

REPRESENTATION OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN EDUCATION-STATISTICAL ANALYSIS



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Shpresa SULI  1*

Amra SABOTIC  2

Gentiana SADIKU-SELIMI  3

1 South East European University, Business and Economic, sh.suli@seeu.edu.mk *Correspondent Author.

2 South East European University, Faculty of Contemporary Sciences and Technologies, amrasabo@gmail.com

3 South East European University, Faculty of Contemporary Sciences and Technologies, jonki.gent@gmail.com

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Abstract

Research “The presence of information and communication technologies in education” is necessary, given that today the integration of these modern technologies is increasingly prevalent, especially since the pandemic, when online learning became the main or even the only way of learning. There are many other benefits that modern technology provides both in general in life and while learning and acquiring new knowledge, providing the possibility of easier and longer-lasting acquisition of knowledge.

The focus of this research is to study the situation in high schools and faculties, on how to integrate information technology into the teaching and learning process, as well as to examine the degree of positive impact. The research was conducted in schools and faculties in Istok, Peja, Prizren and Presevo.

Students and teachers were interviewed about the application of ICT in teaching, as well as ways of using it. Surveys of both students and teachers were conducted through an online questionnaire, using Google Forms tools. A survey of professors who teach in high schools and colleges was conducted. The questions were open-ended and close-ended. Scientific research methods such as comparative, descriptive, and statistical methods were used for the analysis of theoretical data. While the analysis of data collected through the questionnaire is presented in quantitative and qualitative form. We use the regression model to find the relation between the integration of the internet would and ICT of knowledge. In the last part, conclusions and recommendations are given, for professors, students/teachers, as well as for the Ministry of Education, Science and Technology.

Based on the collected, processed and analyzed data, we came to the conclusion that ICT is insufficiently used in our schools.

1. Introduction

Education is a key starting point that prepares the younger generations for the future, helps them to navigate and use and evaluate the available information correctly. This process begins at their earliest age, at the first encounters with computers, but certainly continues more seriously in school. Then an important task is assigned to teachers who must not only convey

information, but also teach students how to turn information into knowledge and how to effectively cope with the current technological environment and teach them how to learn.

The competence of teachers for such responsible tasks primarily depends on their education and motivation. The great responsibility entrusted to them depends not only on their readiness, but also to a large extent on the economic and political

image of the entire state. In order for changes in the educational process to start happening more effectively, it is necessary to change the curriculum, make it more flexible and certainly provide the necessary resources for work. If there is no good financial support, it is not possible to successfully conduct classes with the implementation of information and communication technologies. Likewise, if there is not enough educated staff, the necessary conditions are not provided. Achievements in educating young people for future work with new information and communication technologies are becoming more and more a measure of a country's progress.

Therefore, it is important to look at the situation from different angles, from different time periods and economic and political circumstances in order to gain a more complete insight into the current situation and predict the direction in which education is moving in the context of technological communication progress. In our country, a concerning occurrence is a fact that the ICT is widely abused by students by using it for hours mostly for interaction on social media and playing video games. These children are missing specific orientation instructions and guidelines for their proper use. Besides the family who has the key role in the process of controlling how much time children spent on their computers, the position of the professors is truly important as well since they are able to stimulate the students in using the ICT for the right purposes through different guidelines that have on their disposal.

Spending students' time abusing computers for social media interaction and playing video games can turn its effective use if teachers integrate ICT into the learning process. Using the old traditional way of teaching where the professor is in the center and the students are gathering information only on basis of the theoretical part of the material, is also one of the factors that affect students' passiveness and do not encourage them to participate in the educational practice. Having this said, this survey contains questions that will enable us to estimate how much and what ways professors use to stimulate their students to use computer technologies and the internet for educational purposes since that is the most suitable way in achieving higher results when it comes to education and acquisition of knowledge.

The development of modern ICT technologies has made online classes a quite widespread form of the educational process. To increase efficiency and achieve higher results, the usage of information communication technologies is mostly combined with other old traditional teaching methods which have been confirmed to be the most effective system globally. This kind of work enables acquiring of individual knowledge and on the other

site enables continuous monitoring and evaluation of the learning process of the students and more realistic assessment.

Regarding the structure of the paper, the first part of the paper provides an introduction that defines the problem and the subject of research. Then, the next part of the paper contains a presentation and analysis of research results, as well as interpretation of collected data. Then, the conclusions and recommendations made on the basis of the results of the conducted research are given.

2. Literature Review

Regarding the structure of this paper, the first part provides an introduction that defines the problem and the subject of this research. The second part provides an overview of the concept of information and communication technology, as well as their representation in the educational system including the economic impact and importance. The third part of this paper contains a presentation and analysis of the results as well as an interpretation of the acquired data. Furthermore, this paper includes conclusions and recommendations according to the results of the conducted research.

“Information Technology (IT) is a technology that uses a computer to obtain process, store, protect and transmit information”. The IT term is associated with communication technologies since today in modern society is barely impossible to work on a computer if it is not connected to the internet, so basically, we are talking about information and communication technology (ICT), (Ilic 2020).

Students learning from the images of science and technology not only receive knowledge, but also learn about the process of thinking, as well as thinking about what they can do well think about any others you can do (Jonassen, Peck, & Wilson, 2000). Not just that, but ICT have a lot of other contributions. One of many is a better accessibility to learning materials, and the wider access of students to education. According to (Young, 2002), education is- Easy Access to Learning. with the help of ICT, students can now browse through e-books, sample examination papers, previous year papers etc. and can also have an easy access to resource persons, mentors, experts, researchers, professionals, and peers-all over the world. This flexibility has heightened the availability of just-in-time learning and provided learning opportunities for many more learners who previously were constrained by other commitments.

Next, The World Bank estimated that more than 4 billion people of the global population (7.4 billion people) do not have access to the Internet. Besides that, it is estimated that only 1.1 billion

people have access to high-speed internet. In the United States and other countries, this difference in internet access has created a digital gap. The World Bank, many government offices, and NGOs advocate programs and policies aimed to create a bridge in the existing digital gap by providing greater access to ICT among individuals and populations struggling to afford it, (Pratt, 2019). According to the research conducted by the consultancy company IDC, the value of the global informational technology in 2020 has reached 5.2 billion dollars. The United States now is the biggest technology market in the world, representing 32% of the total amount of approximately 1.7 trillion dollars by 2020 (Brown, 2020).

