue or joint actions with administrations, companies, socio-cultural institutions, etc.</td>
</tr>
</tbody>
</table>

Table 6. Elements and standards of dimension F

6. FINAL REFLECTIONS AS A CONCLUSION

At present, we are at a moment with a strong international current to assess educational systems, because assessment is the instrument through which it is possible to appraise the degree of quality of a process, that is, to identify the degree of adjustment between objectives established and results. Assessment implies identifying and measuring indicators causing quality, which can be influenced to improve it (Sarramona, 2003).

For this reason, it is necessary that university centres have instruments and mechanisms that allow them to assess the levels of quality they are achieving, and this requires a model of quality management in the different fields of university life.

One of these fields is student participation at university, which can be considered as a factor that has a beneficial influence on the quality of higher education and as the result of a quality higher education that aims at the students’ integral education.

In this sense, our design of dimensions, elements and standards to assess student participation at university aims at objectifying educational parameters that are illustrative of the situation of student participation and representation in order to make decisions to promote and extend this to a broad sector of the student population.

Nevertheless, we are aware that the use of standards and indicators to analyze educational quality is sometimes considered with uneasiness, because they present us with an idea of the situation but do not account for the reason behind it.

For this, the design of this model does not intend to be an exogenous instrument that could cause some reluctance due to the imposition of standards, but the appropriate referent to start a process to assess university quality in the field of student participation, which can be adapted to the characteristics of every university project or style and to the variables to be assessed in every institution.
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DECISIONS SUPPORT SYSTEM ARCHITECTURE FOR
THE TRANSPORT COMPLEX MANAGEMENT EVALUATION

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Abstract
Decision support systems (DSS) used for the general purpose resolving: to improve system of management through new processes application. System becomes manageable after the DSS implementation. But during research study it was revealed that before the implementation it is highly important to build an adequate formalized view of the system and then to implement new rules of management. In this case, resulted system helps not only to improve process of management as it is, but helps to evaluate performance of the object of management and ensure the efficiency of management team controlling. Theoretical basis for the research is the statements of the theory of management, theory of organization, theory of complex systems, system analysis and decision making. Methodological basis is a system approach, which helps to look at DSS as on a part of sector strategy, governmental investment and an area of the attraction of private or other capital.

Key words: efficiency evaluation, decision making, management, improvement, business automation, high school management, transport complex

1. INTRODUCTION
Study on decision support system creation for the needs of the socio-economical systems of transport complex was based on an efficiency evaluation of management. Empirical data of the Moscow state university of railway transport (MIIT) was in the scope of research. MIIT is the oldest university, which prepare new personnel for the needs of russian transport complex. The main purpose of the research was to reveal a unique number of parameters applicable for the management evaluation of any type of object from the area of transport complex (case of management standartization or harmonization) and to automate the process of the decision making.

Main terms of processes of system transformation in a Russian high school was proposed by: Atoyan, Berdashkevich, Buglaev, Golenkov, Vanchuhina, Viktorov, Gantmaher, Kazakova, Kozlov, Kolosov, Kortov, Kucev, Muraviev, Plotnikov, Suvorinov, Filippov, Harin, Chekmarev, Shammazov, Shlenov, Shukshunov, Shulgin (Trubitsina et al. 2011). It is underlined that development is the main key success factor for the high school improvement. Currently only one way for the effective operation is the goal-based development which is based on an innovative approach (innovative development) (Astafieva et al. 2005, Trubitsina et al. 2011).

Experience of foreign companies, which a strong competitors on a russian market, shows that for the effective controlling of the status of systems of management it is highly important to receive information regarding the object of management in time and as more information is available, much clear picture can be provided to decision maker.
DSS was used in Russian transport complex for the purpose of: preventing and responding to terrorist acts (Shoigu 2006), transportation systems support (Duta et al. 2009, Burla et al. 2001), safety tracking, production tracking, repairing – normally, for operational management. But for the general management it was never used in the scope of a high school, from the point of view: complex management of the socio-economical system. During the study 2006-2012 (Rudnikova & Ruchkin 2010a 2010b; Rudnikova 2011; Skripova (2010)) it was built the number of basic significant parameters most important for the decision making. These parameters lying in a data model creation for the needs of DSS.

