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The Impact of the Students' Gender and High School Type on the Level of Digital Competency Development for Lifelong Learning

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Abstract
The concept of a lifelong learning is a major step point of the world's social, economic and educational policy. Its realization depends on the individual capabilities in dealing with majority of information, as well as being skillful in searching, selecting, evaluating and effective usage of information, or in short it depends on the digital literacy. The main objective of this paper is to examine the students' qualifications in approaching, selecting and administrating of information as well as taking part in computer used communication. For that purpose, a questionnaire is made with evaluation scale which was applied on 160 high school students from the municipality of Tetovo. The results collected, show that the students are capable of using digital technology when it comes to simpler tasks, but it is needed more work on the further development of the digital competency. The process of learning with a computer is not the same as learning from a book or lectures. It is known that the aim of the one and the other way is to gain knowledge, but forms of learning are different. Most other ways of gaining knowledge leads to better understanding.Learning through ICT is not necessarily, any better or worse than teaching in a classroom, but it's different when it will accept, a change in the way of looking at the role of digital competence in teaching The individual today has to be competent to use the technology in order to find the needed information and to select the one that is needed from the majority. Thus, it can be concluded that the traditional literacy (reading, writing and calculating), recently includes the digital literacy, as well. The 21st century literacy introduces one new amount of knowledge, skills and attitudes needed for successful and quality life.
Keywords: Digital Competency, Lifelong Learning, Technology

1. Introduction

The education today faces many challenges. One of them undoubtedly is the change of the schools and teachers' role as being sole information carriers. (Borovica, Kostović, 2012). With the development of new ways of communication and dealing with educational tasks by the use of virtual pedagogy, the distance learning and open education became real. (Nielsen, Angeloska – Galevska, 2006)

In addition, this leads to broadening in the area of education, especially as non-formal education and lifelong learning are becoming more and more important. Lifelong learning is directed not only towards adults but also to the upcoming generations in order not to exclude any age and social group out of these activities. (Babić, Markojević, Erić, 2010)

Training students for basic ICT (Information Computer Technology) skills is considered as one of the goals through which they will acquire digital competence. However there is still no existing consensus how this competence should generally be treated in the school curriculum. Some policies focus on computer literacy whilst others are more comprehensive and include education for all media

Namely, ICT is not just a mean for different presentation of already existing contents, but it carries new learning paradigms and it changes relations inside and among the educational institutions, formal or informal (European Commission, 2003). It is clear that the lifelong learning will ask for creating a long term policy and will lead to integration of the educational systems with other learning environments.

The process of teaching can be changed towards the process of learning sets new demands from the educational system such as, for instance, providing better services for vocational guidance of students, while taking into consideration the different learning styles and different levels of ability. (European Commission, 2003)

The contemporary curricula are often seen as obstacles for ICT integration, because the content of a given

discipline either can be taught without ICT, or is incompatible with the multidisciplinary approach advocated by ICT. (Soleša, 2007) In order to be convincing, the comparison between teaching with ICT and traditional teaching, it is necessary to identify all decisive factors and indicate their influence. In the process of learning there are many variables, and it is almost impossible to identify the effect from each possible interaction. (Špiranec, 2003)

The advantages, through which the success of ICT is explained, meet the students and teachers' real needs and demands and increased learning effect due to increased motivation and high quality resources.

While, the lack of funds or inflexible use of funds, lack of coordination between individual actors and a clear vision at the national level, the need for further developmeant of the teachers'competence as well as the absence of adequate evaluation and external evaluation, are pointed out as weak points. (Commission of the European Communities, 2005)

It is quite significant, students to acquire technical skills, but it is even more important to acquire digital competence and become critically aware of the impact that media and digital technology have on the way we learn, think, create and express. (Nadrljanski, Đ., Nadrljanski, M., Tomašević, 2007). The increased complexity of today's schools, classrooms and learning environments indicates the need for understanding educational activities in a different, new way as well as developing new analytical models and practices for organizate educational activities. (Kurnik, 2004).

Within the frames of school and extracurricular activities, it is time to train children and young people for autonomous, creative and socially responsible activitas.

In accordance to this, a wider impact can be achieved with the contents of the Internet. The Internet is also a "prominent place" who gives the opportunity of intensive digital media usage in the area of education.

It is necessary for school to find a way, through education by digital media to convey the awareness about the importance of the digital competency in broader sense. (European Commission, 2008)

2. Research design

In the research carried out within the frames of this study, the descriptive model with all its modalities is the dominant one i.e. analysis, comparison and generalization is carried out.

From the research techniques, surveying and scaling are applied, while designing a questionnaire with evaluation scales for students.