If universities want their students and lecturers to use institutional 136 M. FLAVIN technologies, they would be well advised to design technologies in line with these criteria but also to allow a practice to determine a purpose quite distinct from designers' intentions (M. Thomas; J. Palfrey; M. War Schauer 2017).

Based on ICT, learning and teaching no longer depend exclusively on printed materials. Multiple resources are abundant on the Internet, and knowledge can be acquired through video clips, audio sounds, visual presentations, and so on. Current research has indicated that ICT assists in transforming a teaching environment into a learner-centered one (Castro Sánchez and Aleman 2011). Since learners are actively involved in the learning processes in ICT classrooms, they are authorized by the teacher to make decisions, plans, and so forth (Lu, Hou, and Huang 2010).

The problem of integrating ICT in education can be because there is still lack of IT equipment in schools. This is global problem, and this situation is not here or in region. Based on (Chapelle, 2011) Lack of adequate ICT equipment and internet access is one of the key problems that schools specifically in rural areas are facing now. For example, results of a research show that in Kenya, some schools have computer but this could be limited to one computer in the office only. Even in schools with computers, the student-computer ration is high. In addition, the report continues revealed that the schools with ICT infrastructure are supported by parents' initiative or community power.

Not just ICT have a benefits in education but according to (Plomp, Pelgrumand Law, 2007), people have to access knowledge via ICT to keep pace with the latest developments. And also as (Lim and Chai, 2004) are saying., ICT can be used to remove communication barriers such as that of space and time.

The paper also presents the need for education of teachers in the field of ICT and its implementation in teaching. According to

(Hrbak, 2012), teachers, as the main tools in schools, have a very important role in transmitting knowledge to new generations. The greater their information and computer skills, the easier it is for them to integrate ICT into teaching and motivate students. Therefore, it is desirable and important to educate them in a timely manner about new programs and ways of working so that they can use information and communication aids in teaching. This primarily refers to the computer, which is the main tool of teachers in the implementation of information and communication technologies.

3. Research Methodology

3.1. Subject of the Research

One of the first assignments that were implemented was research and analysis of the teaching methods through the integration of ICT. We started this phase by reviewing the existing criteria, studies, and research on the integration of ICT in the teaching process. We have managed to achieve this through studying the available literature and other sources related to this topic. The research was conducted in high schools and universities in different areas in Istok, Peja, Prizren, and Presevo. Two surveys adapted to the professors and students were used as research instruments. The survey was conducted online, using the Google forms tools. After the acquisition of all the necessary data, the same was processed using the excel program and as such will be analyzed and presented.

The conducted research in the schools is qualitative and quantitative research because it is a special way of collecting, organizing, and analyzing data. The purpose of this research was to collect comprehensive, systematic, and detailed information for each case of interest for the study. The subject of this research is the theoretical and empirical research of the defined research problem. The theoretical part of the research includes the definition of ICT, and its methodological aspects.

3.2. Purpose of the Research

The main purpose of this research has led the idea towards realization. The purpose of our research is to determine the level of presence of ICT (Information and Communication Technology) in education as well as the ability of the professors and the students to keep up with the new trends. Today's students are surrounded by new technologies on a daily basis, and they use them mostly for entertainment.

3.3. Hypothesis

After examining the problems from several sources of available literature, we are setting a hypothesis that is going to be the subject of research to confirm or refute.

H0: “High schools and universities are not sufficiently equipped with computers and modern information technology to improve the learning effect either a scientific or technological development is monitored to a sufficient extent as a specific social necessity”.

In general, the professors are not satisfied with the schools' equipment when it comes to computers and other modern technologies such as interactive whiteboards, TV devices... therefore the professors themselves consider they are not trained enough effectively to use those devices in the educational practice. In addition to all those hardware devices schools should have their own electronic portals for students to have access to the educative materials as well as notices and information.

H1: “There are significant variations in the use of ICT depending on the work experience of the professors “.

Using the Internet and the computers in the active teaching class not only for the preparation of materials but is also of huge importance since it facilitates and accelerates the acquisition of knowledge by students. It is strongly important for schools to enable visual access to material for students because pictures and Graphs are much easier to remember and in addition, they are much more attractive and will help to attain and hold the attention of the students during class.

H2: “There are significant variations in the use of ICT during classes depending on the level of knowledge of modern technologies by professors”.

Older professors certainly have less knowledge and experience in using modern technology, and they think the old traditional way of teaching is quite sufficient, based on their experience. It is a bigger challenge for those professors to adopt new teaching methods, but these professors are mostly interested in training organized by the Ministry of Education, Science, and Technology.

H3: “Most students use information technology mostly for entertainment and less for educational purposes”.

The research was conducted in a form of theoretical and empirical research. The theoretical part is based on the acquired data from scientific literature as well as previously conducted research on the same or similar topics. The theoretical part has been completed by using research methods such as methods of analysis and synthesis from the already existing literature, description method, abstraction method and concretization.

The variables used in this research are mainly categorical, nominal and ordinal as well as discrete and continuous quantitative variables. For the processing of the data, it is used SPSS (Statistical Package for Social Science) which includes using techniques such as descriptive statistics, regression and correlation analysis, pivot tables. The research was conducted through a questionnaire, which is the most convenient tool for acquiring and processing data as well as running analysis and generating conclusions. We have managed to design qualitative and quantitative research using a questionnaire. Questioners are designed for teachers and students. The questions are mostly closed-ended, with a few open-ended questions.

3.4. Sample

In order to get more comprehensive information concerning the topic of the research and get more accurate insights about the actual state in the research are included high school students, university students and their professors.

Sample size: The student sample consisted of 100 people, 56 high students, and 34 university students. The sample of the professors is defined as 36.

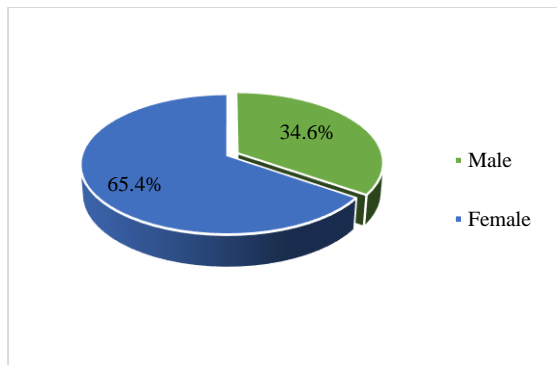
3.5. Data Analysis

Data collection is the first step in every research. After finishing this step, the next phase is referring to data processing and data analysis. In the interest of obtaining the results of the research, we used statistical and descriptive methods. The statistical method that was used to get the results are presented through various Graphs and tables. The descriptive method was used to identify different topics and to present the results of this research. In other words, this method was used to describe the data.