The present paper proposes the architecture of implemented in 2010 DSS system, used for the tracking of the managerial results and for the decision makers support. These paper not present developed models and methods of data gathering and evaluation, but explain how to combine different Information-Analytical Systems for the purpose of management resolving. Data Warehouses, Data Marts, Temporal Data Bases and Virtual Data Models have been considered but not discussed in deep details in this paper.

2. DECISION SUPPORT SYSTEM: FORMALIZED VIEW CREATION

Total function of efficiency depends on mentioned above parameters and can be described through function:

\[ E_m = f(E_{st}, E_{do}) \]  \hspace{1cm} (1)

where efficiency evaluation of organization status tracking: \( E_{st} \) defined as a result of 4 key components: (3)+(4)+(5)+(6) and could be specified as equation (2):

\[ E_{st} = \frac{E_{ma} \cdot \omega_{ma} + E_{ma} \cdot \omega_{ma} + E_{ic} \cdot \omega_{ic} + E_{fq} \cdot \omega_{fq}}{\omega_{ma} + \omega_{ma} + \omega_{ic} + \omega_{fq}} \]  \hspace{1cm} (2)

\( \omega_{ma}, \omega_{ma}, \omega_{ic}, \omega_{fq} \) - weight of the parameter in the evaluation system.

\( E_{ma} \) - evaluation of level of decision maker’s awareness:

\[ E_{ma} = \frac{k_{curr}}{k_{full}} \]  \hspace{1cm} (3)

where \( k_{curr} \) – current number of controlled parameters; \( k_{full} \) – total number of parameter for controlling by decision maker.

\( E_{ma} \) - evaluation of level of decision maker’s working place automation:

\[ E_{ma} = \frac{a_{curr}}{a_{full}} \]  \hspace{1cm} (4)

where \( a_{curr} \) – current number of automated processes; \( a_{full} \) – full number of processes, applicable for model of management.

\( E_{ic} \) - evaluation of level of information consolidation:

\[ E_{ic} = \frac{c_{curr}}{c_{full}} \]  \hspace{1cm} (5)
where \( c_{\text{cur}} \) – current number of consolidated parameters for analysis; \( c_{\text{full}} \) – full number of consolidated parameters.

\[ E_{fq} = \frac{q_{\text{full}}}{q_{\text{cur}}} \times S \]  

(6)

where \( q_{\text{cur}} \) – number of request for decision maker resolving at the beginning of period; \( q_{\text{full}} \) – full number of resolved requests at the end of period; \( S = \frac{q_{\text{cur}}}{q_{\text{t}}} \), where \( q_{\text{t}} \) – number of employees, satisfied with speed and quality of resolved requests; \( q_{\text{t}} \) – full number of employees, received reply from decision maker.

Performance efficiency evaluation of organization \((E_{do})\) is a result of 2 key components average of additive convolution (7) (Rudnikova 2011):

\[ E_{do} = \text{AVG}(\sum_{E=Ea1}^{Ean} E_{E} \times \sigma_{E} + \sum_{T=T1}^{Tn} E_{T} \times \sigma_{T}) \]  

(7)

where \( \sigma_{E}, \sigma_{T} \) - weight of parameter in system of evaluation; \( E_{E}, E_{T} \) – efficiency evaluation in line with common parameters segmentation, efficiency estimation according the methodic of efficacy evaluation respectively; where \( E\in(Ea1...Ean) \) and \( (a1...an) \) – evaluation effects name; \( T\in(T1...Tn) \) and \( n \)- number of segments in common evaluation.

Stochastic frontier production function and theory of X-efficiency was in base of procedure for the production factors evaluation and helps to make an analysis of the basic and of the associated production factors in the scope of performance efficiency evaluation. Consider the stochastic frontier production function, this factors can be displayed separately as described in of Battese & Coelli (1995):

\[ Y_{it} = \exp(x_{it} \beta + V_{it} - U_{it}) \]  

where, \( Y_{it} \) – denotes the production at the \( t \)-th observation (\( t=1,2,...,T \)) for the \( i \)-th firm (\( i=1,2,...,N \)); \( x_{it} \) – vector of values of known functions of inputs of production and other explanatory variables associated with the \( i \)-th firm (\( i=1,2,...,N \)) at the \( t \)-th observation (\( t=1,2,...,T \)); \( \beta \) - vector of unknown parameters to be estimate during the research; \( v_{it}=v_{it}-u_{it} \), \( v_{it} \in N \) \((0, \sigma_{v}^{2})\), \( u_{it} \in N^{+} \) \((\mu, \sigma_{u}^{2})\), \( \mu=0 \) - inefficiency function, \( z=(I, z_{1},..., z_{i},...,z_{im})\) - vector of explanatory variables associated with technical inefficiency of production of firms over time, \( \delta=(\delta_{0}, \delta_{1},..., \delta_{i},...,\delta_{n})\) - vector of inefficiency function parameters.

