Enhancing Teaching and Learning in Greece by Implementation of ICT in Educational System

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Abstract: *Nowadays, there is a general consensus about the importance of applying ICT in all areas of life, and certainly in education. In educational process ICT can be applied by teachers at all levels of education and in different educational context. There are many benefits that can be achieved in this way. In order to achieve the desired results, it is of great importance how ICT support is organized at the level of the entire educational system. Great progress in this area has been recorded in Greece in recent years.*

Keywords: *education, ICT, Greek educational system*

1. INTRODUCTION

Nowadays the ICT have been perceived as the principal driver of educational changes and major innovations in school practice. According to Becta 2007 [1], the application of ICT in schools should be seen as a major innovation that directly improves the various aspects of school life, as it has a direct impact on communication between schools and with the wider community, on administration, management and workload, on communication with parents and the wider community. And, of course, a huge step forward in the teaching process. ICT in education should be seen as an excellent tool that can lead to significant educational and pedagogical outcomes and support students' development on the knowledge and skills.

Researchers have pointed to well-crafted use of technology benefiting, for example: increased learner effectiveness or performance gains, increased learner efficiency, greater learner engagement or satisfaction, more positive student attitudes to learning. There are also benefits of increased collaboration, greater engagement and persistence, more on-task behaviour and better conceptual understanding [2, 3]. Another important element of ICT is the possibility of individualized supported learning for people with special educational needs [4], whether through adaptive or assistive technologies specially designed to support pupils with specific disabilities or through the use of mainstream technologies such as digital video and photography.

Since learning is a social activity and understanding is socially constructed, e-learning should be designed to promote participation, allowing all students to take part in all subjects and activities, enhancing cooperative learning, offering powerful opportunities [5].

Information and Communication Technology is very important in pupils' communication, interaction, cognition, and learning, as well as in their emotional and social development [6]. Therefore, integration of supported technologies in teaching students at all levels of education is useful.

Simultaneously, ICT is important for teachers' competency also, since it can improve teaching by enhancing an already practiced knowledge and introducing new ways of teaching and learning. Transforming and reorganizing teaching is difficult to achieve. There is no doubt that the relationship between teacher and student (face to face) can't be replaced by any surrogate. But opportunities arising from the use of ICT for a more creative approach to teaching, using new pedagogical strategies by aiming at cooperation of a different type with students and other teachers can make the learning and teaching process more efficiency and interesting [7]. Of course, it is a slow process and the main goal is not to apply a radically different vision of pedagogy, since there is no evidence that society really desires a transformed, technologically-mediated relation between teacher and learner [8]. Changes that take full advantage of ICT will only happen slowly over time, and only

if teachers continue to experiment with new approaches [9].

2. GREEK EDUCATIONAL SYSTEM AND ICT

The situation in Greek educational system concerning the ICT, some years ago, was bad. Based on 2011 EU survey [10], in Greece there were considerable fewer computers available for all grade students than the EU average. As for computers connected to the internet in schools, in Greece desktop computers were below the EU average at all grades, and also generally much lower than the average for laptop computers at all grades. In Greece most computers were desktops, ranking among the lowest percentages of internet-connected desktop computers in Europe. The same thing was going on and in terms of internet-connected laptop computers; the result was again among the bottom group of countries.

Also, in Greece general percentages of students taught by teachers for whom ICT training was compulsory were among the lowest in the EU. At that time, Greece was again in the bottom group of countries concerning a digitally well equipped and supportive schools and digitally confident and supportive teachers as well.

- Therefore, within the framework of the Digital Educational Content of the "Digital School" (2010), the Greek Ministry of Education, Research and Religious Affairs developed the project "Digital Educational Platform, Interactive Books and Repository of Learning Objects". It was national and EU co-funded project, and the most important one of the Ministry of Education for the period 2010-15. The "Digital School" [11] refers to approach aiming at the integration of ICT in the whole educational system. It was implemented with a series of projects grouped in five axes. In this paper, we will not analyze the E-Administration of Education and the Horizontal Support Actions, although these projects changed and enhanced the organization and management of the schools in Greece. But in this paper, we want to stress the practical influence of ICT in teaching process, so we will focus on the other three axes developed by Greek ministry of education/
- Strengthening school equipment with interactive boards and portable computer labs (digital classroom) - For the first one of the axons, we could say that just the first step is made. There is still a big lack of equipment in the schools. But, certainly, the situation is better than it was a few years ago.
- Teacher Training - For the in-service teacher training, we can also say that things are better, but there is still a lot of work to be done. This

