European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available on-line at: www.oapub.org/edu

doi: 10.5281/zenodo.1200245 Volume 4 | Issue 4 | 2018

CREATIVE THINKING AS A PROCESS OF CHANGING EARLY CHILDHOOD EDUCATORS' ATTITUDES ABOUT NEW TECHNOLOGIES - THE CASE OF INTERNET OF THINGS (IOT)

Michael Vitoulis[i]
Lecturer, Department of Early Childhood Care
& Education, A.T.E.I. of Thessaloniki,
P.O BOX 141, GR - 57400,
Thessaloniki, Greece

Abstract:
This research detects the potential of the creative practice of brainstorming to change the attitudes of future pedagogues regarding the exploitation of new technologies in the early childhood education and care. The survey involved 111 future educators who were divided into two groups of 54 and 57 respectively. Both groups attended an equivalent training program on the use of new technologies in pre-school education. In the first group, the experimental one, the intervention which was implemented exploited an experiential creative practice. The issue of intervention is about IoT (Internet of Things) as it is a trend that is consistent with the concepts of innovation and creativity. The same subject was taught to the second group, the control group, but with traditional teaching practices. In both groups, the same questionnaire of views and attitudes was applied, both before and after completion of the course. The results showed that the experimental group changed its attitude towards new technologies to a greater extent than in the control group. According to the findings of the research, the educators' active participation in creative practice helped them change their attitudes towards the use of technology in pre-school education.

Keywords: creativity, IoT, early childhood education, digital pedagogy, teacher education, attitude change, ICT in education

1. Introduction

The effect of IoT: With the rapid diffusion of technology and increase in internet speed in networks, and more specifically, the emergence of mobile devices (e.g., tablets and smartphones) and applications have transformed the way people attain, use, and save the information. As a consequence of this, communication and interaction with others,

[i] Correspondence: email vitoulism@gmail.com or vitoulis@bc.teithe.gr

even with objects, as well as creation and spread of knowledge is favored more effectively than ever before. The above conditions make the internet ubiquitous and applicable by seamlessly interlinking everyday physical objects and introducing a new era of a pervasive network known as the Internet of Things (IoT) (Dutton, 2014).

The term "IoT" refers to the networked interconnection of commonplace objects, which are often provided with ubiquitous intelligence and integrating every object for interaction via embedded systems. IoT is an emerging technology that usually exploits Radio Frequency Identification (RFID) with sensor networks. IoT is structured on sensors and actuators (Dutton, 2014). Sensors are used to detect environmental elements and specific physical changes, to activate then some specifically designed actuators (Andersson & Mattsson, 2015). Through sensors, physical objects can "interact" (transmit data) with each other, collect data to interpret a user's behaviors and activities, and interchange commands with each other to perform a physical act.

Things are physical items that can be interconnected to both the Internet and people via sensors. Sensors capture data and convert them into information, enable things to become context-aware, providing more experiential information to help people and machines make relevant and valuable decisions. Systems of IoT are provided with unique identifiers and the ability to transfer data and information over a network without requiring human-to-human or human-to-computer interaction (Rouse, 2014). IoT provides the ability to analyze Big Data and turn them into actionable information.

According to the logic that IoT serves, a thing works as a smart object and it is equipped with embedded sensors and internet connectivity, serves as a primary building block that facilitates interactions, communication, and integration with the environment in which it operates to provide intelligence, to improve quality of useful services and to achieve common goals (Yan et al. 2014). IoT includes an ever increasing number of applications in tracking, data collection, and sensing applications (Arzori et al. 2010). Through time, things have shifted from simple Internet to Internet of Things.

IoT gradually leads to a new model of knowledge management processes, in which a huge amount of data will be acquired automatically from the sensor of things and stored in the network, which are available in real time, associating both people and machines (Del Giudice et al. 2013). IoT brings together people, data, processes, and things to make networked connections more appropriate and valuable than ever before—turning information into actions that create new formidable capabilities. In the real world, IoT extends Internet's benefits, through constant connectivity, remote control capabilities, and data diffusion (Peoples et al. 2013). This kind of interconnection is intended to provide some kind of services. Undoubtedly, IoT has great impact on sectors such healthcare, social welfare, safety, transportation, education and science (Gaur et al. 2015).

It is estimated that by 2020 more than 50% of all devices will be interconnected on the Internet (Gartner, 2014). As IoT is constantly spreading, the value can be realized by analyzing the data generated by the connected things (Markkanen & Shey, 2014). Nowadays IoT is considered as the field of information revolution (Bi et al. 2014).

