Issues with the use of ICTs and multimedia in teaching and learning

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Abstract

Information and communication technologies (ICTs) have brought progress in all areas. The use of ICTs in education has been introduced as a teaching methodology in almost all countries of Europe. Research studies have shown that the use of multimedia tools increases the performance of learning systems. Multimedia tools can help pupils understand and remember for a longer time the given information. Multimedia can allow greater individualization; consequently, lead to improved learning, pupils' satisfaction and final outcomes.

The combination of five basic types of multimedia such as: text, video, sound, graphics and animations ensure that teaching and learning are not only linear but interactive, too. The study aims to establish a general view on the problems, which are currently encountered in the use of ICTs and multimedia in teaching and learning in Albania. To collect the necessary data a survey was carried out to high school pupils in Tirana and to second grade students of ICT and Informatics branch in the Faculty of Natural Sciences. From the data processing were identified the issues with the use of ICT and multimedia in teaching and learning. Resolving these problems will lead to the use of ICT and multimedia tools in teaching and learning as a necessary part of the curriculum in all high schools in Albania, thus putting the Albanian educational system next to European educational systems.

In the future we will conduct studies to explore the impact that ICT and multimedia has in teaching and learning of science subjects using comparative experiments. We think that the use of ICT and multimedia in teaching and learning of science subjects will have a good response from students, increasing of interest in class, as well as a higher and faster acquisition of the new obtained knowledge during that class.

Key terms: ICT, multimedia, teaching, learning.

Introduction

Rapid development of technology and information and communication technologies has brought progress in all the areas. This is because this development has led to the use of these technologies in all the areas bringing facilities, reduction in costs and in some cases

radical changes. Information and communication technology includes all the electronic tools, which enable users to collect, store, process and present the necessary information for their activities.

The term information and communication technology refers to the technical infrastructure that enables the collection, storage, processing and presentation of information, whereas the term information and communication technologies refer to the applications that run on this technical infrastructure. In a personal computer, the technical infrastructure is the combination of the hardware with the operating system (windows or Linux) that allow the execution of these of applications (word, excel, etc). In a computer network, the technical infrastructure includes computers, physical connections between the computers and the operating system. One of the applications that run on in such a computer infrastructure is that application form of eLearning which enables education in distance through World Wide Web. Worldwide research has come to the conclusion that the application of information and communication technologies has brought a great impact into society. A good example of these technologies' impact is also eLearning, which in the broadest sense includes all the electronic forms that help in teaching and learning, eLearning provides education opportunities for everyone, at any time, everywhere and in all directions and in this way it contributes to social inclusion.

Education is very important area for the society of every country because it transmits knowledge from one generation to another and establishes the individuals' values and skills. Scientific research has also shown that the use of ICTs and multimedia tools can help pupils to understand and retain for a longer time the information that is given to them. Consequently the use of multimedia from teachers in teaching would be very effective for the pupils. Multimedia is the area that deals with the computer controlled integration of texts, graphics, drawings, still and moving images(videos), animations, audio and every other media where every type of information can be presented, stored, transmitted and processed digitally. A student might not understand a drama by Shakespeare by the use of text only, which instead can be understood very well if there is a record of the play when put on stage. Voice can meet visual information and can be used to attract attention, to keep the interest alive, to help in the memorization of the information and to make clear the objectives of the issue being addressed. Images can be used to illustrate an information that is being given, for example in the subject of geography or history about the history, culture and economy of a country or in biology about an animal that does not grow in the country and is not in the zoo. Graphics and animations can be used to handle the information that is being given in the form of a game aiming the best absorption of the information (for example in the case of theorems mathematics) or for giving an information about something that doesn't exist like dinosaurs. Video can be used show an experiment, which can be dangerous if tried, like a chemical experiment for example.

