



Study on the use of mobile devices in schools: the case of Greece

Estudo sobre a utilização de dispositivos móveis nas escolas: o caso da Grécia

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Abstract

This paper presents a reflection on the use of mobile technologies in the classroom in Greece, based on a review of relevant literature, PhD thesis and the case of the 1st Lyceum of Rhodes. Despite several developments, m-learning is far from being part of everyday educational practice. This is in accordance to the level of academic research on m-learning in Greece. Few PhD dissertations focus on mobile learning. However, most Greek universities have postgraduate programs on the use of ICT in education and mobile learning is part of their curriculum, giving hope for the future.

Keywords: m-learning, ICT in education

Resumo

Este artigo apresenta uma reflexão sobre o uso de tecnologias móveis na sala de aula na Grécia, com base numa revisão de literatura relevante, teses de doutoramento e o caso do 1st Lyceum of Rhodes. Apesar de vários avanços, o m-learning está longe de fazer parte da prática educacional diária. O mesmo é apontado pela pesquisa académica sobre m-learning, ainda que sejam poucas as teses de doutoramento que se concentram na aprendizagem móvel. No entanto, a maioria das universidades gregas tem programas de pós-graduação sobre o uso das TIC na educação. Ao mesmo tempo, a aprendizagem móvel é parte do currículo, o que nos dá esperança para o futuro.

Palavras chave: m-learning, TIC na educação

Introduction

ICT was introduced during the 1980s as separate course in General and Technical High Schools. The introduction of ICT as a separate course in the curriculum of Greek schools is already in its second decade. According to the Unified Framework of the Curriculum (UFC-1997), at least one separate ICT course is included in the curriculum. Also, UFC provides the progressive integration of the use of ICT as a means of supporting the learning process in the various subjects. Indeed, in recent years, the use of new technologies for the teaching of all courses has been steadily spreading. As experience suggests, the interest of teachers and pupils is growing, inspite the lack of training and the rather conservative

educational environment. The same, of course, applies to the use of mobile devices in the educational process.

Our school, the 1st Lyceum of Rhodes, is no exception to the rule. ICT is an integrated part of the curriculum in all 3 grades. In spite of the fact that, according to the greek law, students are not permitted to bring in school mobile devices, numerous teachers of our school agree that m-learning could offer significant innovative prospects to the teaching process. However, m-learning is far from being part of everyday educational practice. This reality is in accordance to the level of academic research on m-learning in Greece. After search in relevant data bases, one can conclude that the m-learning academic research is still going through its initial stages in Greece. Few PhD dissertations focus on mobile learning. However, most Greek universities have postgraduate programs on the use of ICT in education and mobile learning is part of their curriculum, giving hope for the future.

The Greek educational system¹

The Greek educational system is mainly divided into three levels: primary, secondary and tertiary, with an additional post-secondary level providing vocational training. Primary education includes kindergarten (1-2 years) and primary school (ages 6 to 12). Primary education is compulsory. Secondary education comprises two stages: Gymnasio (Gymnasium, translated as Middle or Junior High School), a three-year school, which is also compulsory. After Gymnasium, students can attend Lykeion (Lyceum, Upper or Senior High School, an academically oriented high school) or Vocational High School. Higher Tertiary education is provided by Universities and Polytechnics, Technological Educational Institutes (T.E.I.) and Academies (for military and clergy). Undergraduate courses typically last 4 years (5 in polytechnics and 6 in medical schools), postgraduate (MSc level) courses last from 1 to 2 years and doctorates (PhD level) from 3 to 6 years.

The Greek educational system is overseen by the Ministry of Education, Research and Religious Affairs. The Ministry exercises centralized control over state

¹ See a good brief presentation of the Greek Educational System at <http://www.fulbright.gr/en/study-in-greece/the-greek-educational-system> (accessed 17/6/2017)

See also : Unesco Institute for Statistics, Education and Literacy in Greece, available at <http://uis.unesco.org/en/country/gr> (accessed 17/6/2017) and OECD,

Education at a glance 2014, Country Note, Greece, available at <https://www.oecd.org/edu/Greece-EAG2014-Country-Note.pdf> (accessed 17/6/2017)

schools, by prescribing the curriculum, appointing staff and controlling funding. Private schools also fall under the mandate of the Ministry, which exercises supervisory control over them. At a regional level, the supervisory role of the Ministry is exercised through Regional Directorates.

