STUDENTS’ PREFERENCES TOWARDS E-LEARNING ENVIRONMENT 288
Nikodijevic Ana, Kuzmanovic Marija, Andelković Labrović Jelena

IDENTIFYING POTENTIALS OF INFORMAL E-LEARNING 2.0 296
Andelković Labrović Jelena, Milosavljević Gordana

“FRESHMAN” TO “POSTGRAD” CHALLENGE: DIFFERENCES IN COLLEGE EXPERIENCES SATISFACTION AND LIFESTYLES AMONG STUDENTS OF FOS 302
Jovanovic Uros, Kovač Adam, Jeverić Mić Milan

MANAGING STUDENTS’ VOCATIONAL TRAINING AT THE MEDICAL COLLEGE OF PROFESSIONAL STUDIES AS A METHOD OF GAINING SKILLS 311
Vasiljevic Blagojevic Milica, Krasulja Nevena, Radojević Ivana

USING „WHITE-BOX“ CLASSIFICATION ALGORITHMS FOR PREDICTING STUDENTS’ PERFORMANCE 318
Milinković Snjezana

LANGUAGE POLICY AND PLANNING IN EUROPE AND SERBIA IN THE CONTEXT – AN OVERVIEW 326
Novaković Marija, Andelković Jelena, Jakic Gordana

RANKING OF CRITERIA TEACHERS USE WHEN SELECTING TEXTBOOKS 331
Pribićević Ivan, Tanasković Aleksandar, Stanojević Darko

LEADERSHIP SKILLS OF A HIGH SCHOOL PRINCIPALS A FIELD STUDY 338
Leskaj Etleva, Kasimati Mimoza, Shyqyri Llaci

PRACTICAL LEARNING OUTCOMES OF ADULT LEARNING INNOVATION IN U3A 347
Dvorackova Ruzena
EDUCATION MANAGEMENT
Abstract: E-learning opportunities are rapidly expanding in higher education. To meet the needs of students enrolled in such courses, universities must rethink how they deliver knowledge and understand the factors that influence students’ satisfaction. Such understanding can be used for appropriate design and improvement of e-learning environments based on their preferences, with the aim to enhance student learning experience. The purpose of this study was to identify students’ preferences and their levels of satisfaction. Special attention was given to differences between the students in e-learning environment (Moodle and open courses) in comparison to traditional students who experience only face-to-face delivery of knowledge or attend few courses in e-learning environment. Conjoint analysis was used for this purpose. Results indicate that there is a difference both in satisfaction and preferences between two groups of students, and factor that singles out is method of knowledge assessment.

Keywords: E-learning, satisfaction factors, student preferences, conjoint analysis.

1. INTRODUCTION

When learning is mediated with technologies then we can assume that some form of e-learning happened. Advancements in technology have revolutionized the opportunities for educators to teach and the means for students to learn (Tutty & Martin, 2009). Rosenberg (2001) emphasized that e-learning refers to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance. E-learning is networked (instant updating, storage/retrieval, distribution and sharing of instruction or information). It is delivered via computer and goes beyond traditional paradigms of training (Rosenberg, 2001, p. 28). E-learning can be defined as the use of network technology (broadly, the “Internet”) to design, deliver, select, administer, and extend learning. Main components of e-learning can include content delivery in multiple formats, management of the learning experience, and a networked community of learners, content developers and experts (Yu et al., 2010).

If e-learning is referred to as part of an educational system then we should explain the term distance education (e-education). E-learning could be viewed as a part of an educational process within educational system. In this sense e-learning is a part of educational process where the teacher and the student are separated from each other and by means of technology they achieve two-way interaction in order to implement the necessary commutation. E-learning also could be seen as content delivery method in distance education that enables synchronous and asynchronous information exchange over the network (Oncu & Cakir, 2011). Today e-learning has become a viable delivery system for both secondary and higher education (Yu et al., 2010).

The central component in e-learning environment is the learner for whose benefit the environment is provided. Understanding the characteristics of learners in respect to how those characteristics may affect the teaching–learning process in the online environment is very important for designing effective instructions for e-learning environment (Roberts, 2010). The manner to achieve that students’ perception of the effectiveness of e-learning course and their satisfaction will be evaluated in this paper.

In order to evaluate the effectiveness of e-learning courses researchers examined different components of e-learning. Malik (2009) created a practical model for examining student satisfaction with e-learning and identified five groups of factors: student, instructor, technical, design, course. Matsatsinis et al (2003) selected three criteria of satisfaction with several sub-levels: interface (web design, user-friendliness, personalization, etc), content (structure, extra links, format, etc) and functionality (response time, reliability, security, etc).

Horvat et al. (2014) examined students perception on e-learning courses on Moodle platform at Faculty of Organizational Sciences and concluded that students who use Moodle have a significantly lower satisfaction.
only before an exam in comparison to students who use it on daily basis (Horvat et al., 2014). They have suggested that feedback on quality characteristics from students that do not use Moodle regularly should be considered as it is done in this research.

Cavanaugh et al (2004) identified success factor of distance learning programs, and found that most important ones are: abilities and disabilities of the student, quality of the teacher, demands of the content, design of the distance learning system, course, and other assessments. Likewise, Damnjanovic et al. (2013) defined eight factors (behavioral intention to use in the future, communicativeness, format, information quality, performance outcome, perceived usefulness, satisfaction and system quality) in order to measure effectiveness and use of Moodle. Their results showed that system and information quality did not influence satisfaction, while communicativeness had the highest impact on performance outcome. Satisfaction had a significant effect on behavior intention (Damnjanovic et al., 2013).

2. RESEARCH FRAMEWORK

The aim of this study was to acquire a broad view of students' preferences in e-learning in Serbia, and to investigate which learning experiences contribute most to their satisfaction. The assumption behind the study is that students prefer certain online components more than others and that it is possible to identify which of these are most influential on their attitudes. In accordance with this, the study did not examine specific courses but a diverse sample of students that are engaged in: (1) entirely online studying via Moodle learning environment, (2) traditional offline, face-to-face studying with some experience with blended courses (combination of face-to-face and e-learning), (3) taking open online courses outside curricula (edX, Coursera, etc). The important element of e-learning is students' perception of the effectiveness of e-learning course and their satisfaction with it. Three dimensions of interest were defined in this study as: e-learning technology, teaching method and knowledge assessment. They were chosen by considering previous research (Mosca et al., 2010; Katz, 2002; Ferguson & DeFelice, 2010; Won & Bravo, 2009) and authors' own experience in teaching in e-learning environments.

Learning environment, or technology used for delivering knowledge, is important as satisfaction of students from e-learning is based on the student's attitude towards ICT (Malik, 2009). Technology is generally not a barrier to the success of participants in e-learning and most students have necessary skills to fully engage in e-learning environments. Drennan et al. (2005) found that student satisfaction is influenced by positive perceptions towards technology, in terms of ease of access.

Teaching method is the most complex dimension as it comprises of several different aspects, mainly related to interaction. According to several authors (Bouhnik & Marcus, 2006; Katz, 2002; Picciano, 2002), interaction is one of the most important factors of e-learning, and can be analyzed on several levels: interaction with content, teacher, other students and the system. Mijatovic et al. (2013) conducted a research on students, who are using Moodle platform for the first time in their studies and they have concluded that active participation in class and interactive usage of the system had strong positive effect on students' achievement. (Mijatovic et al, 2013). Bouhnik & Marcus (2005) found that one of the things students are dissatisfied with is the lack of contact and interaction with their peers. Jung et al. (2002) found that the students who collaborated with each other expressed the highest level of satisfaction. Nummenmaa and Nummenmaa (2010) came to similar conclusion by finding that students who did not interact with others had more negative emotional experiences. The group interactions initiated by teachers are very effective and students enjoy the learning environment. The teacher role is very important and their timely response positively influences student satisfaction (Malik, 2009). Clearly defined objectives, assignments, and deadlines, need to be present in order to increase student satisfaction as well (Stein, 2004).

We found no research results in literature regarding student preferences in knowledge assessment within e-learning environments, but we believe this dimension might have an impact on students' satisfaction and therefore have included it in this study. The details on all three dimensions, their attributes and level are presented later in the text.

3. RESEARCH METHOD

3.1. Conjoint analysis

Conjoint analysis (CA) is a multivariate technique that can be used to understand how an individual's preferences are developed. It originated in mathematical psychology (Luce & Tukey, 1964), and was first introduced in marketing research to evaluate consumer preferences for hypothetical products and services (Green & Rao, 1971). Today, it is widely used to understand preferences in various markets, including transportation (Hensher, 2001), telecommunication (Kim et al., 2008), labor market (Popovic et al., 2012), etc. Furthermore, conjoint analysis has been successfully applied within the education industry: Soutar and
Turner (2002) used conjoint analysis to reveal what kind of university was most desirable among students; Hur and Pak (2007) attempted to identify what the preferred subjects for an after-school computer education course in elementary schools were by using conjoint analysis; Won and Bravo (2009) applied conjoint model that compares the relative importance of six course attributes that influence students’ preferences in order to develop courses to satisfy students’ needs and enhance teaching effectiveness. Sohn and Ju (2010) used conjoint analysis to effectively recruit high quality students for high school; and Kuzmanovic et al. (2012) used conjoint analysis to identify heterogeneity of the students’ preferences for various aspects of university teaching. Kuzmanovic et al. (2013b) propose a new conjoint-based approach to students’ evaluations of teaching which takes into account the students’ preferences.

However, only a few studies have used conjoint analysis within e-learning environment as of yet. Van Der Rhee et al. (2007) used discrete choice analysis (type of conjoint analysis) to understand student preferences for e-learning technologies. They conducted a large-scale survey to determine whether students who are technology ready would place higher utility on enrolling in mixed classes and/or whether there exists a participation bias such that students with low learning-goal orientation place higher utility on enrolling in mixed classes. Pomales-Garcia et al. (2009) evaluated the relative importance of six design dimensions in order to understand how these dimensions are described by two groups of stakeholders—students versus researchers. To determine the predicted rank of the design dimensions based on participant ranking results, they used conjoint analysis. Dağhan and Akkoyunlu (2012) studied learning styles of students receiving education via online learning environments, and used conjoint analysis to determine students’ preferences concerning the online learning environment. Sun and Wang (2013) used conjoint analysis to find out how to choose different e-learning tools for different learning tasks for the design and development of online courses in higher education. The findings yield helpful insights on the best practices concerning the utilization of information technology for the enhancement of student learning outcomes in online course design.

We used conjoint analysis in this study to elicit students’ preferences towards e-learning environment for several reasons. First, conjoint analysis has the advantage over conventional satisfaction models in that it can be used to identify and quantify the trade-offs that respondents are prepared to make between conflicting attributes. Second, conjoint analysis transforms respondents’ subjective attitudes towards estimated parameters into the form of utility functions, thereby making it possible to observe the consequences for the overall preference of a change in the level of an attribute. Third, conjoint analysis allows the utility estimation for any combination of attributes, including combinations that may not currently be available. Fourth, conjoint analysis allows segmentation based on respondents’ preferences. In other words, conjoint analysis is a micro-based measurement technique, i.e. preferences are measured at the individual level. Hence, if preference heterogeneity is present, the researcher can find it. Another reason why we chose conjoint analysis in this study is its cost-effectiveness. Conjunct analysis does not require a large sample size. The reason is that the analysis results in a set of utilities for each respondent.

### 3.2. Survey procedure

Conjoint experiments involve respondents being asked to express their preferences for various experimentally designed, real or hypothetical alternatives. These hypothetical alternatives are descriptions of potential real-world alternatives, in terms of their most relevant features or attributes (both quantitative and qualitative); hence, they are multi-attribute alternatives. Conjoint analysis produces two important results (Levy 1995): utility of attributes and importance of attributes. Utility of attribute also known as part-worth utility, is a numerical expression of the value consumers place in an attribute level. It represents the relative importance of the attribute. Low utility indicates less value; high utility indicates more value.

Lists of attributes describing single alternatives are called profiles or concepts. Typically, the set of relevant attributes is generated by expert opinions, reviewing the research literature and performing pilot research with techniques such as focus groups. The list of attributes may include an attribute currently not available (new feature), but its introduction is under consideration. Two or more levels are defined for each attribute, and these are then combined to create different profiles (Kuzmanovic et al., 2013a). In order to measure the relative importance of key attributes of the e-learning environment with reference to student’ preference, this study followed three key phases.

**Phase 1: Specifying attributes and levels.** Conjoint analysis starts with the identification of relevant product/service attributes that are believed to influence a customer’s preference. They should include those more relevant to potential customer (student) and those that can be influenced or manipulated by the seller/service provider (university). Then, levels must be assigned to them. These must be plausible, actionable and capable of being traded-off one against another. Typically, the set of relevant attributes is generated by expert opinions, reviewing the research literature and performing pilot research. In this paper
eight key e-learning attributes based on literature review and opinions both of students and faculty members are selected (see section 2). The list of selected attributes and their levels is given in Table 1.

**Table 1: Key e-learning attributes and respected levels**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Attribute</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>I E-learning technology</td>
<td>Customize environment based on preferences</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Simplicity</td>
<td>Simple environment, no training necessary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Environment requires training or previous experience</td>
</tr>
<tr>
<td></td>
<td>Lectures</td>
<td>Recorded lecture with slides and sound</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Classroom live broadcasting</td>
</tr>
<tr>
<td>II  Teaching method</td>
<td>Interactive work (discussions, assignments, case studies etc)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Cooperation with other students</td>
<td>Individual assignments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Group assignments</td>
</tr>
<tr>
<td></td>
<td>Flexibility for pre-exam assignments (clear deadlines or flexible deadlines)</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Communication with teacher</td>
<td>Online (e-mail, chat, forums, etc)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Online and face-to-face</td>
</tr>
<tr>
<td>III Knowledge assessment</td>
<td>Method of assessment of knowledge</td>
<td>100% of pre-exam assignments and exam in e-learning environment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>70% of pre-exam assignments in e-learning environment and 30% offline exam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>30% of pre-exam assignments in e-learning environment, and 70% offline exam</td>
</tr>
</tbody>
</table>

Once attributes and their respective levels have been selected, the number of combinations or profiles can be calculated. In this research, the selection would produce 384 profiles \(2^8 \times 3\). Conjoint studies tend to focus on just those attributes that have the greatest influence. Unfortunately, this rarely reduces the number of profiles to manageable proportions, so it is common to use an orthogonal array, a subset of all possible concepts that will allow estimation of the part-worths based on a main effects. Thus, the orthogonal array allows the conjoint analysis to be conducted on a considerably reduced number of product combinations while still retaining statistical reliability. To reduce this number of profiles to a manageable level, in this study a component of the statistical package SPSS 16.0 (Orthoplan) was used. Thus the 384 possible profiles were reduced to 16. Two control profiles (holdout tasks) were added to the given design. These 2 profiles were not used by the conjoint procedure for estimating the utilities. Instead, the conjoint procedure calculates correlations between the observed and predicted rank orders for these profiles, as a check of the validity of the utilities.

**Phase 2: Choosing a presentation method.** ‘Full-profile’ and ‘trade-off’ are the two methods of attribute combinations most widely associated with conjoint analysis. This study used the full-profile approach. Each profile was presented visually in the form of a card. Respondents were asked to rate each profile on an ordered scale ranging from 1 (least preferred) to 5 (most preferred).

**Phase 3: Model specification and the estimation technique selection.** Having collected the information on individual preference, the responses need to be analyzed. In this survey the linear additive model was used as a composition norm and assumed that overall evaluation is made up of the sum of contributions of the attribute levels. The overall additive model for \(K\) attributes, each one with \(L_k\) levels, is given by Eq. (1)

\[
U_{ij} = \sum_{k=1}^{K} \sum_{l=1}^{L_k} \beta_{ijkl} x_{ijkl} + \epsilon_{ij}, \quad i = 1,...,I, \quad j = 1,...,J, \quad (1)
\]

where \(U_{ij}\) is student \(i\)'s evaluation of a given profile \(j\), \(\beta_{ijkl}\) is the part-worth (estimated in the conjoint analysis) associated to the \(j^{th}\) level of the \(k^{th}\) attribute (with \(k = 1,2,...,K\) and \(l = 1,2,...,L_k\)), and \(x_{ijkl}\) is the independent variable (\(x_{ijkl} = 0\) or \(x_{ijkl} = 1\)), which indicates the presence of the \(l^{th}\) level of the \(k^{th}\) attribute in the \(j^{th}\) profile. \(\epsilon_{ij}\) is a error.

The parameters \(\beta_{ijkl}\) (part-worth utilities) are estimated by Ordinary Least Squares regression analysis. These utilities provide a quantitative measure of the preference for each attribute level, with larger values corresponding to greater preference. Part-worths are expressed in a common unit, allowing them to be added together to give the total utility, or overall preference, for any combination of attribute levels. The part-worths then constitute a model for predicting the preference of any product profile, including profiles, referred to as simulation cases, which were not actually presented in the experiment.
4. RESULTS AND DISCUSSION

4.1. Demographics and students’ satisfaction

Data were collected online through a web-based questionnaire in April 2014 in Serbia. Besides conjoint analysis questions, the questionnaire included demographic data, but also questions related to the attitudes toward online courses. The aim was to determine both level of students’ satisfaction and whether there is a difference in preferences among students of different modes of studying. Respondents were students of University of Belgrade, Faculty of Organizational Sciences. In total 121 students completed the questionnaire. However, three responses (2.47%) were excluded since those respondents filled in the questionnaire in a monotonous pattern (e.g. marking all profiles as 1 or 2). Another three (2.47%) were eliminated due to inconsistent responses. After this exclusion, the number of valid questionnaires was 115 (95.04%). The sample consisted of 39 (33.9%) male and 76 (66.1%) female participants, aged 21.5 (SD = 1.789) in average. When it comes to mode of studying, 70 (60.9%) respondents study traditionally and 45 (39.1%) of them are online students.

<table>
<thead>
<tr>
<th>Table 2: Student satisfaction with online courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mode of studying</td>
</tr>
<tr>
<td>Traditional</td>
</tr>
<tr>
<td>Online</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td>Open online courses outside curricula</td>
</tr>
<tr>
<td>Coursera</td>
</tr>
<tr>
<td>edX</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

In total, 111 (96.50%) students attended at least one course via Moodle during their studies (see table 2). Traditional students are more satisfied with this learning platform (average score of 3.96 out of 5), than online students (with average score of 2.88). Looking at the range of scores, it is obvious that none of traditional students gave grade 1 to Moodle, and none of the online students gave it grade 5. There are 21 (18.26%) students who took one or more open online courses outside curricula (24 graded courses). Average grade for these courses is 4.60, meaning that all those courses are graded much higher in comparison to core studies. None of open online courses were graded with 1 or 2.

4.2. Aggregated student preferences

To estimate conjoint parameters we used the statistical package SPSS 16.0 (conjoint procedure). The parameters are estimated individually for each respondent in the sample (individual preferences), as well as for the total sample (aggregated preferences). Table 3 shows both the averaged part-worth utilities for each level of each attribute and importance scores for each of the attributes. Higher part-worth utility values indicate greater preference.

The internal and predictive validity of the model was estimated by Kendall’s tau statistic, which provides measures of the correlation between the observed and estimated preferences. Kendall’s tau statistic (0.924) shows that there is a strong correlation between the observed preferences and those estimated by the model, which suggests a high predictive validity of the model. A high value of the Pearson coefficient, 0.988, confirms the high level of significance of the obtained results. The Kendall coefficient for two holdout profiles has a value of 1.000, which is an additional indicator of the high quality of the obtained data.

Table 3 shows that method of assessment of knowledge was found to have the most significant influence on students’ preferences in e-learning environment with a relative importance of 23.76%. The importance of other attributes is by far lower. Attribute concerning existing opportunities for interactive work is second most important one (14.20%), whereas flexibility for pre-exam assignments was regarded as the least-valued attribute (7.69%). Looking at the most important attribute (knowledge assessment), students prefer the option to do all of pre-exam assignments and final exam in e-learning environment. Students also have positive but lower preferences towards the option to do 70% of pre-exam assignments in e-learning environment. The last attribute level (30% of pre-exam assignments in e-learning environment, and 70% offline exam) has a negative impact on their preferences.
Table 3: Averaged part-worth utilities and importance of e-learning attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Attribute level</th>
<th>Part-worths</th>
<th>Std. error</th>
<th>Attributes importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customize environment based on preferences</td>
<td>Yes</td>
<td>0.105</td>
<td>0.023</td>
<td>9.31%</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>-0.105</td>
<td>0.023</td>
<td></td>
</tr>
<tr>
<td>Simplicity</td>
<td>Simple environment, no training necessary</td>
<td>0.172</td>
<td>0.023</td>
<td>12.36%</td>
</tr>
<tr>
<td></td>
<td>Environment requires training or previous experience</td>
<td>-0.172</td>
<td>0.023</td>
<td></td>
</tr>
<tr>
<td>Lectures</td>
<td>Recorded lecture with slides and sound</td>
<td>0.057</td>
<td>0.023</td>
<td>13.24%</td>
</tr>
<tr>
<td></td>
<td>Classroom live broadcasting</td>
<td>-0.057</td>
<td>0.023</td>
<td></td>
</tr>
<tr>
<td>Interactive work (discussions, assignments,</td>
<td>Yes</td>
<td>0.240</td>
<td>0.023</td>
<td>14.20%</td>
</tr>
<tr>
<td>case studies etc)</td>
<td>No</td>
<td>-0.240</td>
<td>0.023</td>
<td></td>
</tr>
<tr>
<td>Cooperation with other students</td>
<td>Individual assignments</td>
<td>0.004</td>
<td>0.023</td>
<td>9.48%</td>
</tr>
<tr>
<td></td>
<td>Group assignments</td>
<td>-0.004</td>
<td>0.023</td>
<td></td>
</tr>
<tr>
<td>Flexibility for pre-exam assignments</td>
<td>Yes</td>
<td>0.021</td>
<td>0.023</td>
<td>7.69%</td>
</tr>
<tr>
<td>(clear deadlines or flexible deadlines)</td>
<td>No</td>
<td>-0.021</td>
<td>0.023</td>
<td></td>
</tr>
<tr>
<td>Communication with teacher</td>
<td>Online (e-mail, chat, forums, etc)</td>
<td>-0.120</td>
<td>0.023</td>
<td>9.96%</td>
</tr>
<tr>
<td></td>
<td>Online and face-to-face</td>
<td>0.120</td>
<td>0.023</td>
<td></td>
</tr>
<tr>
<td>Method of assessment of knowledge</td>
<td>100% of pre-exam assignments and exam in e-learning environment</td>
<td>0.126</td>
<td>0.030</td>
<td>23.76%</td>
</tr>
<tr>
<td></td>
<td>70% of pre-exam assignments in e-learning environment and 30% offline exam</td>
<td>0.022</td>
<td>0.035</td>
<td></td>
</tr>
<tr>
<td></td>
<td>30% of pre-exam assignments in e-learning environment, and 70% offline exam</td>
<td>-0.148</td>
<td>0.035</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td>3.165</td>
<td>0.024</td>
<td></td>
</tr>
</tbody>
</table>

Correlations between observed and estimated preferences

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson's R</td>
<td>0.988</td>
<td>0.000</td>
</tr>
<tr>
<td>Kendall's tau</td>
<td>0.924</td>
<td>0.000</td>
</tr>
<tr>
<td>Kendall's tau for 2 Holdouts</td>
<td>1.000</td>
<td></td>
</tr>
</tbody>
</table>

4.3. Segment level student preferences

In order to identify whether there are differences among the preferences of certain students groups, an analysis was conducted for the a priori defined segments as well. The a priori segmentation was carried out on the basis of the mode of studying: traditional vs. online. Averaged and segment level importance of attributes are given in figure 1. Although there is no significant difference in importance score among two segments and aggregate data, there are differences in preferred attribute levels (see table 4).