Scientific research has shown that information is better assimilated if the pupil takes part in any way in the teaching material. Five main multimedia types text, video, voice, graphics and animation can be combined in such a way that allows greater individualization, and as a result it affects in the improvement of learning, pupils' satisfaction and final results. The use of ICTs in education has been introduced as a teaching methodology in almost all European countries. Our country too, aiming the establishment of the Albanian educational system next to European educational systems, has taken the initiative to use ICT as a teaching methodology. This is a very important step, which based in

worldwide research will increase the performance of teaching/learning systems. Starting from the research we have made through research work in high schools, we have noticed that Information and communication technologies and multimedia are not used in the expected level in the teaching/learning process. Therefore we undertook this study, which aims to create a general view on the problem encountered currently with the use of ICTs and multimedia in teaching and learning in Albania.

Methodology

In view of the main purpose of the study for analyzing the current situation of the use of ICT and multimedia in teaching and learning we conducted a questionnaire, which was tested for a two-week period to see the possible defects and to improve it. The necessary data was collected by interviewing pupils of high schools in Tirana and students of second grade, in the Faculty of Natural Sciences, branch ICT and Informatics about the questions that contained the questionnaire. In total were conducted 735 questionnaires. For these interviews were chosen the high schools in Tirana because Tirana, being the metropolis of Albania has greater development than other cities. We also chose to interview the students because they come from different regions and in this way they give us information for all cities of the country.

The collected data give us information about technical infrastructure in high school where they study or have studied for example like if it has or has had laboratories, if it has or have had internet connection, if it has or have had classes equipped with computers, the number of projectors that are in school etc. These data also give us information if the multimedia tools or the applications that enable their combination and presentation are used or have been used in teaching and learning. The gathered data were compared with data collected during the previous 5 years interviewing students of Informatics related to the use of information and communication technologies and multimedia in teaching and learning in their schools during the study. The traditional method of processing data were applied on these data to identify the problems currently encountered in the use of information and communication technology and multimedia in teaching and learning in our country. Analyzing these problems we give some recommendation on how to improve the use of ICT and multimedia in teaching and learning with the aim of contributing in the inclusion of the use of ICT and multimedia tools in teaching and learning as a necessary part of the curriculum in all high schools in Albania in a near future, thus putting the Albanian educational system next to European educational systems.

Results and Discussions

At the beginning we analyzed the technical state of the infrastructure in the high schools in our country.
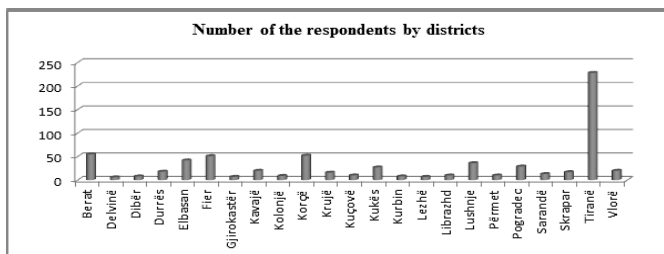

Figure 1.The number of respondents by districts

The information we got is representative because the respondents were from all the regions of Albania as the graphic shows in figure1. According to this graphic, as it was expected, the largest number of the respondents is from Tirana, but there are a lot from Berati, Elbasani, Korca, Fieri, Pogradeci and Kukesi. There are representative respondents from almost every city of Albania.

There are laboratories equipped with computers in almost all the cities. The number of respondents that gave a positive answer to the question "Are there any laboratories equipped with computers? is 719 or 97.8% of the respondents.

While the number of the respondents that gave a negative answers to this question is 16 or 2.2% of the respondents. Figure 2. shows this situation.
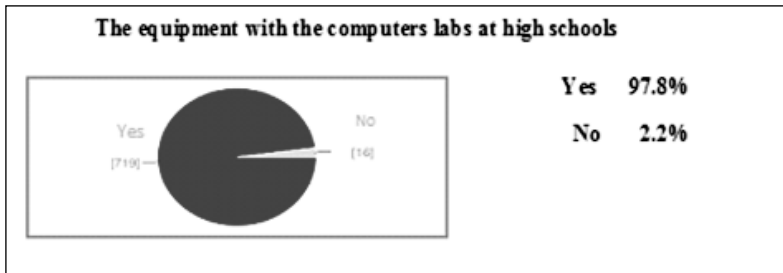

Figure 2. The equipment with the computers labs.