At the end of this research, we have composed a logical conclusion, according to which hypotheses are proved or refuted (assumptions made), which is followed by giving recommendations regarding activities and action steps that need to be taken concerning the inclusion of the information technology in the learning and teaching process, which on the other side will contribute toward the improvement of quality of education. The processing of the collected data was made using the SPSS.

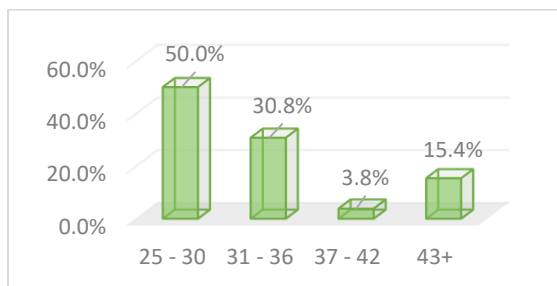
4. Analysis of the Research Results

In this research, participation took 36 high school and university professors. Of those 65,4% were female and 34,6% were male.



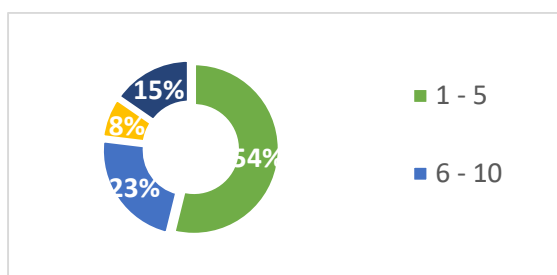
Graph 1. Gender structure of professors
Source: Personal calculations of the author

The age of the professors who took participation in this research is categorized into the following groups: about 50% of the professors are in the range of 25-30 years old, 30,8% are in the range of 31-36 years old, which is almost half less, 15,4% of the professors are 43 years, and 3,8% are professors in the range of 37- 42 years old.



Graph 2. Age of professors
Source: Personal calculations of the author

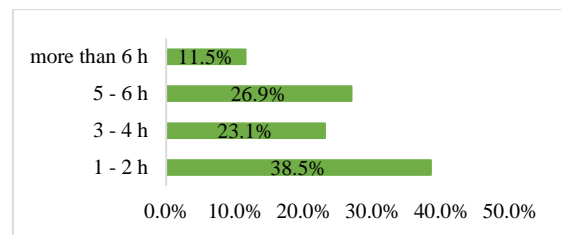
Most of the professors are young aged with less than 5 years of working experience 54% of them, which certainly has an impact on the fact that have higher knowledge in modern technologies, can use them more and as a result of it, they integrate the technologies more in the teaching process.



Graph 3. Work experience of professors
Source: Personal calculations of the author

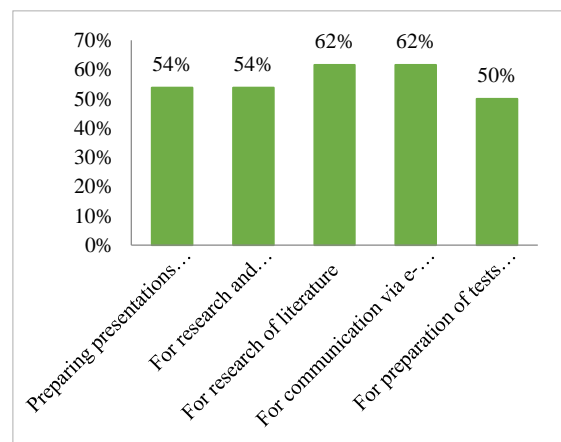
The next question refers to the time professors spent using the Internet, taking into account that a quite long part of the time

professors spent on the Internet while preparing classes and other educational activities. Having this said, 38,5% of the professors spend less than 2 hours online, 50% of them spend 3 to 6 hours online and about 11,5% of them spend more than 6 hours online.



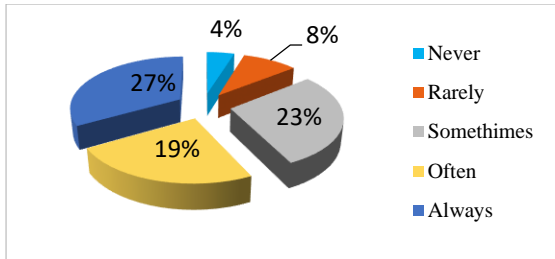
Graph 4. Time professors spend using the Internet
Source: Personal calculations of the author

We can make the conclusions according to the chart presented above that over 60% of the professors spend more than two hours a day using modern information technologies. It is certain that they spend at least a part of that time preparing teaching materials and literature for the classes. Modern literature technologies are mostly used to navigate through different literature sources and enable communication with the students using e-mail (62%), to prepare presentations and other modern teaching methods and to a lesser extent for performing quizzes and tests.



Graph 5. Use of modern information technologies
Source: Personal calculations of the author

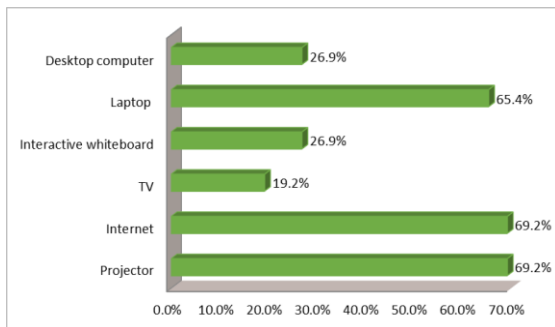
Although more than 60% of the professors that took participation in the research use the Internet more than 2 hours per day, also there are professors that do not use computers and modern information technologies during the lectures (4%), but they adhere to the old traditional way of teaching and other educational activities. In numbers this would be 8% rarely, 23% sometimes, 19% often and 27% always. This means that around 57% of the surveyed professors integrate ICT in teaching classes to a large extent almost every day.