IoT and creativity: The notion of things is totally related to innovation and discovery. These are ways of exploiting technology which enable everyday problem solving. Additionally, it is believed that things are directly related to the concept of creative thinking.

Even though that the definition of the phenomenon itself presents difficulties and is often inconsistent, creativity is important because it leads to human advancement (Hennessey & Amabile, 2010). In parallel, researchers have come to understand that creativity derives from complex interaction and interplay between a numbers of factors (Hennessey & Amabile, 2010). It turns out that creativity is defined in many different levels (Kaufman & Beghetto, 2009). Creativity can be defined as a process or action that someone performs or as a final product, object or idea that is produced and should be both novel and appropriate (Hennessey & Amabile, 2010).

In the effort to identify creativity, a dichotomy approach is followed and concerns Big-C and little-c creativity (Kaufman & Beghetto, 2009). The concept of little-c creativity emphasizes the creative potential in all people (Kaufman & Beghetto, 2009). Little-c creativity refers to a kind of creativity that is far more ambiguous, and far less remarkable, perhaps, than Big-C Creativity (Merrotsy, 2013).

Creativity and attitudes change: Attitude is thought of as an overall evaluation and set of feelings towards an attitude object (Bohner & Dickel, 2011). Attitudes involve a cognitive state, which is based on information, thought and a behavioral component that represents the direct actions related to an attitude object (Watson et al., 2016). Attitudes' formation involves processing information and consequently is subject to change (Tourel et al., 2015). It has been supported the view that persuasion can be a powerful tool used to change human's attitude and that any credible source of information can be advantageous and promote attitude change (Petty & Briñol, 2008).

Audiences who are most likely to engage in cognitive effort during persuasion are more likely to critically examine some ideas beyond their own views (Petty & Cacioppo, 1984). Changing attitudes and the creative process have in common a transformative activity which involves making new connections between previously unrelated concepts and understandings (Andreasen, 2005). It has argued that engagement in a creative activity can serve as a mechanism for attitude change (Rieger, 2017).

2. Methodology

2.1 Research Framework

The present research is based on the fundamental principle that creative activity influences and can change the views of individuals. The attitude of future early childhood educators on the use of new technologies in pre-school education is studied. In particular, it is examined whether the participation of future educators in a creative activity in their education about "ICT in education" can affect the formation of their views and attitudes.

For this attempt, a strikingly innovative trend of IoT is chosen as a base. The criteria for choosing this topic were both the innovative dimension that creates a positive impression and the students' ignorance about it. Moreover, the use of technology so as to meet human needs or to solve problems is by default a creative process. For research purposes, students are invited to produce ideas for possible ways of exploiting technology in the context of education and care of pre-school children. So they participated in a brainstorming game for educational reasons. According to the research design, it was examined whether their involvement in the brain drain activity influenced their attitudes towards the use of new technology in education.

This study attempts to examine the following research questions:

- What are the views and attitudes of future pedagogues on the prospect of exploiting New Technology in early childhood education?
- Do students that actively participate through the creative process of brainstorming change their attitudes towards new technologies?

In this study, a researcher-made questionnaire was used to gather the relevant information.

The questionnaire included closed type questions which were divided into two parts. The first section included questions about demographics and the use of new technologies by the educators. The second section contained questions about the views and attitudes of the future pedagogues to the use of new technologies in early childhood education. The questions regarding the views followed the Likert scale (Javeau, 1996), with the matching " 1 =Not at all, 2 = Little, 3 = Enough, 4 = Very, 5 = Great ", which responded to the expression "To what extent do you believe that .... ".

The survey was attempted to future educator in their studies at the Department of Preschool Education. The research took place in Greece on academic year 2015-2016. The educators who participated in the survey were 124 in total. They were randomly divided into two groups of 62 people each. Both groups attended the same course content. In one of the two groups (experimental group), brainstorming was applied, a method which was not applied to the control group.

All participants were asked to complete a questionnaire on their attitudes and views on the use of new technologies in early childhood education. The questionnaires were in the form of Google Docs and were completed digitally. According to the rationale of the survey, future pedagogues were asked to complete the questionnaire at the beginning of the laboratory lesson, and after a period of four months after they had attended the course, they were asked to answer the same questionnaire again.

In order to match the questionnaires of each subject, each of the participants created her/his own code, which was used in the initial and final questionnaire. Through that, the anonymity was preserved, while the questionnaires could be matched before and after the experimental intervention. It makes it possible to match the questionnaires of 54 educators from the experimental group and 57 from the control group, numbers that constitute our research population.