In all levels of education there are private foundation. Approximately 5% of students in compulsory education (Primary and Lower High Schools) study in private schools, which consists the highest percentage in the European Union². State-run schools and universities do not charge tuition fees and textbooks are provided free to all students.

According to the statistical data for Secondary Education, provided by the Hellenic Statistical Authority for the school year 2014-2015³, 550,628 students attended classes in 1,327 Lower (Gymnasium) and Upper (Lyceum) Secondary schools with 60,931 teachers (see table 1). Of the total pupil population a percentage 4,91% attended private schools.

Table 1.
Statistical data for Secondary Education in Greece, school year 2014-2015

Lower secondary education (Gymnasium)			
	public	private	TOTAL
Pupil population	298,969	13,525 (4,3%)	312,494
School units	1,717	83	1,800
Teaching stuff	35,668	1,824	37,492
Upper secondary education (Lyceum)			
	public	private	TOTAL
Pupil population	224,578	13,556 (5,7%)	238,134
School units	1,239	88	1,327
Teaching stuff	21,850	1,589	23,439

Integration of ICT in greek schools⁴

The evolution of ICT integration in Greek education can be divided in the following four phases, reflecting the trends of educational psychology dominant in each period:

The period of educational technology (before 1970): Computer were treated as a kind of 'learning machine', which can teach not only the content of knowledge but also some general thinking and learning skills. This representation is directly related to the learning theories of behaviourism.

The Informatics Approach (1970-1980): It is characterized by introducing programming, such as Logo and Basic in Junior High School (Gymnasium), mainly

as an elective course in Senior High School (Lyceum) and computer-aided teaching (software and practice software, simulation software) at –then- Technical Lyceums (the equivalent of nowadays Vocational Lyceums (EPAL).

Informatics as a means as well as a subject of teaching (1980-1989): Computer programs are introduced at all levels of secondary education. At the same time, educational software of various types is being developed and used, while Information Technology is a separate subject in the curriculum.

Information and Communication Technologies (ICT) as a Learning Tool (after 1990): This approach is influenced by learning theories of constructivism. The basic idea is that computers do not directly teach thinking skills, but students, while working with the computer, internalize how the computer works as a cognitive tool for their own use. The last ten years ICT is introduced as a teaching subject also in Primary Education.

Another classification of ICT integration in Greek education is based on the philosophy and approach of introducing them into schools⁵.

Technocentric approach: Computer science is a separate teaching subject in the curriculum and is taught at various levels of education. This standard aims to offer knowledge on computer function and to introduce students to programming. In the international literature, it is also described with the term “isolated technical approach” or “vertical approach”. In our country ICT was introduced in secondary education in the mid-1980s, based on this technocentric approach, with Information Technology as a separate teaching subject of the curriculum.

Integrated approach: Information technology and ICT are considered as a means of knowledge, research and learning for all of the teaching subjects, as an expression of a holistic, cross-thematic approach to learning. It appeared in the last decade and its main feature is that the use of ICT and the teaching of this use is incorporated into the individual subjects of the curriculum (often referred to as “horizontal” or “holistic” approach).

Pragmatic / realistic approach (applied in Greece): Information technology and ICT as an element of general culture, but also a social phenomenon, as a combination of the two previous approaches (I teach IT - I teach and learn with IT). It is a combination of previous approaches and requires significantly different educational attitudes, both in the choice of knowledge and teaching practice, as well as in teacher education and training and in the logistical infrastructure. It is characterized by the teaching of at least one separate computer literacy course and the progressive integration of the use of ICT as a

² https://en.wikipedia.org/wiki/Education_in_Greece (accessed 17/6/2017)