Graph 6. Level of integration of information technologies in teaching classes

Source: Personal calculations of the author

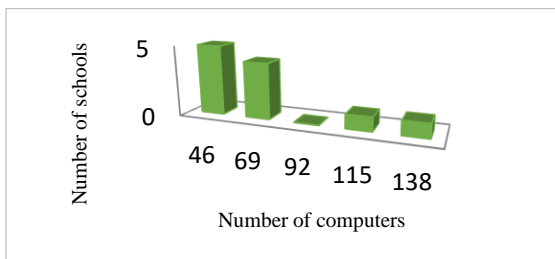
On the question of what kind of modern technology equipment professors use they answered that they mostly use the Internet (69,2%), projectors (69,2%), laptops (65,4%) while schools and universities are less equipped with interactive whiteboards and TVs.



Graph 7. Equipment used in teaching classes

Source: Personal calculations of the author

Question: How many computers do you have at school? For one educational institution, it is crucially important to be equipped with computers and other computer equipment. From the following chart, we can make a conclusion that the equipment of high schools and universities is not at an enviable level and that in the future we should certainly pay more attention to this issue. More schools have less than 25 computers and only two have over 100 computers.



Graph 8. Number of computers in schools

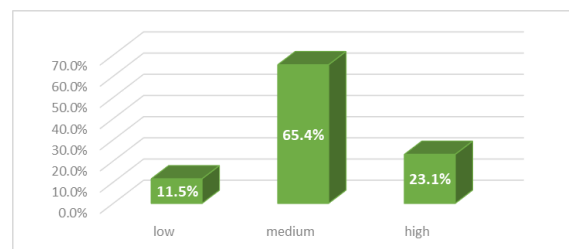
Source: Personal calculations of the author

Table 1. Descriptive statistics - number of computers in schools
Number of computers in schools

<i>Number of computers in schools</i>	
Mean	29,04
Standard Error	6,10
Median	17,5
Mode	15
Standard Deviation	31,11
Sample Variance	967,56
Kurtosis	3,48
Skewness	1,78
Range	127
Minimum	1
Maximum	128
Sum	755
Count	26

From the above existing table that presents descriptive statistics of the total number of computers in high schools and universities, we can note that the maximum number of computers in high schools is 128 and the minimum is only 1 computer. The standard deviation is 31,11, which demonstrates high variation in schools' equipment and the average number of school equipment is 29 computers per institution. The total number of computers in 26 schools and universities which were part of this research is 755 computers.

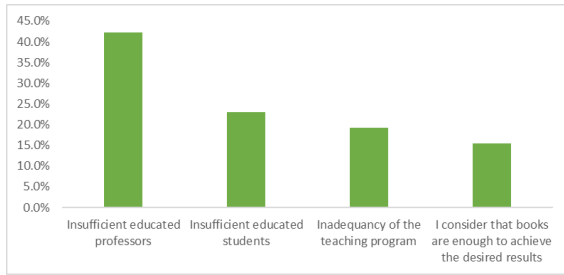
The equipment of schools and universities with computers and other information technology is rated as mediocre by professors.



Graph 9. Level of equipped high schools and universities with computers equipment

Source: Personal calculations of the author

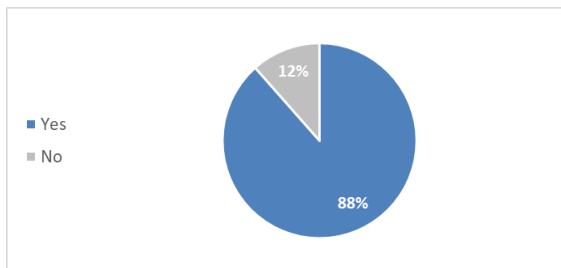
For sure there are several reasons for insufficient usage of the Internet and other modern information technologies. Most of the professors consider that the main reason is a lack of training among professors. What can be considered as an encouraging statistic is that a really small percent of the professors believe that books and traditional ways of teaching are sufficient in achieving good results.



Graph 10. Weaknesses and limitations of the inclusion of computers in classes

Source: Personal calculations of the author

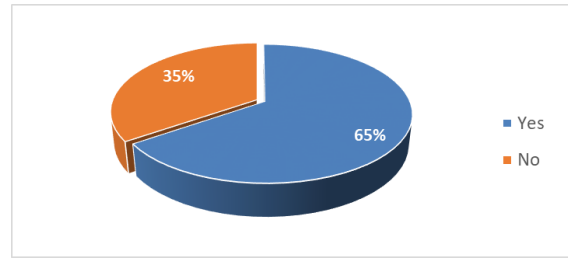
As we can see in the previous chart, the professors consider they are not enough trained and competent to use modern information technologies and that is one of the main core limitation factors and weaknesses. The good thing is that even 88% of the surveyed professors are willing to dedicate themselves and participate in training if the Ministry of Education would provide them, having in mind that the Ministry of education has been implementing this practice for years so far. “The integration of ICT into Kosovo’s education system is in progress. In this context, MEST in cooperation with donors worked on human resources development by providing training in ECDL (European Computer Driving Lesson). In this training participation took around 10.700 professors (Salihu, 2012).



Graph 11. Willingness for participation in ICT training

Source: Personal calculations of the author

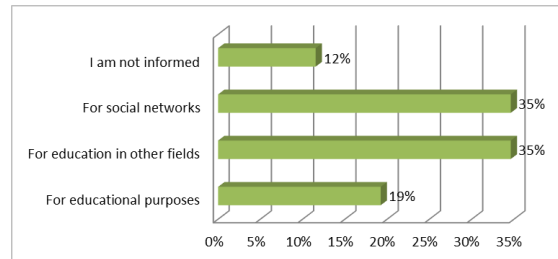
It is important to mention that professors are really trying to motivate students to use computers by giving them homework and preparation of seminar papers for which they need to make research and use computers and the Internet as well. The survey showed that 65% of the professors motivate the students to do their homework this way and 35% of them believe this is not necessary or not feasible given the nature of the subject they teach.



Graph 12. Motivating students to complete their homework using computers

Source: Personal calculations of the author

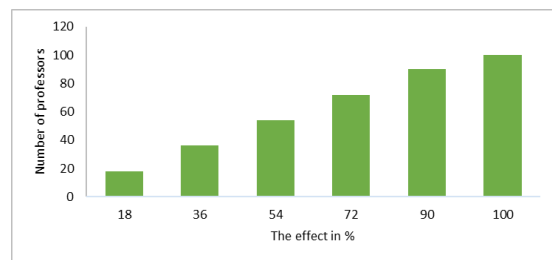
We were also interested in the professor’s opinion on what they think students do on the Internet and why young people spend so much time online. Professors believe students use the Internet for education to the lowest extent 19%, but much more for communication through social networks 35%, as well as for getting informed about general topics from different fields 35%.