![Figure 1: Averaged vs. segment level importance of e-learning attributes](image)

Two segments of students have opposed preferences when it comes to four attributes. Traditional students prefer to listen to recorded lectures with slides and sound, to complete assignments individually, to have flexible deadlines for pre-exam assignments, and to complete the course entirely in e-learning environment. On the other hand, online students want classroom live broadcastings, group assignments, clear deadlines, and as much possible face-to-face tasks. Students have similar preferences towards other four examined e-learning factors.
Table 4: Traditional students’ vs. online students’ preferences

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Attribute level</th>
<th>Part-worths</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Traditional studying</td>
</tr>
<tr>
<td>Customize environment based on preferences</td>
<td>Yes</td>
<td>0.101</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>-0.101</td>
</tr>
<tr>
<td>Simplicity</td>
<td>Simple environment, no training necessary</td>
<td>0.203</td>
</tr>
<tr>
<td></td>
<td>Environment requires training or previous experience</td>
<td>-0.203</td>
</tr>
<tr>
<td>Lectures</td>
<td>Recorded lecture with slides and sound</td>
<td>0.140</td>
</tr>
<tr>
<td></td>
<td>Classroom live broadcasting</td>
<td>-0.140</td>
</tr>
<tr>
<td>Interactive work (discussions, assignments, case studies etc)</td>
<td>Yes</td>
<td>0.251</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>-0.251</td>
</tr>
<tr>
<td>Cooperation with other students</td>
<td>Individual assignments</td>
<td>0.019</td>
</tr>
<tr>
<td></td>
<td>Group assignments</td>
<td>-0.019</td>
</tr>
<tr>
<td>Flexibility for pre-exam assignments (clear deadlines or flexible deadlines)</td>
<td>Yes</td>
<td>0.056</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>-0.056</td>
</tr>
<tr>
<td>Communication with teacher</td>
<td>Online (e-mail, chat, forums, etc)</td>
<td>-0.103</td>
</tr>
<tr>
<td></td>
<td>Online and face-to-face</td>
<td>0.103</td>
</tr>
<tr>
<td>Method of assessment of knowledge</td>
<td>100% of pre-exam assignments and exam in e-learning environment</td>
<td>0.263</td>
</tr>
<tr>
<td></td>
<td>70% of pre-exam assignments in e-learning environment and 30% offline exam</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>30% of pre-exam assignments in e-learning environment, and 70% offline exam</td>
<td>-0.276</td>
</tr>
</tbody>
</table>

5. CONCLUSIONS AND FURTHER RESEARCH

The findings in this study represent first empirical insights that examine the preferences of students towards e-learning environment using conjoint analysis in Serbia. Three dimensions of interest were considered in this study: e-learning technology, teaching method and knowledge assessment. The last one was determined to be the most important one for both traditional and online students. At the same time, two groups of students have opposed preferences towards four attributes regarding teaching method and knowledge assessment. E-learning technology produced homogenous preferences. It seems that both groups strive to features of alternative way of studying. The results of our study reveal information that may be useful in directing future research in key factors essential to the adoption and effective implementation of e-learning environment, and provide a guideline for university policy makers in redesigning online mode of studying.

REFERENCES


Stein, D. (2004). Student satisfaction depends on course structure, Online Cl@ssroom, 4-5.


Identifying Potentials of Informal E-Learning 2.0

Jelena Andelković Labrović1, Gordana Milosavljević2

1 University of Belgrade, Faculty of Organizational Sciences, jeca@fon.bg.ac.rs
2 University of Belgrade, Faculty of Organizational Sciences, gordana@fon.bg.ac.rs

Abstract: The use of Web 2.0 tools has become common nowadays. The research was conducted in order to investigate to what extent students use web 2.0 tools and its applications in their everyday life, for learning or for entertainment, through informal process. The results show that the use of Web 2.0 tools for learning and/or entertainment among students of Faculty of organizational sciences is widely spread (in more than 90% cases) and that students use tools 2.0 for entertainment more than for learning. With that conclusion we should take into consideration that their habits in using those tools should be considered and integrated in formal learning processes.

Keywords: Web 2.0 tools, e-learning 2.0, informal learning

1. Introduction

Contemporary learning and education implies the use of Internet and modern technologies. Web 2.0 (O'Reilly, 2005) represents the second generation of the Web (World Wide Web), in which the users are able to actively participate in the creation of content and where two-way communication between the users, cooperation and exchange of information is applied (Yang & Yuen, 2010). Web 2.0 is otherwise often referred to as the ‘social web’ (Boulos & Wheeler, 2007) or the ‘read/write web’ (Hemmi, Bayne, & Land, 2009), which refers to a range of software applications that have been variously described as ‘dynamic’, ‘interactive’, ‘democratic’, ‘people centric’, ‘volatile’, ‘social’ and ‘adaptive’ (Brown, 2012). In the broadest sense it is possible to state that e-learning is every learning mediated by technology. E-learning, which is implemented using Web 2.0 applications, is called e-learning 2.0 (Downes, 2005). The most common tools used for e-learning 2.0 are: Blogs, Wiki-based sites, Shared media, social networks, social groups, bookmarking and others. In this paper the e-learning 2.0 as a form of informal learning will be analyzed.

From the educational perspective learning could be formal, non-formal and informal, depending on where purposeful learning activity took place (Rubenson, 2011; Andelković Labrović, Bijelić, & Milosavljević, 2014). Informal learning is learning resulting from daily life activities related to work, family or leisure. It is not structured (in terms of learning objectives, learning time, or learning support) and typically does not lead to certification. It may be intentional, but in most cases it is unintentional, incidental or random (Rubenson, 2011). In relation to the definition as represented in authors’ experience in working with students, it appears that whether they are learning retaliated to their modules or anything else that they are interested in many of their learning activities are more similar to informal learning.

Authors believe that a lot of non-formal and informal learning activities are already incorporated in the way of students learning. So we wanted to identify how students informally learn using Web 2.0 tools and applications. The main hypothesis on which it rests is that students use various tools 2.0 in their daily lives and it is important to determine to what extent they are used for learning and how much for entertainment, especially since we cannot claim that thought entertainment informal learning doesn’t happen as well.

2. Literature Review

Clark et al. (2009) explored how adolescents use Web 2.0 technologies for formal and informal learning. Students have identified 30 different Web 2.0 sites including the popular MSN (88%), followed by Bebo (67%) and Facebook (59%). All tools are used for various activities during lessons, in their free time as well as to support school activities, except that Bebo is not used for school activities. In fact 45% of students use Web 2.0 technologies to work in schools while 100% of them to work outside of school. 82% of students use social networking sites. Most of the students focused on the free time, entertainment and social networking activities while only 41% of students directly mention schoolwork, homework or research. For school-related activities most mentioned Microsoft Office (52%) and Internet sites such as Google (27%) and Wikipedia (6%) used for research and support for school work (Clark, Logan, Luckin, Mee, & Oliver, 2009). This study showed that Web 2.0 technologies not used to its full potential and that for students to use Web 2.0 technology as a tool for formal learning additional training need to be provided. Similarly, Cigognini et al.
(2011) concluded that students need support, guidance and educational interventions to make the best possible way using social media to support learning objectives (Cigognini, Pettenati, & Edirisingha, 2011).

Hemi et al. (2009) investigated the use of Web 2.0 and social technologies for teaching and learning within the formal educational process of higher education in the three modules, two at the undergraduate and one online graduate studies. In one module a wiki is used to support teaching and learning, while in the second, blog is used in order to increase participation in discussions in class. At the online postgraduate studies used a wide range of technologies of social media including Facebook, Delicious, blogs, wikis and Second Life (virtual world) to support a variety of learning activities. The results showed that social media caused the pedagogical shift to more common forms of testing, and that their use puts more emphasis on the importance of self-regulation group (Dabbagh & Kitsantas, 2012; Hemmi, Bayne, & Land, 2009).

Vaughan et al. (2011) conducted a research on how students use Web 2.0 technologies to support group work outside of class time. The research results showed that students rather participate in activities that they know that will be assessed by the teacher and that are part of their formal learning process. As opposed to informal learning where researchers were surprised by relatively small number of students that use Blogs, Wikis and other Web 2.0 applications for group work outside of class (Vaughan, Nickle, Silovs, & Zimmer, 2011).

Huang et al. (2013) investigated the role of computer anxiety in influencing female college students’ perceptions toward Web 2.0 applications for learning. The research revealed certain significant differences between genders on six Web 2.0 applications (blog, wiki, social networking tool, online video sharing tool, online game and immersive video environment). Overall they have concluded that females felt more anxious while using Web 2.0 applications than males, except for using social networking tools and online video sharing tools (Huang, Hood, & Yoo, 2013).

3. RESEARCH

The research was conducted in order to explain that students use Web 2.0 in their everyday life, for learning or for entertainment, in informal process. Main research objectives were to test students’ knowledge of Web 2.0 tools and to identify the extent, to which students informally use Web 2.0 tools to learn and in which they use them for entertainment.

Main research questions are:
- Which Web 2.0 tools are most commonly used among college students for learning?
- Which Web 2.0 tools are most commonly used among college students for entertainment?
- Is there a significant difference in using Web 2.0 tools for learning in relation to the use of Web 2.0 tools for entertainment?

3.1. Overview of participants

The participants were students of the Faculty of Organizational Sciences (FOS), in all fields of study (Management and Information systems and technologies) and of all years of study (1-4). Completing the questionnaire was anonymous, and students were informed that the results will be used strictly for research purposes. There were 402 valid questionnaires collected, out of which there were 93 first-year students, 100 second-year students, 94 third-year students, 113 fourth-year students and 2 graduate students. In further considerations to take into account students of all years except graduate level accounting for a sample of 400 respondents. Analysis of available data was performed using SPSS statistical software version 17.0.

The sample of 400 students is represented by 159 students of men, which was (39.8%) and 241 women (60.3%). Distribution by year of study in relation to gender is shown in the following table (Table 1).

<table>
<thead>
<tr>
<th>Year of study</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>40</td>
<td>53</td>
<td>93</td>
</tr>
<tr>
<td>Second</td>
<td>34</td>
<td>66</td>
<td>100</td>
</tr>
<tr>
<td>Third</td>
<td>35</td>
<td>59</td>
<td>94</td>
</tr>
<tr>
<td>Forth</td>
<td>50</td>
<td>83</td>
<td>113</td>
</tr>
<tr>
<td>Total</td>
<td>159</td>
<td>241</td>
<td>400</td>
</tr>
</tbody>
</table>
3.2. Research Method

Survey is used to test knowledge of Web 2.0 tools and to analyze how students use these tools for learning and/or entertainment. Analysis of the results of respondents’ answers to all research questions was done by groups of tools in relation to their application (for entertainment and/or for learning). Web 2.0 tools and applications were presented in a survey through following eleven groups of tools: blogs, wikis, shared media, shared workspaces, social networks and micro-blogging, social groups, bookmarking, tagging, web search engines, web aggregators and forums. The 5-point scale was used (never, once a month, once a week, few times per week, everyday) to show the frequency of using certain Web 2.0 tools.

To check the reliability of the questionnaire the Cronbach’s alpha coefficient was used as an indicator of internal consistency. Internal reliability is assumed for correlation coefficients greater than 0.7 (Cronbach, 1951). Checking was done for the eleven groups of tools which can be used for entertainment, and eleven groups of tools which can be used for studying (N = 22). Calculated Cronbach’s alpha coefficient had a value of 0.839. For data analysis descriptive statistics were used: frequency count to identify percentages in using Web 2.0 tools for learning and/or entertainment.

3.3. Results

Using frequency of certain Web 2.0 tools for learning is observed and the results are presented in the table below (Table 2). Mostly used as a learning tool are Web Search Engines with 97.5%. 69.5% of students are using Web Search Engines every day what could also be connected to the results of daily use of bookmarking of 33.2%. Then, the students in a very high percentage use forums (93.5%) out of which 77.6% use them on a weekly basis. Likewise, wiki tools are very highly ranked with 92.4% (65.4% on a weekly basis). It is assumed that such a large percentage of using wiki tools exists because most students use Wikipedia. It is particularly interesting to point out that if you ignore the dynamics of the use of certain tools (in the sense that it is used once a month, once a week, several times a week or daily) students use most of the tools in more than 50% of cases when learning is concerned (see details in Table 2 row USES (2+3+4+5)). It is interesting to point out that most of the students did not use tagging (70.9%) and web aggregators (65%) for learning purposes. A significant number of students pleaded that 47.6% of them have never used blogs to study. Regarding tagging and aggregation it is assumed that the reason for low use could be precisely in the lack of knowledge about how these tools can be used as a learning means, as for the blogs is assumed that the reason could be seen purely as a student’s preference for a certain tool. Also, often happens that students do not differentiate Web sites that are blogs from other type of web sites.

Frequency of use of Web 2.0 tools for entertainment is presented in the table below (Table 3). Regarding the group of tools that are used the least a situation is very similar as for the tools that are not used by the students for learning. As in previous case aggregation with 67% and tagging with 54.6% is pointed out. In the domain of using Web 2.0 tools for entertainment purposes Shared workspaces appeared as a group of tools that is not used in 53.5% of cases. Among the tools that are used primarily for entertainment Shared media tools stand out with 96.6%. 95.1% of them are used on a weekly basis, while 76.3% of them every day. The following are Web search engines (96.4%), as was the case among the tools for learning. High position among the tools used for entertainment, as opposed to learning, occupy Social networking and micro-blogging services with 90.2%, of which 87.1% is at weekly level and 69.2% is used on daily basis. It should be noted that most of the tools are used in over 60% of cases for entertainment.

Looking at all groups of Web 2.0 tools that students use for learning and/or entertainment it should be noted that there is no group of tools that is not used at all. Over 90% of students use wikis, shared media, social networking tools, search engines and forums. It is these results that demonstrate that students use above mentioned tools 2.0 on their own initiative in accordance with their wishes, knowledge and potentials. The presented results can be interpreted as another indicator that points to an existing habit for the use of particular tools 2.0 for learning outside the formal learning context, as well as the need for their use for learning at universities (educational institutions).
### Table 2: The use of Web 2.0 tools for learning

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Blogs (%)</th>
<th>Wikis (%)</th>
<th>Shared media (%)</th>
<th>Shared workspace (%)</th>
<th>Social networks and microblogging (%)</th>
<th>Social groups (%)</th>
<th>Bookmarking (%)</th>
<th>Tagging (%)</th>
<th>Web Search Engines (%)</th>
<th>Web aggregators (%)</th>
<th>Forums (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Never</td>
<td>47.6</td>
<td>7.6</td>
<td>19.0</td>
<td>41.1</td>
<td>38.0</td>
<td>46.1</td>
<td>21.1</td>
<td>70.9</td>
<td>2.5</td>
<td>65.0</td>
<td>6.5</td>
</tr>
<tr>
<td>2 Ones a month</td>
<td>27.5</td>
<td>27.0</td>
<td>23.5</td>
<td>23.7</td>
<td>11.7</td>
<td>14.8</td>
<td>18.5</td>
<td>12.7</td>
<td>2.5</td>
<td>17.1</td>
<td>15.8</td>
</tr>
<tr>
<td>3 Ones a week</td>
<td>14.8</td>
<td>28.2</td>
<td>17.5</td>
<td>15.4</td>
<td>12.2</td>
<td>16.9</td>
<td>11.9</td>
<td>8.1</td>
<td>7.4</td>
<td>9.0</td>
<td>20.6</td>
</tr>
<tr>
<td>4 Few times per week</td>
<td>8.7</td>
<td>28.5</td>
<td>13.0</td>
<td>13.4</td>
<td>13.8</td>
<td>10.4</td>
<td>15.2</td>
<td>3.9</td>
<td>18.0</td>
<td>4.9</td>
<td>29.9</td>
</tr>
<tr>
<td>5 Everyday</td>
<td>1.5</td>
<td>8.7</td>
<td>27.0</td>
<td>6.4</td>
<td>24.2</td>
<td>11.7</td>
<td>33.2</td>
<td>4.4</td>
<td>69.5</td>
<td>4.1</td>
<td>27.1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Uses (2+3+4+5)</td>
<td>52.4</td>
<td>92.4</td>
<td>81.0</td>
<td>58.9</td>
<td>62.0</td>
<td>53.9</td>
<td>78.9</td>
<td>29.1</td>
<td>97.5</td>
<td>35.0</td>
<td>93.5</td>
</tr>
<tr>
<td>Uses (3+4+5)</td>
<td>24.9</td>
<td>65.4</td>
<td>57.4</td>
<td>35.2</td>
<td>50.3</td>
<td>39.1</td>
<td>60.4</td>
<td>16.4</td>
<td>94.9</td>
<td>17.9</td>
<td>77.6</td>
</tr>
</tbody>
</table>

### Table 3: The use of Web 2.0 tools for entertainment

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Blogs (%)</th>
<th>Wikis (%)</th>
<th>Shared media (%)</th>
<th>Shared workspace (%)</th>
<th>Social networks and microblogging (%)</th>
<th>Social groups (%)</th>
<th>Bookmarking (%)</th>
<th>Tagging (%)</th>
<th>Web Search Engines (%)</th>
<th>Web aggregators (%)</th>
<th>Forums (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Never</td>
<td>37.7</td>
<td>18.6</td>
<td>3.4</td>
<td>53.5</td>
<td>9.8</td>
<td>35.1</td>
<td>17.8</td>
<td>54.6</td>
<td>3.6</td>
<td>67.0</td>
<td>18.1</td>
</tr>
<tr>
<td>2 Ones a month</td>
<td>22.9</td>
<td>26.8</td>
<td>1.5</td>
<td>20.4</td>
<td>3.0</td>
<td>11.3</td>
<td>10.9</td>
<td>17.7</td>
<td>1.5</td>
<td>13.2</td>
<td>20.7</td>
</tr>
<tr>
<td>3 Ones a week</td>
<td>17.4</td>
<td>18.9</td>
<td>2.8</td>
<td>11.0</td>
<td>5.3</td>
<td>17.0</td>
<td>12.9</td>
<td>10.8</td>
<td>3.1</td>
<td>9.9</td>
<td>16.1</td>
</tr>
<tr>
<td>4 Few times per week</td>
<td>15.1</td>
<td>24.9</td>
<td>16.0</td>
<td>6.5</td>
<td>12.6</td>
<td>15.2</td>
<td>17.0</td>
<td>8.7</td>
<td>9.4</td>
<td>4.7</td>
<td>19.1</td>
</tr>
<tr>
<td>5 Everyday</td>
<td>7.0</td>
<td>10.8</td>
<td>76.3</td>
<td>8.6</td>
<td>69.2</td>
<td>21.4</td>
<td>41.4</td>
<td>8.2</td>
<td>82.4</td>
<td>5.2</td>
<td>26.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Uses (2+3+4+5)</td>
<td>62.3</td>
<td>81.4</td>
<td>96.6</td>
<td>46.5</td>
<td>90.2</td>
<td>64.9</td>
<td>82.2</td>
<td>45.4</td>
<td>96.4</td>
<td>33.0</td>
<td>81.9</td>
</tr>
<tr>
<td>Uses (3+4+5)</td>
<td>39.5</td>
<td>54.6</td>
<td>95.1</td>
<td>26.1</td>
<td>87.1</td>
<td>53.6</td>
<td>71.3</td>
<td>27.7</td>
<td>94.9</td>
<td>19.7</td>
<td>61.2</td>
</tr>
</tbody>
</table>
Based on statistical analysis using Wilcoxon Signed Ranks Test (Table 4) it could be concluded that there is a significant difference in the use of Web 2.0 for learning and for entertainment in all groups of tools except Web aggregators (Z has values ranking from -3.476 to -12.673, p<0.001. These results for Web aggregators can be additionally explained because in most cases students do not use aggregator neither for learning nor entertainment (look at table 2 and table 3). Analyzing the other groups of tools 2.0 it is obvious that students are using Wikis, Shared workspaces and Forums more for learning and Blogs, Shared media, Social networks and micro-blogging, Social groups, Bookmarking, Tagging and Web Search Engines for entertainment. With these results, we can emphases once more that students use Web 2.0 tools for entertainment more than for learning (Table 4).

Table 4: Comparative overview of the frequency use of Web 2.0 tools for learning and entertainment

<table>
<thead>
<tr>
<th>Using frequency</th>
<th>Year of study</th>
<th>1+2+3+4</th>
<th>Z</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blogs</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-6.667&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.000</td>
</tr>
<tr>
<td>Wikis</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-3.476&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.001</td>
</tr>
<tr>
<td>Shared media</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-13.166&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.000</td>
</tr>
<tr>
<td>Shared workspaces</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-4.245&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.000</td>
</tr>
<tr>
<td>Social networks and micro-blogging</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-12.673&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.000</td>
</tr>
<tr>
<td>Social groups</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-6.664&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.000</td>
</tr>
<tr>
<td>Bookmarking</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-5.340&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.000</td>
</tr>
<tr>
<td>Tagging</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-7.186&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.000</td>
</tr>
<tr>
<td>Web Search Engines</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-3.913&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.000</td>
</tr>
<tr>
<td>Web aggregators</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-.788&lt;sup&gt;b&lt;/sup&gt;</td>
<td>0.431</td>
</tr>
<tr>
<td>Forums</td>
<td>Entertainment</td>
<td>Learning</td>
<td>-5.815&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.000</td>
</tr>
</tbody>
</table>

b. Based on negative ranks.
c. Based on positive ranks

4. CONCLUSION

Looking at the research results it could be concluded that students use all groups of Web 2.0 tools for learning or for entertainment. Over 90% of students use wikis, shared media, social networking tools, search engines and forums.

Web Search Engines with 97.5% are mostly used for learning, and after that, students use forums (93.5%) and wiki tools (92.4%) in a very high percentage. For entertainment, Shared media tools stand out with 96.6%. The subsequent are Web search engines with 96.4% and Social networking and micro-blogging services with 90.2%.

