HOW LEARNING STYLES AFFECT THE EXPIRIENCE OF E-LEARNING

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ABSTRACT

Putting emphasis on the Moodle platform as a contemporary model of teaching, which is used at the Faculty of Maritime Studies Kotor, in this study we have investigated how students perceive such an alternative model of teaching through the use of different learning styles. The study has shown that individual learning styles and experience of e-learning are statistically significant. All that contributes to greater efficiency and improvement of active teaching models.

KEY WORDS

learning styles e-learning lms moodle

1. INTRODUCTION

The teams consisting of engineers and psychologists have found relevant information regarding the optimization of handling different machines and efficient transmission and reception of information during the Second World War. The relevant fact is that in the transmission and reception of information there is a limitation caused by the addition of technical nature and cognitive systems. Attention, selection and optimization of information transfer, represent a major problem for further research. So important obtained data indicate that these, as well as further steps of research, should be considered an analogy between abstract communication system and style of functioning sensory-nervous system.
It is generally known that learning runs through every human activity. A large number of factors that play a role in indirect sign of learning. First of all, the perception of the primary information processing and individual ability of each individual. Perception has a strong relationship with intelligence, because intelligence is capable of adapting to the new situation helps to perceptual stimuli connect with past experience. An additional factor is motivation, because each individual has in each cycle of life more or less defined primary and secondary motives (Kolb, Fry 1975).

2. INFORMACION TECHNOLOGY

Today, we live in an information world where production, processing and storage of knowledge are important factors of the complete social progress.
In the last few decades, the development of information technology has recorded tremendous growth and every day there

are more in progress. The central position of technological development occupies a large system of information and communication technologies. The integration of systems, standardizing equipment, distribution and internet speed depends on the further development of information technology. To take full advantage of modern computer systems it is essential that the processes in business are properly created. Thus, a prerequisite for the successful implementation of modern ICT (information and communication technology) is a good business organization. The 18th century is treated as the beginning of distance education although greater application is gained with the development of the Internet. Ease and speed contributed to the emergence of a large number of formal and informal institutions that practice this kind of education. The flexibility of this kind of learning proved to be a main priority and as a very good way to close the knowledge to the large number of people.

3. ATTITUDE

According to Dunđerović (2004) the attitudes are relatively permanent emotional tendencies, value and action relationships with people and phenomena. According to Rot (2004), they may simply be defined as the willingness to react to certain events, the positive or negative way. Every man is determined by its structure of attitudes. In this way man adapts to the environment and form his own experience of it, and all of this makes the willingness to engage (Šiber, 1998).
Allport (1936) makes a division of 4 models of attitude formation: mechanism of differentiation, integration mechanism, the mechanism of identification and mechanism of trauma. Kac (1959) speaks of the four functions of attitudes: the adaptation function, the function of ego-defense, function of value-expressive character and function of cognition.
An important driver of distance education was the development of the telegraph and postal services. The university who first enabled distance education was the University of London. At this University 1858th the program was established for distance education (External Programme), which allowed students to come to a degree without having to attend classes at the institution.

4. E-LEARNING

E-learning can be defined as the application of information and communication technologies in education. E-learning or distance learning means that the main carrier of communication between teacher and student separation (at different times and in different places - the separation of instructors - tutor of the student). It must include two way communication between teachers and students that aims to facilitate and support the process of education. Technology is used as an intermediary in the necessary two-way communication.
E-learning consists of three main parts.

4.1. LMS (Learning Management System)

LMS is a set of standardized components for learning, designed to connect learning with existing IT systems within an organization or through a web portal for learning.
The software that forms the basis of LMS manages all elements of teaching and records all parameters required for process monitoring. Based on these parameters, it is possible at any time to monitor the progress of each employee or group, and at the end of the Educational Process reliably measure and analyze performance. The student system access from your computer and included in the teaching process at a time when it is most convenient. According to the teaching program the module for learning and teaching approaches is selected (lesson).
The process is controlled and monitored by the LMS. The time of the access to the module, the success of learning steps, time spent and the final results are recorded.

Data is recorded in a database and are available for analysis and presentation of the different users (project manager, mentor teaching, management ...). The system keeps track of all participants within the stipulated time, allows communication through the system: one to one, one to all, all to all, provides an insight into the details of previous education and experience of participants from other groups (http://www.herridgegroup.com/pdfs/lcms.pdf).

4.2. CONTENT

Content is an essential part of the learning process. Modules for learning are not static but are intelligently guided by auditory and visual application with interactive feedback that leads students toward the goal of the system simulated real-life situations. Errors are signaled to the attendants immediately and are used as a means of direct teaching. Attended the goal can be reached only if all the steps correctly made. Each module can be accessed as many times as necessary to the final result is satisfactory.

4.3. CO-OPERATION (COLLABORATION)

The communication within the system is multidimensional. The primary goal of communication is cooperation (collaboration) students and mentors teaching, and students themselves. Since these two methods are aimed to the same goal the harmony of the communication process is achieved. Collaboration provides control systems and enhances learning, since the learning remote station (the computer and the student) connects the community gathered for the same purpose. Sharing experiences and advice is invaluable. Collaboration tools are e-mail forum (questions / answers / comments), chat (direct discussion), etc.