The easiest way of using ICTs and multimedia during teaching requires that the classroom be equipped with computers (or if possible to bring a computer that's easily transported to the classroom) and a projector (or if possible to bring a projector to the classroom). By having these gadgets, the lesson topic can be illustrated with the help of a video, audio, animation or with images. Therefore we got information about the number of classes that are equipped with computers and the number of projectors that has or has had the school where they have studied.

430 respondents have answered to the question of how many classrooms are equipped with computer , where 45.2% of them have answered that only one classroom is or has been, 39% have answered that 2 classrooms are or have been, 7.9% have answered that 3classrooms are or have been, 6% have answered that are or have been more than 3 classrooms equipped with computers and 1.9% have answered that there are not or have been any classrooms equipped.
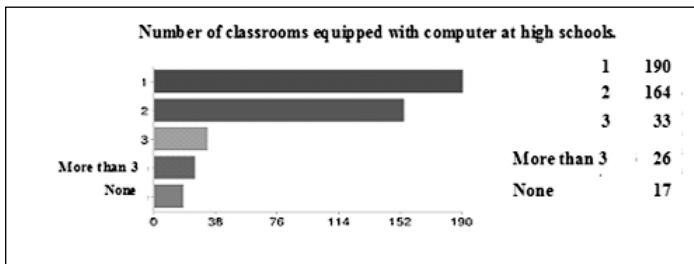

Figure 3.Classrooms equipped with computers

It is clear that it the greatest part of the high schools, if a teacher doesn't bring a computer that is easily transported like a laptop, they cannot illustrate the lesson topic with a video, audio, animation or images. From the interviews the teachers of the high schools are not equipped from school with a easily transportable computer such as a laptop.

430 respondents have answered to the question of how many projectors are or have been in your school, where 43.3% have answered that only 1 projector is or have been in their high school, 10.5% have answered that in their high school are or have been more than 3 projectors and 12% not any projector. (24% of the respondents and 10.2% of them have answered that in their high schools are or have been respectively 2 and 3 projectors.) Figure 4 illustrates the answers of this question.
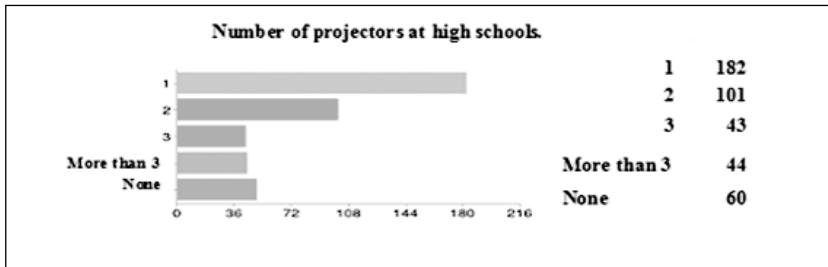

Figure 4. Number of projectors at high schools

As you can see in figure 3 and figure 4 teachers were not always given the opportunity to use ICTs and multimedia in teaching.

If there was an internet connection in school, it would be much easier the illustration of the lesson topic with videos, animations, audios or images because these elements for illustration can be found in different websites. In this way teachers wouldn't spend time downloading these files from websites and presenting them in class or they would use materials for illustration that cannot be downloaded. Positive answers have given 83.57% of the respondents to the question related to if they have or have had internet connection at their high schools.
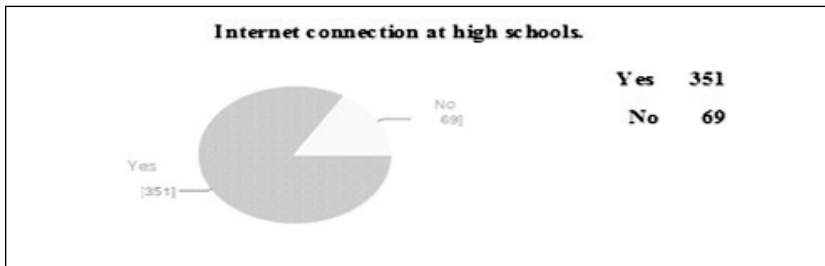