It is these results that demonstrate that students use above mentioned tools 2.0 on their own initiative in accordance with their wishes, knowledge and potentials. Also it was shown that students use Web 2.0 tools for entertainment more than for learning with what has been proven that these results are precisely indicators that their habits for the use of these tools 2.0 should be considered as pattern for designing formal learning processes within educational systems.
REFERENCES


“FRESHMAN” TO “POSTGRAD” CHALLENGE: DIFFERENCES IN COLLEGE EXPERIENCES, SATISFACTION AND LIFESTYLES AMONG STUDENTS OF FOS

Uroš Jovanović1, Milan Jeveričić2, Adam Kovač3
1Faculty of Organizational Sciences, juros26@yahoo.com
2Faculty of Organizational Sciences, the.lanemi@gmail.com
3Faculty of Organizational Sciences, adamzp7@gmail.com

Abstract: This paper investigates the differences in GPA, funding status, alcohol consumption, sport involvement, college experience satisfaction and overall life satisfaction among first, second, third, fourth and postgraduate college students. Research was conducted in the summer semester of 2013 and data was gathered using a questionnaire with the sample of 507 students from the Faculty of Organizational Sciences, including both student courses. The results show that GPA level is higher in fourth-year and postgraduate students groups. Secondly, second-year students displayed far less involvement in sports, while the fourth-year ISAT students displayed significantly lower satisfaction with their college experience than any other group. 85% of students consume alcohol, which is a similar percentage when compared to students from Harvard Business School. Finally, about 80% of students assessed their overall life satisfaction as high and very high, and no significant differences were found between students from different year of study.

Keywords: College experience satisfaction, year of study, overall life satisfaction, academic performance, sport involvement, alcohol consumption

1. INTRODUCTION

Academic predictors such as behavioral experience (behavior at college, grades in college) and social experience (perception of college climate) are the main components of students’ college experience and satisfaction (Suld, Shaffer, & Riley, 2008). Higher education is associated with life benefits that students may have, but also with the life satisfaction that occurs as a result of factors such as job security, (household income), health, mental health, happiness, and other results that appear as an output related to educational achievement (Salazar, 2013). Individuals with higher educational level tend to have more developed social networks and contact with the world, which implies an increase in happiness and life satisfaction (Chen, 2011).

In the literature, differences among college students population are usually inspected from demographic aspect, such as gender, race, country of origin, or different psychosocial variables such as life satisfaction or various personality traits. For example, one study from the USA proves that college major choice varies substantially by gender, race, and ethnicity among college graduates and it investigates whether these differences are present at the start of the college career (Dickson, 2010). Another study discusses the influence of personality traits such as the Big Five and the narrow personality traits on certain areas of college experience (Lounsbury, Fisher, Levy, & Welsh, 2009). Similar study also focuses on the relation between emotional intelligence and a number of ‘life skills’ (academic achievement, life satisfaction, anxiety, problem-solving and coping). Other studies are also focused on differences between students coming from different countries and cultural background in various fields, such as in motivation to study abroad (Salisbury, Paulsen, & Pascarella, 2010) or social network usage (Kim, Sohn, & Choi, 2011).

The decisions that students make in this period of life are very important and have a vast impact on their maturity process and future. The period of emerging adulthood (young people aged 18 to 25 years) is characterized by big transitional changes (like completion of high school, enrollment to university and first employment), which represent a relatively acute stressors and have large impact on their well-being (Gall, Evans, & Bellerose, 2000). Furthermore, Stone et al. suggests that in this particular period of emerging adulthood, people’s wellbeing appear to be the lowest when compared to any other period in the life span (Stone, Schwartz, Broderick, & Deaton, 2010).

Further analysis of literature leads to the conclusion that there are evident distinctions among population of college students, but only few studies are oriented on discovering the differences between students from different year of study (YOS). This also represents the aim of this paper- to discover and analyze the differences between students by grouping them according to YOS in order to get more information about the changes during students’ life span. One of the few study using similar approach is the one conducted by Kjeldstadli et al. (2006) which indicates that medical college students from first-year were as satisfied as
students from other universities, but reported less satisfaction in their graduation year. Put in other words, it appears that life satisfaction of students seems to decrease with the increase of years spent in medical school.

Additionally, students who have a positive college experience are more likely to be satisfied with the college or university than students who do not have a positive college experience (DeShields, Kara, & Kaynak, 2005). Therefore the second aim of this study is to provide information for colleges and universities (in this case- Faculty of Organizational Sciences) about the changes in students experience, satisfaction and habits over time, in order to align their organizational structure, processes and procedures to students and to become more customer-oriented. This type of information could enable the educational institutions to establish and to maintain competitive advantage on the higher education marketplace, as well.

The initial hypothesis of this paper is formed on the statement that college students during their studies cope with different challenges that influence their experience and lifestyle, and that it is possible to identify different trends in student’s behavior during their college life span. The value of this paper is that it provides the insight about the changes and influences of college experiences on habits, grades, lifestyle and satisfaction of students from different YOS. It could prove particularly useful for educational and organizational staff of FOS, as well as students and other parties with the research focus in the given area.

2. RESEARCH DESIGN AND PROCEDURE

Research was conducted in the period from March to July 2013, during the summer semester with the sample of 507 students from Faculty of Organizational Sciences (FOS). Sample consists of students enrolled to both undergraduate and postgraduate studies, from all 3 study programs (Management, Information Systems and Technology (ISAT) and Information System and Technology- distance learning program although this particular e-learning group has negligible effect because it constitutes for only 2,6% of the respondents). Having in mind that FOS has about 4200 enrolled students in total, sample size of 507 students, can provide adequate information about the observed population.

Original survey was conducted for the purpose of determining relation between 6 life satisfactions components and academic performance, sports involvement and demographic and behavioral characteristics. Data is collected using questionnaire with 31 questions that was published both in paper and online form. Majority of respondents provided their answers through the online survey form which can be found on https://docs.google.com/forms/d/1XDKTVpW8eF6JIBTeT6sWlgStu4ce-EceP1wsWUXR99/edit?usp=drive_web, in Serbian language, native language of respondents. For the purpose of this particular study, information about student’s current grade point average (GPA), funding status, sports involvement, alcohol consumption, college experiences satisfaction and overall life satisfaction are taken from this database and analyzed. College life satisfaction and overall life satisfaction have been measured as integral part of Brief Multi-Dimensional Students’ Life Satisfaction Scale (BMSLSS) developed by Züllig et al. (2009). Information about the characteristics of the students involved in the survey is given in the following table:

Table 1: Sample characteristics

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>N (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year of study</strong></td>
<td></td>
</tr>
<tr>
<td>First</td>
<td>121 (23, 9%)</td>
</tr>
<tr>
<td>Second</td>
<td>90 (17, 8%)</td>
</tr>
<tr>
<td>Third</td>
<td>127 (25, 0%)</td>
</tr>
<tr>
<td>Fourth</td>
<td>117 (23, 1%)</td>
</tr>
<tr>
<td>Post-graduate (Masters and PHD studies)</td>
<td>52 (10, 3%)</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>213 (42, 0%)</td>
</tr>
<tr>
<td>Female</td>
<td>294 (58, 0%)</td>
</tr>
<tr>
<td><strong>Core curriculum</strong></td>
<td></td>
</tr>
<tr>
<td>Management</td>
<td>350 (69, 0%)</td>
</tr>
<tr>
<td>Information systems and technologies (ISAT)</td>
<td>144 (28, 4%)</td>
</tr>
<tr>
<td>Information systems and technologies- distance learning</td>
<td>13 (2, 6%)</td>
</tr>
<tr>
<td><strong>Status</strong></td>
<td></td>
</tr>
<tr>
<td>State scholarship</td>
<td>342 (67, 5%)</td>
</tr>
<tr>
<td>Self-financing</td>
<td>165 (32, 5%)</td>
</tr>
</tbody>
</table>
Afterwards, students are categorized according to their year of study into 5 groups– first-year students, second-year students, third-year students, fourth-year students and postgraduate students (includes Masters and PHD students at FOS). Cross sectional analysis is the method used for obtaining the results about the differences among given students groups. Beside Table 1 that contains descriptive statistics and graphical presentations (Figures 1 to 6), Kruskal Wallis nonparametric test is applied to determine if statistically significant differences exist among students from different YOS, using software IBM SPSS Statistics 22. Year of study is the grouping variable (5 groups), while test variables are:

a) Student’s current GPA (4 groups: 1) 6-6.99 2) 7-7.99 3) 8-8.99 4) 9-10),
b) Student’s status (2 groups: 1) state scholarship or 2) self-financing),
c) Sport’s involvement (2 groups: 1)yes or 2) no),
d) Alcohol consumption (4 groups: 1) not at all 2) low 3) medium 4) high)
e) College experiences satisfaction (5 groups: 1) very dissatisfied 2) dissatisfied 3) moderately satisfied 4) satisfied 5) very satisfied)
f) Overall life satisfaction (5 groups same as college experiences satisfaction variable)

### 3. RESULTS

Firstly, the output from IBM SPSS Statistics 22 with the respective values of Kruskal Wallis test statistics is given in the following table:

<table>
<thead>
<tr>
<th>Status</th>
<th>GPA</th>
<th>Alcohol consumption</th>
<th>Sport involvement</th>
<th>College experiences satisfaction</th>
<th>Overall life style satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chi-Square</td>
<td>36.129</td>
<td>18.806</td>
<td>8.838</td>
<td>12.063</td>
<td>4.314</td>
</tr>
<tr>
<td>df</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Asymp. Sig.</td>
<td>.000</td>
<td>.001</td>
<td>.065</td>
<td>.017</td>
<td>.365</td>
</tr>
</tbody>
</table>

a. Kruskal Wallis Test; b. Grouping Variable: Year of study

Secondly, diagrams and tables for every 6 variables (parameters) analyzed, are presented, alongside with brief explanation.

First parameter we analyzed was the grade point average (GPA). Comparing the GPA level throughout the students from different YOS, we found that the highest GPA (in average) is noted within the postgraduate group of students (Master and PhD study program) with 8.73 out of 10. We also noticed a difference between fourth year students compared to the students attending the first three years of Faculty of Organizational Sciences – 8.47 compared to 8.28-8.30.

### Table 3: GPA

<table>
<thead>
<tr>
<th>Year of study/GPA</th>
<th>6-7</th>
<th>7-8</th>
<th>8-9</th>
<th>9-10</th>
<th>Total Responses</th>
<th>Average Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>3</td>
<td>24</td>
<td>49</td>
<td>25</td>
<td>101</td>
<td>8.28</td>
</tr>
<tr>
<td>Second</td>
<td>1</td>
<td>29</td>
<td>39</td>
<td>16</td>
<td>85</td>
<td>8.3</td>
</tr>
<tr>
<td>Third</td>
<td>1</td>
<td>47</td>
<td>52</td>
<td>27</td>
<td>127</td>
<td>8.28</td>
</tr>
<tr>
<td>Fourth</td>
<td>1</td>
<td>35</td>
<td>50</td>
<td>29</td>
<td>115</td>
<td>8.47</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>5</td>
<td>29</td>
<td>18</td>
<td>52</td>
<td>52</td>
<td>8.73</td>
</tr>
<tr>
<td>Total Responses</td>
<td>6</td>
<td>140</td>
<td>219</td>
<td>115</td>
<td>480</td>
<td>8.36</td>
</tr>
</tbody>
</table>

2 37 respondents did not entered correct value of GPA and are excluded from respective analysis
Data in the table 3 show student status cross-referenced with the year of study of students. The difference between some of the years was to be expected considering the fact that number of awarded state scholarships increases for 20% in every advancing year of study (with the exception of postgraduate students). It means that for example, second-year students are awarded with 20% more scholarship than first-year students and 20% less than third-year students. This is the actual reason for detected statistically significant difference.

Table 4: Student’s status

<table>
<thead>
<tr>
<th>Year of study/Status</th>
<th>State scholarship</th>
<th>Self-financing</th>
<th>Total Responses</th>
<th>Percent of students with scholarships</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>59</td>
<td>62</td>
<td>121</td>
<td>48.8%</td>
</tr>
<tr>
<td>Second</td>
<td>66</td>
<td>24</td>
<td>90</td>
<td>73.3%</td>
</tr>
<tr>
<td>Third</td>
<td>98</td>
<td>29</td>
<td>127</td>
<td>77.2%</td>
</tr>
<tr>
<td>Forth</td>
<td>91</td>
<td>26</td>
<td>117</td>
<td>77.8%</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>28</td>
<td>24</td>
<td>52</td>
<td>53.8%</td>
</tr>
<tr>
<td>Total Responses</td>
<td>342</td>
<td>165</td>
<td>507</td>
<td>67.4%</td>
</tr>
</tbody>
</table>

Sport involvement parameter shows a significant drop for second-year students– about 15% fewer students engaged in sports activities, than students from other YOS. We will be discussing about the possible cause of this drop, but it is certain further research is necessary to confirm any assumptions about the potential cause for this drop.
Table 5: Sport involvement

<table>
<thead>
<tr>
<th>Year of study/ Sport involvement</th>
<th>Yes</th>
<th>No</th>
<th>Total Responses</th>
<th>Percent of positive answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>91</td>
<td>30</td>
<td>121</td>
<td>75.2%</td>
</tr>
<tr>
<td>Second</td>
<td>50</td>
<td>40</td>
<td>90</td>
<td>55.6%</td>
</tr>
<tr>
<td>Third</td>
<td>89</td>
<td>38</td>
<td>127</td>
<td>70.1%</td>
</tr>
<tr>
<td>Forth</td>
<td>85</td>
<td>32</td>
<td>117</td>
<td>72.6%</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>40</td>
<td>12</td>
<td>52</td>
<td>76.9%</td>
</tr>
<tr>
<td>Total Responses</td>
<td>355</td>
<td>152</td>
<td>507</td>
<td>70.0%</td>
</tr>
</tbody>
</table>

Figure 3: Sport involvement

By analyzing college satisfaction parameter it can be seen that in general, students are happy with their college experience and that they evaluated it as high (with average value of 3.88 out of 5). Third and fourth year students were less satisfied, than the rest of the students involved in the research

Table 6: College experience satisfaction

<table>
<thead>
<tr>
<th>Year of study/College experience satisfaction</th>
<th>Very low</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very high</th>
<th>Total Responses</th>
<th>Mean value [1-5]</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>2</td>
<td>4</td>
<td>26</td>
<td>57</td>
<td>32</td>
<td>121</td>
<td>3.93</td>
</tr>
<tr>
<td>Second</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>90</td>
<td>4.01</td>
</tr>
<tr>
<td>Third</td>
<td>2</td>
<td>9</td>
<td>20</td>
<td>49</td>
<td>21</td>
<td>127</td>
<td>3.76</td>
</tr>
<tr>
<td>Forth</td>
<td>2</td>
<td>8</td>
<td>24</td>
<td>58</td>
<td>25</td>
<td>117</td>
<td>3.8</td>
</tr>
<tr>
<td>Postgraduate</td>
<td></td>
<td>1</td>
<td>14</td>
<td>22</td>
<td>15</td>
<td>52</td>
<td>3.98</td>
</tr>
<tr>
<td>Total Responses</td>
<td>6</td>
<td>22</td>
<td>121</td>
<td>234</td>
<td>124</td>
<td>507</td>
<td>3.88</td>
</tr>
</tbody>
</table>

Figure 4: College experience satisfaction

Alcohol consumption parameter displays almost similar percent of students consuming alcohol per YOS. The highest alcohol consumption is noted among third-year students with about 40% rating their consumption of alcohol as high or medium.
Table 7: Alcohol consumption

<table>
<thead>
<tr>
<th>Year of study/Alcohol consumption</th>
<th>No</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Total Responses</th>
<th>Mean value [scale 0-3]</th>
<th>Percent of students consuming</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>20</td>
<td>62</td>
<td>30</td>
<td>9</td>
<td>121</td>
<td>1.23</td>
<td>83.5%</td>
</tr>
<tr>
<td>Second</td>
<td>16</td>
<td>44</td>
<td>28</td>
<td>2</td>
<td>90</td>
<td>1.18</td>
<td>82.2%</td>
</tr>
<tr>
<td>Third</td>
<td>15</td>
<td>61</td>
<td>36</td>
<td>15</td>
<td>127</td>
<td>1.4</td>
<td>88.2%</td>
</tr>
<tr>
<td>Fourth</td>
<td>16</td>
<td>65</td>
<td>27</td>
<td>9</td>
<td>117</td>
<td>1.25</td>
<td>86.3%</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>12</td>
<td>30</td>
<td>6</td>
<td>4</td>
<td>52</td>
<td>1.04</td>
<td>76.9%</td>
</tr>
<tr>
<td>Total Responses</td>
<td>79</td>
<td>262</td>
<td>127</td>
<td>39</td>
<td>507</td>
<td>1.25</td>
<td>84.4%</td>
</tr>
</tbody>
</table>

Figure 5: Alcohol consumption

The next set of data represents the parameter of overall life satisfaction. We have noticed that the second-year students have expressed slightly higher satisfaction with life, with the mean value being 0.12 higher than the postgraduate students (who have expressed second highest satisfaction with overall life among sample).

Table 8: Overall life satisfaction

<table>
<thead>
<tr>
<th>Year of study/Life satisfaction</th>
<th>Very low</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
<th>Very high</th>
<th>Total responses</th>
<th>Mean value [scale 1-5]</th>
</tr>
</thead>
<tbody>
<tr>
<td>First</td>
<td>5</td>
<td>14</td>
<td>72</td>
<td>30</td>
<td>30</td>
<td>121</td>
<td>4.05</td>
</tr>
<tr>
<td>Second</td>
<td>1</td>
<td>8</td>
<td>51</td>
<td>30</td>
<td>30</td>
<td>90</td>
<td>4.22</td>
</tr>
<tr>
<td>Third</td>
<td>1</td>
<td>3</td>
<td>17</td>
<td>77</td>
<td>29</td>
<td>127</td>
<td>4.02</td>
</tr>
<tr>
<td>Fourth</td>
<td>20</td>
<td>70</td>
<td>27</td>
<td></td>
<td></td>
<td>117</td>
<td>4.06</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>7</td>
<td>33</td>
<td>12</td>
<td></td>
<td></td>
<td>52</td>
<td>4.1</td>
</tr>
<tr>
<td>Total responses</td>
<td>1</td>
<td>9</td>
<td>66</td>
<td>303</td>
<td>128</td>
<td>507</td>
<td>4.08</td>
</tr>
</tbody>
</table>

Figure 6: Overall life satisfaction
4. DISCUSSION

From the obtained results it can be concluded that statistically significant differences (with significance level p<0.05) are found within status, GPA and sport’s involvement parameters among students from different YOS. No statistically significant differences are found within alcohol consumption, college experiences satisfaction and overall life satisfaction student’s groups (Table 2).

Concerning the year of study/GPA parameter, there are significant differences in the mean value scores between fourth-year students comparing to all others- 8.47 compared to 8.28 to 8.30 (Table 3, Figure 1). There could be many reasons for this result. Firstly, it may result from the fact that only the most successful students reach the fourth YOS. On the other hand, it can be assumed that students attending higher YOS are more familiar with the materials and syllabuses of the courses and therefore achieve better results. From another point of view, it could be assumed that the fourth year at FOS is less challenging and easier to complete. All these assumptions could represent the future direction of this research and require further analysis in order to determine the actual cause.

Speaking about year of study/status parameter we can see that there is a much smaller percentage of students with state scholarship in first YOS compared to others (Table 4, Figure 2). One of the possible reasons for this is that largest number of students drop out or fail at the first year. Still, the actual reason for this is as mentioned previously, that number of awarded state scholarships increases for 20% in every advancing year of study which can be seen from the FOS official documents, too. Also, on postgraduate studies (Master of Science programme) reduced number of state scholarships is awarded.

Physical activity represents one of the factors with positive effects on the quality of physical and mental health (Martin, Church, Thompson, Earnest, & Blair, 2009). Experts in the field of education and health intuitively believe that physically more active students perform better in school (Castelli, Hillman, Buck, & Erwin, 2007). Looking at obtained results and particularly year of study/sport involvement parameter, we can conclude that there is a noteworthy drop considering sport involvement for second-year students– 15% fewer students compared to students from other YOS (Table 5, Figure 3). Still there is no difference in their GPA compared to first and third YOS. With that on mind, a possible explanation could be that after finishing first year, students decide to devote significantly more time to studies and have less time for spare time activities such as sport involvement. Another possible explanation could be that the whole generation of students currently enrolled in second year is not particularly interested for sport activities.

Year of study/college experience satisfaction represents another important parameter included in analysis. No significant differences in college experiences satisfaction are noted among students from different YOS. It should be emphasized that in general, students rated their college experiences satisfaction as high or very high, which is a remarkable result for FOS (Table 6, Figure 4). But by further inspection, it can be noted that third and fourth year students have slightly below average satisfaction. Further analysis of selected parameter according to core curriculum, provides an insight in differences among students from Management and ISAT departments. It is noted that fourth-year students of ISAT have lowest satisfaction with college experiences (mean value at 3.48 out of 5). This can lead to conclusion that decrease of satisfaction with college experiences is more expressed among ISAT students in their final years of study.

Looking at year of study/alcohol consumption parameter, it is interesting to notice that the percentage of students who consume alcohol is almost the same for all YOS (84.4%), except postgraduate with slight lesser percentage- 76.9% (Table 7, Figure 5). This data can look a bit discouraging, but comparing our results with study from Harvard’s College Alcohol Study (Wechsler & Nelson, 2008), it can be seen that alcohol consumption is almost identical for FOS and Harvard students (84% for Harvard Business School). However, we noted that the number of students who declared their consumption of alcohol as high or medium is highest for the third-year students.

By analysing year of study/life satisfaction parameter no significant differences among students from different YOS are noted. In general, students expressed high level of overall life satisfaction. It is important to emphasize that the average student of Faculty of Organizational Sciences is satisfied with his life (Table 8, Figure 6). Second-year students expressed slightly higher level of satisfaction. Already mentioned study from Kjeldstadli et al. (2006), highlights that the life satisfaction of medical students is decreasing during their studies, and that they were as satisfied as other students in the first year of study, but reported less satisfaction in their graduation year. When compared to FOS, overall life satisfaction does not differ significantly among students from different YOS, indicating that this trend is not present in technological and business schools which include FOS, as well.
We encourage further analysis, based on our data, which will further develop each of the segments that were the subject of our research.

5. LIMITATIONS AND CONCLUSION

One of the main limitations of this research is the homogeneity of the sample, because it includes only students from Faculty of Organizational Sciences, as a part of University of Belgrade. Sample that would include other colleges and universities would be far more heterogeneous and would enable us to make comparisons between different educational institutions. On the other hand, this characteristic of sample enables us to make valid conclusions about the student’s population at FOS, such as the inconsistency of second-year students in sport involvement, when compared to other students groups. By further analysis and repeated surveys in future, the actual origin of this inconsistency could be determined. In other words, we could make sure if this inconsistency is the result of trend among every second-year student’s generation at FOS, or just the case with this particular generation enrolled in the year 2011. Secondly, another limitation closely related to previous one is the non-experimental type of research i.e. time-invariant sample. Respondents have filled questionnaire in only one iteration, and certain external events (such as the beginning of exam period, reduced leisure time and increased stress level) could have affected their answers regarding time-variable parameters such as college experiences satisfaction or alcohol consumption level.

Nevertheless, cross-sectional analysis of the data provides useful information about the differences in academic performance (GPA), habits, lifestyles and satisfaction between students from different YOS. Based on the initial statement we can conclude that students’ college experiences, overall life satisfaction and alcohol consumption level do not differ significantly among students of first, second, third fourth YOS and postgraduate students. On contrary, these students groups displayed statistically significant differences within average grade (GPA), scholarship status and sport involvement parameters.