Stochastic frontier production function building and inefficiency function building \((\mu_{i})\) can be realized via FRONTIER 4.1. tool, in line with methodic of Battese& Coelli (1995). Besides method of maximum likelihood evaluation used for the model adequacy comparison with model presented in Battese&Coelli (1995). The likelihood function is defined by parameters:

\[ \sigma_{s}^{2} \equiv \sigma_{v}^{2} + \sigma_{u}^{2} \]  

and \( \gamma \equiv \frac{\sigma_{u}^{2}}{\sigma_{s}^{2}} \)  

(8)

In line with the goal of research technical efficiency evaluation was used for the efficiency evaluation in concordance with common parameters segmentation, result could be estimated as:
Consider the result model for the system of management proposed by Volkova (2006, p.19):

\[ S \equiv (Z, STR, U_{uniq}, COND, E_{st}, E_{do})(t) \]  \( (9) \)

where in the scope of model application tasks resolving should be available from all levels of management (STR), for different goals and subtasks (Z), with different conditions (COND), in the clear timelines (t); besides, to fulfill model Volkova (2006, p.19) additional parameters was included: efficiency evaluation of organization status tracking (E_{st}) and performance efficiency evaluation of organization (E_{do}).

Matrix of goals and subtasks (Z) should be build for the operational management, for the management efficacy improvement 3 basic components should be started to be observed: \( E_{ma} \) – evaluation of level of decision maker’s awareness; \( E_{maw} \) - evaluation of level of decision maker’s working place automation; \( E_{ic} \) - evaluation of level of information consolidation (Rudnikova 2011).

For the decisions support two layers was selected for the first line automation:
- Top management support;
- Second line managers support.

Decision should be possible to apply on a level of medium and small companies, in case of possibility to rent the complex by internal companies, normally, by default it is out of the tracking scope. To resolve the goals of the research evaluation and selection of applicable for the MIIT tools split in 6 directions:
- Business Intelligence System;
- Business Process Analysis;
- Organizational Chart analysis;
- Simulation Modeling;
- Project management;
- Decision Making.

Method of expert choice is proposed for the evaluation. The assumption is that the experts from top management and second line management should be involved in the evaluation to build user-friendly system, which simply to use as well-known for people. Figure 1 shows the number of tools proposed after the end of the process. Complex is divided by zones in line with the scope of task. Zone of the analysis is a decision making zone, manually build through the analytical data from the information system.

Basic architecture of the tools presented in MS Visio. Figure 2 assumption is that there is no integration with the current IT systems. Common warehouse of the decision making system should be filled with
the data schemes in line with the management model mentioned above. All unknown parameters
uploaded into warehouse through the data export result files, developed to realize merge function.
Currently all parameters ‘in use’ at the early stage (before the integration with the system) uploaded as
a data export result too. The most complicated and the most perspective network architecture applied:
“swarm” architecture, type G (Kondratiev 2008a). It is a combination of equal and uniform tools (in our
case: networks of analytical data, process development and automation, project analysis, zone of
organizational structure and imitation modeling). For the management efficiency evaluation purpose
solution for the exchange center creation was proposed, it will support the idea of the self-organization
and self-synchronization of information, to use full capacity of the connected tolls and devices.

It is strongly recommended to supplement “swarm” by special central junction of management
(Kondratiev 2008b): type C – “swarm” with control junction of management). In this case one of the
user should be delegated by an administrator of the system and collaborate as a temporary “leader”
(other users of the network has 2 basic properties: equivalence and homogeneity). Main idea of this
architecture is reconfiguration of the network and announcement of the new leader during the process
of the decision making. Architecture lead to limited number of network users, but gives flexibility for
the effective management.