³ Hellenic Statistical Authority, Surveys On Secondary General Education, Press Release 9/11/2016, available at http://www.statistics.gr/en/statistics?p_p_id=documents_WAR_publicationsportlet_INSTANCE_qDQ8fBKKo4IN&p_p_lifecycle=2&p_p_state=normal&p_p_mode=view&p_p_cacheability=cacheLevelPage&p_p_col_id=column-2&p_p_col_count=4&p_p_col_pos=1&documents_WAR_publicationsportlet_INSTANCE_qDQ8fBKKo4IN_javax.faces.resource=document&documents_WAR_publicationsportlet_INSTANCE_qDQ8fBKKo4IN_in=downloadResources&documents_WAR_publicationsportlet_INSTANCE_qDQ8fBKKo4IN_documentID=233462&documents_WAR_publicationsportlet_INSTANCE_qDQ8fBKKo4IN_locale=en (accessed 17/6/2017)

⁴ See Komis B.I., Introduction to Educational Applications of Information and Communication Technologies. Athens, New Technologies Publishing, 2004 (in greek)

Also see Tzimogiannis, A. & Komis B.I., Perceptions of Secondary Education Teachers on the Implementation of ICT in Their Teaching, in M. Grigoriadou, A. Raptis, S. Vosniadou, & Ch. Kynigos (eds.), Proceedings of the 4th Panhellenic Conference "ICT in Education" (Pp 165-176). Athens, 2004 (in greek).

⁵ Eleni Tsami, Anastasia Anastasopoulou, Teaching ICT in Greek Secondary Schools, International Journal of New Technology and Research (IJNTR), Volume-2, Issue-12, December 2016 Pages 01-06, available at https://www.ijntr.org/download_data/IJNTR02120017.pdf (accessed 18/6/2017)

means of supporting the learning process in the various subjects of the curriculum. This approach also features the Unified Framework of the Curriculum for Primary and Secondary Education (UFC-1997) and the Interdisciplinary Framework Program of Studies (2003). In bibliography this approach is also known with the term “feasible” or “mixed” approach. The emphasis in this approach is on the cognitive and social dimensions of the use of information technology in the educational process.

The digital media used for all of the above are computer labs in schools that are connected to the Greek School Network (GSN), which is the largest computer network in the country, interconnecting all school units and educational structures and services. Additionally, in 2010-12 laptops were offered and used in all Junior High Schools, with built-in educational software designed to be used in the teaching of a variety of cognitive subjects other than computer science. Finally, in recent years educational robotics is being introduced and practiced by many ICT teachers in schools of every level. However, other means such as mobile, tablets etc, easy to use, easily transportable and familiar to students may not be used in schools.

Brief description of the 1st Geniko Lykeio Rhodou- «Venetokleio»⁶

The 1st Geniko Lykeio Rhodou- «Venetokleio» (1st Lyceum of General Education of Rhodes) is a Senior High School. The city of Rhodes (population 80.000) is known due to its exceptional natural environment and local history, both of which have resulted in significant tourist development.

«Venetokleio» was founded by Venetoklis brothers, wealthy Rhodians of Egypt, in 1911. Our school uses a building of the Italian period and has this year 377 students, aged 15-18. The majority comes from middle-class families who indeed suffer because of the financial crisis. Some of our students are of migrant families from the Balkans and Eastern Europe, living in Rhodes for many years. The faculty consists of 40 teachers, the majority of which are highly experienced and qualified (post-graduate studies, foreign languages, ICT etc..)

There are three grades in our school with six classes each. The curriculum includes general education courses (language, history, maths, physics, economics, english, gymnastics etc). Students of 2nd and 3rd grade attend also specialised courses on three domains (“Orientation Groups” : a.Humanities, b. Science Studies c.Economy and Computer Studies). School facilities are old but well-preserved (the building was constructed in the 1920s as an Italian military camp), including modern labs of computer science, physics, chemistry and technology. There is also an event hall, a school library and a historical library with old editions. However, the fact that the facilities are very old and not designed as a school, pose obstacles to school functions.