REFERENCES


MANAGING STUDENTS’ VOCATIONAL TRAINING AT THE MEDICAL COLLEGE OF PROFESSIONAL STUDIES AS A METHOD OF GAINING SKILLS

Milica Vasiljević Blagojević¹, Nevena Krasulja², Ivana Radojević³
¹ Medical College of Professional Studies, Belgrade, milica@tojo.rs
² Faculty of Business Studies and Law, Union University, Belgrade, nevena.krasulja@fpsp.edu.rs
³ The Faculty of Management, Metropolitan University, Belgrade, gujanicaivana@yahoo.com

Abstract: In near future, education should take an important place, even in Serbia, in the conditions of “endless” transition. In such context, the area of the education management is of high importance. Professional training in each of the educational segments is particularly significant, especially in the professional college education. The most common remark on the subject of education in Serbia in general is the low level of practical training received by the pupils/students at all levels of education (secondary, higher, academic and master education). This paper shall present the results which show good practice of a college. It is a Medical College of Professional Studies in Belgrade. Today, students of this College have practical training that meets the request of the Bologna process to the largest extent, it being formally and essentially implemented, which is confirmed by the presented results.

Keywords: practical training, medical nurses, skills, practical knowledge

1. INTRODUCTION

It is essential that students work on self-improvement and aim for the development and improvement of their knowledge and skills. Considering the fact that students – medical nurses are entrusted with patient care and the ability to provide such care from day one of their employment, it is important that during their studies, they learn and perfect all of the required activities, theoretically as well as practically. Authors Krasulja and Janjić (2013) have noted that “global competition, fast and sudden changes, impose the need for continuous improvement so that individuals could ensure the prospect of better employment in an almost unpredictable environment” (Janjić, 2013, p.45). Employers require practical knowledge and skills, and the higher education institutions should provide to their students precisely that, along with the theoretical knowledge, in order for them to become competitive at the labour market.

If we complement this with the fact, as the authors Vasiljević Blagojević and Perić state in their research (2010), that students, when choosing their higher education institution, state good practice as one of the best factors of their decisions, we can conclude that practical training is of key importance in the areas of recruiting staff and leading students to a certain educational institution.

Ever since the beginning of the institutionalized education, terms such as practical training and practical work are used in professional training as an irreplaceable method of gaining the required knowledge, know-hows, skills and habits. Ranković Vasiljević (2004) emphasizes that this refers particularly to the education of medical nurses, starting from secondary school, through higher education institutions and later on (Ranković Vasiljević, 2004, p. 69). Practical training has become highly important factor for the connection of theoretical knowledge gained at lectures with their practical application. By using the practical training during the studies, the students have the possibility to gain practical work experience and to apply theoretical knowledge which they gained at theory classes.

In observation of the historical development of medical nurses’ education worldwide and domestically, it was noted that practical training actually preceded the theoretical training, although this seems impossible today. Namely, ever since Florence Nightingale and her first school, nurses were taught procedures, activities, techniques, interventions, without previously adopted theoretical knowledge, which are the imperative of any professional education today.

Ranković Vasiljević (2003) emphasizes that, with the development of educational systems, a change occurred in application of didactical principles in the education and teaching process, thus the theory began to precede the practical training (Ranković Vasiljević, 2003, p. 93). Nevertheless, there has always been a need for a special kind of training of future medical nurses in their future career, which differed from the so-called „school-type learning“, and which took place in healthcare institutions without teachers’ direct supervision. This kind or type of work whose aim is to gain skills is referred to as the practical training.
In analysis historical documents on education of medical nurses, we came across the Rules on summer practical training for students of the School of Medicine and pupils of medical middle schools, dated June 16, 1950, which regulated the need for such practical training and its goal. Within the programme „Basic professional nursing studies“, the Medical College of Professional Studies in Belgrade has foreseen practical training in the duration of 1800 classes in the course of three academic years.

In this paper, we shall show how important the practical training was from students’ perspective and whether and to which extent it helped them to gain more specific skills.

2. COMPOSITION

Ranković Vasiljević (2004) state that education represents a process of gaining knowledge, know-hows, development of skills and habits, as well as adoption of the behavioural rules’ value system, shaping personalities and making them apt for life in a community (Ranković Vasiljević, 2004, p. 21). Education unifies knowledge and know-hows. Vilotijević (1999) states the following definition of knowledge: „Knowledge is a system of facts and generalization of reality, which the students adopted, permanently preserved in their consciousness and which they can apply in practice“ (Vilotijević, 1999, p. 108). Knowledge represents collected and generalized historical productive-working experience of mankind. Thus, knowledge is the foundation for constructive life and progressive work of a modern man. Working qualifications of any man is dependent on the broadness and depth (extensity and intensity) of knowledge (Vilotijević, 1999, p. 108). A person in possession of a solid knowledge can improve the productiveness of social work in general and contribute to the progress of his/her society. Ranković Vasiljević (2004) concludes that “know-hows are methods of performing certain activities which, unlike skills and habits, do not need to be preceded by certain exercises” (Ranković Vasiljević, 2004, p. 122). One can master a single know-how, without having gained a certain skill yet. Know-hows are in specific relation with the abilities. Gaining know-hows is conditioned by existence of certain abilities. Together with adoption, know-hows assist in the development of abilities.

A skill is psychomotor ability, gained by frequent repetition of selected, rational and successful movements. In the skill-gaining process, the student should learn through insight instead through attempts and mistakes. It enables one to perform a certain activity easier, faster and more accurately. A skill is also one of the stages in the habit-forming process. It precedes habits and is a prerequisite for formation of habits. The authors Djordjevic & Trnavac (2011) state that a habit “through continuous repetition, is an automatic reaction enabling an individual to perform a certain activity with the least required strength, fast and accurately” (Djordjevic & Trnavac, 2011, p. 201). A habit is the last stage, i.e. the final result of practicing. A habit follows the formation of skills and it is an automatic skill. It is difficult to determine where skills end and where habits begin, since habits are skills of a higher quality. Only when a required skill for performance of an activity is formed (e.g. writing skill), such skill can become automatic by further practice and it can turn to a habit.

By a teaching process which accepts didactic requests, gradual gaining of knowledge, know-hows, skills and finally habits, is achieved. Formation of skills and habits, without previous knowledge and know-hows would result in creation of “semi-experts”, which would to work but would not know why are they working, why the exactly like that and with what purpose. During the teaching process, the student gains certain knowledge, know-hows, skills and habits which are predetermined by a certain goal, tasks and contents of the curriculum. Depending of many factors, originating from students, teachers, school, family and social environment, a different level of knowledge is achieved. In healthcare teaching at the Medical College of Professional Studies in Belgrade, contents of the curriculum to be adopted at the levels of knowledge, know-how, skill and habit, are determined through programmes.

The purpose of learning is to have the student change his/her behaviour. The author Woolfolk (1998) concludes that learning is successful if it leads to a permanent change in behaviour. Behaviour and learning should not be equated, although the results of learning are concluded based on the behaviour (Woolfolk, 1998, p. 186). Teaching should be structured as early as in the planning phase, so that it surely leads to the achievement of the learning goal – “resulting behaviour” should differ from the “initial” behaviour, i.e. concordant with the goal set. Teacher selects and prepares the teaching materials with the intention to make understanding and adopting of the new material easier for the students. He/she is the organizer of teaching, which manages the process of the simultaneous upbringing and education of students.
2.1 PRACTICAL TRAINING

Practical training is a form of professional work which, in medical education, dates since the beginning of the institutionalized education. Practical training should make the transfer from academic schooling to the professional work of a medical nurse easier. The goal of the practical training is to make students more familiar with the practical activity through practical work. Thus, students get the opportunity to apply knowledge and abilities gained by learning theory, mainly in separate disciplines. At that, they should gain insight into technical, organizational, commercial and social occurrences and their mutual interconnections in healthcare institutions which are determined as the teaching centres.

Until the last educational reform, known as Bologna process, practical training was conducted for the students from the department of medical nurses / technicians. In the last several years it was conducted as pregraduate training, with the duration of 100 to 200 hours.

The Study programme, accredited on April 29, 2007, practical training with the duration of 1800 hours was determined. Together with the active teaching classes, this programme comes very near to the requests set in terms of education by the European Union, ICN (International Council of Nurses) and other associations. Today, according to the newest accredited 2012 programme, the number of practical training classes at the Department of Professional Medical Nurse has been increased to 2400. In this manner, the European requirements in terms of education of nurses have been fully complied with.

Practical training is attended by students during all three academic years; namely half of these hours are realized in healthcare institutions in Belgrade, and half in institutions the students select themselves. During the sixth semester, the students attend practical training in twice as many hours, in order for them to be able to graduate until June. Practical training is organized in the areas of primary health protection – public health and healthcare in secondary and tertiary health protection.

Students’ work, as per fixed weekly schedule, is controlled by professional medical nurses, as a rule by head nurses in institutions which are teaching centres. If a student is employed, he/she can complete the practical training in an appropriate institution, that is, in the institution he/she is employed in – as per the College programme.

3. RESEARCH

The goal of the conducted research is to determine the importance of the practical training within the skill-gaining process in students – future professional medical nurses.

Tasks of the research are as follows:
- Determine the level of mastery in certain nursing interventions, for the students at the third year of studies, as per estimates of the students themselves;
- Determine how do students estimate methods of gaining skills – during regular classes or practical training;
- Analyse the students’ opinion regarding the practical training;

The following methods were used in this research: descriptive method, which we used to describe all of the relevant procedures for gaining skills in the nursing activities and to discuss the results of the research. For the purpose of preparing this paper, only a part of the obtained results shall be presented; and the scientific research by means of the poll used to learn the subjects’ opinions regarding the subject matter of the research.

Specially structured questionnaire was used as an instrument of the research when determining levels of gained skills and manner of their acquiring in the course of school education.

Population consists of students from the Medical Nurse Study group at the Medical College of Professional Studies in Belgrade, academic year 2013/2014, and the analysed sample is 150 third year students.

Research was conducted in November 2013 at the Medical College of Professional Studies in Belgrade. Data are processed by means of simple statistical procedures; they are shown in tables and graphs and expressed in absolute and relative numbers.
4. RESULTS AND DISCUSSION

A part of the questionnaire for the assessment of the level of mastery consists of a list which includes 24 nursing interventions, next to which students were to mark the level of mastery, by marking one of the provided grades (0-5). Next to each intervention, the subjects were to mark the type of classes (active classes – practical training) which enabled better practicing of the given procedure.

Authors Konjihušić and Kocev state that determining the needs for care is the first and very important stage of a healthcare process (Konjikušić & Kocev, 2005, p. 48). It includes organized and systematic collection of data on the reactions of patients to the illness or other life situation, as well as validity assessment of the gathered information and recording of all relevant data. Assessment of conditions and determination of the need for care should provide a solid database for making a nursing diagnosis and implementation of all subsequent process stages. In order to perceive and determine the needs of a patient for care, a nurse should know what the needs are, what the basic human needs are and how are those to be satisfied in circumstances of impaired health or limitations due to illness, inability and/or ignorance.

![Figure 1: Assessing the patient’s condition and determining the need for healthcare](image.png)

Healthcare process is studied by the students in the second semester of the first year of studies, and they continue to apply it in regular classes and practical training during the whole time of studies. A large percentage of students (85%) deem that they are fully capable of assessing the patient’s condition and determining the need for healthcare. More than half of the subjects-students deem that they achieved such result due to regular classes, while one quarter of them deems that active classes and practical training were equally beneficial in mastering of the given skill (15% of the subjects deem that both practical training and classes helped them, while 6% did not answer this question).

The frequency in which a medical nurse should change the patient’s position shall depend on the condition assessment, i.e. on the need for care determined at the first stage of the healthcare process. One should also consider that the goal is not to have the medical nurse do everything for the patient, but to teach him/her to help himself/herself in line with his/her abilities, that is, to actively participate. Positioning of a patient appropriately and the regular change of the position are very important for prevention of complications which occur due to lying (thrombosis, thrombophlebitis, pulmonary embolism, joint contractures, muscle atrophy, obstipation, and decubitus). All of these complications put patient’s health condition at risk, slow the treatment and rehabilitation processes down and have major impact on the patient’s quality of life, and they increase the costs of treatment and rehabilitation for the healthcare service and the society in general.
Graph 2 shows that more than two thirds of subjects are able to perform the intervention of changing the patient’s position with full independence. Most of the subjects 54% estimate that they acquired this skill at the practical training, although this procedure is learned and exercised in theory classes in schools as well. 31% of subjects deem that regular classes enabled them to independently perform the above intervention (9% of subjects deem that both practical training and classes helped them, while 6% did not answer this question).

Maintaining patient’s personal hygiene represents an important part of the treatment and care. It is of the utmost importance to pay special attention to skin and mucous membranes. Numerous functions are performed through skin and while it is unharmed, it represents the best protection against infections. The author Terzić (2006) states that the skin of immobile patients gets dirtier, that is, it is more exposed to the harmful impact of excretions, it endures pressure, humidity, which are good predisposed factors for development of infections and decubitus (Terzić, 2006, p. 29).

Pupils in secondary medical schools are familiarized with patients’ personal hygiene as early as during the first grade, while the students, through laboratory classes of healthcare 1 during the first semester repeat and consolidate acquired knowledge, know-hows and skills.

Graph No. 3 clearly shows that 48% of students are able to independently, and 44% under supervision, maintain patients’ personal hygiene. Subjects also claim that 25% gained the above skill in active classes, while almost 60% claims it occurred at the practical training. Such result could be expected, since the experience of one’s own ability for a certain job becomes more realistic in realistic situations, which, in this case, is hospital environment and work with patients.
The author Matic (2001) states that decubitus represents local damage, i.e. necrosis of tissue, which occurs due to pressing of body parts onto the underlying surface, where circulation and insufficient blood flow in these parts of the body, referred to as predilection sites, occur: nape, shoulder blades, lower back, hips, knees, ankles, heels, elbows (Matic, 2001, p. 210). Prevention of decubitus implies monitoring of patient’s condition and treatment of the main disease, solving collaborative issues, solving potential problems, patient’s activity – active and passive exercises, using auxiliary devices.

The Graph No. 4 shows that 40% of subjects deem that they are able to perform this intervention independently or under supervision. The opinion on their level of mastery is somewhat lower in almost one fifth of the subjects, which certainly tells us about the need to pay more attention to work in relation with decubitus, in active classes as well as in practical training. Regardless of the level of mastery, only one third of subjects deem that they gained their knowledge and skills in active classes, and 40% in practical training, while one fifth of the subjects deems that both forms of teaching are equally beneficial in terms of gaining the aforementioned knowledge and skills.

Vital functions are studied in detail in the second grade of the secondary medical school; monitoring of vital functions is afterwards practiced during the whole secondary school as well as during higher education. Over 50% of subjects are able to independently monitor vital signs, which is the expected result, while the same percentage of the subjects deems that they acquired this skill in practical training (one can conclude from this that they had not gained this skill during the secondary school education).

Central venous pressure (CVP) is measured in a simple manner. In patients with indicated monitoring of CVP, central venous catheter (CVC) is advanced so that the catheter tip is placed in the right prechamber or near the prechamber inside the proximal inferior vena cava. It is the indicator of the circulating blood volume, state of the vasculature capacity and cardiac function. Values are read directly by means of a transfuse and reader, i.e. on the monitor, expressed in mm of mercury column, or they are read, from a liquid column which is connected by means of a CVC system to the infusion system, and expressed in cm of a water column. Normal values of CVP range from 6 – 12 cm of water column or 2 – 6 mm of Hg column. Only 6% of subjects deem that they can independently perform this intervention, and as much as one quarter of subjects are only informed about this intervention. Considering that as much as 36% of subjects didn't provide an answer, one can conclude that they don't even know what CVC is, this being the reason they failed to answer this question.

Intramuscular application is application of medicines into the gluteus and thigh muscle tissue. Water solutions, suspensions in water and oil solutions can also be administered in this manner. This is one of the most common nursing interventions in practice and the obtained result was the expected one. Namely, 94% of subjects deem themselves fully capable for independent intramuscular application of medicines, while the remaining 6% of subjects deem that they are able to perform this intervention independently under supervision. During the assessment of this intervention, the high percentage of subjects also recognizes practical training as the type of classes which enabled them to exercise the procedure (above 65%).
5. CONCLUSION

On grounds of the available literature, which was studied for purposes of this paper, analyses of the data obtained from student polls and personal, long-term experience in working with students, and considering the goal and the tasks of the research, we have come to the following conclusions:

- Aside from exercises, practical training is the most important skill-gaining method, especially for the medical nurse profession;
- Practical training completion requires high level of organization, on the end of the higher education institution but equally on the end of the healthcare institution which the practical training is conducted in;
- Practical training organization implies compliance with the existing Programme, which is concordant with the Study programme as a whole;
- Practical training completion requires professional supervision by adequately educated and motivated medical nurses from the teaching centres, which have the support of the institution management for that activity;
- Students understand practical training as a type of classes which enables them additionally to gain the skills for the professional work.

The results reported and commented so far indicate importance of practical training of nurses during the studies. Future studies could extend the group of factors that may influence the skills level. For instance, previous education may also be relevant. Additionally, we would recommend analysis whether knowledge and skills were gained in practical training of a quality level appropriate for future employers. Overcoming the gap between the expectations of institutions/future employers and the quality of gained knowledge and skills of graduates should be emphasized.

The essence of a successful practical training is in the following and complying with the Rules which detail the programme of practical training for each year of studies. Based on the practical training log, records are kept and frequency of the conducted nursing interventions from the practical training programme is controlled. What is imposed as necessary is intensification of communication with the nurses – co-workers for practical trainings, in order to adhere to the process in all stages of work. Regular work assessment by means of student polls is also important, and this is an obligation envisaged in the Quality Standard from the accreditation material.

Considering that practical training of students of the Medical College, Department of Professional Medical Nurses is recognized by this research as well as very significant, work on its modernization and improvement is the primary task. For purposes of appropriate preparation of students for exercises and practical training, demonstration and initial exercise until the basic skill level is reached, should be performed on the model in the school cabinet. We expect that in the future, with the increase of patients’ rights, completion of the initial exercises in healthcare institutions, i.e. on patients during practical training, will become much more difficult, which must not lead to a reduced level of knowledge and skills of future generations of professional medical nurses.

REFERENCES

USING „WHITE-BOX“ CLASSIFICATION ALGORITHMS FOR PREDICTING STUDENTS’ PERFORMANCE

Snježana Milinković
Faculty of Electrical Engineering, East Sarajevo, B&H, snjeza@etf.unssa.rs.ba

Abstract: In order to successfully manage the learning process it is necessary to collect and analyze a large number of data that could potentially affect the students’ performance and achievements. Data mining involves techniques for finding and describing structural patterns in data, as a tool for helping to explain data and make predictions from it. Educational Data Mining (EDM), is engaged in the development of methods for exploring the unique types of data that come from the educational context. This paper analyzes the impact of specific administrative and demographic data on actual students’ performance in the course Introduction to programming that is performed in Faculty of Electrical Engineering in East Sarajevo. Some models for predicting students’ performance in the final exam was developed.

Keywords: Educational data mining, students’ performance, classification algorithms, WEKA

1. INTRODUCTION

In order to successfully manage the learning process it is necessary to collect and analyze a large number of data that could potentially affect the students’ performance and achievements. An efficient method for analyzing large amounts of data is using data mining. Data mining involves techniques for finding and describing structural patterns in data, as a tool for helping to explain data and make predictions from it (Witten, 2011). It is desirable for discovered patterns to be useful, understandable and to provide new knowledge. The main goal of data mining techniques is to find and describe the structural patterns in the data in order to attempt to explain connections between data and create predictive models based on them (Witten, 2011). Input data for applying data mining techniques are presented in the form of a set of examples, and the output can be expressed in the predictive or descriptive form of the analyzed data structure. Data mining is a multi-disciplinary field involving machine learning, statistics, databases, artificial intelligence, information retrieval, and visualization (Liu, 2007). There are four the most common tasks used in data mining applications: supervised learning (or classification), unsupervised learning (or clustering), association rule mining, and sequential pattern mining. Each of them is characterized by different styles of learning.

Data mining process involves three main steps:
- Pre-processing – the raw data must be cleaned in order to become suitable for mining. Data cleaning includes removing noises and abnormalities, handling too large data, identifying and removing irrelevant attributes, and so on. Data cleaning is procedure that usually consumes a lot of time and it is very labor-intensive but it is absolutely necessary step for successful data mining.
- Data mining – the process of applying data mining algorithm that will produce patterns or knowledge.
- Post-processing – Among all discovered patterns or knowledge, it is necessary to discover ones that are useful for the application. For making the right decision there are many evaluation and visualization techniques that can be used.

Data mining can be applied to explore and analyze data that come from different types of educational environments (Romero, Ventura, 2013). This new developing field, known as Educational Data Mining (EDM), began to develop intensively in recent years. It is engaged in the development of methods for exploring the unique types of data that come from the educational context (Romero, 2008). EDM analyzes data generated by any type of information system supporting learning or education. These data are not restricted to interactions of individual students with an educational system but might also include administrative data (e.g., school, school district, teacher), demographic data (e.g., gender, age, school grades), student affectivity (e.g., motivation, emotional states), etc. (Romero, Ventura, 2013). The main objective is to extract implicit and useful patterns or to obtain useful knowledge about the ways students learn and factors that affect their learning. Applying data mining methods and techniques on data that come from educational systems it is possible to discover new and useful knowledge. That knowledge can help teachers to get proper understanding of student’s performance and to identify different learning capabilities. Different data mining models can be implemented to evaluate student’s performance and obtained
knowledge can be used to provide feedback and necessary guidance for teachers in order to improve the teaching process through more quality and easier management.

In recent years a lot of research in the field of educational data mining was performed and various types of mining algorithms applied on educational datasets have been proposed. An overview of the current state and the progress made in the development and implementation of educational data mining is given in (Romero, Ventura, 2013). Comparative analysis of various data mining techniques and algorithms has been shown in (Garg, Sharma, 2013). An investigation of data mining techniques for evaluating quality of a course and analyzing a connection between course learning material and the test for the final exam has been done in (Dimić, Prokin, Kuk, Spalević, 2010). Prediction of the achieved success and the final grade in the exam can be performed applying data mining algorithms. In (Affendey, 2010), the ranking of factors that influence the prediction of academic performance in order to identify students who will need to study harder to pass the exam was performed by the application of data mining methods. An experiment with pattern classification for student performance prediction is performed in (Ai, Laffey, 2007). The obtained results illustrate that recognition for a certain class on a large dataset can be obtained by a classifier built from a small size data set. Applying different data mining classification techniques for predicting the marks in the final exam of the students that use Moodle courses has been shown in (Romero et al, 2010). Using clustering analysis comparing of two algorithms for measuring the potential of students’ academic skills has been done in (Dewi, Utomo, Yulianto, 2013). In (Ramesh, 2013), an analysis of the factors that influence students’ performance in final examinations and a suitable data mining algorithm for predict the grade of students has been done. The obtained results reveals that type of school does not influence students’ performance and parents’ occupation plays a major role in predicting grades. The impact of the certain e-learning tools on the achievement of students’ objectives is discussed in (Kickul, 2002).