All the students of both groups attended the same course with the same teacher at the same time. The only difference in the course was the experimental intervention, which was conducted in the control group with traditional teaching practices.

Intervention in the experimental group: The topic of IoT was taught to the members of both groups. The following activity was requested from the experimental group. Students were divided into groups of 4-5. It was ascertained through discussion that students did not know how to exploit IoT in preschool care and education. Each group was asked to suggest possible ways of using IoT in early childhood care and education. Students, by motivating their imagination, created ideas that could make use of technology, especially the case of IoT, in order to solve problems or improve the quality of early childhood education. These ideas concerned the exploitation of the logic that sensors placed in different things, would gather data whose processing would provide useful information that could be used in preschool education. Students were asked to activate their imagination and suggest ideas, without judging them as to whether they would be feasible. The ideas of both groups were discussed at plenary level and were all recorded. Students were then assigned, in groups again, to search on the internet whether the ideas they had already formulated exist as devices. The result of their research was presented in the plenary and was discussed. It was found that for 38% of the ideas that were recorded there was already a device that did something similar. Issues of exploiting the facilities provided by IoT to early childhood education and their pedagogical significance were discussed. Students recorded a total of 154 ideas, which at a plenary level corresponded to 73 ideas. The research on the Internet showed that devices corresponding to a number of 28 ideas that the students themselves were inspired during the brainstorming process (38% of all different ideas) did already exist. The qualitative study and analysis of all these ideas is the subject of another research.

3. Results

The content in Table 1 describes the student's use of the new technology. The fact that almost all students (at a rate of 97,3 %) have access to new technologies through the computer is a consequence of the rapid proliferation of technology. A percentage of 58.2 % indicates that it already uses computers prior to secondary education.

The overwhelming majority of 60.6% is using the computer with a high frequency for over 1 hour a day. Students feel that they are familiar with technology as 50% of them feel at least moderate, while 41.3% say they have a high level of familiarity.

Table 1: Questions of the familiarity profile with the use of ICT

Question	Distribution of the answers				
Do you hold a computer at home?	YES 97,3 %	NO 2,7 %			
From what age do you use a computer?	Preschool 10.9 %	Primary School 47.3 %	Secondary School 41.8 %	High School 0.0 %	
How often do you use the e-mail?	Never 8.4 %	Seldom 37.4 %	Sometimes 30.8 %	Often 18.7 %	Very often 4.7 %
How often do you use Skype?	Never 34.5 %	Seldom 20.0 %	Sometimes 25.5 %	Often 16.4 %	Very often 3.6 %
How often do you use Facebook?	Never 10.8 %	Seldom 3.6 %	Sometimes 13.5 %	Often 36.0 %	Very often 36.0 %
Mean: day use of the computer	Seldom	Some days 7.3 %	10' – 30'/ day 7.3 %	30' – 1/day. 24.8 %	> 1 hour/day 60.6 %
How do you face computers	As a working tool 55.9 %	As an entertainment mean in general 83.8 %	As a mean of communication 87.4 %	Mainly for games 32.4 %	
In what degree do you believe that you are familiar with new technologies	None	Low 1.8 %	Medium 56.9 %	High 37.6 %	Very High 3.7 %
* Degree of familiarity with computers Experimental Group	None 0 %	Low 1,7 %	Medium 17,4 %	High 54,2 %	Very High 26,7 %
Control Group	0 %	1.4 %	17.9 %	53.6 %	28.1 %

* Statistical adjustment of data

The computer is seen primarily as a means of communication and entertainment, and appears to be an appropriate working tool rather than a toy.

After taking into account individual elements that characterize the use of new technologies by students, a statistically adapted variable has been created indicating the general degree of students' familiarity of new technologies. This variable enabled the study to examine whether the level of familiarity with the technology that distinguishes each group is at the same level or not.

According to the statistical data, both the experimental group and the control group appear to be equally familiar with new technologies. The control of this prerequisite is necessary to proceed with our experimental design as it has been established that the familiarization of teachers with new technologies also determines their attitude towards them (see above).

According to the research plan, the analysis of the difference in the change of attitude between the two groups was attempted through the statistical procedure of Independent-Samples T Test that compares the mean for the two groups. As an inferential statistic, was used the Levene's Test for Equality of Variances. This analysis gave the results in Table 2. In accordance with the results, in all direct positive questions about the impact of technology on early childhood education, the difference between the first and the second detection was broadened in both groups (Q1-Q4, Q6-Q9).

