Education Quarterly Reviews

Patsia, Androniki, Kazana, Athina, Kakkou, Argiro, and Armakolas, Stefanos. (2021), The Implementation of the New Technologies in the Modern Teaching of Courses. In: Education Quarterly Reviews, Vol.4, No.1, 159-167.

ISSN 2621-5799

DOI: 10.31014/aior.1993.04.01.183

The online version of this article can be found at:
https://www.asianinstituteofresearch.org/

Published by:
The Asian Institute of Research

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The Asian Institute of Research
Education Quarterly Reviews
Vol.4, No.1, 2021: 159-167
ISSN 2621-5799

DOI: 10.31014/aior.1993.04.01.183

The Implementation of the New Technologies in the Modern Teaching of Courses

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Abstract
Rapid developments in science require the application of new technologies in the field of education, aiming at changing the traditional and obsolete ways of teaching, providing ground for new forms. These new forms of teaching do not replace the teacher but adapt his role from omniscient to mentor and role model for students. With the use of technological means and the teacher's contribution to the teaching of the courses, the results in learning - let alone in the understanding of specialty courses- can be even more remarkable and bring about changes and perspectives for new approaches in the field of education. The aim of this survey was to investigate the use of new technologies by teachers today in the teaching of specialty courses and to what extent this implementation can improve the learning process. The results of the research show that our sample not only has a positive attitude towards the use of new forms of technology in the teaching of specialty courses but also seems to understand the benefits that arise from their use for the teachers themselves, for students, and the whole educational process.

Keywords: New Technologies, Teaching, Specialty Courses, Learning, Educational Technology

1. Introduction

Educational technology as a scientific field has been evolving over the past years. Therefore, according to current data, educational technology is a vague concept that could be approached as a field of practice in teaching. The term educational technology, albeit of unknown origin, pre-existed from the early stages of the application of technology (Saettler, 2004). It is based on research on how to learn, communicate and combine both human and non-human resources to bring about positive results.

One definition that can approach educational technology is the study and ethical practice that aims to facilitate the learning process and improve performance by creating, using, and managing appropriate educational processes and tools (Januszewski & Molenda, 2013). Technology has added multifaceted new dimensions to teaching and learning, which include new ways of teaching every aspect of language, new pedagogical and assessment approaches, as well as new ways of conceiving and conducting research and development (Chapelle & Sauro, 2017).

The more developed a culture is, the more complex the technology designed to meet the needs and requirements of the population. The same is true in the field of education where any significant change and redefinition of priorities and goals in the learning process can and is able to modify the means of technology applied. It can involve innovative methods in the teaching process and combine different elements such as people, technological devices, techniques and processes as well as ideas aiming at learning and supporting all 21st-century metacognitive skills such as initiative, communication, collaboration, adaptability and the use of the internet (Bates & Sangra, 2011).

New technologies and teaching

The main objective of innovative educational technologies is to prepare a person for life in an ever-changing world. It is impossible to imagine a modern lesson without the introduction of innovative technologies (Rahmatova,2020). They need to be introduced and consolidated in the field of education, providing substantial opportunities for students and educators for new forms of teaching in course teaching.

A key concern in the use of alternative teaching methods with modern supervisory tools is the strengthening of teaching. This is facilitated by exploring sources for knowledge acquisition in order to help modernize teaching and contribute to the understanding of teaching units by providing content to the theoretical framework of teaching (De Biasi et al., 2006). Some forms of new technologies seem to be widespread and used more extensively by teachers, while others are not yet widespread and integrated into teaching. The term New Technologies includes educational software, internet, e-learning, educational multimedia, and interactive whiteboard (Roblyer, 2008).

The advent of new technologies in the field of education is a revolutionary method that promises new perspectives in the teaching of specialty courses, as opposed to traditional forms of interaction and teaching. The communication between teacher and trainee now takes on a new dimension and electronic form. Both the teacher and the student have an active role in learning and exchange information and knowledge in the context of teaching. The role of the teacher and the ability to perform his work is constantly updated under the influence of the social and economic environment, but also of cultural changes (Efthymiou & Vitsilaki, 2008).