In (Romero, Ventura, 2007) a survey about the application of data mining to web-based electronic courses and learning content management systems was performed. As a result, a general model that represents the whole process of application of data mining techniques in educational systems was created, Figure 1.

![Figure 1: Application of data mining in educational systems](image)

This paper analyzes the impact of specific administrative and demographic data on actual students’ performance in the course Introduction to programming that is performed in Faculty of Electrical Engineering in East Sarajevo. Some models for predicting students’ performance in the final exam was developed. The models were created using a decision tree and instance based classifiers. Presented experiments were performed using WEKA data mining tool (Weka). The influence of input attributes on the performance of the model was analyzed and higher accuracy of the generated model was achieved by application of appropriate techniques.

The rest of this paper is organized as follows. The process of data collection and preprocessing are described in second section. Classification algorithms implementations is described in the third section, while in the fourth section simulation results of proposed experiments are shown. Finally, fifth section provides conclusion remarks and outlines directions for future work.

2. DATA COLLECTING AND PREPROCESSING

For the purposes of this study, administrative and demographic data of students who have attended the Introduction to Programming course were collected and their impact on students’ performance was analyzed. This course is performing during the summer semester of the first year of study at the Faculty of Electrical Engineering in East Sarajevo. Randomly sampling, the data of the two generations of students from all three study programs that are running at the Faculty have been taken into account. Open source data mining tool WEKA (Weka) was used to apply the learning methods to a dataset and analyze their output to extract useful information about the data and their impact on students’ performance. The data collected, which represent
the attributes for data mining process performing, include city from where students came (city), high school they graduated (school), average mark of subject mathematics (matav) and informatics (infav) in high school, graduated average mark in high school (hsav), points obtained on the faculty qualification exam (test) and obtained mark in the course Introduction to Programming (mark). The last attribute was used as a class attribute.

To be able to apply data mining techniques, it was necessary to preprocess input data. In the initial stage of preprocessing step is identifying and discarding the attributes that have no predictive value (the index number, name, and so on). By manually discretization process (Romero et al., 2013) a numerical values which represented the final grade of class attribute ‘mark’ were transformed into nominal values in accordance with the specific needs of the individual experiments performing.

Two experiments were conducted and their results are shown in this paper. First experiment was performed over 6 distinct values of the class attribute: five, six, seven, eight, nine and ten. In the second experiment class attribute has 3 distinct values (five=weak, six, seven and eight=good, nine and ten=excellent). Excel .csv file is formed of these data and then exported to WEKA data mining tool. Data preprocessing is a procedure that usually consumes a bulk of time and requires a lot of work, but it is an absolutely necessary step for the successful application of data mining techniques and algorithms.

3. CLASSIFICATION ALGORITHMS IMPLEMENTATIONS

One of the most common tasks used in data mining applications is the classification. Classification is type of machine learning analogue to human learning from past experiences to gain new knowledge in order to improve our ability to perform real-world tasks (Liu, 2007). Computers using machine learning learns from data which are collected in the past and represent past experiences. In most cases classification is used for learning a target function that can be used to predict the values of a discrete class attribute, e.g. classification is one type of predictions methods. The goal of prediction is to infer a target attribute, predicted variable, from some combination of other aspects of the data or another attribute. Classification here means the problem of correctly predicting the probability that an example has a predefined class from a set of attributes describing the example. In classification learning, the learning scheme is presented with a set of classified examples from which it is expected to learn a way of classifying unseen examples (Weka).

There are many methods and measures for estimation the strength and the accuracy of a classification/predictive model (Liu, 2007). The main measure is the classification accuracy which is the number of correctly classified instances in the test set divided by the total number of instances in the test set. Some of the common methods for classifier evaluation are holdout set, Multiple Random Sampling and Cross-Validation. One of a number of different evaluation metrics is F-measure. F-measure is used if a single measure to compare different classifiers is needed (Weka). For more detailed analysis of the distribution of instances of the class attribute confusion matrix can be used. It contains information about actual and predicted results given by a classifier for all class attribute’ values.

While conducting above mentioned experiments, three different types of classification algorithms provided by Weka were used: two rules-based algorithms – JRip and NNge, and one tree-based algorithm - J48. All these algorithms were executed using their default parameters’ values. Every machine learning algorithms have been applied separately on all data set. These algorithms have been selected because they are considered so called „white-box–classification algorithms. These algorithms provide an explanation for the classification result and are preferred to „black-box–data mining models which are usually more accurate but less comprehensible. The classification results obtained by „white-box–classification algorithms can be used directly for decision making. Obtained models can explain their predictions at a higher level of abstraction by IF-THEN rules. These types of rules can be more comprehensible and easily interpreted by non-expert data mining users, such as teacher or course instructor. In this way it is possible for a teacher or course instructor to analyze and use obtained classification output in order to detect certain classes of students and factors that may affect their performance.

For evaluation of classifier 10-fold cross validation testing technique was used. That is a standard method for predicting the error rate of learning techniques performed over a fixed sample of data. During the evaluation process the data set is divided into 10 subsets. Then the classification algorithms are fed with these data subsets. The left-out subsets of the training data are used to evaluate classification accuracy. When seeking an accurate error estimate, it is standard procedure to repeat the cross-validation process 10 times - that is, 10 times tenfold cross-validation and average the results. This involves invoking the learning algorithm 100 times on datasets that are all nine-tenths the size of the original. Getting a good measure of performance is a computation-intensive undertaking (Witten, 2011).
The decision tree is a very popular method for classification and decision making. It is a decision making technique used to solve many problems. It predicts outcomes using a series of questions and rules for data classification. The decision tree branching occurs as a result of meeting the requirements of classification issues. Each question will divide data into subsets that are more homogeneous than the senior set. If the question has two answers, then the response to the question arise two subsets (binary tree). Subsets arise according to number of questions answers. Therefore the classification of certain data are carried out. Predicting the behavior of a particular client can be made on the basis of its belonging to a particular event (which is classified based on a number of issues and conditions), for which we know how it acts. During the construction of decision trees is important to know the right questions. In this paper, J.48 decision tree, which is an implementation of C4.5 algorithm in WEKA data mining tool (Weka), is used.

Instance based classifiers rely on using directly the examples from the training set as concept models without constructing abstractions. They proved to be effective but the absence of an associated compact explicit model limits their —readability. On the other hand, the rule based approaches can provide comprehensible rule sets. The hybrid variants, based on the concept of generalized exemplars, combine the idea of distance based classification with that of best matching rule. The generalized exemplars are sets of instances which can be interpreted as rules and which allow to decrease the model size and to increase the robustness to noise of instance based classifiers. Instance-based classifier Non-Nested Generalized Exemplars (NNGE) is based on algorithm introduced by Brent, 1995. It examines generalized exemplars as a method of improving the classification performance of instance-based learners. It has been shown that generalising exemplars results in improved classification performance over standard nearest neighbor. The only thing that may pose a problem is that the algorithm tends to produce rules that test a large number of attributes. Because of this they are not very intelligible to people.

JRip is Weka’s implementation of the RIPPER rule learner. It is a fast algorithm for learning "IF-THEN" rules. RIPPER is an acronym for repeated incremental pruning to produce error reduction. Classes are examined in increasing size and an initial set of rules for a class is generated using incremental reduced-error pruning. An extra stopping condition is introduced that depends on the description length of the examples and rule set. The description-length DL is a complex formula that takes into account the number of bits needed to send a set of examples with respect to a set of rules, the number of bits required to send a rule with k conditions, and the number of bits needed to send the integer k—times an arbitrary factor of 50% to compensate for possible redundancy in the attributes. Having produced a rule set for the class, each rule is reconsidered and two variants produced, again using reduced-error pruning—but at this stage, instances covered by other rules for the class are removed from the pruning set, and success rate on the remaining instances is used as the pruning criterion. If one of the two variants yields a better description length, it replaces the rule. Next we reactivate the original building phase to mop up any newly uncovered instances of the class. A final check is made, to ensure that each rule contributes to the reduction of description length, before proceeding to generate rules for the next class. (Witten, 2011)

4. SIMULATION RESULTS

Using above described classification algorithms, results obtained performing the first experiment (six values of class attribute) are shown in Table 1.

Table 1: Classifier evaluation

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Correctly Classified Instances - CCI</th>
<th>F-measure</th>
<th>Number of rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.48</td>
<td>22.86%</td>
<td>0.20</td>
<td>56</td>
</tr>
<tr>
<td>JRip</td>
<td>26.67%</td>
<td>0.16</td>
<td>4</td>
</tr>
<tr>
<td>NNge</td>
<td>22.86%</td>
<td>0.23</td>
<td>48</td>
</tr>
</tbody>
</table>

From Table 1 it can be seen that all generated models have very small accuracy and consequently very small F-measure value. Among all classifiers JRip perform the most accurately prediction, 26.67% correctly classified instances (CCI). It also has the smallest number of rules, 4. Generated rules are quite comprehensible, but as it can be seen in Table 2, there are very small number of instances that are correctly predicted (numbers in parentheses indicate the number of totally classified instances of one class / number of incorrectly classified instances of that class).

Detailed distribution of predicted values for every class attribute can be presented in the form of the confusion matrix. Confusion matrix is a two-dimensional matrix with a row and column for each class. Each matrix element shows the number of test examples for which the actual class is the row and the predicted class is the column. Good results correspond to large numbers down the main diagonal and small, ideally...
zero, off-diagonal elements (Witten, 2011). Six values of class attributes mark are indicated by letters a=five, b=six, c=seven, d=ten, e=eight and f=nine. The results obtained using all three classifiers are shown in Table 3.

Table 2: JRIP rules

| JRIP rules:                                                                 |
| (test >= 38) => mark=ten (6.0/2.0)                                         |
| (city = pale) and (test >= 29) => mark=ten (3.0/0.0)                       |
| (infav <= 2.5) => mark=six (2.0/0.0)                                       |
| => mark=five (94.0/68.0)                                                  |

Table 3: Confusion matrix

<table>
<thead>
<tr>
<th>Predicted class</th>
<th>J48</th>
<th>JRip</th>
<th>NNge</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>a</td>
<td>b</td>
<td>c</td>
</tr>
<tr>
<td>Real class</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a=five</td>
<td>13</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>a=six</td>
<td>8</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>c=seven</td>
<td>7</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>d=ten</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>e=eight</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>f=nine</td>
<td>8</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

From confusion matrix it can be seen that there is an unbalance in the distribution of the value of output classes and the accuracy of small classes is less than the accuracy of the higher class. In the case of unbalanced data sets, examples of small classes are more difficult to train. The problem with unbalanced data arises because learning algorithms tend to overlook less frequent classes (minority classes), paying attention just to the most frequent ones (majority classes). As a result, the classifier obtained is not able to correctly classify data instances corresponding to poorly represented classes. One of the most frequent methods used to learn from unbalanced data consists of re-sampling the data (Romero et al., 2010). To solve this problem, in this paper re-sampling was performed using Resample Weka filter for supervised learning. The result of applying this filter has shown that the difference in the values of attributes decreased. Results obtained by applying above mentioned algorithms on re-sampled data are shown in Table 4.

Table 4: Classifier evaluation (re-sampled data)

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Correctly Classified Instances - CCI</th>
<th>F-measure</th>
<th>Number of rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.48</td>
<td>56.19%</td>
<td>0.55</td>
<td>54</td>
</tr>
<tr>
<td>JRip</td>
<td>54.29%</td>
<td>0.52</td>
<td>12</td>
</tr>
<tr>
<td>NNge</td>
<td>70.48%</td>
<td>0.70</td>
<td>33</td>
</tr>
</tbody>
</table>

The generated models performed on re-sampled data enable more precise predictions. Obtained results show that all classifiers applied on re-sampled data have significantly better accuracy compared to results presented in Table 1. NNge classifier in this case obtained the best result, 70.48% correctly classified instances and F-measure of 0.70. It can be concluded that accuracy is significantly increased on resampled data but the number of rules generated by the best classifier in this case is very huge and incomprehensible. The number of rules generated by JRip classifier is 12 and they are shown in Table 5. From Table 5 it can be seen that the most relevant attribute for classification was city. Although the number of correctly classified instance is much higher than in the previous case still there are a significant number of instances whose values are misclassified.

The second experiment again compared the same three classification algorithms using all the available data but now applying pre-processing discretization data task on the class attribute. Discretization divides the numerical data into categorical classes that are easier for the teacher to understand. The manual discretization method (where cut-off points have to be specified) has been applied to the mark attribute, where three intervals and labels have been used (weak: if value is 5; good: if value is 6, 7 and 8 and excellent: if value is 9 and 10). Repeating above performed simulation obtained results on unbalanced data set are presented in Table 6.
Table 5: JRIP rules

<table>
<thead>
<tr>
<th>JRIP rules:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(school = tehnicar racunarstva) and (matav &gt;= 4.8) =&gt; mark=nine (4.0/1.0)</td>
</tr>
<tr>
<td>(city = nevesinje) and (hsav &lt;= 4.6) =&gt; mark=nine (2.0/0.0)</td>
</tr>
<tr>
<td>(school = masinska) =&gt; mark=nine (2.0/0.0)</td>
</tr>
<tr>
<td>(test &gt;= 40) =&gt; mark=ten (6.0/0.0)</td>
</tr>
<tr>
<td>(test &gt;= 25) and (hsav &gt;= 4.8) and (school = gimnazija) =&gt; mark=eight (9.0/1.0)</td>
</tr>
<tr>
<td>(city = zvornik) and (school = tehnicar racunarstva) and (test &gt;= 10) =&gt; mark=eight (6.0/0.0)</td>
</tr>
<tr>
<td>(city = bratunac) =&gt; mark=six (7.0/2.0)</td>
</tr>
<tr>
<td>(city = sokolac) =&gt; mark=six (4.0/1.0)</td>
</tr>
<tr>
<td>(matav &gt;= 4.75) and (test &lt;= 14) =&gt; mark=seven (10.0/0.0)</td>
</tr>
<tr>
<td>(city = ugljevik) =&gt; mark=seven (2.0/0.0)</td>
</tr>
<tr>
<td>=&gt; mark=five (44.0/21.0)</td>
</tr>
</tbody>
</table>

Table 6: Classifier evaluation

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Correctly Classified Instances - CCI</th>
<th>F-measure</th>
<th>Number of rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.48</td>
<td>53.33%</td>
<td>0.45</td>
<td>2</td>
</tr>
<tr>
<td>JRip</td>
<td>57.14%</td>
<td>0.55</td>
<td>3</td>
</tr>
<tr>
<td>NNge</td>
<td>46.67%</td>
<td>0.46</td>
<td>36</td>
</tr>
</tbody>
</table>

In this case, the best classification result was obtained using JRip classifier, 57.14% CCI, but J.48 classifier also obtained approximately good result. The rules generated by these two classifiers are shown in Table 7.

Table 7: J48 and JRIP rules

<table>
<thead>
<tr>
<th>J48 pruned tree:</th>
</tr>
</thead>
<tbody>
<tr>
<td>test &lt;= 26: good (77.74/33.0)</td>
</tr>
<tr>
<td>test &gt; 26: excellent (27.26/14.26)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JRIP rules:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(test &gt;= 26) and (hsav &gt;= 4.7) =&gt; mark=excellent (19.0/7.0)</td>
</tr>
<tr>
<td>(test &lt;= 8) =&gt; mark=weak (17.0/6.0)</td>
</tr>
<tr>
<td>=&gt; mark=good (69.0/26.0)</td>
</tr>
</tbody>
</table>

Important conclusion that can be made analyzing the Table 7 is that both the classifier detected the same value of test attribute as a limit for the separation excellent and good class. But still, the number of incorrectly classified instances is relatively huge.

Confusion matrix was used for a more detailed analysis of the class attribute distribution, Table 8.

Table 8: Confusion matrix

<table>
<thead>
<tr>
<th>Predicted class</th>
<th>J48</th>
<th>JRip</th>
<th>NNge</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>b</td>
<td>c</td>
<td>a</td>
</tr>
<tr>
<td>0</td>
<td>23</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>1</td>
<td>47</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>0</td>
<td>15</td>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>

a=weak
b=good
c=excellent

After re-sampling, the generated models enable more precise predictions. Results obtained by applying above mentioned algorithms on re-sampled data are shown in Table 9.

Table 9: Classifier evaluation (re-sampled data)

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Correctly Classified Instances - CCI</th>
<th>F-measure</th>
<th>Number of rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.48</td>
<td>67.62%</td>
<td>0.66</td>
<td>41</td>
</tr>
<tr>
<td>JRip</td>
<td>64.76%</td>
<td>0.64</td>
<td>9</td>
</tr>
<tr>
<td>NNge</td>
<td>80%</td>
<td>0.80</td>
<td>22</td>
</tr>
</tbody>
</table>

In this case NNge classifier made a very good prediction, 80% correctly classified instances. The number of generated rules is also significantly reduced. Some rules with the highest coverage (number in parentheses) are shown in Table 10.
Table 10: NNge classifier rules generated

<table>
<thead>
<tr>
<th>Real class</th>
<th>Predicted class</th>
<th>NNge classifier rules generated :</th>
</tr>
</thead>
<tbody>
<tr>
<td>a=weak</td>
<td>a</td>
<td>city in {cajnice,mostar,trebinje,insarajevo,nevesinje,foca,milici,rudo} ^ school in {gimnazija,tehnica racunarstva,tehnica elektronicke} ^ 2.0&lt;=matav&lt;=5.0 ^ 2.5&lt;=infav&lt;=5.0 ^ 3.2&lt;=hsav&lt;=4.7 ^ 6.0&lt;=test&lt;=26.0</td>
</tr>
<tr>
<td>b=good</td>
<td>b</td>
<td>city in {pale,rogatica,kalinovik} ^ school in {gimnazija} ^ 3.5&lt;=matav&lt;=5.0 ^ 3.5&lt;=infav&lt;=5.0 ^ 3.8&lt;=hsav&lt;=5.0 ^ 11.0&lt;=test&lt;=24.0</td>
</tr>
<tr>
<td>c=excellent</td>
<td>c</td>
<td>city in {sokolac,visegrad,ilidza,zvornik,gacko} ^ school in {gimnazija} ^ 3.3&lt;=matav&lt;=4.8 ^ 4.5&lt;=infav&lt;=5.0 ^ 3.9&lt;=hsav&lt;=4.9 ^ 7.0&lt;=test&lt;=35.0</td>
</tr>
</tbody>
</table>

Although very complex, these rules can be easily interpreted and implemented with the goal of grouping students for better adjustment of teaching materials to their affinities.

NNge confusion matrix is shown in Table 11.

Table 11: Confusion matrix

| Real class | Predicted class |  
|------------|----------------|-----------------------------------|
| a=weak     | a              | city in {cajnice,mostar,trebinje,insarajevo,nevesinje,foca,milici,rudo} ^ school in {gimnazija,tehnica racunarstva,tehnica elektronicke} ^ 2.0<=matav<=5.0 ^ 2.5<=infav<=5.0 ^ 3.2<=hsav<=4.7 ^ 6.0<=test<=26.0 |
| b=good     | b              | city in {pale,rogatica,kalinovik} ^ school in {gimnazija} ^ 3.5<=matav<=5.0 ^ 3.5<=infav<=5.0 ^ 3.8<=hsav<=5.0 ^ 11.0<=test<=24.0 |
| c=excellent| c              | city in {sokolac,visegrad,ilidza,zvornik,gacko} ^ school in {gimnazija} ^ 3.3<=matav<=4.8 ^ 4.5<=infav<=5.0 ^ 3.9<=hsav<=4.9 ^ 7.0<=test<=35.0 |

Analyzing confusion matrix of the NNge classifier can be concluded that the largest number of miss predictions was made in the class b. Miss prediction among classes a and c is relatively small. One of the reasons for that may be the fact that class b covers the largest range of obtained marks. This may refer to the future research in which the experiments could be performed with a different redistribution of value within the class.

5. CONCLUSION

The choice of the classifier for generating predictive model is a complex task. The whole data mining process is almost always iterative: it usually takes many rounds to achieve final satisfactory results. The selection of a correct data mining algorithm depends not only on the goal of an application, but also on the compatibility of the data set. Performed experiments have shown that different algorithms obtain the best classification accuracy depending on the different preprocessing tasks like discretization or rebalancing.

This paper describes the analysis of the three white-box classifiers for creating rules and identifying the factors that influence predicting of students’ performance in the course Introduction to Programming at Faculty of Electrical Engineering in East Sarajevo. Experiments were performed on two types of the values of class attribute, with and without the applied method of discretization. Several experiments were performed using available administrative and demographic data about students to try to obtain more accuracy and better rules. Rebalance preprocessing techniques have also been used on the original data to test again if better classifier models can be obtained. The two standard measures for evaluation of the accuracy of the predictive model (the number of correctly classified examples and F-measure) were applied. Confusions matrix was used for a more detailed analysis of the class attribute distribution. From the obtained results it can be seen that generated predictive models with re-sampled data enabled more precise predictions.

The aim of future research is to explore the possibility of including the additional parameters in the analysis by which it could be achieved better predictive results and use of other classification algorithms for creating more precise predictive model.
REFERENCES


Kickul J and Kickul G (2002), New pathways in e-learning: The role of student proactivity and technology utilization, 45rd Annual Meeting of the Midwest Academy of Management Conference, Indiana, USA


Moodle, Available: https://moodle.org/


Witten IH et al. (2011) Data mining: practical machine learning tools and techniques, Morgan Kaufmann, Amsterdam
Abstract: The increasing trend of globalization, international trade and global communication has led to the rise in the need for foreign language learning. Plurilingualism, the command of several languages by an individual is set as a goal for the European environment. Therefore, language policy and planning need to be developed accordingly. This paper gives an overview of relevant European institutions and important documents which have now become an indispensable part of European language policies. The paper also analyzes the situation in Serbia with regards to language policy and planning and the use of these widely-accepted documents.

Keywords: language policy and planning, plurilingualism, CEFR, Language Portfolio

1. INTRODUCTION

The increasing trend of globalization, international trade and global communication has led to the need for foreign language learning. The need for understanding, communication and cooperation is making it a necessity for people to become proficient in several foreign languages. Nation states are investing resources and staff into implementing curricula which foster language learning and are many themselves multilingual. English has for long established itself as a *ligua franca* in both economic and educational environments. The threat of English-only situation is driving the need to facilitate learning of other languages and promote plurilingualism. In Europe, numerous stakeholders have invested resources and research to meet this aim. This paper will give an overview of language policies in Europe and some of the most important documents regulating and directing them, and attempt to connect it to the situation in Serbia.

2. TERMINOLOGY AND RELEVANT BODIES

According to Filipović (2009), language policy and planning are most commonly defined as an organized, targeted and long-term activity of public bodies on different aspects of status, form and domain of the use of a specific language variety. This is an incomplete definition of language policy and planning, since it can be managed outside state institutions, applying different theoretic and methodological activities (p. 54).