Figure 5. Internet connection at high schools

Teachers can provide a clearer view to the pupils about the lesson topic by asking them to navigate in different websites about the topic. In order for pupils to complete this work, they should have the possibility to work with a computer, to have internet connection and sufficient knowledge in using the computer and the internet. In order to understand if pupils have the possibility to work independently we added to the questionnaire the

following questions:

- Do you have (have had) a computer at your home during high school studies.
- Do you have (have had) internet connection at your home during high school studies.
- Rate from 1 to 5 how much you fit the sentence: I have difficulties in using the computer (1-certainly not, 2-a bit, 3-maybe, 4-a lot, 5 completely)
- Rate from 1 to 5 how much you fit the sentence: I have difficulties in using the internet (1-certainly not, 2-a bit, 3-maybe, 4-a lot, 5 completely)

Only 8% of the respondents answered that they didn't have a computer at home during high school studies and only 3% answered that they had a lot or too much difficulties using the computer. About the internet 24% of the respondents don't have or haven't had internet connection during high school studies and only 2% of the respondents had a lot or too many difficulties using the internet. Pupils have possibilities to work independently about the lesson topics.
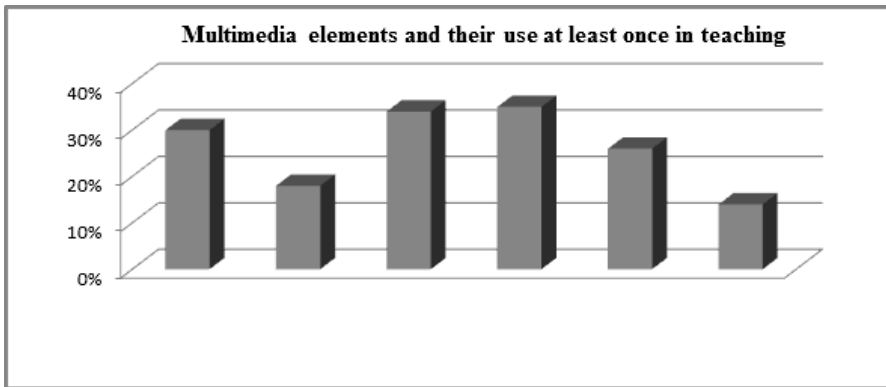

Figure 6. The use of multimedia elements in teaching

Multimedia elements can provide a clearer view of the topic of the subject being treated in almost all the subjects of high school. According to respondents in most high schools multimedia elements are used at least once. As shown in Figure 6 traditional elements have the highest usage such as the text stored on computer, or images stored on computer. 35% of the respondents have answered that it has been used at least once the text stored on computer and 34% of them have answered that there have been used at least once the images stored on computer in teaching. However, it is also seen a high percentage of the use of videos that are recorded on computer. 30% of the respondents have answered that I has been used at least once a recorded video in teaching.

The subjects, where these elements are used more are scientific subjects such as: Biology, Physics and Chemistry and in some social subjects such as: Geography, History, Albanian Language and Literature.