is a slow process, almost all of in-service teachers have a basic knowledge of ICT (first level of ICT education), now a lot of teachers finished the advanced ICT education (second level of ICT education), many of teachers are still in the process, and many others are waiting for they turn to accomplish the advanced education. The ministry first provided the possibility of training to primary education teachers, and teachers of language, mathematics and science. Training of teachers who teach other subjects is now in progress. This process will continue in the coming years. According to the official website of the Ministry of education-Teacher training , the subject of the second level ICT education for in-service teachers is to learn the principles of pedagogical use of ICT, acquiring skills for the pedagogical use of educational software, general use of tools and the Internet, with emphasis on Web 2.0 tools and services, as well as the cultivation of the knowledge, skills and attitudes, which contribute in two ways: continuing education, personal and professional upgrading of the educated teachers, and the utilization and application of ICT in the class by themselves and their students for research, interaction, collaboration and building new knowledge. Additionally, the subject of training includes the learning and teaching of interactive teaching systems as well as educational content management systems such as the available educational platforms and repositories for collecting and distributing educational material (e.g. "Fotodendron" [12, 13], E-book school system [11]).

- Digital Educational Content - Huge work has been done when it comes to digital content. From the start of the project to the present day, over 200 teachers, under the scientific guidance and coordination of University Teachers, have joined the project. The project "Digital Educational Platform, Interactive Books and Repository of Learning Objects" concerns the design, development and operation of central Internet services of the Ministry of Education for the digital educational content of Primary and Secondary General Education: the "Interactive School Books" and a series of digital repositories of educational content called "Photodentro". When we talk about the interactive school books, we should say that it includes the digital form of all the primary, secondary and high school textbooks in pdf format, student books in editable html format. But there is more. There we can find over one hundred Interactive School Books (e-books),

i.e. books enriched with interactive digital educational material in order to facilitate collaborative, experimental and flexible learning. Interactive books, as well as the digital repository can help teachers to enhance the educational process by using different materials from the repository. There we (practitioners) can find a lot of learning objects like educational videos, educational software, user educational material, open educational practices, external resources from other institutions, e.g. cultural collections from digital libraries, museums etc. There is also and the Digital Learning Platform e-me (e-me.edu.gr) [14].

– The Photodentro is made as the Greek national repository of Learning Objects for Primary and Secondary Education [15]. The learning objects you can find for teaching and learning concern a wide range of subjects (Mathematics, Geography, Chemistry, Biology, Physics, Aesthetics, Religion, History, ICT, English, French, German and Greek Literature). The Photodendro [12, 13] has free access, it is open to students, teachers, parents, and anyone interested. All of different learning objects are autonomous and reusable digital content units [16]. It is very easy and interesting for users. We can find many useful contents that can change our teaching style and simultaneously make a teaching process more interesting and challenging, since there we can find and use a lot of interactive simulations, visualizations, investigations, images, experiments, educational games, 3D maps, exercises etc. Obviously, the Photodendro can provide to students and teachers an opportunity to avoid and enhance the classic way of teaching and learning. According to official website [12, 13], today this repository includes approximately 9000 learning objects, including 6500 learning objects of enriched interactive school books as well as collections of selected objects developed within the framework of various actions of the Ministry of Education or other bodies.

3. CONCLUSION

The modernization of the teaching process with the help of ICT has begun in developed countries. Now the order of the Balkan countries has come. The educational practices in Balkan countries need transformation and modernization. One big step in this direction is the application of the ICT in educational practice. Since we are talking about a slow process, it is time to implement in continuous professional development the specific ICT education (both for in-service and pre-service

teachers). An experimental approach using ICT in everyday practice is an important factor in increasing teachers' pedagogical competence. This is the best way to make them ICT confident. For that reason, it is extremely important to make teachers more active and willing to experiment and prepare them to be able to upgrade their ICT skills and gain more pedagogical knowledge in a more active way.

It is our opinion that the Greek national strategy for the application of digital content in the education is well organized. This new approach is helping us to reorganize the educational process, making the teaching and the learning more creative and flexible. The best proof for the success of the concept is the fact that the official site of Ministry of education with digital educational content has an average of 400,000 unique visitors per month since its launch in 2012 [11]. For modernization and acceleration of creative teaching and learning, we need continuous support of the organizational and institutional context, and a national strategy for ICT in education is sine qua non to achieve this goal.

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