Fig. 1. Number of the tools for the decision making system creation.
3. EMPIRICAL APPLICATION

Scheme of the technical architecture implemented in MIIT reflected on Figure 3. For the practical realization it was highly important to use the existing set of control parameters, familiar for the decision makers. BI system was selected for the data integration and merging. Three-tier architecture of hardware was implemented in line with the conception of client-server technologies, including:

- Database server;
- Analytical server;
- Workstations.

End DSS selected tools reflected in Table 1.
Table 1. Software tools, applied for the core of the DSS system (Zone of analysis).

<table>
<thead>
<tr>
<th>Type of the resource</th>
<th>Software</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database server</td>
<td>DBMS Oracle 10g version 10.2.0.4</td>
</tr>
<tr>
<td>Analytical server</td>
<td>Oracle BI Standard Edition One 10.1.3.4</td>
</tr>
<tr>
<td>Admin working station (Administrator)</td>
<td>Oracle Client 10g Release 2 (included SQL*Loader);</td>
</tr>
<tr>
<td></td>
<td>Oracle SQL Developer higher or equal 2.0;</td>
</tr>
<tr>
<td></td>
<td>Oracle BI Administration 10.1.3.4;</td>
</tr>
<tr>
<td></td>
<td>MS Internet Explorer higher or equal 7.0.</td>
</tr>
<tr>
<td>End user workstation (Workstation)</td>
<td>Microsoft Internet Explorer 7.0 or higher</td>
</tr>
</tbody>
</table>

After the DSS implementation, procedure of the decision making evaluation was implemented: it was generated by different scenarios. Result of the evaluation was presented as imitation model (via simulation tool: Arena). Time of the decision generation was reduced by 40% and the loading of the
decision makers reduced by 10%. Imitation model was included into the complex (or DSS) to control system of management status in future.

4. CONCLUSION
This paper presented an investigation of management efficiency evaluation of the socio-economical systems of transport complex. We can conclude that automation of the decisions support is highly important to submit after the formalized view of management system presentation. Created formalized view is a significant alternative of today’s meaning of managerial perspective and take abilities to provide smart system performance tracking. Decision makers and owners have the opportunity to quickly access various applications and resources through the web-based interface of BI system. Decision support system for the object of study was developed in line with the scope of research: to reduce the cost of the implementation, to use current available tools and devices and to provide effective tool for the decisions support. Built in MIIT system was filled with 50% of currently used software and completed with the core: BI system. As a result of research was reached main positive outcome: reducing time of the decision making and the time of the of the decision makers loading. These factors help to resolve current and strategic tasks with the vital level of management efficiency, with essential level of operational efficiency.

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THE ROLE OF BUSINESS EDUCATION IN BUILDING CULTURAL COMPETENCES:
THE CASE OF CROATIA

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Abstract

Being successful in the global economy requires knowing culturally-specific soft skills. In order to handle a challenging global workplace, the role of business schools is to develop and design intercultural programs that identify knowledge, skills and experience for the attainment of global competency. The focus of the study is business students from five different higher education institutions in Croatia. The study explores their attitudes towards intercultural education as well as cross-cultural sensibility.

Key words: cultural competences, intercultural education, cross-cultural sensibility, business education

1. INTRODUCTION

With the market expansion organizations are faced with one of the most important changes in its history, which marked the transition from a specific mono-cultural and ethnic community in the cultural pluralist environment. Doing business in the global market implies the existence of a multicultural identity whereby multinational companies and their managers in various ways adapted and conquer new markets. The transition from national to international markets requires adaptation and a new approach to business. The job description for managers, despite the new, changed circumstances remains the same. What is different is the way in which the global manager will perform the basic managerial functions. In order to succeed, the manager must adopt knowledge of the complexity of the international environment and the particular features of specific economic, legal, and political systems.

For this reason, the importance of interculturalism and cultural competences is increasingly growing. Interculturalism refers to support for cross-cultural dialogue and challenging self-segregation tendencies within cultures. Basic intercultural concepts include dimensions on which cultures and individuals fall at varying points on a continuum (such as individualism and collectivism), and the importance of values and how these drive behavior and manifest differently from culture to culture. Turbulence, unpredictability and cultural plurality of the international global market does not require managers with outdated ethnocentric approach and superior sense of their management practices, but highly conscious

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managers who effectively adapt their own managerial style of leadership to the tradition of the country with which they do business, or the company they work for. Therefore, interculturalism involves moving beyond mere passive acceptance of a multicultural fact of multiple cultures effectively existing in a society and instead promotes dialogue and interaction between cultures.  