New forms of technology in the teaching of both general and specialty courses lead to a readjustment of roles in education and the educational process changes from teacher-centered to student-centered or team-based (Griva, Thanopoulos, Armakolas, 2019a). More specifically, the teacher ceases to provide sterile knowledge to students and retains the role of counselor and mentor, utilizing computer tools in education. In addition, his role is to explain to students the new e-learning system and how to use it to filter the inexhaustible sources of knowledge provided to them through the use of the internet. As a result, students learn how to train and acquire critical thinking (Hüttner, 2008; Armakolas, Panagiotakopoulos, Fragkoulis, 2019).

Also, the use of digital technology in classroom activities can enhance new forms of dialogue (Griva, Thanopoulos, & Armakolas, 2019b). Interactive skills refer to the specific use of language as a tool for understanding knowledge. It is a way of creating understanding based on one's perception, while allowing other ideas and opinions to be adapted or integrated into one's own thinking. Thus, we argue that it is valuable that teachers can support the development of students' interactive skills (Rasmussen & Ludvigsen, 2010; Headrick & Hall, 2013; Rubel, Hall-Wieckert & Lim, 2017).

Research has shown that it is not the technology itself that increases the quality of classroom discussions. New technologies need to be integrated with teacher practices and homework design (Dillenbourg, Jarvela & Fisher, 2009). It has also been shown that the importance of establishing rules that are set and regulated within the classroom needs to productively address the presence of technologies (Rasmussen et al., 2012).

Teaching specialty courses

The role of new technologies in the teaching of specialty courses is significantly important because it integrates technique and general education. Specialty courses usually take place in the context of laboratory courses and the use of new forms of technology helps to integrate theory and practice (Hüttner, 2008).

For the more diverse learners, the use of computer technology for all facets of second language learning has dramatically increased as the reach of the internet continues to spread, providing access to social media, reference materials, online instruction and more (Chappelle & Sauro, 2017). The power and dynamics of the image facilitate the transmission of specialized knowledge, but also its better assimilation by students. In the environment of mathematical science, the introduction of new technologies provided enrichment, glamor and at the same time opened new avenues for exploration, experimentation, computational speed, and quality upgrading. For example, color intervention distinguished geometric concepts (Verykios, 2010).

The increased access to a large volume of information works beneficially for the learner himself since he increases his autonomy from the moment, he becomes active in learning and is called to evaluate the sources of knowledge provided to him and to cross-reference information (Armakolas, Panagiotakopoulos, Karatrantou, 2018). This is where the biggest difference between the use of new forms of technology in teaching and the traditional teacher-centered learning model lies, as the use of new technologies welcomes experiential discovery.

Even for those who are inclined to experiment with emerging technologies, it can be challenging to identify which resources, tools, or Web sites may best fit a particular lesson, activity, or goal. Many of the most compelling opportunities are situated within the same global social and technology trends that have become commonplace in our daily lives, including social media, artificial intelligence, big data and augmented realty (Kesiler, 2018). As a result, students' critical thinking is sharpened and students begin to perceive in a multifaceted way the subject of general courses, but also their specialty which is the subject that concerns them most in their later professional career (Griva, Thanopoulos, Armakolas, 2019a).

With the use of new technologies, the curricula of the specialty courses are modernized and adapted to the requirements of the labor market, optimizing the individual qualifications of the students, without any social and geographical distinctions, since the use of new technologies favors the change of learning environment (Papadiamantopoulou, Papadiamantopoulou, Armakolas, Gomatos, 2016; Armakolas, Kazana, Mitroulia, 2020). Asynchronous and modern forms of communication and correspondence do not limit place-based learning. More specifically, it does not force students to attend within the classroom, nor does it require the simultaneous presence of the teacher in order to achieve learning (Kazana, Armakolas, Zotos, 2019). Therefore, distance education is one of the main benefits of using new forms of technology in the teaching of specialty courses, as well as in general education (Armakolas, Panagiotakopoulos, Karatrantou, 2018) and has undoubtedly played a catalytic role in the Pandemic era to maintain regularity of the educational process.