Our school prepares students for the National Exams for admission in Universities, with significant success (90%) and is proud for many of its graduates becoming

distinguished scientists. However, the Teachers’ Assembly is well aware that our students -especially of the third grade- are extremely pressed by the intensive preparation and focus on the exams’ syllabus. This one sided approach creates serious problems, such as school anxiety, frustration etc. Therefore, we encourage participation in extracurricular activities aiming to the introduction of non formal educational methods and the intergrated development of our students’ personalities. Specific goals of these activities are to indicate the students’ abilities so as to plan their job careers, to raise their sensitivity on social and environmental issues, to develop democratic attitudes, their cultural involvement, the elevation of the European Idea, the encouragement of the use of foreign languages and ICT.

Our school aims as well to be open to the local community and scientific associations (already collaborated with the International Writers' and Translators' Centre, The Greek language Teachers' Association, the Mathematics Society, the Aegean University etc). We are also working to enhance the knowledge and use of foreign languages and spread the European Idea through the participation of our students in European projects, such as «EUROSCOLA» and funded European Programmes (Erasmus+).

ICT, e-learning and m-learning in 1st Lyceum of Rhodes

Curriculum. According to the curriculum of the Greek General Upper/Senior High School (General Lyceums) introduced from the school season 2014-2015, in the 1st Lyceum of Rhodes teaching of ICT has as follows:

1st Grade of General Lyceum

Applications of Computer Science (2 hours/week), as an optional subject

2nd Grade of General Lyceum

Introduction to the Principles of Science of Computers (1 hour/week), as a compulsory subject

3rd Grade of General Lyceum

Computer Science, as a compulsory subject of the Economical and Computer Studies Orientation Group

Mobile devices. According to the existing greek legislation, students are not permitted to keep, while in school, their mobile phones or any other digital device. In case students bring mobile devices in school, they must keep them inactivated in the schoolbag. Breaking the above rules is a matter of pedagogical inspection.

The latest regulation of the Greek Ministry of Education (Reg. No 137003/D1/25-08-2016)⁷ on the “Use of Mobile Phones and Electronic Devices in Schools” states as follows :

“For the proper functioning of schools, concerning the use of mobile phones and electronic devices by students and teachers of Primary and Secondary Education within the school area and having taken into account the Act of the Board of the Institute for Educational Policy No. 14/04.21.2016, we decide the following :

⁶ See our school site at <http://venetokleio.gr/school/>

⁷ Available in greek at <https://www.minedu.gov.gr/dimotiko-2/nipiagwgeio-ma8ites-m/23569-16-09-16-xrisi-kinton-telefonon-kai-ilektronikon-syskevovstin-a-thmia-ekpaidefsi-2> (accessed 20/6/2017)

1. Students are not allowed to be in possession of mobile phones within the school area.
2. Students are not allowed to have in their possession mobile phones as well as any other electronic device or game that features a system for editing image and audio within the school area. The equipment provided by the school must be used during the educational process and only under the supervision of a teacher.
3. Teachers, apart from the available by the school electronic devices (PC, laptops, tablets, interactive whiteboards etc.) are allowed to use their own personal electronic equipment during the teaching process and for the needs of it, in compliance with the safety standards and the relevant legal provisions on the protection of personal data of students and teachers (laws 2472/1997 and 3471/2006). [...]

The School Regulation of 1st Lyceum of Rhodes, as of every other school in Greece, is in accordance with the National Legislation and the school directorate has imposed disciplinary actions for certain misconducts.

However, both the Principal and the teachers of the school have leniency and tolerance as their first priority, especially when the possession of the mobile device meets certain needs of communication and does not prevent the teaching process and the school life itself. Regarding the use of the mobile phones as teaching tools in the classroom, numerous teachers of our school agree that this could offer a significant issue, innovative prospects and potentials to the teaching process. However, the educational use of mobile devices is not part of everyday educational practice.”

Research on the use of mobile technologies in school

PhD Theses. In greek bibliography there are very few studies on m-learning. This conclusion can be easily confirmed after a brief survey in the National Archive of PhD Theses⁸. The National Archive of PhD Theses provides access to the PhD theses from all Higher Education Institutions (HEIs) in Greece as well as PhD theses awarded to Greek scholars by foreign HEIs and certified by the Hellenic National Academic Recognition and Information Center (NARIC). The National Documentation Centre of Greece (EKT)⁹ is the organization responsible, by law, for the collection, development and maintenance of the National Archive of PhD Theses.