In order to understand, communicate with, and effectively interact with people across cultures, modern managers today have to continuously build their cultural competences. Referring to the ability to behave and communicate effectively and appropriately in multicultural contexts, cultural competences involve awareness of one's own cultural worldview, attitudes towards cultural differences, knowledge of different cultural practices and worldviews, and cross-cultural skills. Besides communication effectiveness, the basic requirements for cultural competencies become sensitivity and self-awareness, as well as understanding of the behavior of others as well as understanding the way they think and see the world.

1.1 The importance of cultural competences for global management

Due to the significance of the role culture plays in their organization's profitability and overall performance, global managers today have to possess cross-cultural knowledge and a general understanding and adaptability of foreign cultures. Although the relevant literature identifies a wide range of terms referring to intercultural understanding and competencies such as “intercultural effectiveness” (Stone 2006, p.338); “intercultural competence” (Deardorff 2006, p.247) and “global competence” (Hunter 2006, p.270), for the purpose of this study the term “cultural competence” is used.

Cultural competences assume continually developing cross-cultural skills and understanding of the differences across cultures. Since it also comprises an awareness of one’s own cultural worldview, cultural competence helps developing an ability to understand, communicate with, and effectively interact with people across cultures. It involves understanding characteristic beliefs and behaviors of certain social groups within a multicultural society that emphasize its uniqueness in relation to the dominant culture, ethnicity, race, religion, physical and/or mental ability, sexual and/or gender orientation. Developing competence refers to the adoption of the necessary skills to constructive action and the resolution of the issues that arise between cultures within a society.

Operationally defined, cultural competence is “the integration and transformation of knowledge about individuals and groups of people into specific standards, policies, practices, and attitudes used in appropriate cultural settings to increase the quality of services; thereby producing better outcomes.”

The importance of cultural competences reflected in one of the fundamental interests of management,

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refers to the expansion of the products and services in global markets in different parts of the world. For many multinational companies, the main strategic goals are opening more companies, expansion of production and gaining competitive advantage in different parts of the globe. In this kind of business, it is not enough for management to dispose with mere possession of certain technical knowledge and high-quality performance of operational functions of business, but also the understanding of how the business world operates within a culture in which it operates.

In other words, the managers are expected to be the mediators between the two different cultures. Success in carrying out this task depends on the specific competencies that manager should possess in order to operate well in the international markets. In order to raise the general level of cross-cultural efficacy of the future managers, the role of business schools is to shift their focus from traditional business and economic programs and provide and designing strategies for effective intercultural education.

1.2 The Role of Business Schools in Providing Cross-Cultural Curricula

New task of management is to establish effective intercultural relations in the field of global business. To be effective in operating within a plural cultural market, one does not only need to be involved in understanding, negotiating and managing the differences (Heyward 2002; Stier 2006), but also has to find the way to utilize the rich diversity this brings to work and learning contexts. In order to prepare one to operate within culturally diverse global market, the basic form of training managers for intercultural relations requires developing programs for professional training based on cross-cultural principles. This means that intercultural curricula in business schools and related faculties should have objectives focused on the adoption of the basic concepts in the field of culture, understanding of the functioning of plural communities as well as encouraging flexible thinking and the development of cultural competences. Achieving the level of integration of diversity, both in the living and working environments, and switching from mono to pluralistic cultural perspective requires existence of the intercultural education at all levels of education.

The need for developing cultural competences among graduate students has been recognized by Freeman et al (2009). He claims that cultural competence skills are prerequisite in order for graduates to be successful in global business environment. Leask (2002); Ridings et al. (2008) and Stone (2006) identified cultural competences and skills as one of the graduate capabilities that must be demonstrable within degree outcomes. However, despite the importance that has recently been attributed to intercultural management and the development of cultural competence, research has shown that many graduates are still ill-prepared to face the global employment market and relatively few undergraduates gain international or intercultural competence in universities (Hunter, White & Godbey 2006). Academia has to be seen as the main driver of change; through the competence approach to curriculum design based on intercultural principles, with the introduction to modern teaching strategies, methods and forms of work to meet the needs of modern economic markets of European countries that today require a whole range of new skills and occupations of experts in various fields of management. Innovation would be that influencing on the educational policy which will allow not only the consistent implementation of intercultural principles in educational practice, but will as well indirectly influence those who create the demands and needs of the modern labor market in the field of management.