Figure 7 gives information about subjects where these multimedia elements are used in teaching.
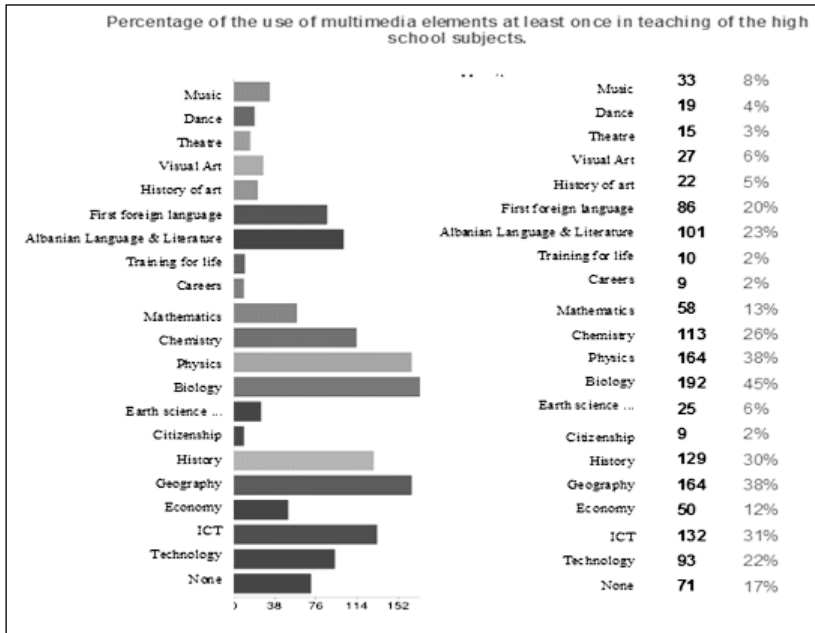
Figure 7.Subject where are used multimedia elements

Teachers are getting used to this new methodology of teaching. However, this new and modern technology requires changes to be made in pedagogy and consequently teachers are going to need training and time to absorb this technology completely.

Conclusions

The integration of the ICTs and multimedia in teaching and learning provides a very effective educational methodology. Despite its promotion by the Ministry of Education as a teaching methodology and setting also the ICT standards for teachers, the ICTs and multimedia are not being widely used in teaching and learning. The basic infrastructure to use the ICTs and multimedia in teaching and learning needs to be improved. Their usage would increase if schools are equipped with easily transportable computers such as laptops and projectors for each teacher.

The integration of ICTs and multimedia in teaching and learning, despite being useful, needs changes in pedagogy and for this reason it becomes a difficult process that requires a lot of time. Teachers must be ready to change their methodology and this requires trainings related with the use of information and communication technologies, ideas in integration of information and communication technologies and multimedia in teaching and learning and sufficient time to include this new methodology in the teaching of their subject. It would be useful to them to have in the textbooks of their subjects addresses in the world wide web where they can find information that illustrate the lesson topics with multimedia elements like video, audio, animation or images and/or CDs or DVDs with this information. They will not lose time to find the multimedia elements needed to illustrate better the lesson topics if they have references, and as a result, they

will use more these elements in teaching and learning of their subjects. The use of the information and communication technologies in teaching and learning will be encouraged if the teachers will be equipped with a guide on how to use the ICTs and multimedia in the teaching and learning of the lesson topics of their subject.

Future Work

In the future we will conduct studies to explore the impact that has the use of ICTs and multimedia in the teaching and learning of scientific subjects such as chemistry, physics, biology and mathematics using comparative experiments. We think that the use of ICT and multimedia in the teaching and learning of scientific subjects will have a good response from the part of the pupils, increase of interest during the lesson, as well as a higher and faster acquisition of the new information that is given during the lesson.

References

- Cronin, M. W, & Myers, S. L. (1997). Effects of visual versus no visuals on learning outcomes from interactive multimedia instructions. Journal of Computing in Higher Education.
- Institute of Education Development (August 2011), information and communication technology standards for teachers. Tirana
- Large, A., Behesgti, J., Breuleux, A., & Renaud, A. (1996). Effect to animation in enhancing descriptive and procedural texts in a multimedia environment. Journal of the American Society of Information Science.
- Tennenbaum, R. S. (1999). Theoretical foundation of multimedia. New York, NY: Computer Science Press.