Table 2: Questions related to the Perceptions (Inferential Statistics)

Questions		Experimental Group Mean	Control Group Mean	Independent-Samples T Test **
Q1. Do children contact with computers?	Pre-	3,10	3,38	F=0.39, df=105
	Post-	3,73	3,87	F=0,11, df=105
Q2. Is the occupation useful?	Pre-	3,04	2,91	F=0.19, df=105
	Post-	4,40	3,57	F=2.37, df=105 *
Q3. Is it a chance for learning?	Pre-	3,65	3,61	F=1,30, df=103
	Post-	4,55	4,28	F=0,13, df=103 *
Q4. It is advantageous for the learning and educational process?	Pre-	3,81	3,87	F=0.52, df=103
	Post-	4,42	4,19	F=1,65, df=103 *
Q5. NO to the use of computer because of possible unhealthy effects?	Pre-	3,05	2,87	F=0.92, df=106
	Post-	2,63	2,69	F=0.37, df=106 *
Q6. In every Preschool Centre there should be a computer accessible by children?	Pre-	3,21	3,24	F=0.21, df=106
	Post-	3,96	3,85	F=0,47, df=106
Q7. Will the child be happy by using a computer?	Pre-	4,26	4,11	F=0.08, df=106
	Post-	4,62	4,35	F=5,22, df=106 *
Q8. Are children able to respond to simple software suitable for their age?	Pre-	3,50	3,59	F=5,05, df=104
	Post-	4,31	3,78	F=5,03, df=104 *
Q9. Do computers cultivate children's creativity?	Pre-	3,56	3,41	F=5,13, df=104
	Post-	4,15	3,87	F=0,36, df=104 *
Q10. Risk of computers to substitute other important activities?	Pre-	3,75	3,61	F=0.57, df=104
	Post-	3,84	3,74	F=4,14, df=104
Q11. Computers deprive the child 'childishness'?	Pre-	3,63	3,54	F=0.18, df=104
	Post-	3,94	3,61	F=0,00, df=104
Q12. Hard for the child to respond to the two-dimensional screen?	Pre-	2,69	2,35	F=1,80, df=104
	Post-	1,69	1,56	F=3,03, df=104*
Q13. Children do not possess the cognitive development to interact with computers.	Pre-	1,54	1,61	F=1,83, df=104
	Post-	1,46	1,56	F=1,52, df=104
Q14. The occupation with computers isolates and prevents child's socialization?	Pre-	3,41	3,55	F=1,61, df=102
	Post-	3,33	3,36	F=0,95, df=102
Q15. The occupation with computers harms the child's "sentimentality"?	Pre-	2,71	3,04	F=1,73, df=104
	Post-	2,67	2,85	F=1,26, df=104
Q16. The occupation with computers reduce, diminish the role of the teacher?	Pre-	2,71	2,38	F=0,17, df=105
	Post-	2,35	2,15	F=0,23, df=105
Q17. Computers are a tool for adults - children's occupation with computers is incompatible to their nature?	Pre-	2,92	2,78	F=0,07, df=105
	Post-	2,67	2,47	F=0,11, df=105*
Q_Sum. Overall view ***	Pre-	3,51	3,48	F=0,67, df=96
	Post-	4,16	3,79	F=0,02, df=96*

** Levene's Test for Equality of Variances
*** Statistical adjustment of data
* $p \leq 0.05$

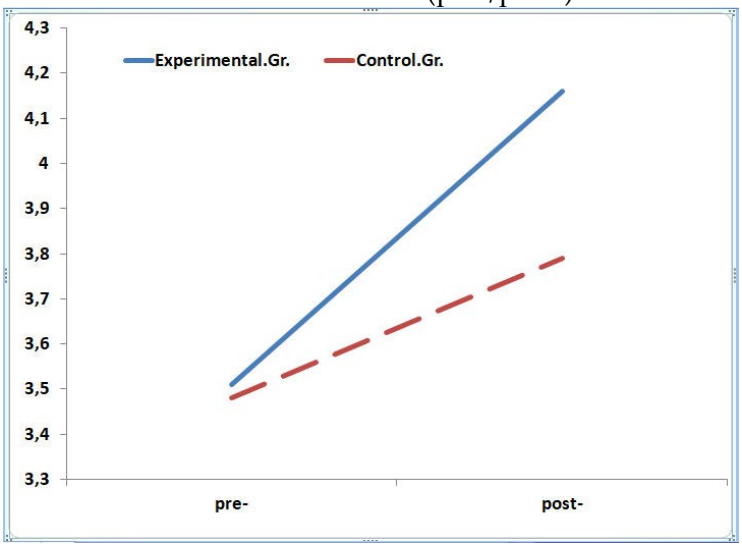
However, in relation to the comparison of the extent of the mean differences, it is statistically clear that the experimental group's positive opinions improved more than the control group's opinions. Enhancement of the difference is statistically significant and suggests that the process applied to the experimental group had a more positive effect on changing students' attitudes. In particular, statistically strong is the change in views on the benefits that technology may have in preschool children Q2, the opportunities it offers to children for learning Q3, the view of enhancing learning and educational process Q4, the sense of joy that children feel Q7, the ability of children of this age to meet the demands of technology Q8, the cultivation of their creative thinking Q9.