2. GOALS AND TASKS OF THE RESEARCH

In this paper, education is perceived as a central institution in all existing conceptualization of the interculturalism. The purpose of the research is an empirical analysis of the existence, intensity and
direction of showing some (inter) cultural characteristics of individual students in business schools and faculties of economics in the Republic of Croatia. The possession of basic predisposition and the ability to receive intercultural content and tolerance towards others has been verified. The interculturalism is understood as an active understanding of different cultures, establishing positive relations of exchange and mutual enrichment. Assessment of intercultural predispositions should serve as an incentive for both, shaping new and the enrichment of the existing curricula for intercultural education in business schools. According to this objective, there are a few main objectives that can be derived from this research:

- Assessing the level of acceptance of intercultural values characteristic for European democratic and pluralistic society with regard to the degree of acceptance, identifying the level of students' intercultural competence;

- Exploring the similarities and differences in attitudes and the acceptance of certain values of the student of Zagreb School of Economics and Management and other B-school students;

- Laying the foundation for further development and improvement of specific business school curricular content in the intercultural aspects of management.

3. METHODOLOGY, METHODOLOGICAL SPECIFICS AND GUIDELINES FOR FUTURE RESEARCH

Data collection was performed by using a questionnaire. Students expressed their degree of agreement or disagreement with the statements using a scale containing five levels of intensity. Attitudes towards twenty-five statements about values, derived from the value system recognizable as intercultural sensitivity were tested; levels of acceptance of the claim were compared between the Zagreb School of Economics students and students of related faculties.

The research was conducted on the sample of 117 respondents (68 male, 49 female). The research included five business schools and faculty of economics in the Republic of Croatia - ZSEM (29), VERN (28), Faculty of economy in Osijek (20), Faculty of economy in Zagreb (20), Polytechnic in Slavonski Brod (undergraduate study of management) (20). The survey was conducted on undergraduate level (71) as well as on the graduated level (46).

The response of the respondents to the survey was positive; there were no significant problems in understanding the survey. Given that sample was randomly obtained, we can generalize our hypothesis on the entire population with a relatively high degree of reliability. After the appropriate logical tests, the data were entered into a computer and processed. The basis of this paper is the data obtained after processing and analyzing, preparation of analytical tables, graphs and the interpretation of the survey results.

Methodological remark refers to the quantitative approach, since the survey included insufficient number of respondents, and this number was not well distributed. In order to obtain more reliable results, it would be necessary to include a larger number of participants and properly distribute it among the students - those whose regular studies have not yet included the intercultural education and those who are attending or have completed some intercultural education course.

In this way, the rate of the responses neither agree nor disagree would probably be reduced. In this study, the rate of such responses was rather high and this could be interpreted in two ways - as an insufficient
level of awareness or a simple reflection of an attitude. Percentage of neither / nor response would probably remain relatively high among young students and could be interpreted as a lack of awareness and ignorance of the contents of interculturalism. It can be assumed that the percentage would decline proportionally with respect to the degree of involvement in the International management course or courses of similar content.

Guidelines for future research are related to the need for greater attention towards developing and implementing different methodological frameworks for studying social phenomena. Inclusion of non-statistical methods of inquiry and using qualitative research such as structured interviews and narrative descriptions together with quantitative approach could be used to better understand and examine social processes that might be missed by traditional quantitative measures only.