Graph 13. What for are used the information technologies the most by students

Source: Personal calculations of the author

Professors believe that the integration of modern information technology with traditional teaching methods has a positive impact on reaching higher results and contributes towards bigger achievement by students.

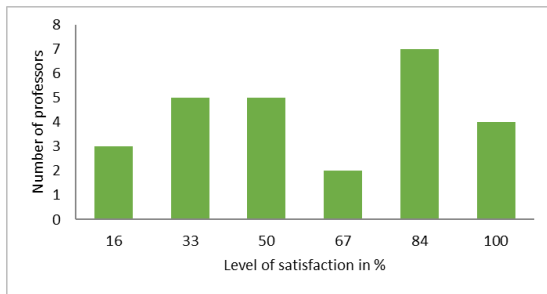


Graph 14. The positive effect of computer uses in classes

Source: Personal calculations of the author

Considering the Covid-19 pandemics has caused disruption in the world, both in life and education, professors in our country and in the world, in general, were forced to switch to online classes. Some professor has adapted easily and has done it much better than others while expressing their satisfaction with the realization

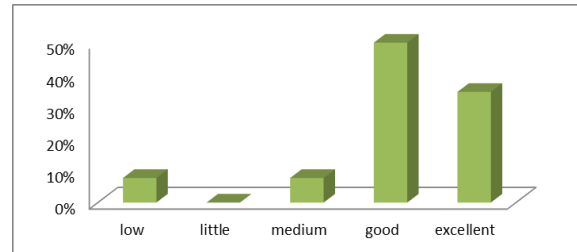
of online classes, having in mind that not all schools have provided adequate support both to professors and students.



Graph 15. Satisfaction level with online teaching

Source: Personal calculations of the author

In the end, it is very important how professors evaluate their knowledge of modern information technologies. Actually, 85% of the professors consider they have good or excellent information technology knowledge and 16% are not satisfied with their current competencies.



Graph 16. The expertise of modern technology

Source: Personal calculations of the author

Using regression analysis, we have determined a connection between integration of ICT in classes and knowledge of ICT, meaning integration depends on how competent the professors are and how much they are familiar with the technological trends.

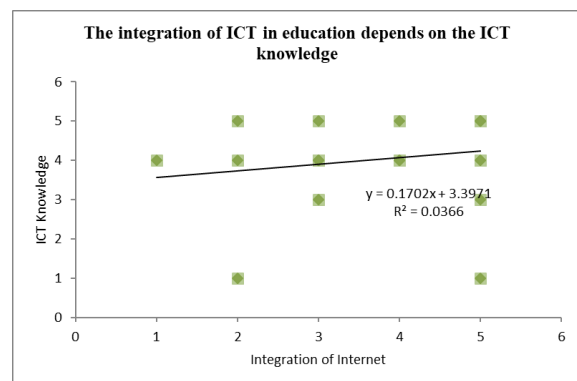
Table 2. Regression statistics - ICT integration

<i>Regression Statistics</i>	
Multiple R	0,191337
R Square	0,03661
Adjusted R Square	-0,003531
Standard Error	1,078217
Observations	26

Table 2.1. Continue of table 2

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	3,3970588	0,7041267	4,8244991	0,0000649	1,9438127	4,8503050	1,9438127	4,8503050
Integration of ICT in education	0,1701681	0,1781864	0,9550004	0,3490985	-0,1975905	0,5379267	-0,1975905	0,5379267

The following graph is the simple linear regression, where we can graphically observe the connection and the dependence of the ICT integration in education, depending on ICT knowledge and expertise of professors – integration of the internet.



Graph 17. The integration of ICT in education depends on the ICT knowledge

Source: Personal calculations of the author

If the integration of ICT would 10 then the ICT Knowledge would be 3,3971, and if the integration of the internet would increase by

1, then ICT of knowledge would increase by 0,1702. Also, the value of $p < 0,05$ indicates that has statistical significance.

Table 3. Correlation, work experience - ICT knowledge

	<i>Working experience</i>	<i>ICT knowledge</i>
Working experience	1	
ICT knowledge	-0,2	1

From the table above, which represents the correlation between working experience and ICT knowledge, we can notice there is a negative correlation of -0,2. This means that as more professors have longer work experience, the less ICT knowledge they have. Consequently, to it, we can make a conclusion that the older

professors mostly use the traditional old methods of teaching and follow the technological trends less as well as computers and the Internet.

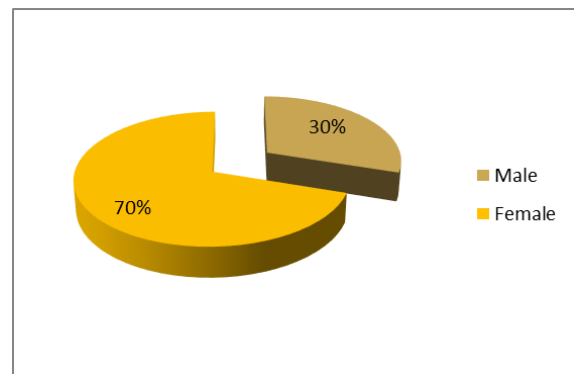
Table 4. ICT integration based on school equipment

% of integration	Level of integration					Grand Total
	Never	Rarely	Sometimes	Often	Always	
Equipment in schools						
low	0,00%	0,00%	8,00%	0,00%	4,00%	12,00%
medium	4,00%	12,00%	16,00%	16,00%	20,00%	68,00%
high	0,00%	0,00%	4,00%	0,00%	16,00%	20,00%
Grand Total	4,00%	12,00%	28,00%	16,00%	40,00%	100,00%

The table above is a pivot table showing the relation between the level of integration of information technology on classes and school equipment according to the opinion of the professors. Actually, from this table, we can notice that although the schools' equipment is assessed as high, it doesn't mean that the computers are used at their maximum level indicating that the capacities are not fully used. From the same table, we can notice that computers are mostly used in the category of medium-equipped schools 68% which means that the level of school's equipment is important, given the fact that in this category of poorly equipped schools integration is only 12%, but not a crucial factor. In addition to the fact that the school should be fully equipped it is more than necessary to have personnel who have proper competencies, and it is ready to actively use this equipment in an adequate way.

