Pre-Service Teachers, Computers, and ICT Courses: A Troubled Relationship

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ABSTRACT

The study presents the results of a four-year long survey among pre-service teachers, examining factors which influence their knowledge and skills on computers, as well as factors which contribute to shaping their perceived computer competency. Participants were seven hundred fifty-four senior students, at the Department of Primary School Education, University of the Aegean. Results analyses, using multiple linear regression, indicate that pre-service teachers do not actually know much about computers and that they base their perceived competence on computers mainly on how skilled they believe they are in office applications. Results also indicated that the number of ICT related courses students attended contributed, to some extent, in knowledge acquisition but did not influence their perceived computer competency. Based on the results, recommendations are made in order so as pre-service teachers to be more adequately prepared to meet the challenges of using ICT at school.

KEYWORDS
ICT Courses, Knowledge and Skills on Computers, Perceived Competence on Computers, Pre-service Teachers

INTRODUCTION

Despite the fact that ICT has been introduced in education for quite a while, it is still underused (Mueller, Wood, Willoughby, Ross, & Specht, 2008). According to the results of Schoolnet’s survey (2013), conducted in all EU’s countries, teachers consider insufficient equipment as the major obstacle to ICT use. On the other hand, no relationship was found between high levels of infrastructure and teachers’ use. Most teachers, even though they state that they are familiar with computers, confident in using ICT, and positive about ICT’s impact on students’ learning, they still use computers merely to prepare their teaching. Interesting is the fact that the more confident teachers are in using ICT, the more frequently they get involved in ICT-based activities during lessons. Another extensive survey, featuring data from 64 countries, has concluded that the impact of technology on education is yet to be realized (Organisation for Economic Co-operation and Development-OECD, 2015). There are still significant drawbacks such as the tendency of educators to avoid changes, the insufficient policy design and implementation strategies, and the poor understanding of the relationship between ICT and pedagogy. The study makes an interesting suggestion: teachers have to become active agents of change, not just tools for implementing technological innovations, but also capable of designing them.

From the above, it is evident that educators hold the key to the successful integration of ICT in education because they are the ones that are called to make good use of computers and to implement policies. Literature suggests that major predictors in determining if teachers will use computers in
teaching are their views and beliefs on the matter (Fessakis & Karakiza, 2010) and their attitude towards computers (i.e., Celik, & Yesilyurt, 2013; Teo, 2011; Paraskeva, Bouta, & Papagianni, 2008). To influence these attitudes, in-service training is suggested (Schoolnet, 2013; Goktas, Yildirim, & Yildirim, 2009), but also one has to start as early as possible, at the pre-service level. Pre-service teachers have to have well-developed ICT skills and adequate experience on tools that will be useful in their future profession. Universities have the responsibility to positively influence their attitudes and adapt the curriculum so as to sufficiently prepare them to meet the challenges of using ICT at school (Koehler & Mishra, 2009).

The fact is that universities’ curricula vary enormously within and between countries (Darling-Hammond & Baratz-Snowden, 2005) and ICT practices vary even more (Law & Plomp, 2003). Nevertheless, Davis (2010) specifies five strategies that have been commonly implemented in order to develop the pre-service teachers’ ICT skills, knowledge of technologies, and the ways that ICT may be effectively applied in-service schools’ (a) stand-alone technology courses, (b) workshops, (c) integrating ICT in method and foundation courses, (d) modeling how to use ICT, and (e) practicum in schools that include ICT.

All Greek departments of primary school education incorporate a number of ICT courses into their curricula. Students have to attend mandatory and elective courses which provide them with basic and advanced ICT knowledge and skills, as well as courses closely related to ICT uses at school. In general, all the strategies indicated by Davis are applied. For example, 13% of the courses that are offered at the Department of Primary School Education, University of the Aegean, are ICT orientated. Considering the multidisciplinary nature of teachers’ studies, this percentage is quite high. Similar is the situation in all the other Greek departments of education, with percentages varying from 8 to 13%. This indicates that universities acknowledge the importance of adequately preparing pre-service teachers to integrate ICT into their future profession.

The above ascertainment, however, raises a number of reasonable questions:

- What students have actually learned after having attended all the ICT related courses? In other words, what is their actual ICT knowledge and skills level?
- Do students consider themselves competent in using computers? Do they consider themselves competent in all the categories of software tools that allow the development of educational applications?
- What factors influence the above? Do ICT courses play a substantial role?

The present study is an attempt to clarify these matters. It is important to give answers to these questions because in case the curriculum fails in achieving its goals, this will result in students not being skillful in ICT, but also their perceived ICT self-efficacy might be affected. These two factors, combined together, can lead to the underuse of computers at the in-service level (Kumar & Kumar, 2003). Furthermore, the study at hand, is a longitudinal study, examining senior students’ knowledge, skills, and perceived self-efficacy across the years 2012 to 2015. To the best of the author’s knowledge, there are no previous studies –at least in Greece- longitudinally examining similar parameters.

**METHOD**

The target group was students attending the final year of their studies at the Department of Primary School Education, University of the Aegean. Senior students were selected because, at this stage, they have already attended most of the courses (including ICT-related ones). The study was conducted from late 2012 to late 2015, gathering data from the 93% of senior students (754 valid responses out of 807 total graduates). Also, the sample represents roughly 10% of the total number of students that graduated from all Greek departments of primary education (around 7,200) at the same period of
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