Within the frames of this research, the dependent variable is the level i.e the degree of the digital competency development for a lifelong learning as well as indicators for the same. The gender of the students and the high school type appear as independent variables.

Quantitative and qualitative analysis of the data is also carried out. Within the frames of the quantitative analysis, the data are shown in percentages in charts and comments are given under the same.

The qualitative analysis consists of processing of already existing data and comparison of results gathered from relevant researches in relation to the subject in question.

3. Research sample

The research sample is random. The students' sample consists of 40 fourth year students from four high schools from the municipality Tetova (comprehensive high school, medical, economical and agricultural) or in total 160 students..

4. Hypothesis

General hypothesis:

X0: High school students are capable of approaching, selecting and administrating of data as well as in taking part in computer used communication.

Auxiliary hypotheses:

X1. The Digital competency is s directly dependent on the gender of the students.

X2. The digital competency is more developed in students from comprehensive high school in comparison to students from vocational high schools.

5. Results

In order to gain greater visibility to the results gathered from the students' questionnaire, the answers are grouped into several segments: having basic knowledge of informatics, knowledge of word processing, the ability to create and organize electronic information and their systematic use, ability to use appropriate aids (presentations, graphs, diagrams, maps) in order to to collect, present and understand more complex information as well as understanding of the main computer applications, working with spreadsheets, databases, storage, and data management.

According to the results shown in Table 1, we found out how much knowledge students have in basic informatics (ICT).

Table1 Having basic knowledge in ICT (Information Computer Technology)

	Strongly disagree	Disagree	Agree	Strongly Agree	Neutral
1. To turn on and off the computer, properly	8	6	7	139	3,73
	5,00%	3,75%	4,38%	86,88%	
2. To create folders	0	6	11	143	3,86
	,00%	3,75%	6,88%	89,38%	
3. To create documents individually and store(save) them in appropriate folders	1	3	14	142	3,86
	,63%	1,88%	8,75%	88,75%	
4. To search for existing documents, to rename them and to move them from one place to another	4	1	12	143	3,84

In the first statement there is a difference in the support between female 95,60% in comparison to male 81,16% students, while the difference in the support between comprehensive high school students and students from vocational schools is smaller, i.e. comprehensive high school students 92,50% and vocational schools 88,33%.

In the second statement the tendency is the same, but there is a more equal support, female 90,11% - male 88,41%, comprehensive high school 92,50% - vocational schools 88,33%.

Also, in the third statement there is an existing difference in the support between the female 93,41% compared to the male 82,61% students, comprehensive high school students 92,50% and vocational schools 87,50%.

A bigger difference in the support between female 95,60% compared to male 75,36% students can be noticed in the fourth statement, while the difference while the difference in the support between comprehensive high school students and students from vocational schools is smaller, i.e. comprehensive high school students 90,0% and vocational schools 85,83%.

Although the high support for the given statements offered as a response to this question is satisfying, however since we are talking about basic knowledge there is an opportunity for improvement. It also points out that student are willing to use the computer and that should be used in favors of learning.

A very significant factor for the development of the digital competence is word processing. In order to find out the amount of knowledge the students possess in this subject we are going to analyze the support they gave for the given statements.

Table 2 While word processing

	Strongly disagree	Disagree	Agree	Strongly agree	Neutral
1.I can use the tools in the upper part of the screen for creating documents	3	5	24	128	3,73
	1,88%	3,13%	15,00%	80,00%	
2. I can create ready text according to certain requirements	1	3	31	125	3,75
	,63%	1,88%	19,38%	78,13%	
3. I can insert table in text	2	2	16	140	3,84
	1,25%	1,25%	10,00%	87,50%	
4. I can combine text from different documents and present it within the frames of a certain document	3	1	35	121	3,71
	1,88%	,63%	21,88%	75,63%	

The most supported statement is the third one which is supported by 87.50% of. This statement is in a higher percentage supported by female 90.11% compared to 84.06% of male students as well as students from high school 95.00% compared to 85.00% vocational schools.

In the first statement there is a bigger difference in the support between high school students 92, 50% compared to students from vocational schools 75,83%, while the difference between female 83,52% compared to male 75,36% students is smaller.

In the second and fourth statement the support between individual categories is approximately the same as the in the third one with minimal differences in the percentage.

This relatively high support can be used as a motive for taking further steps in the more intensive computer involvement in function of modernization of the teaching process.

In order to examine how much, according to their own evaluation the students are capable of creating, organizing and systematic usage of the electronic information, we offered four statements for which they could express their support.