Respectively, the negative impact questions did not show any statistically significant change among the groups (Q5, Q10-Q17). The observation indicates that the

experimental group was mainly affected by its positive attitudes while the negative approach did not seem to be affected.

In order to holistically control students' attitude change, a variable derived from a statistical adjustment which considers the positive and negative changes of individual views (Q_Sum). According to the results supported by statistical significance, it appears that the experimental group has enhanced its positive attitude towards new technologies in relation to the control group (Figure 1).

Figure 1: Mean of variable Overall View (pre-/post-) between two groups



At the level of inferential statistics, it was examined whether the variable "degree of familiarity with new technologies" influences the variable "overall view" and affects the change of attitudes before and after intervention.

The statistical process of the correlation of two variables was applied (Crosstabs), while the experimental /control group was defined as a layer variable. According to the results, it appears that while the degree of familiarity with technology influences the overall view before intervention in both groups (Exp.Gr_X2=77.7, df=56, γ=0.66, p=0.00/ Contr.Gr_X2=77.9, df=64, γ= 0.67, p=0.00), after the intervention the effect is only on the control group (X^2=46.5, df=48, γ= 0.3, p=0.03), but not on the experimental group (X2=101,4, df=56, γ=0.2, p=0.23). This finding further demonstrates the evidence of the effect of the intervention that was applied to the experimental group as well as its importance for the change of students' attitudes.

4. Discussion

The beliefs and attitudes of persons are dynamic and are consistently changing as they are affected by their experiences (Thompson 1992). Teachers shape their intentions for education through their experiences (Schon 1996). Appropriate training and experience contributes to reconsidering the attitude of the pre-service educators (Savenye et al. 1992), especially when it is supported by positive experiences (Teo 2009).

Particularly in preparing educators for preschool children during their studies, for exploiting new technologies in the educational process, should not be a theoretical approach of technology, but should implement application of teaching scenarios with the use of technology (Afshari et al. 2009; Zaranis and Oikonomidis, 2014).

Active participation in critical thinking processes can contribute to changing attitudes of individuals (Petty & Cacioppo, 1984). The process of creative thinking, where new interconnections are created between previously unrelated concepts, is an energetic process that can change attitudes of individuals (Andreasen, 2005). The knowledge of existing needs in the field of pre-school education and care, as well as the realization of the individual possibilities of technology in the context of this research was considered as a field of activation of students' creative thinking.

In this research, a brainstorming game was implemented as a teaching practice in the context of student education on issues related to the use of new technologies in pre-school education. The involvement of students in the brainstorming game has creatively activated them on issues related to their motivation to exploit technology in the educational process.

According to the research results, it was found that students have a good degree of familiarity with the use of new technologies. However, their views on the use of new technologies in pre-school education, before the course, appear to be slightly restrained. Appropriate training seems to improve their attitudes towards new technologies. However, the implementation of the experimental method of the creative process of brainstorming seemed to have influenced a further increase in the positive change of views. The experimental group of students participating in the act seems to have improved to a greater extent its positive views and attitude on the use of new technologies in pre-school education and care.

It seems that their active participation in the issue of reflection through a creative process has helped them overcome potential barriers to their thinking, preconceived notions and convergent thought pattern. The creative process of studying innovative links between unlinked information and existing problems, turning them into solutions and generating ideas seems to have helped them approach the potential of new technology in a broader perspective. In the process they experienced, skeptics turned into inventors, criticism gave way to solutions, and reservations faded into creative imagination. To conclude, this research assumes that creative participation in the process of educating future pedagogues positively affects their attitudes towards the use of new technologies in the context of pre-school education and care.

