

# The usefulness of the dominant models of ICT used in Education and their contribution to the Information Society

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**ABSTRACT:** This article aims to present the value of the contribution of ICT models to Vocational Education, regarding the trained students as well as the teachers. At the same time, it aims to present their dominant attitudes, respectively, regarding the usefulness of ICT. ICT and the three main models of its use in the school community are initially defined, while the individual pedagogical benefits and some of the disadvantages arising from their inclusion in school units are then unfolded. The following is a comparison of the attitudes towards ICT, both from the part of the trainees and from the teachers. The methodology used is the review of contemporary, global literature. ICT offers professional development skills in a demanding world, part of the "Information Society", which is constantly changing. A considerable number of educators find it difficult to integrate these into the educational work, which contrasts with learners who tend to be technologically inclined. Teachers must understand and then use the pedagogical advantages of ICT, as well as adopt new teaching methods.

**KEY WORD:** ICT, Information Society, Evolution

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## I. INTRODUCTION AND LITERATURE REVIEW

ICT occupies a central position in every modern field of everyday life, while it has been identified with development and development is a derivative of education. Education is changing and very soon it will be very different from what it is today. Young people, today's students and future citizens, will be asked to live in the "Information Society" characterized by a wide use of new technologies. A new system of knowledge is now required, which in the past was not required. The introduction of new information and communication technologies (ICT) in Greek schools is now a necessity, which has been delayed enough to come to Greece, compared to other developed countries abroad. The aim is, on the one hand, to familiarize students and teachers with their use and utilization in teaching and the learning process. It is imperative that the Greek education system respond to these new data, in order to ensure for all students, access to the "Information Society" in order to avoid, in the future, new inequalities, additional forms of social exclusion, but also additional difficulties of integration into the labor market. (G.K. Papadopoulos, G., Babiniotis 2000)

The term Information and Communication Technologies (ICT) has taken the term IT. This term includes on the one hand the technologies that allow the processing and transmission of a variety of forms of information representation with symbols, images, sounds, videos and on the other hand the media that are carriers of these messages. These technologies mostly concern multimedia, hypermedia, internet, PC hardware as well as modern software. (B. I. Komis, 2004)

### 1.2 The dominant models of ICT use in the educational field

According to B. I. Komis, three basic forms of use of ICT were distinguished through the daily educational school life: 1. the technocentric model where the computer is used as an actual subject of knowledge, 2. the integrated/holistic model where the use of the computer is carried out through all the cognitive teaching objects, as an expression of a holistic and interdisciplinary approach to learning and 3. the pragmatic model which is a combination of the two aforementioned forms. (B. I. Komis, 2004).

The main goal of the technocentric model is the acquisition of essential practical knowledge regarding the operation of computers and the introduction to their programming. Based on the technocratic model of introduction to ICT education, emphasis is placed on technological literacy as well as familiarity with the operation, handling and programming of computers, on the part of the students. Within this framework, IT is treated as an autonomous subject - isolated technical approach or vertical approach. (B. I. Komis, 2004)

The integrated/holistic model is distinguished by the introduction of ICT in the whole set of knowledge subjects, strengthening the interdisciplinary approach to learning. That is, in this model, the use of ICT is integrated into the individual courses of the syllabus (A.P.) – a horizontal/holistic approach, without constituting a subject different from the rest. This approach presupposes the existence of renewed educational concepts and attitudes, both in terms of the choice of knowledge and use of teaching methods, as well as in the education and training of pedagogues, as well as the existence of logistical infrastructures. (B. I. Komis, 2004)

The difficulty of practical application of the holistic model, but also the admission that computer literacy is necessary, leads to the pragmatic model of the introduction of ICT in education. The pragmatic model is a combination of the technocratic and the holistic model. In other words, it is a hybrid solution, necessary until the complete introduction of ICT throughout the AP. This model advocates the logic of an initially introductory teaching of general computer knowledge systems and the subsequent gradual introduction of the use of ICT, as a means of learning support, of all the cognitive subjects of the AP. This approach combines the pedagogical advantages of the overall model with the need for technological literacy. ICT becomes not only a subject of knowledge, necessary for the technological literacy of students, but also a means of teaching for all subjects. Their correct pedagogical use is an innovative pedagogical method, which changes the traditional communication structures, while favoring the application of many other pedagogical principles, which until now have been difficult to apply in the context of a traditional classroom. (B. I. Komis, 2004).