Table 3 When it comes to charts, I can:

	Strongly disagree	Disagree	Agree	Strongly agree	Neutral
1. To create data chart	3	4	28	125	3,72
	1,88%	2,50%	17,50%	78,13%	
2. According to data chart to create graphs	1	15	40	104	3,54
	,63%	9,38%	25,00%	65,00%	
3. To filter and sort out data based on different parameters	3	17	56	84	3,38
	1,88%	10,63%	35,00%	52,50%	
4. To calculate total value done by formula	6	21	44	89	3,35
	3,75%	13,13%	27,50%	55,63%	

The first statement has the highest support, whereas the difference is between female 82,42% students compared to male 72,46%, and the students from vocational schools 79,17% compared to comprehensive school 75,00%.

In regard to the second statement there is a ittle difference in the support between male 68.12% and female 62.64% students and students from vocational schools, 65.83% and high school 62.50%.

Within the frames of the fourth statement, the support is quite equal. This statement is little more supported by the female students 58,24% compared to male 52,17%, as well as students from vocational schools 55,83% compared to high school students 55,00%.

The lowest support within these frames has the third statement supported by 52,50% from the students. There is an existing difference between male 57,97% compared to female 48,35% respondents as well as students from high school 57,50% compared to vocational schools 50,83%.

The more complex knowledge needed for this are the reason for the lower support for these two statements compared to the previous two. In order to increase the percentage of students who are capable to operate actively with this kind of knowledge, it is necessary to carry out a precise analysis of the students' needs and accordingly to that to provide education for the modern society.

Within the skills necessary for the development of digital competency, the ability to use resources (additional, auxiliary means, aids) for the presentation of complex information is also included. The support for the given statements will give us an opportunity to reach a conclusion about the extent students is adept in using aids in the preparation of Power point presentation.

Table 4.In creating Power point presentation

	Strongly disagree	Disagree	Agree	Strongly agree	Neutral
1. I can create presentation with certain number of slides only with text	8	7	46	99	3,48
	5,00%	4,38%	28,75%	61,88%	
2. I can create presentation with certain number of slides with graphs too	6	20	47	87	3,34
	3,75%	12,50%	29,38%	54,38%	
3. . I can create presentation with certain number of slides composed of pictures	4	15	37	104	3,51
	2,50%	9,38%	23,13%	65,00%	
4. I can present the presentation by using LCD projector	15	19	67	59	3,06

From the given statements, the first one has the highest support, where according to the categories in question, the situation is: female 65,93% - male 63,77%, high school 75,00% - vocational schools 61,67%.

In the third statement, there is a difference between the support from the female students 68,13% compared to male 53,62%, as well as from the students from high school 77,50% compared to vocational schools 56,67%.

In the second statement, the support is approximately equal: female 54,95% and male 53,62%, и students from high school 55,00% and vocational school 54,17% .

In this case there is a lower support, when it comes to realization of more complex tasks. We think that the students should be encouraged to carry out the more complex tasks too although they are not certain in their successful completion.

The lowest support from 36, 88% in the category „I strongly agree "has the fourth statement. This statement has the highest support from 41, 88% in the category „I agree ".

The lowest support for this statement is probably a result of the fact that most of the students didn't have the chance to see how LCD projector looks and functions in practice, thus their knowledge is mainly theoretical.In addition to this is also the fact that schools usually have one or in best cases two projectors, and teachers need to have skills and to be persistent in order to use them.

Aiming to obtain information about the extent the students have developed digital competency, we are going to analyze the support for the statements related to students' knowledge of main computer applications and their usage.

Table5 From the basic programming functions

	Strongly disagree	Disagree	Agree	Strongly agree	Neutral
1.I can create simple programs for division, multiplication or other simple Mathematical operations	20	28	51	61	2,96
	12,50%	17,50%	31,88%	38,13%	
2. I have basic knowledge for the variables and the ways they are defined and declared	15	36	77	32	2,79
	9,38%	22,50%	48,13%	20,00%	
3. I have basic knowledge for operators and operations	8	35	70	47	2,98
	5,00%	21,88%	43,75%	29,38%	
4. I have basic knowledge for the simple logical expressions	10	27	58	65	3,11
	6,25%	16,88%	36,25%	40,63%	

It is easily noticeable that all the given statements have low support in the category „I strongly agree ".

However, the highest support has the third statement which is fully supported by 40, 63% from the students. The visible difference is between male 44, 93% compared to female 37, 36% students as well as between students from high school 47, 50% compared to vocational schools 38, 33%.

In the first statement there is a difference in the support between female 42, 86% compared to male 31,88% students, while the support between the students from high school 40,00% and vocational school 37,50% is nearly equal.