From the research of the Public Institute of Educational Training on teachers of different specialties, it was found that the use of supervisory tools in teaching and more specifically technological tools such as the computer are among the first choices of teachers. This is justified by the possibilities it offers for the active participation of the trainees and discussion in the nature of the subject (Saginetou, 2019).

Most educational institutions, however, do not have a plan for learning new technologies. They do not know the goals of learning new technologies (Bates & Sangra, 2011). The teaching of learning new technologies and the use of technology is mainly aimed at supporting and providing not only the knowledge but also the skills of the 21st century. Flexible access to knowledge has increased teacher-learner interaction, the provision of personalized learning and has promoted student self-efficacy, communication, collaboration, and adaptability to the data and requirements of modern society. The value and usefulness of new technologies are not limited only to education, but also to the society in general (Ahmadi, 2018; Koutsogiannis, 2007).

But Bates & Sangra in 2011 concluded that while teachers are willing to use technology to enhance the traditional teaching method, they do not change the way they teach. The use of new technology if not combined with a change in the way of teaching will not have tangible benefits in learning, but will only bring costs to the education system.

2. Method

The aim of this survey was to study the impact of new technologies in the field of education and specifically in the teaching of specialty courses. The specific aim of this research was to motivate the scientific staff that either works or will work in education, to integrate the new forms of technology in the teaching of the specialty courses, realizing its benefits.

In particular, the following research questions are studied:
Research Question 1. What is the attitude of teachers towards new forms of technology today?
Research Question 2. What new forms of technology are used by teachers in the teaching of specialty courses?
Research Question 3. What is the effect of the use of new forms of technology in the educational process?

The importance of the subject, according to the literature, lies in the fact that there is a need for the introduction of new forms of technology in the teaching of specialty courses. There have been several studies abroad that prove that they help the learning process and for this reason, their use by teachers is becoming more frequent. Based on these findings, an effort is being made to investigate the issue in Greece as well. The new scientific knowledge that will be produced will aim to help both teachers and staff of other specialties in the field of education and to motivate the state to take measures to introduce educators to the proper use of new technologies in education.

The present research was conducted from January to April 2020 and was qualitative, in the form of a semi-structured interview. This research is qualitative, due to the use of interviews. This type of research is suitable for an in-depth investigation of teachers' attitudes and perceptions towards the use of new forms of technology in the teaching of specialty courses. The goal of the qualitative investigation is not simply to record an attitude or behavior but a holistic understanding of it (Panagiotakopoulos & Sarris, 2016).

The sample for our research was eight teachers of specialty courses, who study in ASPAITE of Patras and specifically 4 men and 4 women with an average age of 38.4 years. In terms of years of service, the average for men was 8 years, while for women teachers it was 6 years. Men come from specialties in physiotherapy, economics – administration, and biology, while women from nursing, agriculture, information technology, and economics. Interview questions were based on research (Januszewski & Molenda, 2013; Bates & Sangra, 2011; Seet, Hong & Chai, 2019; Rasmussen & Ludvigsen, 2010; Headrich & Hall, 2013; Rubel et al, 2017).

3. Results

RQ 1. Teachers' attitudes towards new forms of technology

The first research question consisted of three sub-questions related to teachers' attitudes towards new forms of technology. To the first question about their attitude towards new forms of technology, all participants answered that they are positive. This fact is in line with research that supports the positive attitude of teachers towards the use of new forms of technology (Koutsoukou, 2014; Koutsogiannis, 2007). Others expressed it with enthusiasm, citing benefits that result from their use, such as arousing students' interest, that students participate more and that the lesson is done in a more enjoyable way. However, there were teachers who responded that they were cautious but sceptical. which is why they did not incorporate the new forms of technology in their teaching from the beginning of their teaching career. The use of new forms of technology for them was done gradually and in their effort to keep up with the technological developments of the time. In fact, the answer of a physiotherapy professor that "*in the future, he will join to a greater extent because he will enjoy many benefit*s" was typical.

