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Enablers and barriers to the use of ICT in primary schools in Turkey: A comparative study of 2005–2011

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ABSTRACT

The purpose of this study was to reveal barriers encountered by Turkish primary school teachers in the integration of ICT, to propose potential enablers to overcome those barriers, and to compare the current status of ICT integration (in 2011) with the status of ICT integration in 2005. Part of the data for this comparison was gathered in 2005 as part of a doctoral study by Goktas (2006). A survey design was used to investigate the barriers and enablers. Data were collected from 1373 teachers from 52 schools in 39 provinces. The results indicate that 'lack of hardware', 'lack of appropriate software materials', 'limitations of hardware', 'lack of in-service training', and 'lack of technical support' were the most important barriers. The highest ranked enablers were 'allocation of more budget', 'allocation of specific units for peer support', 'allocation of support offices and personnel for teachers', and 'offering higher quality pre-service training for ICT'. Other leading enablers were 'supporting teachers to enable effective ICT use', 'having technology plans', 'offering higher quality and more quantity of in-service training', and 'designing appropriate course content/instructional programs'. Analysis of an independent *t*-test revealed that most barriers showed significant differences and most enablers showed moderate or low differences between teachers' perceptions of their situation in 2005 and in 2011.

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1. Introduction

In recent decades, the increased affordances of Information and Communication Technologies (ICT) revealed great concern on its integration to education (La Velle & Nichol, 2000; Lever-Duffy, McDonald, & Mizell, 2003). New approaches have been developed in education to offer people greater competency regarding teaching and using technologies. Many initiatives and investments were undertaken to integrate ICT into education and many studies have been conducted on how to integrate ICT into education (Becker & Riel, 2000; Cattagni & Farris, 2001; Ficklen & Muscara, 2001). However, the effective integration of ICT into education is still occasionally difficult and problematic (Askar & Usluel, 2002; Buckenmeyer & Freitas, 2005; Cuban, Kirkpatrick, & Peck, 2001; Ertmer, 1999; Firek, 2003; Keengwe, Onchwari, & Wachira, 2008; National Education Association [NEA], 2008; Zhao, Paugh, Sheldon, & Byers, 2002). To overcome perceived barriers, both institutional and political plans have been formulated, but no significant results have yet been reached. Ertmer, Addison, Lane, Ross, and Woods (1999) categorized these barriers as internal and external.

The external barriers encompass hardware and software inadequacies, and lack of technical support and time. The internal barriers include attitudes and beliefs toward the uses of technology in education, and the teaching approaches used by schools. Tsai and Chai (2012) indicated one more order as the third-order barrier, which is the lack of design thinking by teachers. They stress the value of easy and timely access to ICT facilities, and a careful harness of teachers' design thinking skills. Additionally, rapid advancements in ICT can cause some problems in the integration process. Thus, a wide variety of problems can obstruct effective integration (Mueller, Wood, Willoughby, Ross, & Specht, 2008). The common barriers are identified as lack of hardware, software, instructional content, support (i.e., technical or administrative), basic knowledge and skills, time, and physical environment. These barriers (post 2000) are summarized in Table 1.

Abbreviations: ICT, Information and Communication Technologies; SPSS, Statistical Package for the Social Sciences; *M*, Mean; SD, Standard deviation; MoNE, Ministry of National Education.

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Table 1
Main barriers to the integration of ICT into classes.

	Akbaba - Altun (2006)	Bingimlas (2009)	Cagiltay et al. (2001)	Cinar (2002)	Cuban et al. (2001)	Dionys (2012)	Ertmer (2005)	Ertmer et al. (2006–2007)	Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur and Sendurur (2012)	Hew and Brush (2007)	Keengwe et al. (2008)	Kotrlik and Redmann (2009)	MONE (2007)	Sanchez (2011)	Toprakci (2006)	USDE (2000)	Usluel et al. (2007)	Wachira and Keengwe (2011)
Lack of in-service training	√	√		√	√			√	√	√	√	√	√				√	√
Lack of technical support		√		√	√		√	√	√	√	√	√	√	√	√	√	√	√
Lack of hardware	√	√	√	√		√	√	√	√	√		√	√	√	√	√	√	√
Lack of basic knowledge/skills for ICT	√	√	√	√	√	√				√		√						√
Lack of knowledge/skills for ICT integration	√	√	√	√	√	√				√			√				√	
Lack of appropriate software/materials	√	√	√	√			√	√	√	√	√	√	√	√	√	√		√
Lack of appropriate physical environment	√	√		√		√			√				√				√	
Lack of appropriate course content and instructional programs	√		√		√					√							√	√
Lack of appropriate administrative support	√	√		√			√	√	√	√	√	√	√	√		√	√	
Lack of time		√	√		√			√		√	√	√		√		√	√	√

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