The public primary school principals' self-perceived competence and use of ICT for personal, teaching and administrative purposes

Kyriacos Charalambous[1], Fotos Papaioannou[2]
kyriacoscharalambous@gmail.com, fotospap@hotmail.com
[1] Ministry of Education and Culture of Cyprus
[2] Cyprus International Institute of Management

Abstract

The current study surveyed a random sample of 250 public primary school principals, from April until June of 2008, in order to explore the principals' self perceived competence and use of Information and Communication Technologies (ICT) for personal, teaching and administrative-managerial purposes in primary schools of Cyprus. The results of the study revealed that primary school principals generally, do not feel very competent in using ICT, although the majority of them have received in-service training on ICT for personal purposes. Moreover, principals use ICT frequently but not on a daily basis. Also, principals feel more competent in using a word-processor and a search engine on the Internet than creating and using a spreadsheet or a database. Finally, it appears that principals use the computer more frequently for personal purposes, then for administrative purposes and last for teaching purposes.

Keywords: primary education, principals, self perceived competence, educational administration

Introduction

ICT integration in public primary schools is a major priority of the Ministry of Education and Culture (MOEC) of Cyprus. Following the guidelines of the European Union (EU), which promoted the strategic framework "i2010-A European Information Society for growth and employment", many millions of euros have been spent and many more are about to be invested in order to: equip schools with the necessary infrastructure, hardware and software; organize in-service training for teachers; develop a Learning Management System (LEM) and a School Management System (SMS); create a broad network among schools; and enrich the curriculum with specific goals and activities on ICT (Doratis, 2007).

However, results from various studies indicate that ICT integration in primary schools of Cyprus can not be considered as successful yet. A survey from Empirica (2006) revealed that only 7.9% of the primary school teachers use computers in class in more that 50% of their lessons, whereas more than 35% of the primary school teachers use computers in class in less than 10% of their lessons. Moreover, another study that was conducted among primary school teachers in 2004 revealed that 53% of the teachers hold negative attitudes towards computer technology integration in their classroom practices (Eteokleous, 2008).

The success or failure of this innovation is very much depended on the efforts and competence of the school principals. According to Anderson and Dexter (2005) "school's technology efforts are seriously threatened unless key administrators become active technology leaders in a school" (p.74). Like every innovation, school leaders are expected to lead the efforts acting as "change agents" (Murphy & Shipman,1999, p.213) transforming

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their schools into learning organizations (Reezigt & Creemers, 2005) by promoting internal training and an ongoing professional development and by "providing opportunities for meaningful student involvement, developing staff collaboration, securing outside resources to support the school and the forging of links between home and the school" (Reynolds & Teddlie, 2000, p. 144).

This study aims to reveal the Cyprus public primary school principals' self perceived competence and use of ICT for personal, learning and administrative-managerial purposes. Results from this study might throw some light to identify whether primary school principals are ready to lead this innovation or whether policy makers should focus their efforts on amplifying principals' capacity to lead effectively ICT integration in schools.

The educational context of the study

The role of primary school principals in the educational system of Cyprus

The centralized structure of the Cyprus Educational System (CES) deteriorates the role of principals in primary schools. According to official regulations of MOEC about the functioning of public primary schools, the main responsibilities of school principals are to: run their school effectively; promote the implementation of the national curriculum; undertake instructional duties; keep school records, school register and attendance records etc. On the other hand, they do not have a say in which school they would like to be appointed. Moreover, they do not have the authority to recruit their teaching personnel and of course, they have no appositeness about the salary of their staff. Additionally, principals - like teachers - are not allowed to stay in a school for more than six continuous years. It should also be mentioned that the principals' involvement in curriculum development is very limited. Kithreotis and Parshiardis (2006) concluded that the inflexibility of the centralized educational system of Cyprus is one of the biggest barriers in the efforts of the principals to create effective leadership and to shape a strong positive culture in a school.

The history of ICT implementation in primary schools of Cyprus

MOEC following a centralized approach introduced ICT in primary schools in the early 1990s. Although the innovation was top-down "the strategy for ICT integration involved a combination of centralized initiative and largely decentralized implementation policy" (Karagiorgi & Charalambous, 2004, p. 22). According to MOEC, ICT should not be used as a discrete subject but "as a dynamic tool in the teaching and learning process aiming at a more effective implementation of the school curriculum and developing of skills such as problem solving, decision making, communication and information handling." (MOEC, 2007, p. 274). Today, almost twenty years after the initial efforts for ICT integration, all classrooms have at least one computer, a scanner and a printer. It should also be mentioned that in-service training programmes for using ICT have been developed by the Pedagogical Institute.