In the second part question, teachers were asked to answer whether they believe that the benefits of using new forms of technology are limited to the teaching process. The response to this question was controversial in terms of the wording and the way our sample perceived it because some educators answered that those new forms of technology can be used in other areas of human activity in their daily lives. Typical was the response of a Biology teacher who states "*and in a company if someone worked and made a presentation at PowerPoint it would be easier to understand by the public for example*," others said that in addition to knowledge it provides metacognitive

skills such as socialization, the organization, and encouragement to further expand their spiritual horizons and familiarize students with the use of new forms of technology. As Bates & Sangra said in 2011, the ultimate goal of new forms of technology is to acquire 21st-century metacognitive skills such as taking initiative, communicating, collaborating, adapting, and using the internet. Another part of the sample refers to the use of new technologies again in teaching but outside the context of the classroom, pointing to their use in distance education via skype or the use of the internet from home. Summing up, from the answers collected, it appears that the benefits of new forms of technology are undoubtedly generalized beyond the space of teaching the specialty courses. The usefulness of new forms of technology is not limited to education, but also has benefits in society in general (Koutsogiannis, 2007).

In the third part question of the thematic unit, which concerns the attitude of teachers to new technologies, teachers were asked to give us an example that new technologies helped in the learning process. The examples used focused on the results and benefits of using new forms of technology in teaching. Typical answers were "*new technologies have untied the hands of teachers*," "*students are constantly asking questions and finding the lesson interestin*g," "*they showed a special interest*," "*what more experiential than to see them in a video on YouTube, they do not see only me and are bored*," "*the students felt as if they were participating in the process themselves*," "*the liveliness and immediacy increased the students' interest," "they see it as an experience from telling them, which is not so easy to understand on a practical level*," "*so the lesson became very fun, interesting, they laughed, wondered and were surprised by how easy the lesson can become, so they can understand things they did not know*"."These examples are in line with Januszewski & Molenda who in 2013 argued that educational technology facilitates the learning process and student performance. Also, the entry of new technologies enriches and gives glamor to the teaching of specialty courses (Verykios, 2010).

RQ 2. The use of new technologies in the teaching of specialty courses

The second research question concerned the use of new forms of technology i.e., modern supervisory tools, by teachers in the teaching of specialty courses. To the first part about which supervisory tools they consider appropriate and use in the teaching of specialty courses, the majority of teachers answered that they use more in the course presentation the Power Point, and the internet. Typical was the response of an economics teacher who justified his answer by saying that the PowerPoint presentation helps him to present diagrams and figures and the students understand concepts of the lesson that would not be easy to describe orally. A biology professor also mentioned the importance of using PowerPoint in teaching both Biology and other science subjects, such as Physics and Chemistry. From her experience, she has noticed that when addressing a younger audience, she needs to make some concepts that may seem complicated in the eyes of students more understandable, so the PowerPoint presentation provides the ability to use shapes and facilitates teaching. A professor of economics and administration typically said "*it is very good for students to see and observe*," thus emphasizing the importance of using supervisory tools in teaching. Supervisory means do not only provide knowledge but complement and enhance teaching (Roblyer, 2008). The findings of the present research, always according to the teachers, show that the use of supervisory means enhances the understanding, interest, and attention of students.

Many teachers also prefer to use the internet in teaching. An economics teacher said he encourages students to use the internet at home to see more concepts and issues related to delivery. Also, a professor of agriculture states that now on the internet there are updated sites with serious work and good exercises. A nursing teacher also sees the internet as an important educational tool but is frustrated by the network's inability to support connection to all classrooms in the school unit where she works. A smaller percentage of teachers use online assignments and interactive whiteboards in their teaching. A professor of economics and administration typically states that recently, when she started using the interactive whiteboard in her teaching, students showed interest, even those who were not activated by some form of traditional teaching. Therefore, as reported in 2006 by De Biasi et al., new forms of technology add content to the theoretical framework of teaching. Judging by the apparent motivation of the students and the willingness to participate, the conclusion is that the use of digital technology in classroom activities has led to more forms of dialogue (Rasmussen & Ludvigsen, 2010; Rubelet al.l, 2017).