As for Europe and its language policy and planning, Bugarski in Filipovic (2009) introduces the term interactive model which means that there is no longer coexistence, but rather interaction or cooperation among speakers of different languages on equal grounds which would provide membership in the European family under a common roof. This interactive model is represented by various documents by the Council of Europe, including the *European Common Framework of Reference*.

Breidbach (2003) perceives “European communicative integration as a political concept which calls for structuring through language education policies” (p. 7).

Concepts important for discussing language policy and planning are multilingualism and plurilingualism and how they should be treated. According to the Council of Europe “Multilingualism refers to the presence in a geographical area, large or small, of more than one ‘variety of language’ i.e. the mode of speaking of a social group whether it is formally recognised as a language or not; in such an area individuals may be monolingual, speaking only their own variety.” Therefore, multilingualism does not include individuals speaking more than one language, which is the aim for the “House of Europe” for the future. On the other hand, “Plurilingualism refers to the repertoire of varieties of language which many individuals use, and is therefore the opposite of monolingualism; it includes the language variety referred to as ‘mother tongue’ or ‘first language’ and any number of other languages or varieties. Thus in some multilingual areas some individuals are monolingual and some are plurilingual.”
When discussing language policy and planning in Europe, numerous actors are included, but this paper will be limited to three major bodies – Council of Europe, European Commission, and European Centre for Modern Languages which is a Council of Europe institution also supported by the European Commission.

**European Commission** sees its role in developing language learning policies in Europe by retooling education systems in member States, gathering data to formulate benchmarks in language learning and promoting multilingualism with the aim of improving employability within the EU. Following the change of the labour market and skills necessary, the EU is investing in education system reforms to cater for these changes. They have supported vast analyses of the current state of affairs and provided several instruments to support transparency and recognition of knowledge, skills and competences. As for language skills, the European Commission is working closely with the European Centre for Modern Languages. According to the first European Survey on Language Competences (http://ec.europa.eu/languages/policy/strategic-framework/documents/language-survey-technical-report_en.pdf) “Member States must reform their education systems based on new methodologies for teaching both the first and second foreign languages”. The survey included students of lower and upper secondary education and provided an extensive overview of the current state of affairs.

**Council of Europe**, with headquarters in Strasbourg, aims at promoting linguistic diversity and language learning, and operates under the European Cultural Convention. It currently includes 47 member States; Serbia joined in 2003. The Council promotes policies designed to promote plurilingualism, linguistic diversity, mutual understanding, social cohesion and democratic citizenship in an ever more globalized world. The importance of languages is underlined through the existence of the Language Policy Division in Strasbourg and the European Centre for Modern Languages in Graz, Austria. Policy makers, test designers and teachers have all been influenced by the work of the Council’s Language Policy Division, starting from the series of publications between 1975 and 1990 listing the linguistic means necessary to communicate efficiently with speakers in another language, i.e. “the threshold level”. The products of several decades of work are two major documents – the Common European Framework of Reference (CEFR) and the European Language Portfolio.

According to data by the European Commission, the data on Educational attainment and outcomes of education – Language skills, show that in the 28 member countries of the European Union in 2011, the self-reported level of foreign language skills on the first and second stage of tertiary education is as shown in Table 1.

**Table 1**: First and second stage of tertiary education (levels 5 and 6) in 2011

<table>
<thead>
<tr>
<th>Languages</th>
<th>No languages</th>
<th>1 language</th>
<th>2 languages</th>
<th>3 languages or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>European Union (28 countries)</td>
<td>11.6%</td>
<td>36.7%</td>
<td>33.7%</td>
<td>17.9%</td>
</tr>
</tbody>
</table>

Table 1 shows that the overall knowledge of foreign languages in the EU is on a satisfactory level. However, it is far from the plurilingual aim. On the other hand, despite not having substantial data on the information in Serbia, the authors are of the opinion that the numbers are far lower (not including speakers of minority languages).

Neuner (2002) indicates that linguistic diversity for a plurilingual individual is the overall guideline for the European language policy so as to be able to interact with other Europeans, thus formulating a threefold objective of such a policy (p. 8):

- pragmatic (facilitate mobility of citizens)
- intercultural (overcome prejudice and develop multicultural interest and tolerance)
- socio-political (protect and support linguistic and cultural diversity)

According to the author, English holds “the first place among foreign languages offered in the curriculum in almost all Member States of the Council of Europe, not only in compulsory education (school level) but also in institutions for adult education and lifelong learning” (p. 10). The author continues to point out that this dominance of the English language represents a danger to the concept of European language policy. Finally, the author proposes limiting the time for learning English and allocating the rest of the time for foreign language learning to other languages.

The following chapter will give an overview of the two main documents aimed at aiding language learning – Common European Framework of Reference and Language portfolio.
3. COMMON EUROPEAN FRAMEWORK OF REFERENCE AND LANGUAGE PORTFOLIO

Common European Framework of Reference (CEFR) is a benchmark document for curriculum design and language policy creation which is the result of over twenty years of research in the field of language planning, learning and assessment done by the Council of Europe. Its aim is to provide a common framework for the design of curricula and syllabi, teaching materials and language testing and assessment. It was officially adopted in 2001 and is now translated into over 39 languages. The primary purpose of the document is to serve as a prescriptive tool and help stakeholders in the field of language learning to describe and compare their teaching options, all with the aim of transparency and comparability. Therefore, according to the Council of Europe’s Tools for Language Teaching, the document proposes:

- a common methodology for analysing and describing situations and choices in language teaching and learning;
- a common terminology for all languages and educational contexts;
- a common scale of levels of language proficiency to assist with goal-setting and learning outcome assessment.

The CEFR describes foreign language proficiency in six levels (A1, A2, B1, B2, C1, C2). This helps to compare tests and knowledge level across languages, and recognise language qualifications, which helps both educational and occupational mobility. For example, holders of the Cambridge ESOL language certificates of B2 level and higher, are eligible for attending undergraduate, graduate and post graduate courses across Europe and beyond.

The document also gives a detailed overview of “can do” descriptors for all aspects of language competence (Reading, Writing, Listening and Speaking). Table 2 shows a segment of the Global scale (for a proficient user).

<table>
<thead>
<tr>
<th>Proficient user</th>
<th>C1</th>
<th>Can understand with ease virtually everything heard or read. Can summarise information from different spoken and written sources, reconstructing arguments and accounts in a coherent presentation. Can express him/herself spontaneously, very fluently and precisely, differentiating finer shades of meaning even in more complex situations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>C2</td>
<td>Can understand a wide range of demanding, longer texts, and recognise implicit meaning. Can express him/herself fluently and spontaneously without much obvious searching for expressions. Can use language flexibly and effectively for social, academic and professional purposes. Can produce clear, well-structured, detailed text on complex subjects, showing controlled use of organisational patterns, connectors and cohesive devices</td>
</tr>
</tbody>
</table>

In addition to principles for teaching and learning which are set out in Chapters 5, 6 and 8 of the CEFR, the Council of Europe has produced several other documents to assist in assessment, such as the Manual for Language Test and Development (2011) and Relating Language Examinations to the Common European Framework for Reference of Languages: Learning, Teaching, Assessment, A Manual (2009).

All of the listed documents do not aim at telling practitioners what to do or how to do it, but rather give guidelines and provide support in line with the specific needs of the users.

Filipovic (2009) lists several reasons for and against the implementation of CEFR. Those against it underline that it is a result of a specific political and ideological position which sees economic power and political influence as an understatement of the explicit aims of this document. Those criticizing the document emphasize that it insists on language equality only formally, while the political reality of the countries it is addressing hinders systematic implementation of its guidelines. Also, many authors within the EU point to a discrepancy between the declarative support to plurilingualism and the support for imperialistic language policies which strengthen the already strong languages. On the other hand, as the author states, those who are for the implementation of the Framework actually have an active position in the process of educating the professional and the general public on the importance of plurilingualism and the positive aspects of being competent in a great number of languages. Therefore, if the recommendations of the Framework are responsibly and objectively incorporated in language policy and planning they can help to protect minority languages and promote linguistic and cultural diversity.

European Language Portfolio is a document which helps language learners keep track of their learning process. Its aim is to support plurilingualism and allow users to record their language learning achievements. It consists of three parts – Language Passport, Language Biography and Dossier. The Europass Language
Passport was developed by the Council of Europe and the European Union. Both the standard and the Europass Language Passport contain a record of a learner's progress. The Language Biography helps the learner note down the experience and reflect on the learning of a specific language. Finally, the Dossier serves to keep track of personal work. The Portfolio is the property of an individual learner and it is linked to the CEFR, enabling it to be widely acknowledged. Every Language Portfolio must be accredited by the European Language Portfolio Validation Committee, thus ensuring that the standards and all the necessary criteria are met.

4. SERBIA IN THE CONTEXT

When discussing the pros and cons of the implementation of CEFR, Filipovic (2009) reflects on the language policy and planning in Serbia. The author feels that there is no clear direction or aim of these processes. She proposes an overall analysis of which foreign languages should be taught and for how long, the language content that should be taught, methods in language learning and a strategic and scientific grounds on which language policy and planning should be founded. Only after such an extensive analysis should an overall language policy be designed. This should provide future generations with the possibility to be included in the professional life of a plurilingual Europe.

The authors found vague data on Serbia in the context of the implementation of CEFR. However, in a Survey on the use of CEFR conducted in 2007, Serbia was among the 30 respondents. This survey indicated that CEFR was referred to in a number of official documents at state or regional level, such as primary, secondary or higher education curricula, teacher training, assessment, etc. In addition, CEFR proved to be most useful in curriculum design. In general, the CEFR seems to have a major impact on language education. Countries who responded to the survey indicated that the Framework is well known by the institutions in question and well accepted by teachers. In some countries the CEFR was used in developing both strategic language policy documents and practical teaching materials. In others, it is referred to in curriculum planning. Some respondents stress that the CEFR has made the communicative approach to language teaching more action-oriented.

On the other hand, some respondents state that the CEFR has had a moderate impact. It has contributed to coherence and transparency; however, it does not impact the teaching profession at the school level. These countries feel that the full potential of CEFR is yet to be realised. In addition, they feel that the document needs more clarification.

The survey provided information about the countries’ comments on the CEFR:
- there is a need for a concise and reader-friendly summary of the CEFR and of the basic principles of its approach
- national syllabi need to be calibrated to the CEFR
- tests calibrated to the CEFR levels for different age groups need to be developed
- a forum for an exchange of good practice related to the use of the CEFR is necessary.

Since the Survey does not provide specific information on individual respondent countries, it is difficult to say where Serbia stands on these points. However, the feedback gives valuable information on potential problems or suggestions on the implementation of CEFR.

5. CONCLUSION

Without any discussion on whether Serbia should enter the European Union or not, the authors see Serbia as a part of the European academic space since it is a part of the Bologna reform. Therefore, language learning and language policies should be a matter of central interest to all stakeholders in education if students of all levels of education are to be provided with the possibility of participating in this academic space and in the ever growing globalization of economy. The authors suggest further research in the field of language policy implementation, standardization with the adopted European practices and provision of teachers, learners and policy makers with a more in-depth knowledge of both the possibilities and shortcomings of the abovementioned documents and processes, all with the aim of improving cooperation, mutual understanding and development.
REFERENCES

Council of Europe, Language Policy Division http://www.coe.int/t/dg4/linguistic/Division_EN.asp
Eurostat, retrieved from http://appsso.eurostat.ec.europa.eu/nui/submitViewTableAction.do
Martyniuk W., and Noijons J., The use of the CEFR at national level in the Council of Europe Member States (2007), retrieved from: http://www.coe.int/t/dg4/linguistic/Publications_EN.asp
Abstract: Due to non-existing norms and criteria in primary educational system of the Republic of Serbia, each teacher has the right to choose the appropriate textbook on the basis of their own criteria and ratings. That may lead to the selection of a textbook which is not of a high quality. Our objective in this paper is a clear determination of criteria which we have to use when selecting textbooks for primary schools in the educational system of Serbia. In the period between 29th of October and 11th of November, teachers were given an internet questionnaire to rate the most important criteria they rely on when choosing a textbook, using grades 1 to 3. Using the results of the questionnaire, we will try to pinpoint the most important criteria. The latest research has helped us find out that the authors’ assumption that the criteria, which help teachers choose a textbook, are actually appropriate for the age of the children who learn from them. They also assume that there are around seven most important criteria which can be applied to any subject. On the basis of previous research on this subject, we expect to conclude that the teachers of the Serbian educational system are mostly guided by the criteria which are oriented on students and that they don’t use more than 10 criteria.

Keywords: Textbook, Teacher, Entropy, Student, Ranking, Average score, Criteria.

1. INTRODUCTION

Definition of the importance

Due to non-existing norms and criteria in primary educational system of the Republic of Serbia, each teacher has the right to choose the appropriate textbook on the basis of their own criteria and rating. That may lead to the selection of a textbook which is not of a high quality. Furthermore, we don’t know which criterion is the most important when opting for a textbook, therefore, some publishers don’t pay attention to important segments when publishing a textbook. It’s necessary to focus on the essence – the segment which helps teachers to choose the appropriate textbook for teaching.

Summary

In their study named “Rhetorical form, selection, and use of textbooks”, the University of Illinois discovered that teachers and administrators, “tended to perceive the ideal textbook to be well-organized/systematic, informational, appropriate in content to school objectives, and readable on or below grade level” (Crismore, A., 1989). Another study conducted by Manto Sylvia Ramaligela identified 7 important criteria for textbook evaluation and selection: content, connectedness, language, format, context, activities and teaching strategies (Ramaligela, M. S., 2010). Solomon Olorundare from University of Ilorin also conducted a study named “Textbook selection: A critical process in the education enterprise”. Professor Olorundare singled out these four criteria: adequacy of the textbook: process, adequacy of the textbook: content, material presentation and teaching ability of the textbook (Olorundare, S. A., 1998).

Study named “Selecting an E-(text)book: Evaluation criteria” (2012) by Mariusz Marczak concluded a list of categories of evaluation criteria used when selecting an e-textbook. The categories were: layout and design; content and functionalities (Marczak, M., 2012). These results show us that evaluation criteria regarding textbooks vary depending on their purpose and their form.

Hypothetical paragraph

The latest research has helped us find out that the authors assume that the criteria, which help teachers to choose a textbook, are actually appropriate for the age of the children who learn from them. They also assume that there are about seven most important criteria, which can be used for any subject.

Subject
In the period between 29th of October and 11th of November, teachers were given an internet questionnaire to rate the most important criteria they rely on when choosing a textbook, using grades 1 to 3. Using the results of the questionnaire, we will try to pinpoint the most important criteria in this section. In addition, we will use the methods from the theory of decision making such as entropy, average score, total score and variance to determine values and confirm findings that will be shown in this paper. We will also make a ranking list to see which criteria are the most important for the primary school teachers in the Republic of Serbia.

Objectives

The social objective is a clear determination of criteria which we have to use when opting for primary school textbooks in the educational system of Serbia. That will help us improve their quality.

The scientific objective represents the scientific qualification of the criteria which are used for the selection of textbooks, emphasizing the most significant of them with the aim of enhancing the quality of classes.

Hypothesis

Teachers of the Serbian educational system are mostly guided by the criteria which are oriented on the students, and they don’t use more than 10 criteria.

<table>
<thead>
<tr>
<th>School administration</th>
<th>Number of respondents</th>
<th>Percentage of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sombor</td>
<td>27</td>
<td>3.7%</td>
</tr>
<tr>
<td>Novi Sad</td>
<td>142</td>
<td>19.5%</td>
</tr>
<tr>
<td>Zrenjanin</td>
<td>73</td>
<td>10%</td>
</tr>
<tr>
<td>Belgrade</td>
<td>119</td>
<td>16.3%</td>
</tr>
<tr>
<td>Valjevo</td>
<td>47</td>
<td>6.4%</td>
</tr>
<tr>
<td>Požarevac</td>
<td>36</td>
<td>4.9%</td>
</tr>
<tr>
<td>Kragujevac</td>
<td>30</td>
<td>4.1%</td>
</tr>
<tr>
<td>Jagodina</td>
<td>24</td>
<td>3.3%</td>
</tr>
<tr>
<td>Zaječar</td>
<td>27</td>
<td>3.7%</td>
</tr>
<tr>
<td>Užice</td>
<td>36</td>
<td>4.9%</td>
</tr>
<tr>
<td>Čačak</td>
<td>18</td>
<td>2.5%</td>
</tr>
<tr>
<td>Novi Pazar</td>
<td>11</td>
<td>1.5%</td>
</tr>
<tr>
<td>Kraljevo</td>
<td>16</td>
<td>2.2%</td>
</tr>
<tr>
<td>Kruševac</td>
<td>26</td>
<td>3.6%</td>
</tr>
<tr>
<td>Niš</td>
<td>67</td>
<td>9.2%</td>
</tr>
<tr>
<td>Leskovac</td>
<td>27</td>
<td>3.7%</td>
</tr>
<tr>
<td>Kosovska Mitrovica</td>
<td>3</td>
<td>0.4%</td>
</tr>
<tr>
<td>Ranilug</td>
<td>1</td>
<td>0.1%</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>730</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

2. SAMPLE

The study included 770 examinees. The sample consists of 730 of them since the responses of the remaining 40 examinees were not taken into account for failure to fulfill basic conditions. Basic terms that are defined in the questionnaire are: respondents must be class teachers or subject teachers, citizens of the Republic of Serbia, and must fill in certain fields that are marked as required.

- The structure of the sample by years of service
Most of respondents have between 11 to 20 years of service (43%), followed by respondents from 21 to 30 (29%), then respondents with 1 to 10 years of service (23%), and, lastly, the respondents with 31 to 40 years of service (5%).

- The structure of the sample by Level of Education

When it comes to the structure of the sample by Level of Education, the situation is the following: number of those with a bachelor's degree is by far the largest (76.9%), followed by a significantly smaller number of those with a master's degree (13%), and those with a higher level of education (7%), whereas only 4 respondents, or 0.01% have obtained a PhD.

- The structure of the sample by the professional title

The data shows that, by far, the most respondents do not have a professional degree (96%), only 3% have a degree of pedagogical advisor, and 1% are ranked as high pedagogical advisors, three of the respondents hold the title standalone and one respondent holds the title of a higher pedagogical advisor, which makes 0.4% and 0.1% of the total respondents respectively.

- The structure of the sample in relation to whether the respondents are employed in the classroom or subject teaching

In relation to whether respondents work as elementary or subject teachers, it can be seen that there is approximately the same number of respondents who are employed as elementary teachers (49%) and those who are employed as subject teachers (51%).

- The structure of the sample by school administration

The study involved respondents from 210 municipalities of the Republic of Serbia, for easier and more user friendly display, points are classified by school administration. The sample consists of respondents employed in schools in total of 18 school districts. Most of them are those whose schools belong to the school administration Novi Sad (19.5%), followed by Belgrade (16.3%) and Zrenjanin (10%). The least number of respondents are from the school administration Kosovska Mitrovica and Ranilug (0.4, or 0.1%). These results can be seen in Table 1.

3. METHODOLOGY

Textbooks selection criteria

This research includes the evaluation of entropy, as well as the analysis of the variance, average scores and total scores. Method used to rank the criteria in this study is shown below on Chart 1. The method was taken from (Bahraminasab, M., Jahan, A., Mustapha, F., Sapuan, S. M., & Ismail, M. Y. (2012)).

In this paper, parameters of entropy, mean and total values are used for the measurement or quantification criteria.

In order to better understand the responses obtained by questionnaire or teachers' criteria concerning the selection of textbooks, we used the technique of the theory of decision-making called entropy, the measure of dispersion, of order/disorder rate. Entropy provides insight into the actual behavior of the system, meaning, if the survey provides insight into the dissipation of the vote compared to multiple choice. In addition to entropy, respondents have been observed through the average and total scores.

After the application of this method for all the criteria, we can see important criteria in relation with which there is agreement among the respondents, as well as where you can draw the line between very important criteria and those that are less important. This result can be confirmed with an overview of average and total score criteria.

In the process of calculating the entropy for the sake of obtaining these results, we used the following formula:

\[ H(x) = -\sum_{i=1}^{n} p(x_i) \log_b p(x_i) \]  

(1).

The process of calculation is proceeded as follows:

Rating 1 - Number of votes 7; Rating 2 - Number of votes 64; Rating 3 - Number of votes 659.
The obtained result (for concision criteria) looks like this: Entropy \( H = 0.3188902 \).

\[
H = - \left( \frac{7}{730} \log_3 \frac{7}{730} + \frac{64}{730} \log_3 \frac{64}{730} + \frac{659}{730} \log_3 \frac{659}{730} \right)
\] (2).

Table 2 shows that there is no difference in the results when taking into account the average score of criteria and obtained values of entropy. It is clearly seen that the results are identical, except that the difference obtained by using entropy convincingly indicates these results.

The results show that criteria named below are, based on the rating of respondents, teachers’ most important criteria in the selection of textbooks:

- Language adjustment to the students’ age
- Encouraging students to think creatively
- Methodical approach by author
- The opportunity for students to work independently
- Page overview
- Didactic approach by author
- Conciseness in presentation of content

And the least important criteria for teachers in the selection of textbooks:

- Parts of the textbook set are in a blindfold
- Parts of the textbook set are separated
- Price

**Table 2:** Ordering of criteria in relation to the importance of entropy and average score
In order to get the most data from this analysis, the criteria were sorted in groups, depending on their nature. To clarify, selected criteria (Language adjustment to the students’ age, Encouraging students to think creatively, Page overview, The opportunity for students to work independently) were sorted in group named Criteria oriented on student. The same sorting method was used to create the remaining three groups:

Criteria oriented on author (Didactic approach by author, Conciseness in presentation of content, Methodical approach by author, Prolixity in exposure of content).

Oriented on the physical quality of textbook (Illustrations quality, Design quality, The quality of paper and printing, Multimedia of textbook set, Parts of the textbook set are in a blindfold, Parts of the textbook set are separated, Price).

Oriented on teacher or scientific field (Encourage students' interest in scientific field, Additional materials for teachers are available, Occupational character of textbooks). The result of this grouping shown with entropy and average score can be seen in Chart 2 and Chart 3.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Average score</th>
<th>Entropy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language adjustment to the students’ age</td>
<td>2.971</td>
<td>0.115</td>
</tr>
<tr>
<td>Encouraging students to think creatively</td>
<td>2.958</td>
<td>0.160</td>
</tr>
<tr>
<td>Methodical approach by the author</td>
<td>2.951</td>
<td>0.177</td>
</tr>
<tr>
<td>The opportunity for students to work independently</td>
<td>2.915</td>
<td>0.270</td>
</tr>
<tr>
<td>Page overview</td>
<td>2.912</td>
<td>0.277</td>
</tr>
<tr>
<td>Didactic approach by the author</td>
<td>2.901</td>
<td>0.301</td>
</tr>
<tr>
<td>Conciseness in presentation of content</td>
<td>2.893</td>
<td>0.319</td>
</tr>
<tr>
<td>Encourage students' interest in scientific field</td>
<td>2.788</td>
<td>0.494</td>
</tr>
<tr>
<td>Additional materials for teachers are available</td>
<td>2.782</td>
<td>0.514</td>
</tr>
<tr>
<td>Occupational character of textbooks</td>
<td>2.778</td>
<td>0.521</td>
</tr>
<tr>
<td>Multimedia of textbook set</td>
<td>2.711</td>
<td>0.599</td>
</tr>
<tr>
<td>Illustrations quality</td>
<td>2.684</td>
<td>0.623</td>
</tr>
<tr>
<td>Design quality</td>
<td>2.538</td>
<td>0.725</td>
</tr>
<tr>
<td>Price</td>
<td>2.527</td>
<td>0.773</td>
</tr>
<tr>
<td>The quality of paper and printing</td>
<td>2.447</td>
<td>0.791</td>
</tr>
<tr>
<td>Prolixity in presentation of content</td>
<td>2.356</td>
<td>0.850</td>
</tr>
<tr>
<td>Parts of the textbook set are separated</td>
<td>2.110</td>
<td>0.953</td>
</tr>
<tr>
<td>Parts of the textbook set are set in a blindfold</td>
<td>1.986</td>
<td>0.994</td>
</tr>
</tbody>
</table>

Chart 2: Average scores for groups of criteria
4. CONCLUSION

After using entropy method it became absolutely clear that these seven criteria are, based on the rating of respondents, teachers’ most important criteria in the selection of textbooks: Language adjustment to the students’ age; Encouraging students to think creatively; Methodical approach by author; The opportunity for students to work independently; Page overview; Didactic approach by author; Conciseness in presentation of content.