This survey was conducted through the “advanced search” tool in the site of the National Archive of PhD Theses. Advanced searching in the discipline of “educational sciences” with the terms “mobile learning” or “(smart) mobile devices” exact key words gave only 4 results¹⁰.

Therefore, it is easy to understand that academic research relevant to m-learning is in its first stages. However, a free web search reveals that all the Departments of Education in Greek Universities offer Postgraduate Studies Programmes on ICT use in

education. This fact can be considered as evidence of the recognition by the greek academic community of the need to enhance the knowledge of teachers on ICT in general and m-learning particularly, and upgrade the level of relevant academic research and studies.

After an analysis of the abstracts of these, relevant to m-learning, PhDs, one can conclude the following:

Papadakis, Stamatios, The use of ICT for teaching realistic mathematics in preschool education, 2015 (in greek), University of Crete, School of Education, Department of Preschool Education¹¹

The study investigates and compares the influence of the use of PCs, laptops and smart mobile devices (e.g. tablets) to teach Realistic Mathematics, in the development of mathematical competence of preschool children. The main conclusion is that the use of computers and tablets, together with various other factors, can play a significant role to the development of mathematical skills of preschool children.

Karamatsouki, Angeliki, Environmental education for children with dyslexia through mobile devices, 2009 (in greek), University of Thessaly, School of Humanities and Social Sciences, Department of Special Education¹²

This thesis explores Mobile Learning, ie the ability of students to access learning resources while they are in motion, and the benefits of integrating them into the environmental education of students with dyslexia. The research was implemented on students of Secondary Education and included various educational activities to study the natural environment of an urban park. In order to find out if the use of mobile devices in the learning process benefits students with dyslexia, a study of the changes in knowledge and student attitudes before and after the educational intervention was made, as well as a comparison with other groups of dyslexic or formal students who followed “traditional” learning methods. The results showed that activities have been effective, and dyslexic students have experienced relatively the most positive changes in their responses, especially those who have used mobile devices. At the same time, through the observation process it was found that students can easily use devices for learning activities. Also, their participation and interest was particularly high throughout the experiment. As a general conclusion it can be argued that mobile learning can improve environmental education, especially for students with dyslexia.

Alepis, E.D., Emotional intelligence in object oriented multimodal user interfaces for mobile learning and e-learning, 2009 (in greek), University of Piraeus, Department of Informatics.¹³

The field of mobile software technology is an important research goal of this dissertation, focusing on the provision of educational software and authoring tools for trainers. The resulting “Mobile Tutor” system incorporates reasoning mechanisms with regard to users,

⁸ <https://www.didaktorika.gr/eadd/>

⁹ <http://www.ekt.gr/en>

¹⁰ Papadakis, Stamatios, The use of ICT for teaching realistic mathematics in preschool education, 2015 (in greek)

Karamatsouki, Angeliki, Environmental education for children with dyslexia through mobile devices, 2009 (in greek)

Alepis, E.D., Emotional intelligence in object oriented multimodal user interfaces for mobile learning and e-learning, 2009 (in greek)

Giaroudis, D.P., Information and communication technologies in collaborative learning via mobile devices, 2012 (in greek)

¹¹ <https://www.didaktorika.gr/eadd/handle/10442/36766>

¹² <https://www.didaktorika.gr/eadd/handle/10442/37200>

¹³ <https://www.didaktorika.gr/eadd/handle/10442/26662>

such as user modeling, and techniques of adaptation to the user and to the operating environment of the mobile device in question. Integrating these intelligent mechanisms into mobile software technology is a major innovation and contribution of this thesis. The adaptability of the system to the environment of each interface is of particular importance, since it allows the presentation of the transmitted information to be adapted according to the mobile device of each user. The main part of the dissertation is the field of human-computer emotional interaction, aiming at the potential integration of this field into the mobile software technology. Human-computer emotional interaction involves the recognition of users' feelings from computers as well as the production of emotional states from the computer side through assistant-agents. Both production and recognition of emotional states has been studied in the context of this thesis, while the conviction for the importance of their interdependence has been strengthened. Although these conclusions refer mainly to the Informatics scientific field, might be of great importance for education practices and especially m-learning.