### **1.3 The usefulness of integrating the dominant models of ICT use in the educational process**

According to S.X. Papadakis and N.Th. Hatziperis, ICTs have many and varied pedagogical advantages, since they are an innovative means of approaching knowledge and learning both for the student and for the teacher. ICT refers to an interactive educational software that enables the presentation of knowledge in many forms, while at the same time reducing the required time to assimilate it. The goal of the educational software is to fill in the weaknesses and gaps of the teaching material, making use of the interconnection possibilities provided by modern computing, network technology and multimedia (text, movement, sound, image, video). In other words, students are given the favorable opportunity to explore existing objects or spaces, to which they do not have direct access or are difficult to understand in an alternative way, due to their size, position or properties. The opportunity to find hard-to-find information is provided, with accessibility in international bibliographic contexts. ICT favors the discovery of learning, but also the possibility of developing collaborations, while they can act as reinforcements for students with special needs or occasional health problems. (S.H. Papadakis, N.Th. Chatziperis, 2005, G. Babiniotis 2000, G.K. Papadopoulos, V. I. Komis,)

On the other hand, ICT support the educational work and the preparation of the teacher, giving the possibility to search for literature, special material, supplementary teaching and evaluation. They also support the student's study process by providing text processing, spreadsheets, graphing, problem solving, simulations and guidance with the help of the computer (PC). They give fluency in the use of symbolic means of expression and analytical and synthetic thinking. (S.H. Papadakis, N.Th. Chatziperis, 2005, (G.K. Papadopoulos)

ICT contributes to the development of students' participation, proactive attitude, efficiency, experimentation, creativity, brainstorming and technical skills, as well as to the cultivation of a love for learning, as it becomes meaningful and ceases to be related to a stressful process, while it takes place in a rich, pleasant and attractive learning environment, offering activities of free choice and autonomy. Also, ICT, as an alternative teaching practice, helps in the interdisciplinary nature of learning, approaching it holistically and contributing to the acquisition of skills that can be transferred to various fields of knowledge. (G.K. Papadopoulos, V. I. Komis, Pange T. & Kyriazi M.)

Through ICT, communication between teacher and students is facilitated and strengthened, it is possible to acquire and transfer teaching materials such as exercises, notes from the teacher to the student and tasks from the student to the teacher. Students who are forced to be absent can be informed directly about the material taught, receive exercises, observations and notes, through a personal and personalized contact. (S.H. Papadakis, N.Th. Chatziperis, 2005)

### **1.4 The positive, educational contribution of the use of ICT in Dyslexia**

According to research conducted by P. L. Sutherland and his colleagues, it has been shown that ICT can help dyslexic and dyslexic children with low school performance and even with spectacular results. People with dyslexia experience difficulties in reading and writing handwriting, correctly and correctly. The computer acts as a reinforcement in dealing with this difficulty, since the form and position of the digits and letters entail smaller requirements, while the font and the text have the possibility to be modified, achieving a better aesthetic result, without paying great effort on their part. Also, through the PC, the spaces that tend to leave between words are avoided. Dyslexic children learn best through touch, since touching the keys strengthens their memory. Also, the use of the computer helps in their ability to focus attention, to recognize clerical items, as

well as to discover that a text can be corrected and should not be abandoned after it has been written. Computer-based learning can be leveraged in many learning styles, as it is a multimodal process. (Sutherland P. L.)

### **1.5 Administrative support of educational units and creation of teachers' discussion groups**

A notable axis of study of ICT is its function as a means of administrative support and information management, in relation to the organization and operation of educational units, evaluation, decision-making and improvement of the quality of services provided. (S.H. Papadakis, N.Th. Chatziperis, 2005)

In addition, through ICT, teachers in different geographical areas can create discussion groups among themselves, exchanging their views with people of a similar specialty and discussing teaching problems of a cognitive field of their subject or various problems they face in the classroom. (S.H. Papadakis, N.Th. Chatziperis, 2005)

### **1.6 Disadvantages, problems and emerging difficulties in using ICT models in classrooms**

A key element that educators should be prepared to face are the common problems that arise when using ICT in educational practice. These represent the lack of extra time required on their part, for the preparation and organization of such actions. Also during navigation, there are risks of unforeseen technical problems that need constant maintenance, disorientation from the main teaching objective due to an overabundance of available information, the absence of the validity of this information or even unwanted access by students to websites with content inappropriate for their age. On the other hand, the lack of methodology for the inclusion of such programs in the school curriculum can be another significant problem. In addition, some students may not participate to the desired degree, while others monopolize discussions and during group work in the context of integrating teaching methods with ICT. (S.H. Papadakis, N.Th. Chatziperis, 2005)