4.1. Data Acquired by Surveying Students

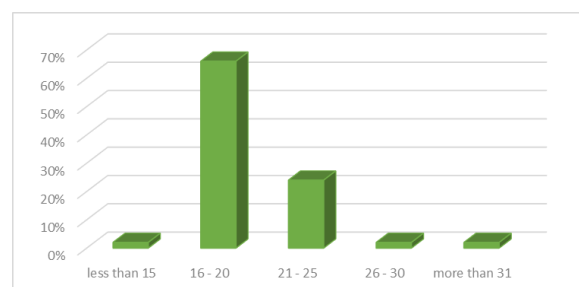
The purpose of this research is to prepare and analyze the results acquired by surveying high school students and university students. The survey was conducted online. The questionnaire contained 15 questions. In this research, participation took 100 high school students and university students. Regarding the gender structure of the participants, 70% are female and 30% are male.



Graph 18. Gender structure of students

Source: Personal calculations of the author

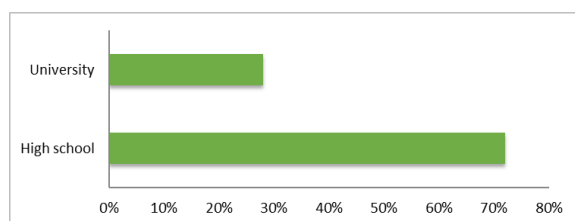
Regarding the age of the participants most of the participants are at age of 16 to 20 years' old which is 66% and from 21-25 years' old which is 24%.



Graph 19. Age of the students

Source: Personal calculations of the author

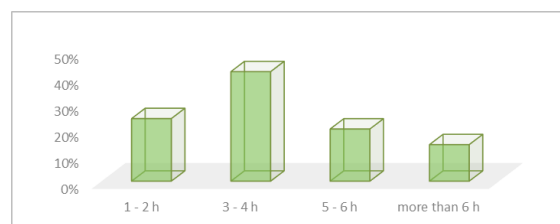
Of the total number of participants, 72% are high school students and 28% are university students.



Graph 20. Level of education

Source: Personal calculations of the author

From the graph, we see that 76% spend more than 3 hours per day and 24% less than 2 hours.



Graph 21. Time spent online

Source: Personal calculations of the author

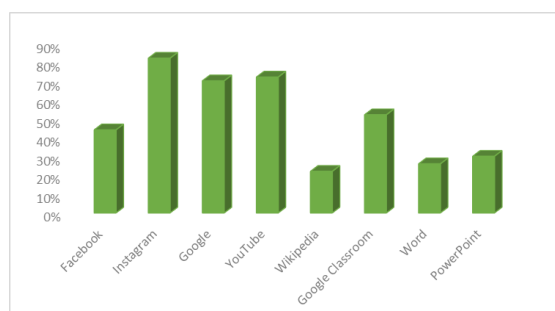
Although students spent a lot of time online, a very small part of that time they dedicate it to studying and using computer and computer applications for education. Students spent much more time on social media and watching movies, while a little less time listening to music and playing video games.

Here are how students replied to the question: “Most of your time you spent on the Internet for:

Table 5. What is the Internet mostly used for?

Internet is used mostly for	Playing games	video	Listening to music	Watching movies	Social Networks	Studying
Never	34%	10%	12%	4%	10%	
Rarely	28%	24%	18%	10%	18%	
Sometimes	32%	34%	52%	36%	38%	
Always	6%	32%	18%	50%	34%	

Using the table above, we can conclude that students do not spend much time on the Internet and using modern internet technologies for studying but to socialize and relax. In the following chart, we can notice that mostly used application is Instagram (82%), then YouTube (72%), Google (70%), in fourth place is Google Classroom (52%) used in online teaching, then Facebook (44%), then PowerPoint (26%) and Word (30%) which are considered as very useful tools in writing seminar papers, homework and preparation of presentations and in last place is Wikipedia (22%).

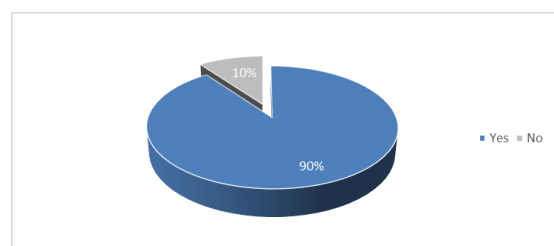


Graph 22. The most frequently used applications

Source: Personal calculations of the author

It is extremely important that almost 90% of the students have internet access in school, but we can't forget and neglect that 10%

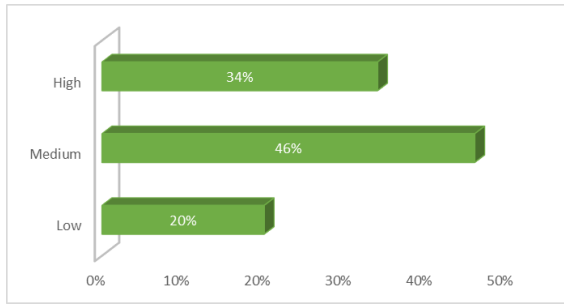
who do not have this opportunity, so the focus must be on this issue, and we must work on providing internet access to all schools in all areas regardless they are in the cities or in rural areas.



Graph 23. Internet access

Source: Personal calculations of the author

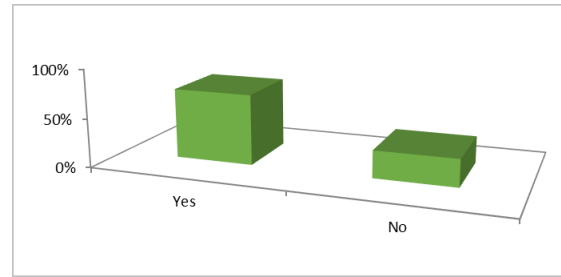
It is highly important what is the opinion of students about the school's equipment, meaning are they satisfied. From the chart below we can conclude that students are quite satisfied with how educational institutions are equipped with electronic devices, only 20% of the students think that school equipment is low, 46% think that equipment is medium and 34% think the schools are highly equipped with modern devices which indicate their satisfaction.



Graph 24. Level of satisfaction of the students concerning the school equipment

Source: Personal calculations of the author

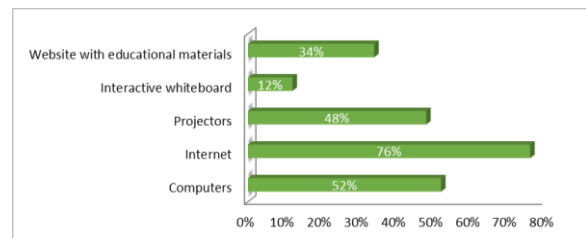
With the following question, we have examined the students' satisfaction and opinion on whether professors motivate them enough to use computers, either by their example in classes, by taking them to computer laboratories, or by giving them homework and preparation of seminar papers that must be done online and by using electronic devices. Actually, this is the case with 72% of the surveyed students but that is not the case with the other 28% of the students which is an extremely high percentage.