Glaroudis, D.P., Information and communication technologies in collaborative learning via mobile devices, 2012 (in greek), University of Macedonia, Department of Applied Informatics¹⁴

In this thesis it is argued that the evolution of Internet and multimedia services has led to interesting applications in education, but the acquisition of knowledge presupposes the existence of computers and internet access. Most times, however, owning or using a computer with a reliable Internet connection can be an important restriction for learners. Mobile communication technologies can overcome such restrictions, and prepare learners for more flexible training environments. Because of economic realities, educators are compelled to consider new delivery strategies and approaches to developing lifelong learners. Development of personal skills by learners includes communication and cooperation skills, as is the ability to manage information and flexibility to work in different contexts or conditions. However, Internet users often cope with difficulties such as distraction, lost-in-space syndrome and cognitive overhead, when trying to acquire and access learning material. Additionally, mobile learners are highly goal-driven when they search information on educational sites. Thus, it is essential to improve browsing usability for mobile learners with less effort and frustration, and, more important, by saving browsing time. By knowing how learners gather web information and choose their navigation paths, recommendation systems can be

modeled and partially automate and predict learners' steps, thus improving learning material discovery and simplifying management. The main topic addressed in this work is to propose an architecture aiming to reduce mobile users' effort when navigating in an educational portal and drive them to desired educational material, while gaining knowledge without spatial and temporal constraints. After tracking mobile users' preferences from preceding log records while visiting the portal and exploiting the semantics of the learning content, an online system recommends the portal's web pages with similar conceptual content.

Although limited in number, the existence of the above theses suggest that academic research in Greece has shown interest on this new trend of educational technology, as is m-learning. Being in its initial stages, research on the use of mobile devices in Education will certainly progress in the following years. Of course, the greek educational system has to embrace these new trends that –most probably- facilitate the educational process, abandoning conservative stances and practices, like the prohibition of the use of mobile devices in greek schools.

Postgraduate studies¹⁵. Most of the greek Universities offer postgraduate studies on ICT in Education, some of interdisciplinary. After a brief web research¹⁶, eighteen (18) postgraduate studies programmes on ICT in Education are offered by Greek Universities. M-learning consists integral part of many of these programmes¹⁷. Graduate and postgraduate students often choose as theme of their final dissertation “m-learning”¹⁸.

Concluding remarks

After the brief research on the use of mobile devices (m-learning) in Greek education, which has been analyzed in this paper, one can argue that:

The m-learning academic research is still going through its initial stages in Greece. Few PhD dissertations focus on mobile learning. However, most Greek universities have postgraduate programs on the use of ICT in education and mobile learning is part of their curriculum.

The introduction of ICT as a separate course in the curriculum of Greek schools is already in its second decade. In recent years, the use of new technologies for the teaching of all courses has been steadily spreading. The interest of teachers and pupils is growing, although there is a lack of relevant training and the educational environment offers limited opportunities for the assimilation of the use of new technologies in the Greek

¹⁴ <https://www.didaktorika.gr/eadd/handle/10442/28481>

¹⁵ <https://www.eduguide.gr/>

¹⁶ Through the educational portal “eduguide” at <https://www.eduguide.gr>. See a list of postgraduate studies programmes on education at <https://www.eduguide.gr/grad/program> (accessed 25/6/2017)

¹⁷ As in the case of the programme “Education Sciences - Education with the Use of New Technologies”, offered by the Department of Primary Education, Faculty of Humanities, University of the Aegean, Rhodes. See about it at European Commission's page Learning Opportunities and Qualifications in Europe, Masters Degree in “Education Sciences - Education with the Use of New Technologies”, offered by the Department of Primary Education, Faculty of Humanities, University of the Aegean, Rhodes, available at <https://ec.europa.eu/ploteus/en/content/master%E2%80%99s-degree-education->