### **1.7 The attitudes and readiness of teachers as a determining factor for the successful and dynamic use of ICT models in the classrooms**

A successful exploitation and use of ICT models in educational contexts depends to a large extent on the attitude and degree of their acceptance by the entire school community, but mainly by the teachers. (G.K. Papadopoulos) Their effectiveness is also due to the teachers, their choices but also the mental and ethical management of ICT on their part. (Fykaris M. Ioannis, 2012)

According to N. Amanatidis, teachers, based on their differentiated profile, personality and behavior, regarding the use of ICT models in the learning process, are divided into three main categories: the innovators, the moderate and the reluctant. Innovators are those who maintain a positive attitude towards the acceptance of ICT, towards its pedagogical use, while they tend to have sufficient computer knowledge. Innovative educators believe that a teacher should not be the only source of information in a class of students. As moderates, those who are cautious and hesitant about their inclusion in teaching, while they consider that there must be certain conditions for their use. Finally, those who criticize and have a strict attitude towards ICT, while advocating and insisting on established, traditional and formal teaching methods, as a factor of successful and effective learning, are characterized as reluctant. These teachers show insufficient training in the use of computers, while they argue that the use of books is superior to the use of computers. (N. Amanatidis, 2013). The teachers' use of the positive attitude of the new generation of students towards ICT

In contrast to the difficulty and reluctance of teachers to introduce ICT into teaching activities, a new generation of children is coming, which is impressively familiar with new technological tools and the handling of PCs, software and the Internet, independently from whether or not they have a PC, in their familiar environment. It would therefore be an excellent opportunity with definite benefit if teachers were to utilize and approach this technological bent in order to win over children and further expand their knowledge and skills through the involvement of ICT. In particular, ICT would be a fertile ground for increasing efficiency in subjects where students lag behind the most. (Tsimogiannis A., 2001, Koutsoyiannis D., Nikolaidou S., Mavridou A., Rouvas G.)

## **II. Conclusions**

With the rapid changes and ever-increasing demands of the "Information Society", ICT must be a necessary integrated part in education, to achieve a fair and equal learning opportunities for young people, educational system. This is because ICTs offer dynamic opportunities for instant access to a wealth of current knowledge, helping to eliminate inequalities, while at the same time providing valuable skills and opportunities for professional development, in a changing world. (G.K. Papadopoulos, B. I. Komis)

Also, by incorporating machine-assisted learning through computing technology and audio-visual media, learning is enhanced by leveraging multimedia as students gain a new relationship with knowledge. (G.K. Papadopoulos, V. I. Komis) The correct and always appropriate way of using ICT models in education, depending on the existing educational needs, can, now proven, greatly enhance the learning process, making it,

at the same time, more attractive and interesting for the trainees. Teachers also benefit greatly from the use of ICT, being given the opportunity to use alternative and more innovative teaching techniques and tools.

ICT can in no way replace the lively teaching staff or printed books and their unique relationship with students, but neither can they be an end in themselves. On the contrary, the use of a quality educational software under the guidance of the educator, can assist and act with a complementary and supportive role in the educational work and in all teaching subjects. In this way, an educator can become from a simple transmitter of knowledge, to a valuable partner of students and organizer of teaching and learning. Students, on the other hand, will have the ability to control their educational environment, through quick access to many areas of information. (Fykaris M. Ioannis, 2012, G.K. Papadopoulos, Babiniotis G., 2000)

An area of thought production must be the adequate training of both innovative and moderate, but also reluctant teachers in the planning of their teaching work, with the auxiliary and complementary use of ICT. This is considered necessary, as until today, there are obvious deficits in basic computer training on the part of teachers, as well as the inability to follow the development of ICT, resulting in the limitation of their teaching techniques. (G.K. Papadopoulos)

It is important for the educator, before making the decision to use ICT models in the teaching process, to be well informed about their educational advantages. It should also not leave unexploited the positive mood of the students regarding the use of technology, always utilizing it for teaching purposes. The simple or opportunistic use of ICT by teachers, due to rapid social developments and demands, or as a result of their admiration for technology does not lead to any strong pedagogical benefit. (Pange T. & Kyriazi M.).

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