And the least important criteria for the teachers in the selection of textbooks: Parts of the textbook set are in a blindfold; Parts of the textbook set are separated; Price.

In order to get the most data from this analysis, the criteria were sorted in groups, depending on their nature. This showed us that teachers tend to use the criteria which are more focused on students and their ability to understand the subject presented in a textbook. This confirms our hypothesis that teachers of the Serbian educational system are mostly guided by the criteria which are oriented on students.

On the basis of the number of the criteria that have been pinpointed as the most important in the selection of textbooks, the other hypothesis, that teachers of the Serbian educational system don’t use more than 10 criteria, is also confirmed.

We advise that any research which could follow up on the conclusions made in this study, should involve the application of AHP method for criteria that were offered and were pointed out in this paper as the most important.

REFERENCES


LEADERSHIP SKILLS OF A HIGH SCHOOL PRINCIPALS
A FIELD STUDY

Mimoza Kasimati, Shyqyri Llaci, Etleva Leskaj
University of Tirana, moza_kasimati@yahoo.com
University of Tirana, shllaci01@yahoo.com
University of Tirana, etlevaleskaj@gmail.com

Abstract: Completing the mission of pre-university education institutions is of fundamental importance for the evolution of Albanian society and every society in general. One of the important actors in this context is the school principal; his leadership and vision are substantial components that need skill. In the framework of limited resources and relatively rigid structures, management skills of school principals allow for a combination of all factors within and outside the institution to create a value-added service. The complex situation is increasingly presenting social challenges related to individual performance and governing institutions. These individuals must be teachers, principals and leaders of mentally natural processes as well that occur within schools. But how do they actually occur? How many of these individuals are “equipped” with the qualities needed to fulfill their role as leaders? This article gives a description of a research performed on school principals about their leadership skills in Tirana (municipality and district).

Keywords: leadership skills, university education, mission, long-term performance, JEL: M19

1. INTRODUCTION

University education in Albania has been involved in significant changes for several years. New concepts such as school-based management, the school principal being the manager and leader at the same time, the free choice of textbooks from the school itself, etc., have come along with significant changes in curricula. All efforts lead to the decentralization of Albanian education system and assimilation to knowledge for the purpose of creating an open society. These new concepts require significant structural changes and organizational reform and the role of all actors involved in the process, as well.

Time requires new standards and parameters of evaluation. The quality of education depends on how school is managed, as well as on the abundance of resources available. In the context of significant changes, the re-conceptualization of the role of all actors involved in the process is also being considered. In this paper we focus only on the school principal as a very important central figure for coordinating all the actors and factors that determine the school performance.

The perfect role of the school principal is that of an innovative pedagogical leader and a proactive manager all the while. The complex role of the school principal can be played only when creativity is a lifestyle, not a sporadic quality displayed occasionally. Overcoming the individual and collective understanding of the school principal as a midterm operational director should be associated with an individual social investment in developing his management capacity. It certainly requires a coordination of promotion and selective processes for the subtle position of the school principal, and the creation of a long-term training system based on the school and individual level, too. However that may sound absurd, creating a mentoring system for the growth and development of potential leaders, accompanied where appropriate with specific training for concrete capacity building of management, it seems to the authors of this paper as a valuable measure for long-term rewards. But how is the school principal capacity as a leader presented? Due to inability to manage financial incentives, what is his strength level of motivation and inspiration? What qualities of leader are actually presented? Due to inability to study the entire community of 1980 directors of pre-university education system in Albania, the aim of this paper is to identify the leadership capability of school principals in Tirana.

In the academic year 2011-2012 Tirana region had 171 schools of pre-university education system, 86 in the city and 85 in the districts.
2. THEORETICAL BASIS

Since 1950 when researchers at Ohio State University identified the dimensions called "initial structuring" and "consideration" for the first time, the two dimensional model of leadership behavior has influenced on its behavior studies. The researchers aimed at "determining by means of factor analysis procedures of the smallest number of dimensions that describe adequately the behavior of the leader" (Korman, 1966).

*Initial Structuring* concerns the extent to which a leader tends to define and structure his role and of his followers, with the efforts to achieve their objectives. This includes the morals that attempt to organize work, work relationships and objectives. The leader resulting with a high level in this dimension can be described as a person who "assigns specific tasks to group members", "expects employees reach certain standards of behavior and certain work", "emphasizes the importance of implementing time ".

*Consideration* is defined as the extent to which an individual has a tendency to build working relations that are characterized by mutual trust, respect for their dependents' ideas and regard to their feelings. The leaders give attention to their followers' contentment, their status and satisfaction. A leader that results in high levels in this dimension is characterized by: helping subordinates for their personal problems, friendship and goodwill, fair and equal treatment to subordinates and predisposition to communicate. These behavior dimensions of leaders have influenced the research in the field of leadership and have been comprised by other theories of school behaviorism and theories of the case. In fact, many researchers continue to use the two dimensional structure to make the leadership measurements functional (Hall, Workman & Marchioro, 1998; Kuntonbut 1999 SCANDURA, Von Glinow, 1999 Low, B artolo, Furlonger 2000).

Another concept of understanding leadership and its behavior is the *transactional leader* against the *transformational one*. The *transactional leader* directs and motivates his followers towards the realization of their objectives, clarifying roles and task requirements. Besides this type of leader who is based on everyday relationships to achieve the objectives, there is also another type of leader who inspires his followers to overcome their personal interests for the good of the organization and who is likely to have a great and extraordinary impact. This is called the *transformational leader*. This leader changes the way his followers think and feel, by making long-term problems be viewed in a new different perspective; he regards the followers' interests and needs to be developed; is able to inspire, encourage and excite followers to try harder to reach common targets toward a new required state, described from his vision.

Since 1995, when psychologist Goleman stirred the minds of academics and management by publishing "Emotional Intelligence" book, the concept of emotional intelligence (EI) defined as "the ability to motivate yourself and cope with difficulties, to control impulses and restrain pleasure, to self-control humor and prevent disruption from reversing thinking, to have emotional sensitivity to others and hope " has drawn researchers attention as a prerogative that a successful leader should have. Trying to understand more clearly what personal skills generate an uncommon performance, Goleman, Boyatzis and McKee have been encouraged to analyze data from almost 500 models of competences built for various organizations including academic institutions. The list of components that generate altogether an exceptional performance in top level brings attention mostly to initiative, cooperation, empathy, intellect, cognitive skills such as the ability to understand it all and to see beyond the moment, etc. The estimation of technical indicators and cognitive skills (some of which are actually used as a way to show intelligence quotient, IQ) and the comparison to each of the components characterizing the exceptional performance of the case leaders, highlighted that IE-based skills play an increasingly important role the higher the level of hierarchy is, in contrast to technical skills that are playing a less important role. (Goleman, Boyatzis, McKee, 2008).

Therefore, the higher the hierarchy level of leaders with exceptional performance, the more it is noted that IE was the performance explanatory. When compared to average performance leaders at high hierarchy levels, it is noted that approximately 85% of the difference in their profiles attributes to EI factors rather than cognitive skills such as technical expertise, etc. One of the reasons that can explain this is that individuals have strong selection criteria mainly based on IQ until they reach senior management levels. After meeting all criteria and the required post graduate education levels (MBA, etc.) according to some certain levels of IQ standards, almost all those who reach high levels of hierarchy have an approximate comparable intelligence level with each other. On the other hand, the deficiency of emotional intelligence test draws extensive variations between individuals at this hierarchy level. In this context, when it comes to exceptional performance of high-level executives, superiority goes better than intelligence in simple terms. The IE report of cognition skills of reality depends on how each of them is measured and the unique requirements of each organization. But Goleman, McKee and Boyatzie believe that EI contributes 80 to 90% (sometimes even more) of the competencies that distinguish an exceptional leader from the common one.
3. METHODOLOGY

3.1 The Cluster Study

Thinking about what skills of leader school principals of pre-university education have, the authors collected preliminary data on the number and structural composition of potential subjects under study. Several persons committed to preschool education leadership were interviewed. This preliminary study figured out that the cluster was very big and unattainable beyond the authors’ possible capacity. Consequently, the group studied was limited within the territorial boundaries of the authors’ residency (in Tirana). Due to relevant leading authorities’ approval there were interviewed 62 public school principals in the municipality of Tirana and 63 public school principals in Tirana district. From a particular cluster of 171 schools (86 in the municipality and 85 in the district), 73 per cent of the interviewees represent a big sample. Practically, there were 72% of pre-university education schools interviewed in Tirana municipality and 74% in Tirana district.

The interview’s questionnaires were carefully outlined to identify the structuring and consideration skills, and the emotional intelligence features. The paper and pencil interviews were conducted concurrently in one day in each subgroup (in the city and district) under the supervision of the respective author. For the sake of preserving the anonymity there was no other data recorded except the interview’s questionnaires. Considering the data collection method there is a high probability for outspoken answers.

3.2 The research Instrument

The interview was conducted by carefully structured questionnaires. The instrument "How Good Are Your Leadership Skills?" is a certified questionnaire to identify the supervisor's individual leadership skills. The questionnaire contains 18 questions according to Likert scale 1-5 (where 1 defines never, and 5 often). The questionnaire has been arranged and translated as an attachment below:

1. Questions 2, 8 both measure Self confidence
2. Questions 10, 17 both measure Positive Attitude
3. Questions 5, 15 both measure Emotional Intelligence
4. Questions 6, 14 both measure Creating a challenging vision for the future
5. Questions 9, 12 both measure People Motivation
6. Questions 4, 11 both measure Being a good model
7. Questions 3, 13 both measure Effective Management of Performance
8. Questions 1, 7, 16, 18 suggest Providing support and incentives for subordinates.

The questionnaire was applied to both groups of school principals in the city and district.

3.3 Analysis and Findings

There were several types of analysis conducted on the collected data. Each group data was carried separate and it was evaluated once separately and then all together. In the following there are comments for both groups and relevant graphic data in cases of any differences between these two subdivisions.

The questionnaire contains assertions in English and Albanian in order to minimize the differences in translation perception. The questionnaire was applied to a total of 125 school principals of pre-university education level in Tirana. Following there are some of the findings.

3.4 Regression Analysis

In attempt to notice any polarization of these two-dimension characteristics where normally a structuring and consideration leader operates (or in simple terms, the concern to perform a good job and keep helpful relations of your leadership), two statements were arbitrarily considered as dependent variables by the authors and the other assertions were allocated respectively in the role of independent variables. Specifically, question 4 was considered a dependent variable for the structuring dimension (task-oriented) and statement 7 as a dependent variable for the account dimension (people-oriented). Statements 1, 3, 6, 11, 13, 14, 18 were related to structuring, statements 5, 9, 12, 16 were related to consideration. According to the overall group calculation, the regression indicators are:

\[
\text{TASKORINTED=1.363+0.158SUBDIVISION-0.029RESULT-0.179DIFFERENCE+0.069STRUCTURING+0.136IMPLEMENTATION+0.17PLANNING+0.187SPECIALIZATION}
\]
The determination coefficient is \( R^2 = 0.079 \). This shows that 7.9% is explained by the regression variables that we have taken into consideration, which it also means that the model significance level is low and this regression is inadequate to explain the model.

To better prove the interpretation of regression and variables, it is used Durbin-Watson test with the value of about 2. In this case it has the 2:03 value. This indicates that the variables used in the model are important for determining the task oriented and there is no autocorrelation between them.

\[
\text{MAINTENANCE} = 3969 - 0.416\text{CONSOLATION} + 0.222\text{MORALITY} - 0.548\text{ENCOURAGEMENTS} - 0.41\text{INCREASE}.
\]

The determination coefficient is \( R^2 = 0.017 \). This indicates that 1.7% is explained by the regression variables that we have taken into consideration, which it also means that the model significance level is low and this regression is inadequate to explain the model. To better prove the interpretation of regression and variables, it is used Durbin-Watson test with the value of about 2. In this case it has the 1.905 value. This indicates that the variables used in the model are important for determining the people oriented-consideration and there is no autocorrelation between them. According to the questionnaire, the regression analysis indicates that the consideration dimension (concerning people) is stronger in this group surveyed. Studies have shown that followers prefer considerate leaders, but they are much more efficacious when working with structuring leaders (Judge, Piccolo, Ilies, 2004). Seeing that the questionnaire does not correspond to the leader two-dimension-analysis, the author developed a simple percentage processing suggested by the authors of test.

4. ANALYSIS OF QUESTIONNAIRE CONTENT

4.1 Personal Characteristics

1. Self-confidence, Self-confidence is one of the characteristics that determine success in any of the individual's activities. Individuals with high self-confidence are usually inspiring; generally people prefer joining sides of people who believe in themselves and in what they do. If a leader is a positive and optimistic person who tries to do his best in every situation, it will be much easier to motivate people to do their best. According to previous studies, self-confidence is so far considered one of the key positive features of a leader (Stogdill 1948, Mann 1959; Zaccaro, 2007; Sternberg, 2007).

Figure 1: Results for self confidence - Tirana District school principals

From questionnaires completed by school principals of Tirana, it is proved that 51% of respondents’ self-confidence has been estimated at maximum levels. So they believe in what they do and what they aim to achieve. However, this feature has not proved homogeneous in both groups under study. If we had analyzed this feature focusing on the differences between the two community groups studied, we will note that (Figure 1 and Figure 2): Self-confidence of school principals in the district of Tirana is only 40% at high levels (5*), while self-confidence of school principals in the city was 63% at high levels. So there is a high percentage of self-confidence at maximum levels of school principals in the municipality of Tirana, given that the number of the respondents in both groups was almost equal (63 questionnaires in the district of Tirana and 62 questionnaires in the municipality of Tirana).
2. **Positive Attitude** Being positive means much more than wearing a happy face to the world. People with a positive approach can manage a situation realistically and they are prepared to make the necessary changes to overcome any problem. People with a negative approach on the other hand, are often oppressed by stress, the pressure of the situation and the fear of unsolvable situations. This affects on the choice of improper strategies or their improper implementation by engaging in activities that often lead to failure. From the analysis of the questionnaires conducted, we notice that only 9% of the respondents have a low-grade estimation of positive attitude (Chart 3), (or in other words it means that they have no positive attitude at all) and 91% of interviewees have a high or above average estimation. By comparing the two groups (Appendix A) we notice that 13% of school principals in the district of Tirana have a low-grade estimation, whereas only 5% of the respondents in the municipality of Tirana have a low-grade estimation. Generally speaking, district school principals have the highest percentage of low positive estimation.

![Figure 3: Results for positive attitude for the whole community. Rounded data](image)

4.2 Emotional Intelligence

When someone is upset, I try to understand how this person feels. I feel intimidated when someone criticizes me. According to the authors of the questionnaire, these are two questions that might account for emotional intelligence of those who test. In fact, the authors of this article elaborated the questionnaire considerably by classifying some of the questions under the category of emotional intelligence. A simple percentage processing of answers given to questions 5 and 15 (Figure 4) indicates that 61% of respondents have a maximum self-esteem about the IE feature. Along with the first results between the two groups of respondents, this feature is consistent and there are no significant changes in the results of the two subgroups (city-district).

![Figure 4: The result of emotional intelligence for the whole community](image)

In regard to the assessment received by school principals in the district of Tirana, it is noted that personal characteristics as confidence, positive attitude and emotional intelligence (according to the authors of the test), are at high estimation levels (according to Likert scale, on level 4 and up), to over 88% of the study sample. These findings on personal features of the study sample are promising and serve as a necessary condition for the school principals to be successful leaders at their schools, despite the limitations public schools confront in meeting their objectives.

4.3 Transformational Leadership

Transformational leadership is that type of leadership which changes goals, values, needs, beliefs and aspirations of followers.

1. **Creating a challenging vision for the future.** The ability of leaders to create in their mind the image of a desirable future state of their organization and their capacity to convey this image to all the followers is one of the characteristics of a transformational leader.

Referring to the data (Figure 5), we see that 70% of respondents have an average and low-grade assessment of the ability to create a vision for the future.
The question that naturally arises is: do we want school principals to be transformational leaders? By identifying their role defined within the framework of public service with delineated boundaries and less possible options, the authors’ idea was that the school principal should be adapted to the role of a transactional leader. In this context, the above result fits with the logic of the role and can be seen as likeable. Furthermore, other researchers’ studies indicate that organizational culture influences the leader’s degree of being transformative (Waldman, Yammarino 1999; Shamir, House, Arthur 1993).

However, school principals are leaders with vision. A vision is a picture of the future of the organization and the results that leaders want to achieve (Grant, 1991). A vision is not a vague desire, dream or hope. Vision comes from the future; it energizes and informs the present.

Vision is important because:

- **The organization inspires action.** A powerful vision attracts on ideas, people and other resources. It creates energy and makes changes happen. It inspires individuals and organizations to continue to give their best.
- **It is a practical guide** for making plans, setting goals and objectives, making decisions, and coordinating and evaluating the work of any project, large or small.
- **And it helps organizations and focused groups stay together,** especially when dealing with complex projects in difficult times.

A director must be a transactional leader, particularly to focus on clarifying roles, the monitoring of progress towards achieving the objectives and giving rewards and penalties as a response to performance (Antonakis, House). Within this framework a leader needs the power that comes from expertise in the relevant field. Using the techniques of strategic analysis for their schools, will help the directors to be not only visionaries, but also realistic about what their schools can achieve. Therefore, the environmental analysis techniques, PESTEL, Porter and SWOT (r Port, M., 1985, Lynch, R. 2006) can help leaders guide their organizations towards the fulfillment of this vision; identify challenges they will have to face and strategic options as well (of course within the framework established by the regional education directors). The authors consider this training course as valid.

2. **Motivation of people.** A transactional leader must know how to articulate his vision and make the followers want and see the future as described in the vision. Encouraging others to act on achieving the work objectives, motivating followers to achieve individual and institutional performance standards, are areas that define directors leadership capability. The community analysis (Chart 6) indicates that 58% of school principals surveyed consider that they have the maximum ability to motivate followers. As a self-reported indication, (this feature) relies mostly on individual perception and it is more favorable to suggest self-confidence than their leader’s actual behavior.

3. **Setting a good model.** Good leaders lead by setting examples. They do what they say and show what they do; they are reliable and highly integrated. They engage in everyday activities if necessary and keep in contact with what happens in the organization. True leaders do not run out of office; they demonstrate actions and values that are expected to be demonstrated by their teams as well. Studies show
that followers expect ever more their leaders to be experts at work and they become willingly subjects of the authority of their expert leaders.

![Figure 7](image.png)

**Figure 7**: The results on the ability to set a good model for the followers - whole community

In the community research it is noted (chart 7) that only 15% of respondents have a maximum estimation of their ability to set models for their subordinates. On the other hand, this maximum estimation in these two groups relates to respectively 10% of school principals in the district and 20% of school principals in the city. Just as the ability to create inspiring vision and the ability to set a good model for followers, too, indicate that 44% of respondents admit to have an average or below average estimation of their ability. But in contrast to the characteristics of having a vision (not necessarily at high levels) a low-rate perception on personal pattern as a model of behavior is not a good indicator. We can even say that it is an indication that may cancel all the aforesaid values at some perspective.

4. **Effective management of performance.** Effective leaders tend to define their own role and structure and of their followers*, in an effort to achieve the objectives. This includes behavior that attempts to organize work, work relationships and objectives. The leader with high-level-results in this dimension can be described as a person who "assigns specific tasks to group members", "expects employees reach certain standards of behavior and work", "emphasizes the importance of implementing deadlines ", "relates performance to rewards ", etc.

![Figure 8](image.png)

**Figure 8**: Results on effective management capability of performance for the whole community

With regard to effective management of performance, 57% of respondents have a satisfactory estimation of this ability, while 14% of the respondents have the highest estimation (Chart 8). Nearly 30% have an average or below average estimation level of this capability.

These results were predictable by the authors of the study. In general, the feeling of being an insignificant factor in the performance management of subordinates, mainly due to not possessing sufficient instruments for material rewards or promotion regarding performance is a phenomenon that occurs frequently in the mindset of public institution directors. Public school principals cannot discount for this stereotype. We believe that directors” training plays an important role in changing the meaning and enhancing their understanding of the different elements of reward and non-material value on their subordinates in the Albanian context (Koli, Dumani, 2000; Kasimati, 2011).

5. **Support and promotion of subordinates.** To be motivated, men need more than a list of tasks to be performed every day. They need interesting, non monotonous and challenging jobs to develop their skills, have tangible results and deserve gratitude for what they do (Herzberg 1959). Fortunately, teachers” job is one of the most motivating in this context for as much as it has all these features. Teachers leaders have no obligation of motivation rather than harmonize all factors in order that work motivation comes along with performance satisfaction.

Unfortunately, the analysis of the results observed (Chart 9) indicates that 23% of respondents have a satisfactory estimation of the ability to provide support and encouragement to subordinates, and only 2%
have a maximum estimation level of this ability. Meanwhile, all the rest (75%) of the respondents have an estimation level of their ability to develop average and below average support.

Figure 9: Results on the ability to provide support – whole community

The authors of this study think that low skilled perception in this feature is explained within the context of leaders’ perceived role in public organizations already interpreted.

5. CONCLUSIONS AND RECOMMENDATIONS

Based on personal perceived and self-reported characteristics, this article aims simply to identify some features of pre-university school principals in Tirana district for the position of potential leaders. The study does not account on personal effectiveness or institution indicators under school principals’ administration. Neither is described the way their followers (subordinates) perceive their leaders. The concentration of the community surveyed in only one region (the capital) does not necessarily generalize the outcome of data processing.

According to House (1996) effective leaders possess and make use of more than one administration method. Regardless any test results (commented furthermore in the article), school principals are encouraged to adapt to different behavioral categories of the leader and also try to exercise new practices when necessary, in accordance with the characteristics of their followers and institutional objectives. Education directorates can implement on their part developing programs to enhance leadership features of school principals.