[sciences-education-use-new-technologies-department-primary](https://www.eduguide.gr/) (accessed 25/6/2017) and <http://www.pre.aegean.gr/pms-ntedu/?lang=el> (accessed 25/6/2017)

¹⁸ See for example:

Fotis Panagopoulos, m-Learning: Education through mobile devices, TEI of Crete, 2009, available at

<http://nefeli.lib.teicrete.gr/browse/stef/epp/2009/PanagopoulosFotis/attached-document-1288691305-567457-16990/Panagopoulos2009.pdf> (accessed 25/6/2017)

Lazaros Devetzis, Mobile Learning: Learning through mobile devices, TEI of Thessaloniki, 2014, available at http://index.lib.teithe.gr:8080/bitstream/handle/10184/7259/Devetzis_Lazaros.pdf?sequence=3 (accessed 25/6/2017)

school. The same, of course, applies to the use of mobile devices in the educational process. For the time being, the Greek state deals with this issue with mistrust.

Our school, the 1st Lyceum of Rhodes, is no exception to the rule. Nevertheless, teachers and students, thanks to the participation of our school in the “Blic & Clic” program, have been in touch with the educational benefits of new technologies and mobile devices in particular, potentially creating new perspectives in the educational process.

Referencias

Books and articles

Alepis, E.D., Emotional intelligence in object oriented multimodal user interfaces for mobile learning and e-learning, 2009 (in greek), available at <https://www.didaktorika.gr/eadd/handle/10442/26662>

Eleni Tsami, Anastasia Anastasopoulou, Teaching ICT in Greek Secondary Schools, International Journal of New Technology and Research (IJNTR), Volume-2, Issue-12, December 2016, available at https://www.ijntr.org/download_data/IJNTR02120017.pdf (accessed 18/6/2017)

Fotis Panagopoulos, m-Learning: Education through mobile devices, TEI of Crete, 2009, available at <http://nefeli.lib.teicrete.gr/browse/stef/epp/2009/PanagopoulosFotis/attached-document-1288691305-567457-16990/Panagopoulos2009.pdf> (accessed 25/6/2017)

Glaroudis, D.P., Information and communication technologies in collaborative learning via mobile devices, 2012 (in greek), available at <https://www.didaktorika.gr/eadd/handle/10442/28481>

Karamatsouki, Angeliki, Environmental education for children with dyslexia through mobile devices, 2009 (in greek), available at <https://www.didaktorika.gr/eadd/handle/10442/37200>

Komis B.I., Introduction to Educational Applications of Information and Communication Technologies. Athens, New Technologies Publishing, 2004 (in greek), available at

Lazaros Devetzis, Mobile Learning: Learning through mobile devices, TEI of Thessaloniki, 2014, available at http://index.lib.teithe.gr:8080/bitstream/handle/10184/7259/Devetzis_Lazaros.pdf?sequence=3 (accessed 25/6/2017)

Papadakis, Stamatios, The use of ICT for teaching realistic mathematics in preschool education, 2015 (in greek), available at <https://www.didaktorika.gr/eadd/handle/10442/36766>

Tzimogiannis, A. & Komis B.I., Perceptions of Secondary Education Teachers on the Implementation of ICT in Their Teaching, in M. Grigoriadou, A. Raptis, S. Vosniadou, & Ch. Kynigos (eds.), Proceedings of the 4th Panhellenic Conference "ICT in Education" (Pp 165-176). Athens, 2004 (in greek).

Web sites

Educational portal “eduguide”, <https://www.eduguide.gr>

European Commission, Learning Opportunities and Qualifications in Europe, <https://ec.europa.eu/ploteus/en/content>

Fullbright Foundation, <http://www.fulbright.gr/>
Hellenic Ministry of Education, <https://www.minedu.gov.gr>

Hellenic Statistical Authority <http://www.statistics.gr>
National Archive of PhD Theses <https://www.didaktorika.gr/eadd/>

National Documentation Center, <http://www.ekt.gr/en>
OECD, <https://www.oecd.org>

Unesco Institute for Statistics, <http://uis.unesco.org>
Venetokleion 1st Lyceum of Rhodes web site, <http://venetokleio.gr/school/>

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