Registered sites	68,352
Countries	235
Courses	7,054,520
Users	67,703,247
Teachers	1,155,563
Enrolments	85,481,139
Forum posts	117,883,780
Resources	62,847,732
Quiz questions	168,585,683

Figure 1. Statistics Moodle platform in the world(https://moodle.org/stats/ 15/02/2014.)

5. MOODLE (MODULAR OBJECT-ORIENTED DYNAMIC LEARNING ENVIRONMENT)

Moodle is a software solution for the production and maintenance of online courses through the Internet. This is a free, open-source platform for e-learning. This platform is very popular. She herself has over 57 million users. According to many surveys that have been published on the Internet, Moodle is one of the most accepted platform in its segment. Moodle is a modernized providing the best tools to manage and promote learning. The built-in functionality that allows exactly the same work practices whether the two users, tens and hundreds or a few thousand active users. Because of its scalability has found its application in both residential customers who provide courses and a small number of users to large systems.

6. MODELS OF LEARNING

Each individual is unique in their own way. With its idiosyncracies, everyone has a particular style of learning that suits them in acquiring information.
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6.1. VAK model of learning

This model was created as a result of accelerated learning process in the world. It has its continued development. Despite the many advantages that this model contains,it has its disadvantages. Many researchers consider it more a tendency than style.
Any individual who is engaged in learning using three sensory channels (visual, auditory and kinesthetic), through which it is possible to receive new information and experience. One, possibly two of them are more dominant in the cognitive processing of information. Dominant and also the most effective means for adoption information. However, an individual style that can deal with mastering one type of material, while the second may be the more appropriate a different style.
According to the theorists who advocate this style of information is best presented in a way that will be represented on all three styles. And thus it gives everyone the ability to (Honey, Mumford, 1992).

6.2. Felder- Silverman mode l

In order to achieve the most effective learning we combine learning styles. According to scientists Richard M. Felder and Barbara A.Silverman there are styles that are inherently opposed and because of this opposition are working well. These two scientists presented the view that no one is using only one style of teaching and learning and in order to make them to be of a high quality and comprehensive people combine styles. According to the Felder-Silverman's theory the following styles have been developed (Felder, Silverman, 1988):

1. *Active and reflective learning style;*
2. *Sensory and intuitive learning style;*
3. *Visual and verbal learning style;*
4. *Sequential and global learning style.*

7. METODOLOGY AND RESULTS OF THE RESEARCH

The survey was conducted on a sample of 100 respondents. The initial case of the study is to assess the nature and distribution (direction and intensity)of learning styles, on the one hand and the general attitude of e-learning on the other.
The scientific goal - to determine how learning styles, as independent variables influence on the overall satisfaction about e-learning as a dependent. The practical goal - the data can contribute to more efficient and convenient operation of educational institutions in the country in terms of effective engagement of individuals willing to work to improve the education system in Montenegro.
The research variables are dependent (general satisfaction with e-learning included) and independent (learning styles - VAK model and Felder-Silverman model).
Further work will present the results of researching. The correlation of overall satisfaction with e-learning at the Faculty of Maritime Kotor, and two models of learning.
In the statistical analysis, which was performed SSPS Windows 17 program, we investigated the $\chi 2$ (chi-square)-measures the difference between the segments crossed variables, and its value should not be higher than 10 to confirm the value of p. The value of p is relevant in the sense that it is an indicator of association between the variables. The p-value is a number between 0 and 1 and interpreted in the following way: this means that if p is less than 0.05 and close to 0.01 indicates a strong correlation and the likelihood of association with 95% and 99%. C coefficient value shall indicate the degree of correlation between the variables (http://www.ef.uns.ac.rs/Download/statistika/2010-1020_testiranje_statistickih_hipoteza.pdf).

In the picture below affiliation, percentage are clearly shown according to each type of **VAK model**.

Verbal 29% Auditive 35% Kinestetic 36%

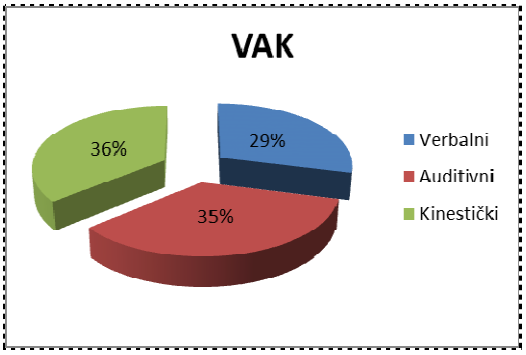

Figure 2. Percentage of VAK model

Table 1. General satisfaction with e-Learning and VAK model

General satisfaction and visual type VAK model χ2=13,546 df=2 C=0,455 p=0,034
General satisfaction and auditory type VAK model χ2=2,985 df=4 C=0,149 p=0,567
General satisfaction and kinesthetic type VAK model χ2=2,098 df=4 C=0,201 p=0,621

From Table 1 we see that the general satisfaction with e-learning (positive attitude about the same) and the verbal type VAK model was found statistically significant at the 0.05 level (p = 0.034), which implies that with 95% confidence that respondents to the VAK model belong to the type of visual feature. Visual respondents have positive attitudes toward e-learning because it itself mostly runs this kind of creativity, reasoning, leaves room for idiosyncratic experience and convergent thinking. Next, jumble materials Moodle's platform placed, combining chart, diagram, written material induces human visualization. In the other two types there is no statistical significance or positive correlation. In cases where there is no statistical significance was not possible to make any conclusions about it, because that would fall within the subject matter of speculation.