4. SURVEY RESULTS

<table>
<thead>
<tr>
<th>Claims</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interculturalism helps in understanding of your own culture.</td>
<td>3.89</td>
</tr>
<tr>
<td>Interculturalism promotes the development of national identity.</td>
<td>3.75</td>
</tr>
<tr>
<td>Interculturalism promotes tolerance in relation to the diversity of other cultures and peoples.</td>
<td>3.91</td>
</tr>
<tr>
<td>Interculturalism helps in gathering knowledge about cultures of other nations.</td>
<td>4.08</td>
</tr>
<tr>
<td>Interculturalism encourages critical thinking in social processes.</td>
<td>3.70</td>
</tr>
<tr>
<td>Interculturalism helps to combat prejudices about the history and culture of other nations.</td>
<td>3.86</td>
</tr>
<tr>
<td>Interculturalism helps coexistence of different cultures.</td>
<td>3.97</td>
</tr>
<tr>
<td>Interculturalism helps coexistence of different religions.</td>
<td>3.93</td>
</tr>
<tr>
<td>Interculturalism promotes learning of other languages.</td>
<td>3.91</td>
</tr>
<tr>
<td>Without interculturalism there is no democracy.</td>
<td>3.27</td>
</tr>
<tr>
<td>Without interculturalism Europe/China will not survive.</td>
<td>3.32</td>
</tr>
<tr>
<td>Without moral there is no interculturalism.</td>
<td>3.37</td>
</tr>
<tr>
<td>Without interculturalism there is only terrorism.</td>
<td>2.65</td>
</tr>
<tr>
<td>At university we do not study enough about interculturalism.</td>
<td>2.66</td>
</tr>
<tr>
<td>Interculturalism is studied as a new ideology.</td>
<td>2.90</td>
</tr>
<tr>
<td>Interculturalism is learned in the family.</td>
<td>3.39</td>
</tr>
<tr>
<td>Interculturalism is learned in university trough different courses.</td>
<td>2.74</td>
</tr>
<tr>
<td>Interculturalism could be only learned in primary schools.</td>
<td>2.41</td>
</tr>
<tr>
<td>Interculturalism could be only learned in secondary schools.</td>
<td>2.49</td>
</tr>
</tbody>
</table>
Interculturalism is learned through media. 3.32
Interculturalism is learned in your social environment. 3.49
Interculturalism is learned in political party. 2.94
Interculturalism is learned in your free time. 3.27
Interculturalism is learned while traveling. 3.81
Interculturalism should be separate course in universities of economy and business schools. 3.33

Respondents showed a significant predisposition for acknowledging the value of interculturalism. Some values were not accepted in full, but a high percentage of students partially agree with them: interculturalism helps in understanding the culture of their own people (45.98%), encourages the development of national identity (47.13%), develops tolerance in relation to the diversity of other cultures and people (38.37%), helps learning about the cultures of other nationalities (36.38%), develops critical thinking about social processes (38.37%), represses prejudice against history and the culture of other nationalities (35.63%), improves coexistence between different cultures (40.23%) and religions (33.33%).

It is important to point out that the respondents might be opting for such claims only on the basis of their cognitive identification. In practice, this does not necessarily mean that, in the particular circumstances, students will respect their own judgment and act in accordance with them. Not once they have completely denied the claim that says interculturalism helps in gaining knowledge about other cultures. However, this does not mean that students are aware of all aspects of intercultural processes. For example, for the claim that interculturalism can help to understand one’s own culture, a relatively high number of respondents have no opinion.

Such situation does not reveal that respondents have an equal number of pros and cons, so they are hesitant; it speaks more to the fact that most students are not sufficiently familiar with impact of the process of interculturalism to the understanding of the other cultures as well as of their own, consequently to its preservation rather than losing.

Significant differences in opinions between the ZSEM students and related faculties are visible in eleven claims. For example, the claims which are accepted to a greater percentage of the ZSEM students are 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 20, 21, 23, 24, 25.

They disagree with the claim that the curricula teaches them enough about interculturalism, 21.43% of them do not agree, and 32.14% partially disagreed. Negative tone is increased by 38.57% of respondents with no opinion on this issue. There is an obvious difference in attitudes between ZSEM students and students from other faculties in claiming that interculturalism is taught as a new ideology, only 3.57% of them totally disagreed with this claim, as opposed to 19.77% of others.
In contrast to their colleagues from other faculties (28.74%), a small percentage of ZSEM students (7.14%) completely agree with the statement that interculturalism is adopted in the family while as much as 46.43% are hesitating in expressing any opinion on this. The difference between ZSEM students and students of other higher education institutions analyzed for the purpose of this study is also visible in the claim stating that interculturalism is adopted at the university through several courses. No ZSEM student agrees with this statement, as opposed to 28.74% from other universities confirming that this is true. Not a single ZSEM student agrees that interculturalism can be adopted only in elementary school, as opposed to the opinion of students from other institutions which think that this is true (32.18%).