In the second part of RQ 2, which deals with the use of educational supervisory tools in the teaching of specialty courses, teachers were asked how many years they have been using new forms of technology in their teaching. First of all, it should be noted that all teachers use educational supervisory means in the teaching of specialty courses and the average answer given was that they have started to incorporate new forms of technology in their teaching in the last 5.5 years. Most teachers even admitted that they did not use new technologies from the beginning of their educational career, but they gradually incorporated it. At first, some were skeptical about the benefits, but then they began to modernize more and more and use technology in their teaching. This is easily understood if we consider that the average length of service of these teachers is 7 years. Typical was the response of a teacher who, while trying to use them, made the following remark: "*here most of them are older than me and do not think that technologies can help with anything. It is purely a matter of the traditional method. Anyway…".* This is a reasonable observation if we consider that the new generations are more familiar with the use of new forms of technology.

The third part of the research question regarded whether there is any other supervisory tool that they have used in their teaching. In addition to what was mentioned in the first question, the majority of teachers answered that they use mainly what was mentioned above. Many of them, although they may not use many forms of new technologies, have been positive and have stated that if they need or are asked by students to use further supervisory means in teaching specialty courses, they are willing to do so. But there have also been answers from teachers who use skype and computers only when necessary, while others are considering incorporating some of the new technologies mentioned in the first question into their teaching in the near future.

RQ 3. The effect of the use of new forms of technology in the educational process

In the third research question, participants answered questions about the results from the use of new forms of technology on the educational process. When asked what effect they think their integration into teaching has, most teachers have claimed it has a positive effect, citing significant benefits that come from using them. Initially, as it is typically stated, they motivate students to seek new knowledge on their own and to become familiar with the use of new forms of technology. In addition, they reduce the teacher preparation time, they make the lesson more understandable and interesting, and they increase the participation of students, helping them develop metacognitive skills and work in groups in a pleasant and creative atmosphere. The results from the use of new forms of technology are in line with research that claims that their use contributes to faster and more effective learning (Seet et al., 2019). There were also teachers who expressed that although their effect is positive, there are cases where they prefer the traditional way of teaching depending on the subject they want to teach. Nevertheless, all participants recognize that the introduction of technology has positive results in the field of education.

Participants were then asked if they believed that the use of new forms of technology in teaching specialty courses would help educators or learners more. Most of the sample answered that both sides can in different ways benefit from their use in teaching. On the one hand, teachers using new forms of technology in the teaching of specialty courses facilitate the organization of the lesson and communication and dialogue with students, and on the other hand, students understand concepts and practices more easily using audiovisual material, which stimulates their interest of the students, is closer to the standards of their generation, and finally turning the lesson into a more familiar one and giving it a fun character. The integration of new forms of technology in teaching facilitates the activity of both teachers and learners (Koutsolia, 2014) and helps to build ideas and organize the way of thinking (Shaffer, 2004).

Finally, they were asked about how the use of new technologies is useful in teaching specialty courses and most teachers answered that it is necessary mainly for teaching specialty courses due to their specialized nature. Specialty courses, as teachers of different specialties emphasized, are more difficult for students to understand and the use of new forms of technology helps students to become familiar with new technologies, but also to access new knowledge, especially in cases where it is not possible. Our research agrees with the results of Seet, Hong, & Chai, (2019), who argue that the use of new forms of technology increases the technological - pedagogical knowledge. Typical answers "*in my own lesson as an agronomist I do not know whether it is possible to take students to a farm, to a nursery, to a flower shop*," "*computer courses nowadays do not mean to be done without*

new technologies," "*new technologies are the beginning of specialization courses*." As Picciano & Seaman (2009) report, new forms of technology increase feedback in education. However, some teachers also refer to the benefits that they themselves have with the use of new technologies in the teaching of specialty courses as it helps them to better organize the material, in less time and to teach it more effectively to students. A small percentage of the sample believe that the use of new forms of technology is equally helpful for both general courses and specialty courses, without considering that their use offers more in the teaching of specialty courses.