Graph 25. The motivation provided by professors

Source: Personal calculations of the author

Students express what they can use in school, can clearly tell us that they have the most access to the Internet (76%), computers (52%), projectors for different kinds of presentations (48%), slightly fewer websites (34%), and interactive whiteboards (12%).



Graph 26. Available resources in schools

Source: Personal calculations of the author

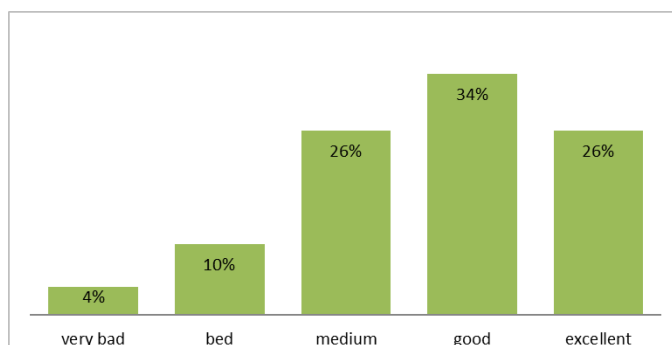
The world trends in the field of information communication technology in terms of usage of presentations, e-books, various quizzes, and online classes themselves are summarized that 56% use online classes, 52% presentations, 46% quizzes, and to a lesser extent 40% digital e-books.

Table 6. Teaching classes following the ICT trends

Alignment of classes with ICT trends	Using presentations	E-books	Educative quizzes	Online classes
Not at all	18%	28%	22%	16%
Not enough	30%	32%	32%	28%
To a high extend	32%	22%	22%	32%
Totally	20%	18%	24%	24%

Online classes have been present in the world for some time. Since the pandemic started, this practice started to implement in our country to an extremely large extent. Students and professors as well managed this new situation differently and the level of satisfaction on how the online classes were organized primary from the Ministry of Education and after the schools and universities themselves was not the same. In the next graph, we can

see that students are quite satisfied with how online classes are organized. This result is supported by the fact that most of the students choose this kind of class compared with the traditional way of teaching which requires physical presence in classrooms.



Graph 27. How well do students manage with online classes?

Source: Personal calculations of the author

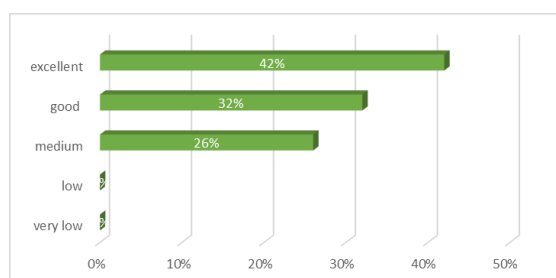
Based on the following question, in your opinion, how does the use of ICT affect education? Students express their opinion, on whether and to what extent the use of ICT has a positive impact

on teaching-learning activities and consequently on students' success.

Table 7. The effect of ICT on education

The effect of ICT on education	Getting information from professors faster and more efficiently	Sharing educational and entertaining texts	Developing teamwork	Increasing students' interest in the subject	Higher access to educative materials
I don't agree	16%	14%	18%	12%	14%
Generally, I don't agree	20%	18%	18%	24%	18%
I am not sure	20%	30%	24%	22%	20%
Generally, I agree	24%	8%	22%	20%	22%
I totally agree	20%	30%	18%	22%	26%

All of the surveyed students have some experience when it comes to technology, so none of them stated that they have poor knowledge, meaning 100% of the students believe they have average, good, or even excellent knowledge in this area.



Graph 28. Knowledge in modern technologies by students

Source: Personal calculations of the author

5. Conclusions

To face the fundamental changes that became challenges for the educational communities, especially with the integration of the ICT, it is more than necessary to create policies and strategies with long-term educational goals and new educational achievements. ICT is not only a tool for introducing existing

content through a new environment, but it is also a tool for introducing new learning patterns. However, during the research and based on the analysis of the presented results, we came to those results. According to the results, we found out that some educational institutions do have computers and others do not, but it is not only important the existence of the computers but also the training for proper use provided for professors and students as well. Professors were trained only through the ECDL program, organized by the Ministry of Education, Science, and Technology. According to the results, this program was successfully implemented.

Many students have computer skills, but there is an obvious difference between ICT skills and usage of ICT for educational purposes. The lack of guidance for the professors on the integration of ICT in classes is evident. Students are missing more specific information and instructions on how to use ICT for educational purposes. Most students use computers for playing video games and interacting, but extensive usage can even create an addiction in children. Also, professors motivate students to make Internet research for school's needs as well for the preparation of their homework, but to an insufficient level.

However, in Kosovo, this kind of lecturing is not so common and not developed enough, but due to the coronavirus has started to be implemented much more frequently. The main purpose of this research was to identify the advantages and disadvantages, and problems that arise from this type of lecturing in high schools and universities in Kosovo, so we can give recommendations to eliminate these disadvantages and improve the efficiency of this type of education. According to it, we have defined one main hypothesis and three auxiliary hypotheses which are based on the results of the research and analysis of the attained results (confirmed or refuted), which will be individually explained below.

H1: *“There are significant differences in the usage of the ICT depending on the professor’s work experience”*

From the correlation analysis between the working experience and ICT knowledge, we have noticed a negative correlation, which means the more working experience professors have, the less modern information technologies knowledge they have. This means that the above hypothesis is confirmed.

H2: *“There are significant differences in the use of ICT in classes depending on the level of professor’s information technology knowledge”.*

Based on graph 17 where the regression analysis is presented, we can see there is a correlation between how educated professors in terms of ICT are and how much they integrate computers and the Internet into teaching activities. According to it, the above hypothesis can be confirmed.