6. REFERENCES

Antonakis, House, R.J., “The Full-Range Leadership Theory”.
Koli, Z., Dumani, B. Motivimi dhe efektiviteti i potencialit njerëzor, Ekonomia dhe transizioni Nr.1, 2000.
Kuntonbutr, C., (1999), A Comparative Study between Thai and American Subordinates’Perception of Managerial Values in the Banking Industry, unpublished dissertation, University of Sarasota, US.


Abstract: The paper is based on one decade experience in the management of adult education and training, in particular offered by the university of the third age. The paper is an attempt to highlight changing and growing education needs of adults learners and their corresponding changes and trends in education provision. Implementation of the research results of adult learners’ needs and competition analysis is fundamental for the efficiency of the educational process. The most relevant features of the innovated adult learning/teaching methodology incorporating blended learning and exploiting the elements of coaching to achieve expected learning outcomes, are characterized. The desired learning outcomes are the change in individuals, learners and teachers, and the acquisition of practical skills and competences. The author tries to underline the positives and negatives of a new approach to adult education both for the teachers and learners. The Czech population is still getting older and education provided by Universities of the Third Age (U3A) makes their lives active and helps combat ageism.

Keywords: Lifelong learning; adult education; motivation; coaching, blended learning, practical outcomes,

1. INTRODUCTION

Lifelong learning, lifelong teaching, adult education are terms widely used for the education aimed at adults within the European Union education framework, The Czech Republic included. This variety of terms designates the activities leading to widening or deepening the learning process during the life span of a human being. These are carried out in various forms of formal, non formal and in formal education, academic courses, commercial courses, academies, training, preparatory courses, and universities of the third age included. According to Rubenson, European Union, the OECD and the UNESCO proclaimed three fundamental attributes in 1976 that lifelong learning is based on (Rubenson, 2011):

- It is lifelong and therefore concerns everything from cradle to grave
- It is wide-life recognizing that learning occurs in many different settings
- It focuses on learning rather than limit itself to education.

Lifelong learning provided as courses of Universities of the Third Age is an important part of the holistic education, functioning as a corrective to the regular educational system and an innovative mechanism of the educational system.

The objective of this paper is to present ten years experience within the lifelong learning with the provision of the adult education in the University of the Third Age and the application of a new approach to its provision by Business School Ostrava plc. In the first part of the paper the approaches of both the learners and teachers to adult education will be described. In the second part of the paper the results of the research will be presented. The questioning and interviews of 300 respondents took place in 2012 – 2013. The same number of respondents was questioned in Spain and Turkey within the international project of the Grundtvig programme. Though the results show almost identical data in the participating countries, the paper describes findings, and their implications in adult education for the Czech Republic.

The Courses of the University of the Third Age are developed and designed for adult learners, aged 55 and more, which means for experienced mature individuals. Learners of this age had rather limited opportunities for university studies in their young age due to limited access to high education strictly controlled by the government. Minority of adult learners is graduates, but most of the adult learners were quite successful in their careers. Universities of the third age are quite popular within the European Union, and are attractive for and enjoyed by adult learners in the Czech Republic as well. A variety of courses are offered both by public and private high education institutions, while the courses of public high education institution are financially supported by the Ministry of Education, Youth and Sports, the private ones are not eligible for the state subsidy according The Higher Education Act (Ministry of Education, Youth and Sport, 2010). Apart from the educational outcomes the social impact of the education courses is widely promoted and frequently financially supported by municipalities. It is assumed that the person, who is trained, educated on a
permanent long term basis and who maintains active lifestyle has a better chance to live longer, healthier and independent life.

The population of the developed countries within the Europe, the Czech Republic included, is growing older, which is the most characteristic feature of the demographic development. According the Czech statistic institution the inhabitants aged 65 and more will be represented by 22.8% of the total population in 2030, populace, and by 31.3% in 2050, which stands for approximately 3 million persons. In 2007 persons aged 65 represented 14.6% of the Czech population. The demographic prognosis expects approximately half a million inhabitants aged 85 and more in 2050 (124.937 in 2007). The National Action Plan for supporting the positive getting older process for 2013 – 2017 was accepted by the Ministry of Labour and Social Affairs, which is in compliance with national priorities and Regional implementation strategy of Madrid international action plan pro the getting older issues (Organisation of United Nations, 2002). Among seven priorities the lifelong learning is included.

The Czech population is getting older. The approximate number of new pensioners is 150 000 each year. These are offered a variety of services: counselling, leisure time activities, palliative care, help lines, health care, special services provided by non-profit organization, in particular. Universities are also very active in this field, offering individual courses, universities of the third age, academies. Though the adult learners may be enrolled in regular studies, they prefer taking the courses without the ambition to be awarded the degree. The course content, the affordable price, and the professional, pedagogical and human qualities of teachers are the key criteria for the decision making process of the applicants for the adult learning. High education institutions are appreciated by adult students as the top quality education guaranty.

Generally the contents (curricula), teaching methodology (pedagogy), and the learning outputs of various types of adult education differ. In some learners are guaranteed eligibility for further studies, in others they gain "only" the knowledge and social ties. The knowledge, social networking and especially improvement of the quality of life are considered the crucial issues highly esteemed by adult learners. The courses for adult learners aged 55 and more are typically called the courses for seniors, the courses for the retired, or the University of the Third Age, which is perceived by adult learners and graduates as a very pejorative or even discriminatory labelling and the evidence of ageism.

2. METHODOLOGY

The Courses of the University of the Third Age are particularly developed and designed for adult learners aged 55 and more. Universities of the third age became very popular, they are attractive for and enjoyed by adult learners within the Czech Republic. Restricted opportunities to enter university studies before the Velvet revolution may be one of the significant causes of the unceasing interest in courses offered by universities. The adult education is frequently promoted and financially supported by municipalities within their educational and social initiatives.

Study groups may be organised of large scale, but those of 20 persons at maximum help avoid anonymity and develop positive, warm climate and relaxed atmosphere. All learners are charged fees. Almost 30 per cent of them are graduates, but majority of adult learners gained the experience in managerial positions. Many are still economically active, with full time and part time jobs, most are active in their hobbies, family activities. Although the female learners prevail, the numbers of male learners tend to increase in past two years. The teachers face an extremely highly and permanently motivated group of learners, with fairly high expectations and high demands on the teacher’s expertise and pedagogical skills. The length of studies of adult learners of the University of the Third Age may differ, but four semesters, which means two academic years are customary. Students who complete obligatory courses, usually four core subjects, are invited for the final ceremony similar to graduation ceremony.

This paper presents the results of research that was focused on the approach to adult education aimed at required innovation and development of adult education courses. The paper is based on data gained by the method of questioning, and data collected in interviews. The questionnaire survey was carried out to find out the learners needs and expectations and to gain the feedback by learners for the teachers. The aim was to gather information about learning/teaching process. Questioning was conducted after completing four subjects.

300 respondents, learners of the University of the Third Age executed in different towns took place in questioning; the same numbers participated in the same research done in Spain and Turkey. The research methodology was agreed on by Grundtvig project partners. The core questions, both open and closed, aimed at getting the response to the assumptions that 1. So called traditional approach to education, it means giving the lectures by frontal teaching, is still appropriate for adult learners aged 55 and more, 2. The
adult learners aged 55 and more avoid using new technologies and 3. The adult learners aged 55 and more are neither willing nor are they able to change their approach to learning.

3. ADULT LEARNERS 55+

When designing the courses for adult learners aged 55 and more we strongly believed that so called traditional way of teaching, ex cathedra method, when the focus is on the activity of teachers not on the activity of learners, it means delivering lectures to listeners, would perfectly suit the learners. These could enjoy traditional ex cathedra teaching while listening to the speaker and taking the notes simultaneously. We were convinced that especially graduates appreciated coming back to the environment they were familiar with in their youth. Secondly we assumed that using modern technologies would be not so much popular with adult learners and finally we guessed that adult learners would be not willing to change the attitude towards learning which they got used to.

Surprisingly for us the learners got involved in their studies quite spontaneously and became eager for new and different ways of delivering education they had not experienced during their previous studies. Since the adult learners strongly desired to be actively engaged we understood the must for a dramatic change of our attitude and mindset to adult education.

Three figures are presented.

![Figure 1](image1.png)

**Figure 1:** The expectations: Why do I attend the courses, 2013, Grundtvig-3G

In Figure 1 the expectations, reasons for attending courses are described. Three age categories were questioned so that expectations, needs could be compared. To relax, socialize, be useful, and develop yourself were the most frequent replies. To develop yourself especially in the field of modern technology was among the priorities. The same questioning took place in Spain and Turkey, with the same number of respondents and almost same results.

Figure 2 describes the experience with previous education university studies or secondary school education. Although theoretical courses were appreciated respondents mentioned that these were so much not enjoyed. The same questioning took place in Spain and Turkey, with the same number of respondents and almost same results.
Figure 2: Which type of education I have the experience with, 2013, Grundtvig-3G

Figure 3 expresses the needs and wishes of adult learners. While the theoretical courses took the bottom place, practical group training, self studies, and individual training were preferred by almost the same percentage of replies. The same questioning took place in Spain and Turkey, with the same number of respondents and almost same results.

Figure 2: Which type of education do I prefer now, 2013, Grundtvig-3G

Teaching methods
The questionnaire results revealed the following findings: adult students prefer individual form of training in order to deepen and broaden the knowledge in a field that interests them, they prefer individual pace, and although they do appreciate the theoretical courses, their first choice courses are the learning by doing courses, practical group training, the courses with the practical outcomes. Learners do not want to be passive listeners only; being passive consumers of information is not satisfactory for them anymore. They expect being given assignments, being evaluated by the teacher and other learners, being given the feedback. Sharing of ideas and discussions on agreed topics are considered a valuable part of education. Debates, organized discussions were supposed to be strictly controlled by the teacher. Teamwork was described as a new and positive experience, individual projects processed as power point presentations were found enriching challenges.
Meeting on a regular weekly basis brings the adult learners a new quality of life and new challenges. Assignments and project work help connecting generations. Development of verbal skills was considered another benefit.

Subjects
Within the University of the Third Age four compulsory subjects are included. These are aimed at learning and developing computer skills, foreign language skills, and learning the law and legal system issues and fine arts. The subject focused on developing PC skills was appreciated most of all the subjects, especially due to its practical outcomes, while the subject about fine arts was appreciated more than the subjects about a foreign language and law and legal system. Subjects which were offered as voluntary, usually after completing two year course, were appreciated high, because being attended only by those who made the choice (psychology, philosophy, music).

Based on the research results we can say that the offer of the subjects was not the issue to be changed and dealt with dramatically. Three areas to be addressed for the prospective innovation of the course correspond with the assumptions we made at the beginning of developing the adult education courses for the University of the third age and which proved to be our prejudice: traditional ex cathedra teaching complies with the adult learner, adult learners are not excited about using modern technologies, and adult learners are not willing or are not able to change the attitude towards learning which they got used to.

3. NEW MINDSETS

In order to integrate the research results on the demands and wishes by adult learners into innovation of current courses their knowledge and skills, the courses curricula were innovated and new pedagogical approach accepted. Motivation of the learners, their life experience and time at disposal were the positives, while the need to make a change in the attitude to education both by learners and teachers was the only negative. The change of the approach to education, pedagogy, and understanding the need for this change was a little slow and difficult process (but directly associated with the participants’ age). This change occurred during the first course, and was easily adopted in follow up courses. Once understood and accepted, it was appreciated both by the learners and teachers.

New philosophy, new mindset
The initiatives were taken in two areas: the first being to change the attitude, mindset, and the second to change teaching methods. Changes made in one area were immediately reflected in the other.

We did not have to deal with the offered subjects. All the subjects are considered to be needful and attractive.

To improve our teaching methods and the efficiency of education process we decided for a new philosophy of education, which involves changing the focus of education from the process of lecturing to the learning process (Jovanović et al., 2012). Before implementing different teaching methods the change of the attitude and mindset is necessary. The change in the attitude and mindset is a demanding process. The existing attitudes and mindsets are being developed over a long period of time, and in a way are getting isolated from the society, (Jovanović et al., 2012). The change of our concept of adult pedagogy was based on incorporating the elements of coaching, a combination of specific attitudes and tools. We looked for a successful model management education in the sense of leadership. We have experienced that success could not be achieved by still increasing effort, more intensive work. I believe that many aspects of coaching were applied intuitively. Initially some approaches seemed to be completely unacceptable, provoking both learners and lecturers. And they do repeatedly provoke new learners every academic year. Our goal was to make a change of thinking, develop action, encourage initiatives and trigger creativity.

The change of the mindset and the attitude towards adult education means the dramatic change of a student’s and teacher’s roles. The teacher is becoming an advisor, mentor, encouraging learners, but withdrawing from ex cathedra, frontal, teaching. Teachers take much more active role in developing learners speaking skills. Developing reading, writing and listening skills is sufficiently supported by the study material, frequently online resources.

The goal to strengthen student’s skills to organize and monitor their performance, control their studies and take responsibility for own learning results was not easily accepted neither by learners nor teachers.
To stimulate the change of traditional roles of learners and teachers our efforts were be directed into five areas:

1. Restriction of the autocratic style of leadership; there is no need for the lecturer to know absolutely everything, to have a solution ready, and to be the first always.
2. Listening. The lecturer learns to listen with no need to make comments; he listens to the opinions and attitudes.
3. To be open, warm: letting the others take the initiative.
4. To help people think more deeply; providing them feeling that the learners are the subjects of the action, developing them in the professional and humanistic ways.
5. To ensure self-reflection, free from stereotypes.

A newly developed and properly accepted attitude to adult learning/teaching process had a very positive impact on the relationship between the learners and teachers. If students perceive the empathy, acceptance and congruence in the teacher’s behaviour, they do not feel threatened, and start be more open to new experiences, which in turn will enhance their confidence and encourage acceptance of responsibility. New and creative solution can be found more easily. (Whitmore, 1994)

The teachers training for the adult education included learning the following attitudes and tools:

- **Empathy**
  The teacher tries to feel the learner’s feelings. He makes no comments. The learner gets the impression: He wants to understand me. This is not: He understood me.

- **Acceptance**
  Respect is in no relation with the warmth, quality of previous and current experience, feelings, successes, failures. It is the respect with current possibilities, capability and borders of the learner.

- **Congruence**
  Comprises of sincerity, consistency, authenticity

- **Trust**
  The teacher brings the learner the confidence, the trust that he is able to develop independently of the starting position and at the individual pace. Each person is fundamentally perfect and has the potential not used previously but being ready to develop. The assumption is that people tend to behave according to the expectations of others.

- **Sincere interest**
  Interest in the learner’s world, what is his world like, how he perceives it, how he enjoys it.

Our starting point is based on the adult learner’s dissatisfaction with the results alongside with his willingness to develop his potential. The tools we used can only support what we had prepared and built by our attitude. The tools not being fully implemented in the pedagogy do not guarantee the success. (Stacke, 2005)

- **Creating a relationship**
  requires the time investment, ideally in sharing a common experience, as well as the mastery of voice and body language control.

- **Asking questions**
  asking questions by the teacher is not a sign of uncertainty; questions can stimulate creativity, development of knowledge, skills. Questions generally indicate the respect and interest, primarily because the interviewee is by being asked perceived positively. You can apply a wide range of questions.

- **Active listening**
  Is related to keeping the eye contact, elimination of disturbing moments, maintaining the interview communication share 50% to 50%, providing sufficient time or the giving the answer, the mastery of keeping and managing the silence.

- **Language metamodel**
  During our communication, in the dialog, we voice only a part of what we experienced. There are issues of the missing information, reasons why they miss, reasons for applying non-specific verbs, words.

- **Expressing and communicating mutual expectations**
  Learning to formulate expectations, desires, direction, learning how to define specific goals in individual plans. The conscious and unconscious expectations help develop the educational framework. Communication of mutual expectations is a turning point for learners and teachers. For many participants it is a completely new experience, after which their further development, feelings of satisfaction gradually start evolving.

- **Giving and receiving feedback**
  Recognition of constructive criticism.

- **Reframing**
  Finding what is good in a particular situation.
Dealing with errors and suggested solutions
Not to avoid mistakes, get rid of perfectionism.

Using mental techniques
Applying visualization, relaxation indicates the quality of the relationship between the learner and teacher. Visualization requires to get rid of stereotypes, prejudices, routine. It helps clarify the relationship, develops imagination concerning the future, and removes barriers. (Whitmore, 2007)

Mental activities must be maintained, enriched and strengthened though self motivated learning and self education. People can learn about the world by using their common sense and their common sense motivates people to reach the treasuries of knowledge that will enrich their personalities and minds by correcting their own minds and education. (Karavidic et al., 2012)

Teaching methods
Discussions, teamwork, project work, debates accelerate developing verbal skills and help learn the world and its inhabitants and correct the minds and education. High verbal skills are correlated with the decrease in physical aggression by Boone and Montane (Bellon, 2000). Once someone feels capable of responding verbally they fell less inclined to resort to physical force. The learners learn to respect the opposite side. Discussion, debates increase argumentativeness without increasing verbal aggression (Colbert, 1994).

Strengthening the individualization of education and the consequent individualization of learning pace, enhancing practical aspects, practical outcomes, enhancing interaction by involving students in their own learning, based on their learning style, and particularly the sharing of tasks and follow up discussions was partially supported by introducing E-learning.

In the academic circles there is no doubt that E-learning is a significant method of education in the modern world, which backs the modernization and optimization of the educational process in all spheres of modern society. Blended learning, the issue of IT has to be integrated in a very efficient way. Mother tongue, foreign languages and computer languages are ways of communicating and their command creates prerequisites for active participation in a human life, while expertise in the field enriched with the active command of these prerequisites is becoming a must in one’s, not only professional, life nowadays. We strongly believe that e-learning courses will be more theory-led than technology-led in the future; as it is supported by Horton’s opinion who claims “E-learning does not change anything about how human beings learn”.

The online study material, its structure and learning instructions for use were user friendly. When developing study material close cooperation with IT experts cannot be underestimated at any stage, especially when defining specific needs for the study material, online course structure and the target group of learners.

Learning is a demanding process of acquiring knowledge, abilities and skills. It is the teacher’s approach to learners, which can influence the quality of the educational process, and deal with constrains of online learning process, so the teacher’s role can in no case be neglected. When introducing E-learning the idea was to exploit the online learning as much as possible. Learners were expected to study individually, not only during the lessons in a classroom. The goal was to strengthen student’s skills to organize and monitor their performance, control their studies and take responsibility for the results. The opportunity to work at individual pace, and mostly online was considered the benefit by majority of learners while others appreciated more the opportunity to study during the contact lessons. During the lessons in a classroom the learners present their study results, share the experience and discuss.

3. TEACHER’S CONSTRAINS

Even small changes can have a big impact; each activity influences the whole system. If you live in a rather authoritarian environment, both parties are accustomed to issuing and receiving orders. In such an environment, we cannot expect independent personality. For the personal development building a relationship between the learner and teacher and among learners themselves, patience, communicating expectations, consistency, creating a common vision, seeking allies in community, in a family, and friends, networking are needed. When creating the fragile relationship the statements supporting non supportive approach must be excluded from the education process, those of the adult learners exclusively. Statements like I am too busy, Talking is better than asking, They are all the same, I have being doing that for ages have proved to be very contra productive.

The need for the change of the attitude towards adult education by teachers was in some cases, dare I say, accepted with more difficulties than by learners. Particularly the teachers with no previous experience with adult education learned a new role more or less that of a tutor, counsellor, or leader with some constrains. If they succeeded they got far beyond their former professional activities and started enjoy new ways of teaching. The emphasis put not only on the education in individual subjects, but also on the personal development of the participants was appreciated by teachers as well. Due to implemented changes, getting the inspiration, motivation, deep insight, taking the corrective measures during the educational process of adult learners became continuous and valuable part of the learning process both for learners and teachers.

The change of a student's and teacher's roles proved to be difficult. The teachers acting as an advisor, mentor motivates and encourages learners. If ex cathedra teaching is abandoned by the teacher takes much more active role in developing learner’s skills. With the aim to strengthen student’s skills to organise and monitor their performance, control their studies and take responsibility for learning results the teachers have to adhere to the new role, which cost them a lot of efforts, as they confess. They admit that the need for the change of teaching methods should be brought to the fore with more emphasis.

After the new teaching methods were accepted the teachers noticed a better quality of the relationship between adult learners and teachers, tendencies towards better intergeneration understanding and especially improvement of verbal skills. Though the teachers admit inconvenience, in some cases lower self confidence if letting the more active role to adult learners they notice the increasing level of adult learner motivation and increased level of the assignments quality. The constrains and inconvenience perceived by the teachers during building a different kind of relationship between learners and teacher slowly faded away. The different quality of relationship merged into a more efficient way of education even though the teachers confess that controlling, managing, and leading the teaching process towards changes in individuals based on the new mindset was considered as a very demanding task.

Practical outcomes
Due to the change of the mindset and new philosophy of the adult education the practical outcomes, so needed and expected by the adult learners and expressed in the questionnaires and interviews were achieved. All are considered to be triggered by attending the lifelong courses for adults, the University of the Third Age, by the adult learners. A variety of activities either on a regular basis or unique basis can be regarded the practical, valuable learning outcomes increasing one’s professional or private life. Below you find the listed ones: setting up a nonprofits organization, membership in the international pet club, working with PC: designing web pages for personal use and for business purposes, solving difficult family situation (divorce, marriage), introduction of new family traditions, starting a business (business license ), organizing leisure time activities on a regular basis for community members, further studies, solving a difficult situation (illness, finance), charity activities, giving lectures, offering practical training, developing teaching materials, participating in international project, travelling abroad for specific kind of sightseeing, organizing exhibitions.

These effects manifested in the listed areas, include creativity, family planning, care about children, quality of learning, appreciation for arts, culture and learning, health care services, political participation, understanding of social issues, acceptance of social changes, the sense of shared culture and social solidarity. (Karavidic et al., 2012)

5. CONCLUSION
Undoubtedly the primary objective of adult education, the University of the Third Age included, remains the provision of education and increasing knowledge, skills and abilities. Lifelong learning proved to be an integral part of holistic education: a corrective of the regular educational system and an innovative mechanism of the educational system. (Karavidic et al., 2012)

Due to changes in the attitude towards adult education provided for learners over 55 and more, the practical outcomes were reached as being illustrated by a wide variety of activities and events. I do believe the results came into existence due to the efficient interaction of learners and teachers, interconnection of theory and practice. These are the evidence, that education provided to adult learners significantly improves the knowledge levels, intellectual tendencies, influences their self esteem, helps people in finding their own identities and in their individual choice of lifestyles, and to a significant extent increases practical competencies, flexibility and tolerance in their capacities of citizens, workers, family members and consumers, and influences the choice of leisure time activities, their health and their general abilities for coping with problems in life. (Karavidic et al., 2012) Beside the intellectual gains particularly the direction for one’s life are appreciated.
REFERENCES

Bellon, J. (2000). A research – Based justification for debate across the curriculum, Argumentation and Advocacy, Vol. 36 Issue 3, p161-175, Georgia State University, Atlanta, Georgia
Grundtvig project Connecting three generations, 2012-2014.