4. Discussion

The scope of this survey was to investigate the use of new forms of technology by secondary school teachers in the teaching of specialty courses, in order to assess the extent of the use of new forms of technology in teaching, the results of their use, but also any lack of knowledge about their proper use, both for teachers and for students. It should be emphasized, however, that there was a limitation of the small sample, as the sample comes only from teachers who studied in ASPETE Patras and for this reason; it is not easy to generalize.

With regards to the first research question, our sample not only has a positive attitude towards the use of new forms of technology in the teaching of specialty courses but also seems to understand the benefits that result from their use for both teachers themselves and students as well as the whole educational process. There is no correlation between gender and attitudes towards the new forms of technology since both sexes comment positively and recognize through the examples, they gave the importance of new technologies in teaching. It was observed that teachers who were younger showed more enthusiasm for the use of new forms of technology in their teaching.

Regarding the second research question i.e., the use of new technologies in the teaching of specialty courses, our sample seems to use new forms of technology in teaching especially in recent years at an increasing rate in order to improve the quality and interest of the course, thus facilitating the educational work. Regarding gender, no difference was observed as both men and women use new forms of technology in their teaching. Furthermore, from the answers of the sample, there does not seem to be any difference in gender and age in terms of the effect that teachers believe that the use of new forms of technology has on the teaching of specialty courses since they all answer and document the positive results they observe.

Finally, in the third research question, they seem to realize that through the use of new technologies they benefit themselves and the students both in the smooth outcome of the lesson, as well as in the motivation and increase of the students' interest in their lesson.

It also seems that the level of knowledge for both educators and learners is largely determined by their personal effort and desire to be trained as there is no correspondence between the rapid development of technology and the training received by both educators who are responsible for passing on the knowledge, as well as the trainees who will have to cope successfully with this new data.

Especially nowadays, the messages from the use of technology through the platforms of modern and asynchronous education are encouraging, which on the occasion of the Pandemic created new conditions for learning and supporting education. Technology has become an integral part of everyday life and now steps have been successfully taken in terms of the integration of new forms of technology in the educational process.

References

Ahmadi, M. (2018). The use of technology in English language learning: A literature review. International *Journal of Research in English Education*, 3(2), 115-125.

Armakolas, S. Kazana, A., Mitroulia, M. (2020). Distance Sustainable Education. Incentives and expectations. *Journal of Education, Technology and Computer Science*, 1(31), 9-18. http://dx.doi.org/10.15584/jetacomps.2020.1.1

Armakolas, S., Panagiotakopoulos, C., Fragkoulis, I. (2019). The educational design of the teleconference with the use and utilization of participative - experimental techniques. In *proceedings of 10th International Conference of Open and Distance Learning, 10,* 140-149. http://dx.doi.org/10.12681/icodl.2326

Armakolas, S., Panagiotakopoulos, C., Karatrantou, A. (2018). Teleconference in support autonomous learning. *European Journal of Open, Distance and e-Learning*, 21(2): 27-43.

Bates, T., & Sangra, A. (2011). *Managing Technology in Higher Education: Strategies for Transforming Teaching and Learning*. Jossey – Bass: A Wiley Imprint.

Chapelle, C., & Sauro, S. (2017). The Handbook of technology and second language teaching and learning, Publications John Wiley & Sons.

De Biasi, M., Desisle, R., et al (2006). *CIRCE–Training Program Classical Studies with New Technologies for Europe*. Julian Morgan.

Dillenbourg, P., Järvelä, S., & Fisher, F. (2009). The evolution of research on computer- supported collaborative learning: from design to orchestration. In N. Balacheff, S. Ludvigsen & De Jong, T. Lazonder, A & Barnes, S. (Eds.), *Technology-Enhanced Learning: Principles and Products*. Springer.

Efthimiou, H., Vitsilaki, Ch. (2008). *New forms of learning and the role of technology - The case of teacher education.* Kyriakidis Bros.

Griva, A., Thanopoulos, C., Armakolas, S. (2019a). The pedagogical use of ICT in a School of Engineering in tertiary education. *Innovations and Technologies in Education,* 01(2019): 5-14. ISSN: 2571-2519.