Could interculturalism be adopted only in high school? Again, no ZSEM student confirms this claim in full, and 30.23% of students from other faculties do so. Again, no ZSEM students completely affirms that interculturalism could be adopted in parliament / congress as opposed to the other surveyed group (22.99%).
The percentage of ZSEM students interested in introduction of special courses with intercultural content in business school curricula is slightly higher: 14.29% of them agree completely, and 35.71% tend to agree with the need to introduce special courses. A quarter of ZSEM students have no opinion (25.00%) on this, which is a much smaller percentage than the percentage of respondents from other surveyed higher education institutions (59.30%) who have no reason to disagree or disagree with this claim. Such number indicates that the students, as future managers, are more than indifferent to the type and quality of education that prepares them for their future careers. There are differences in other claims as well, but those are not significantly high.

The percentage of students who neither agree nor disagree with the survey claims is rather high. It is very symptomatic that even 12 out of the 25 claims in total, have more than 30% of respondents who do not have any opinion. Here is the percentage of students that have expressed no opinion on the following issues: no democracy without interculturalism (49.43%), without interculturalism Europe cannot survive (47.13%), with no ethics there’s no interculturalism (42.53%) with no interculturalism remains only terrorism (43.68%), at the university we learn enough about interculturalism (40.23%); interculturalism is adopted in the family (46.43%); interculturalism can be adopted only in the high school (36.05%); interculturalism is adopted through the media (60.67%), it adopts in a social environment (47.13%), it adopts through parliament / congress (42.53%), it adopts through leisure time (43.68 %); interculturalism should be a special course at faculties of economics and business schools (59.30%).

The last percentage is particularly alarming. Such a high degree of students’ indifference is not in line with the profile of professionals that faculties of economics and business schools are educating and preparing for the labour market. It is considerably lower among ZSEM students (25.00%), and it speaks in favor to need to introduce the students at the initial level of their business education of the importance and influence of cross-cultural principles in economic issues and management processes.
5. CONCLUSION

Post-industrial society is characterized by the development and spread of multinational and transnational companies, whose expansion should be followed by competent managers ready to perform managerial functions of planning, organizing, leading and managing human resources in a new, improved way. The basic prerequisite for carrying out such basic managerial functions is to understand the complexity of the international environment and specificity arising from the diversity of certain economic, legal, political and socio-cultural systems.

Comparing the results of this and similar studies combined with deliberation of such new challenges for managers, calls for rethinking the perspectives for development of intercultural management as a special area of management. The research confirmed that students, overall, have a positive attitude towards the offered values, especially those students which, during the study, had the opportunity to meet more frequently with courses with intercultural content; they show greater social closeness and greater interest in learning about the culture of national and ethnic backgrounds and, consequently, are expected to be better prepared for the global market. Given that the learning goals and cultural competencies are essential in verifying the qualifications on both, national and international level, there is no doubt that the acquisition of intercultural competences should be the first step to take into account when creating management and business studies curricula.

Due to its EU framework and orientation of Croatia as a knowledge society, building new and varied modalities of intercultural education and training for managers that help improvement of relationships and interactions between members of different cultures becomes an inevitable task for establishing communication directed towards effective cooperation and achieving business success. The research suggests that most respondents did not acquire a sufficient level of information and knowledge needed to create their own values. It should be noted that on a number of claims, one-third or more of respondents do not have an opinion, but provide the answer - neither agree nor disagree. Along with the important roles that society, media, family and professional experiences have in developing intercultural competence, emphasis needs to be placed also on higher education institutions and their responsibility in providing and designing strategies for effective intercultural communication.

In order to raise the general level of intercultural competences of students in business schools and faculties of economics that are necessary for effective management in the 21st century, a systematic and long-term implementation of the intercultural principles in the field of educating manager for intercultural relations should be conducted. In other words, it is necessary to redefine the existing and to introduce a number of new non-economic courses, from the socio-cultural and communication fields to the traditional business and economic studies, as it is done in a number of European universities.

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