The second and fourth statement has the highest support in the category „I agree partially". The lowest support for these statements is a result to the fact that the more complex knowledge are characteristic for courses which prepare future ICT staff or will continue education in that direction.

6. Discussion

The results gathered from the analysis of the student's attitudes towards their basic knowledge in ICT which are in favors of the female students and the students from high school indicate their growing interest and success in using computer (PC), as well as greater readiness and initiative for individualized and active learning by computer. Nowadays, students should be able with the help of technology to find the important information, but also to know how from a variety of information to recognize and use the right one. Hence the traditional literacy which until recently included (reading, writing and arithmetic), today includes digital literacy, also. In that order, the ability to process text is from a great importance. Higher level of support for these statements in favor of female students and students from high school comes as a result of their personal engagement, which indicates their willingness to move from knowledge reproduction towards independently reaching of information. Teaching ICT can be a key factor in that direction.

Even though it is about having basic knowledge, the high support for these statements also indicates that our students are prepared to use the opportunities offered by digital literacy, which is certainly a positive signal in the direction of modernization of our education system.

Introducing new technologies in the modern education of today does not only mean distributions of information but also changing of the learning methods. The support of these statements once again emphasizes the need for implementation of educational activities in a new, different way. The technology allows quick and easy access to information, but the research efficiency, selection, evaluation and appropriate use of information require additional capabilities.

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Higher support by students from vocational schools shows that they are more willing independently to access information, manage them, analyze and transform them into knowledge. This is also a confirmation that among them there is a potential that needs to be systematically upgraded. .

If we take into consideraction the importance of the principles of visibility and the systematic acquisition of knowledge, in that case it is necessary to dedicate significant attention to the presentation of the contents within the ICT teaching. And not just in ICT, this activity should be encouraged when presenting results of students' participation in certain projects or research activities. Of a great importance for the development of this skill is the use of power point presentation by teachers within the teaching process.

An important component of digital competency is the appropriate presentation which is also an indicator of the level of comprehension of certain knowledge. The higher difference in support in favor of high school students is an indicator for greater practical application of such activities within the teaching, due to individually

creation of certain presentations practiced in different teaching subjects.

When it comes to the interest shown for more advanced knowledge based on the support for the given statements, it can be noted that a relatively low percentage of students show interest in more advanced knowledge in the field of ICT.

The advantage in favor of high school students shows that they use more successfully their knowledge in the ICT field which puts them in a role of creators of knowledge and shows that within the teaching process in the gymnasium education more attention is given to advanced knowledge in ICT.

However this support implies the need for other additional elective subjects, within the high school and the secondary vocational education as well, that will include more complex contents and will allow additional information to those students who are interested in it.

According to the presented results we can reach a conclusion that high school students are capable enough to access and select information as well as in taking part in communication by computer, but not for their administration, which means that hypothesis is partly accepted.

When it comes to the support among the examined categories it can be concluded that with regard to the gender there is a difference in favor of the female students which means that digital competence is directly dependent on the gender of the students, which leads to the acceptance of the set hypothesis. In the relations between students from high school compared to vocational schools, we have higher results among students from high school, which means that digital competency is more developed among high school students compared to students from vocational schools, which leads to acceptance of the set hypothesis.

7. Conclusions and recommendations

Based on the survey results we can conclude that students still lack information that could help them in developing critical awareness of the digital competency significance for lifelong learning and its application in all spheres of modern life.

For that purpose it is recommended:

-To including digital competency contents within the curriculum in other school subjects, not just in Math and ICT, as well as introduction of electives with contents that will enable additional knowledge to the students within the gymnasium and vocational education.

- To promote interaction between students from different schools i.e. creating so-called educational networks in function of improving the educational process
- Within the ICT school subject, students to demonstrate their knowledge instead of explaining.
- Stimulating students to gain knowledge in a particular area via Internet that will be appropriately valued in the teaching process.

In the following period, the researching should be directed towards application of digital media within the activities on micro level i.e.in the classroom, in order to improve the communication between students and teachers. We believe that the change of the working methods can motivate even those students where all the other methods were unsuccessful. It is recommended to investigate the impact of innovative pedagogic methods in official education documents, but for their implementation is available support from schools and teachers in the form of advice or assistance in implementing them. At the same time it is a meaningful approach for creating a constructivist learning environment based on new principles of learning and teaching. Thus, this approach has the potential to enhance student engagement and provide better educational outcomes for learners. Justification of technology integration is based on its ability to open the classroom to other learning opportunities which exist outside the school or to extend the learning demand.

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