H3: *“Most students use information communication technology mostly for entertainment and less for educational purposes”.*

According to the results obtained after the realization of this research, this hypothesis was confirmed. considering the answers to the question “how much time do you spend on the internet daily” we can make a conclusion that today the Internet occupies a prestigious place in life generally and basically and we spent a quite large part of our time online. However, the answers to the question “why do you spend most of your time on the Internet” indicate that high students and university students generally use the Internet for entertainment, mostly for social networks, and to a lesser extent for learning and educational activities. In addition, in the research, there was also a question related to the most frequently used applications, where the results showed that social network applications are used the most, such as the Internet 82%, YouTube 72%, Facebook 44%, and to the lesser extent applications used in the educational practice such as Google classroom 52%, Word 26%, PowerPoint 30%.

H0: *“High schools and universities are not enough equipped to contribute towards the improvement of the students’ educational results and these institutions are not paying enough attention to scientific and technological development as a specific social need”.*

Taking into account the answers to the question “in your opinion evaluate how much the implementation of the ICT effects the learning process” we can conclude that the students believe that ICT generally has a very positive impact on the learning process and allows easier and faster access to educative materials, provides easier communication with the professors, enables and facilitates collaborative work between themselves, develop team spirit and enables learning in a fun and non-traditional way.

However the results of the previous auxiliary hypothesis as well as the results of the research in which professors consider the school’s equipment is “mediocre”, the results that show there are schools with only one computer, many of the professors said that they do not integrate modern technologies enough in the educational practice and the fact that students spent a lot of time online using social network applications and to a lesser extent learning and educative applications and tools, we can wrap up that all the benefits of the information communication technologies are underused. According to these results, the basic hypothesis has been confirmed.

Some of the recommendations we can give to increase the quality of education through the integration of the ICT are the following: Professors need to implement a variety of modern educative strategies and methods, applying diverse visual teaching methods and using different hardware and software tools that we have at our disposal today.

Professors should pay more attention to students who have misbehavior issues, which might be a consequence of the improper usage of computer devices and the Internet mostly for playing video games than for learning and useful research, so they can notify the parents concerning their child educational progress. Professors should guide students and present them the benefits of the usage of ICT in terms of providing them with the necessary information on different topics which are part of the teaching program through using a different kind of sources such as books, newspapers, magazines, educative videos, websites, etc., comparing the usefulness and the reliability of different media and information collected from diverse sources and to inspire the students to do the same in preparation of their seminar papers or homework.

Professors should encourage their students to prepare their assignments in forms such as text boxes, headlines, subheadings, illustrations, tables, graphs, and many more tools by giving them assignments to prepare the seminar paper using these tools in high schools not only universities, because this is the only way they will independently or with an assist by the professors acquire information and communication skill, which is the 21-century skill.

Professors need to locate and apply appropriate online tools for students' assessment, creating interesting online quizzes and competitions when the main objective will be encouraging students to gain new knowledge and get data for different subjects of interest.

It is recommended for students to communicate as much as possible about school-related issues via e-mail and other forms. To educate as many students as possible in the field of information and communication technologies and in that way to prepare students for their future careers, regardless of the field of activity they choose, given that computers and the Internet are present in every field or life segment.

Students should have insight about the information provided in the e-books, but also about the information available on the Internet and have a critical opinion towards all information regardless of the source.

The key recommendation of the Ministry of Education is that besides the required additional investments in equipment in both urban and rural schools it is necessary to organize and deliver training concerning information technology usage for professors so they can effectively use all the available devices and adequately integrate them into the educative activities in order to make the classes more attractive and acceptable as much as possible for the students.

When we talk about the integration of ICT, we do not only mean about equipping classrooms with computers and their usage only for the needs of the computer science subject but also about the modernization of the educative programs in general for all the subjects and their adaptation in the order they can become more efficient and applicable following the scientific trends - technological revolution.

References

1. Aničić, O., & Đekić-Lović, J. (2012). Informacione i Komunikacione Tehnologije u obrazovanju. 4. Internacionalna Konferencija. IV. Čačak: Tehnički fakultet.

2. Brown, T. (2021). The Importance of Information and Communication Technology (ICT). (2021, 18. December) IT Chronicles: <https://itchronicles.com/information-and-communication-technology/the-importance-of-information-and-communication-technology-ict/>
3. Cairncross, F. (bez datuma). ICTs for education and building human capital. (2021, 15. December). Retweeted from: <https://www.itu.int/osg/spu/visions/papers/education/paper.pdf>
4. Hrbak, V. (2012). Primjena informacijsko – komunikacijskih tehnologija u osnovnoškolskom obrazovanju. Filozofski fakultet, Odsjek za informacijske znanosti. Osijek: Sveučilište Josipa Jurja Strossmayera u Osijeku.
5. Ilić, S. (2020). Upotreba informacionih tehnologija u nastavi - stavovi i mišljenja nastavnika i učenika. Prirodno-matematički fakultet, Departman za matematiku i informatiku. Novi Sad: Univerzitet u Novom Sadu.
6. Kaur, M. (2021). What is ICT in Education and Its Importance? (2021, 16 December) techprevue: <https://www.techprevue.com/ict-in-education/>
7. Linways Team. (2017). ICT enabled education: The alchemy of mixing technology and education. Preuzeto (2021, 18. December). Retweeted from: <https://stories.linways.in/ict-enabled-education-d190bcc91bf0>
8. Pratt, M. K. (2019). ICT (information and communications technology, or technologies). (2021, 15 December). Retweeted from: <https://searchcio.techtarget.com/definition/ICT-information-and-communications-technology-or-technologies>
9. Rushiti, A. (2018). Nevojat per teknologji inovative ne arsim. <http://centrum.mk/wp-content/uploads/2018/07/3-1.pdf>
10. Salihu, A. (2012). Inovacioni, Shoqëria e Informacionit, Politikat Sociale dhe Shëndetësore. Priština: Task Forca për Integrim Evropian.
11. Skaraeva, M. (2020). Što su ICT u obrazovanju. Vrste suvremenih informacijskih-komunikacijskih tehnologija i zahtjevi za njima. Zbirke elektroničnih obrazovnih izvora i traženje izvora u njima. (2021, 20 Decembar). Retweeted from: <https://monster-evo.ru/hr/belinskijj/cto-takoe-ikt-v-obrazovanii-vidy-sovremennyh-informacionno-kommunikativnyh-tehnologii-i-trebovaniya/>

12. Smiljčić, I. (2017). ICT u obrazovanju. (2021,15 Decembar) iz Sveučilište u Zagrebu. Retweeted from: <https://hrcak.srce.hr/file/272311>
13. Trucano, M. (2005). Knowledge Maps: ICTs in Education. (2021,17 December). Retweeted from: <https://www.infodev.org/articles/teachers-teaching-and-icts>