References

1. Afshari, M., K. Kamariah Abu Bakar, W. Su Luan, B. Abu Samah, and F. Say Fooi. 2009. Factors Affecting Teachers' Use of Information and Communication Technology. *International Journal of Instruction*, 1, 77–104.

2. Andersson, P. and Mattsson, L. (2015), "Service innovations enabled by the 'internet of things' ", *IMP Journal,* 9(1), 85-106.
3. Andreasen, N.C. (2005). The creating brain: The neuroscience of genius. New York: Dana Press.
4. Atzori L, Iera A, Morabito G. (2010). The Internet of Things: A survey. *Computer Networks.*, 54, 2787-2805.
5. Bi, Z., Xu, L.D. and Wang, C. (2014), "Internet of Things for enterprise systems of modern manufacturing", *IEEE Transactions on Industrial Informatics,* 10(2), 1537-1546.
6. Del Giudice, M., Della Peruta, M.R. and Maggioni, V. (2013), "Collective knowledge and organizational routines within academic communities of practice: an empirical research on science-entrepreneurs", *Journal of the Knowledge Economy,* 4(3), 260-227.
7. Dutton, W. (2014), "Putting things to work: social and policy challenges for the internet of things", *Info,* (16)3, 1-21.
8. Gartner (2014), "Gartner says the IoT will transform the data center", available at: https://www.gartner.com/newsroom/id/3771363 Retrieved December 7, 2017.
9. Gaur A, Scotney B, Parr G, McClean S. (2015). Smart City Architecture and its Applications Based on IoT. *Procedia Computer Science,* 52, 1089-1094.
10. Hennessey, B. A., & Amabile, T. M. (2010). Creativity. *Annual Review of Psychology,* 61, 569-598.
11. Kaufman, J. C., & Beghetto, R. A. (2009). Beyond big and little: The Four C Model of Creativity. Review of General Psychology, 13, 1-12.
12. Markkanen, A., & Shey, D. (2014). The intersection of analytics and the internet of things. *IEEE Internet of Things.*
13. Merrotsy, P. (2013). A note on big-c creativity and little-c creativity. Creativity Research Journal, 25(4), 474-476.
14. Peoples, C., Parr, G., Mcclean, S., Scotney, B. and Morrow, P. (2013), "Performance evaluation of green data centre management supporting sustainable growth of the internet of things", *Simulation Modelling Practice and Theory,* 34, 221-242.
15. Petty R. E., & Cacioppo, J. T. (1984). The effects of involvement on responses to argument quantity and quality: Central and peripheral routes to persuasion. *Journal of Personality and Social Psychology,* 46, 69-81.
16. Petty, R.E., & Briñol, P. (2008). Persuasion: From single to multiple meta-cognitive processes. *Perspectives on Psychological Science,* 3, 137-147.
17. Rieger, A. (2017). Creativity as a Route to Attitude Change: Can the Creative Process Augment the Effectiveness of a Persuasive Message? *Honors Thesis Collection. 478.* http://repository.wellesley.edu/thesiscollection/478 Retrieved December 4, 2017.
18. Rouse M. (2014). What is Internet of Things (IoT)? Definition from WhatIs.com http://internetofthingsagenda.techtarget.com/definition/Internet-of-Things-IoT. Retrieved December 10, 2017.

19. Savenye W., Davidson G., Orr K. (1992). Effects of an educational computing course on preservice teachers' attitudes and anxiety toward computers, *Journal of Information Technology for Teacher Education,* 3(1), 31-41.
20. Schon, D.A. (1996). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions.* San Francisco: Jossey-Bass, Inc.
21. Teo, T. (2009). Modelling technology acceptance in education: A study of pre-service teachers. *Computers and Education,* 52(2), 302–312.
22. Thompson, A.G. (1992). Teachers' beliefs and conceptions: A synthesis of research. In D. Grouws (Ed.), *Handbook of research on mathematics teaching and learning* (127–146). New York: MacMillan.
23. Turel, O., Mouttapa, M., & Donato, E. (2015). Preventing problematic Internet use through video-based interventions: A theoretical model and empirical test. *Behaviour & Information Technology,* 34(4), 349-362.
24. Yan, Z., Zhang, P., & Vasilakos, A. V. (2014). A survey on trust management for Internet of Tings. *Journal of Network and Computer Applications*, 42, 120–134.
25. Zaranis, N., & Oikonomidis, V. (2014). The main factors of the attitudes of Greek kindergarten teachers towards information and communication technology. *European Early Childhood Education Research Journal*, 24(4), 1–18.