Griva, A., Thanopoulos, C., & Armakolas, S. (2019b). Integrating digital technologies in tertiary education to prepare students for the job market. *Form@re - Open Journal Per La Formazione in Rete,* 19(3), 175-185. https://doi.org/10.13128/form-7719

Headrick, T., & Hall, R. (2013). *Counter-mapping the neighborhood on bicycles: Mobilizing youth to reimagine the city.* Technology, Knowledge and Learning, 18(1-2), 65-93.

Hüttner, A. (2008). *Teaching of technological courses*. Ion Publications.

Januszewski, A., & Molenda, M. (2013). *Educational Technology: A Definition with Commentary*. Routledge - Taylor & Francis Group, New York and London.

Kazana, A., Armakolas, S., Zotos, C. (2019). Participation and motivation in distance learning programs of Geotechnics. *Innovations and Technologies in Education*, *01*(2019): 42-54. ISSN: 2571-2519.

Kesiler, G. (2018). Technology and the future of language teaching. *Foreign language annals,* 51(1), 205-218.

Koutsogiannis, D. (2007). *Utilization of information and communication technologies in the teaching of philological courses and mainly in the teaching of Greek*, Thessaloniki - Greek Language Center (Research on philologists trained in the project Odyssey, 2007).

Koutsolia, M. (2014). The applications of the internet in teaching and learning, Sparta, Thesis, TEI of Peloponnese.

Koutsoukou, P. (2014). Investigation of the perceptions of primary school teachers regarding the didactic utilization of new technologies in the teaching of History, Postgraduate Thesis, University of Patras.

Panagiotakopoulos, C., & Sarris, M. (2016). *Conducting a scientific study using ICTs.* ION Publishers. [In Greek]

Papadiamantopoulou, M., Papadiamantopoulou, C., Armakolas**, S**., Gomatos, L. (2016). Pre-service and in-service teacher training: the use of technology in the Greek educational system. *Proceedings: konference Olympiáda techniky Plzeň 2016.* ISBN 978-80-261-0620-3 Západoĉeská univerzita v Plzni. University of West Bohemia.

Picciano, A., & Seaman, J. (2009). *K-12 Online Learning – A 2008 Follow-up of the Survey of U.S. School District Administrators,* Barson Survey – Research Group, January 2009.

Rahmatova F. (2020). Methods of innovation technologies in primary education, *Архив Научных Публикаций* JSPI, 2020.

Rasmussen, I., Lund, A., & Smørdal, O. (2012). Visualisation of trajectories of participation in a Wiki: A basis for feedback and assessment? *Nordic Journal of Digital Literacy, 1 (*2012), 21–35.

Rassmusen, I., & Ludvigsen, S. (2010). *Learning with computer tools and environments: A sociocultural perspective.* Research Gate.

Roblyer, M. D. (2008). *Integrating educational technology into teaching.* Publications Ellin.

Rubel, L. H., Hall-Wieckert, M., & Lim, V. Y. (2017). Making Space for Place: Mapping Tools and Practices to Teach for Spatial Justice. *Journal of the Learning Sciences, 26*(4), 643-687.

Saettler, P. (2004). *The Evolution of American Educational Technology*. Information Age Publishing.

Saginetou, E. (2019). *The educational techniques and supervisory tools used during teaching in a Public Vocational Training Institute: A case study*. Diploma Thesis, School of Humanities, Hellenic Open University.

Seet, C., Hong, H., & Chai, C. (2019). A Case Study on the Development of Pre-Service Teacher's Design Thinking, A Wide Lens: Combining Embodied, Enactive, Extended, and Embedded Learning in

Collaborative Settings; In *proceedings of 13th International Conference on Computer Supported Collaborative Learning- Conference 2*(815). Retrieved from: https://research.ou.nl/ws/portalfiles/portal/31456037/CSCL_2019_Volume_2.pdf

Shaffer, D. (2004*). Developmental psychology - Childhood and Adolescence.* Publications Ellin.

Verykios, P. (2010). Functional approach to basic mathematical concepts in high school. Doctoral thesis. National and Kapodistrian University of Athens (EKPA).