Visual/verbal 28%, active/reflective 26%, sensory/intuitive 29%, sequential/global 17%

Felder-Silverman model

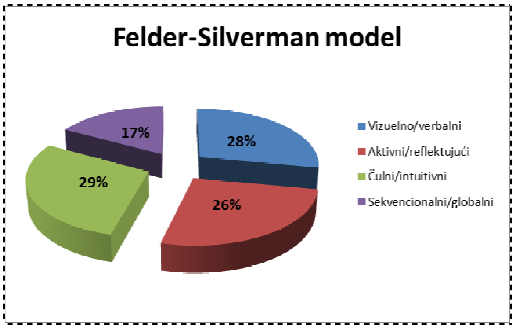

Figure 3. General satisfaction with e-Learning and F-S model

Table 2. General satisfaction with e-Learning and F-S model

General satisfaction and visual / verbal χ2=8,988 df=2 C=0,235 p=0,045
General satisfaction and active / reflective χ2=5,653 df=2 C=0,198 p=0,091
General satisfaction and sensory / intuitive χ2=3,121 df=4 C=0,482 p=0,403
General satisfaction and sequential / global χ2=1,954 df=4 C=0,607 p=0,620

From Table 2 we see that the positive correlation between the variables satisfaction of e - Learning and visual / verbal style is found. This is a very important indicator , because as we have seen in the theoretical part of the visual / verbal style is almost equivalent to the visual style of the VAK model.

This result is not only important for the efficiency of a practical aim, but also confirms that equivalent among different models of learning. In Felder - Silverman model the results indicate a positive correlation of visual type, according to the general satisfaction of e-learning at the level of 0.05 (probability of 95 %) - p = 0.035 . This means that with 95 % confidence that the respondents belonging to the visual / verbal learning style FS models have the highest satisfaction of e-learning. Although the value of χ2 = 9.543 tends to a larger sample would be higher and would strengthen the correlation. That means that with the larger sample (for example 200 subjects) , the value of χ2

would go over 10 , and it is known that the value which is greater than 10 is more reliable.

8. CONCLUSION

As you can see, the results show that the correlation examination of general satisfaction with e-Learning and learning styles, and the VAK model and Felder-Silverman model correlation was observed in both cases with a visual learning style This implies that it is important in the pedagogical terms take into account what kind of motivational material responds to students. As we know, except by adopting a knowledge and transmitting the knowledge that there is a bridge in the form of learning style that plays equally important role. Implications for the organization of adequate productive classes have a clear purpose and structure, learning material, which must be clear, interesting and logical, the course must have a clear concept, simple form and aesthetically appropriate, clear instructions, with discussions that are functional and effective, with constant interaction and communication and motivation, verbal-esthetic type.
Visual intelligence is a kind of ability of visual perception, in which the individual understands and easier adopts the visual material of our knowledge in a variety of formats, contexts, forms... Individuals who have expressed this kind of intelligence they have their own style of learning, thinking and impressiveness of mental presentations in the cognitive system. They think in pictures, remembers in pictures and most reliable material for learning, for them, it should be presented in this style. The moment when such an individual is trying to pull information from long-term memory, resorts mnemonic visualization and creating images in the mind. This kind of capability has a good disposition to work with geometry, operations with spatial reference, and the adaptation to the unfamiliar environment. Easier to interpret diagrams and maps of the written material. respondents tended visual style love to draw and match three-dimensional objects. Possible areas of interest are engineering, architecture, sculpture, visual art, mechanics, etc. All of this leaves room for further research and thinking on the same or similar topics, but is also the argument that e-learning have specific attractive model of teaching that excites the visual perception of the individual. The complexity of the content of written, pictorial or other material acting as motivational factor for the verbal type of student / learner. It is important to note that, although the student / student belongs to the visual learning style, needs to develop and stimulate other styles, as much as possible, because it is relevant that he sees the difference between the styles. Seeing individual differences and understanding what his more corresponds to the adoption of different skills, thus increasing their efficiency of organized learning.

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BIOGRAPHIE

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Zeljko Pekic was born in Bar, Montenegro, in 1984. He received the Spec.App. degree in Computer Engineering at the University of Montenegro, Podgorica, in 2009. Currently a postgraduate student computer science in Podgorica. Since 2011 he is employed at the University of Montenegro – Faculty of Maritime Studies, at the post of computer laboratory system engineer. His area of interests includes computer engineering, networks, advanced forms of e-Learning, learning styles, etc.

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