Literature review

The dominance of ICT in schools has inevitably altered the way principals execute their teaching and administrative duties. Using a computer is no longer a benefit for the few gifted ones but a necessity for almost all of those who wish to be effective leaders of their school. Nowadays, the vast majority of principals in developed countries have access to a computer at school. But having access to a computer is not of such importance as using the computer productively for teaching and administrative purposes. Many scholars emphasize

that principals must not only use computers extendedly, but additionally, they must act as role models (Anderson & Dexter, 2005; Gurr, 2000) providing to their teachers visible support and encouragement for the use of the ICT. Becta (2003) concludes that school leaders "personally using the technology in their everyday working lives, raise the profile of ICT in their schools" (p. 3).

A main question that emerges is what impact does the use of ICT by the principals have on their work? Does technology really reduce the principals' heavy workload or does it make things worst? Gurr (2000), who interviewed principals from Australia, found that the use of ICT had not necessarily resulted in a decrease in the workload of principals and concluded that "it is not so much that technology has decreased workload, but that technology has facilitated new work, and has improved older work patterns" (p. 16). The above finding is consistent with findings of other researchers who also found out that principals do not necessarily have a decrease in their workload as a result of their use of technology (Bishop, 2002) but, on the contrary, the integration of ICT results in an increase of their workload (Schiller, 2003). Of course, there are researchers that do not agree with the above findings claiming that technology can reduce the workload of the principal (Becta, 2004; Felton, 2006).

The level of ICT use by principals is very much depended on their self perceived competence in using ICT. Self-perceived competence in using ICT or computer self efficacy refers to the belief that individuals hold about their own ability to operate successfully with technology. Bandura (1991) defines self efficacy as the peoples' "beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives" (p. 257). The school leaders' computer self efficacy is very important for the ICT integration efforts because the stronger the perceived efficacy the higher the goal challenges people set for themselves and the firmer their commitment to them (Bandura, 2002).

Increasing their own competence in using ICT is of vital importance for the school leaders who wish to successfully integrate ICT in their school. Actually, principals have a dual role to play concerning the in-service training in their school. First, they must ensure that they receive the appropriate training on ICT (Becta, 2007; Dawson & Rakes, 2003; Flanagan & Jacobsen, 2003) in order to increase their skills and knowledge and effectively inspire and lead the staff in integrating technology across the curriculum (Flanagan & Jacobsen, 2003). Dawson and Rakes (2003), through their study on principals' training, came to the conclusion that "the type and amount of technology training principals receive, can make a positive difference in schools" (p. 46) towards ICT integration. Secondly, principals must promote the professional development of their staff in order to help them integrate ICT successfully in the teaching and learning process (Flanagan & Jacobsen, 2003).

Research Methodology

The population was comprised by 336 principals who were serving in public primary schools of Cyprus at the school year of 2007-2008. The sample was chosen randomly and was consisted of 250 school principals all over Cyprus. Data were collected through questionnaires, which were mailed to the principals. One hundred thirty one questionnaires were received completed (return rate 52.4%).

In order to assess the principals' competence and use of ICT a special survey instrument was developed. The first part was consisted of eight close-ended questions which were relevant with the principals' demographics and other background information (Table 1). The second part contained five questions which investigated the principals' self-perceived

competence in using ICT and the frequency of ICT use for personal, teaching and administrative purposes.

Descriptive statistics (means, standard deviations, minimums, maximums, frequencies, percentages) and inferential statistics (t-test, one way ANOVA, and Chi-Square tests) were used to analyze all the variables and assess the principals' self perceived competence and use of ICT. The reliability coefficients were assessed using Cronbach's alpha on the five questions of the second part of the survey instrument. Results indicate that the coefficients were very high ranging from .887 to .954.

Research findings

Demographics

In Table 1 the demographics of the principals that participated in the research are presented. Of those principals who took part in the quantitative research: 64.9% were females; about eight out of ten of them had access to a computer and the Internet at home; and seven out of ten of them were holders of the Pedagogical Academy diploma only (plus one year of completion). Regarding in-service training on ICT, the majority of them received training for using ICT for personal purposes (78.6%) and for using ICT in the teaching and learning process (63.4%). On the contrary, a high percentage of them (82.4%) had never attended in-service training on ICT for administrative and managerial purposes. Finally, the principals can not be considered as very computer experienced since only three out of ten of them have been learning or working with computers for more than ten years. As far as it concerns the schools' background information: 65.6% had a computer in the principal's office; 84.7% had a computer in the staff room; and 60.3% had a computer lab.

Table 1. Frequency distribution of principals' and schools' demographics

Variable	N(131)	%	Variable	N(131)	%
Gender			**INSET for using ICT for personal purposes**		
Males	46	35.1	Yes	103	78.6
Females	85	64.9	No	28	21.4
Years of Service			**INSET for using ICT in teaching and learning**		
18-25 years	19	14.6	Yes	83	63.4
26-30 years	5	3.8	No	48	36.6
31-35 years	62	47.7	**INSET for using ICT for administration and management**		
36+	44	33.8	Yes	23	17.6
Highest Academic qualification			No	108	82.4
Pedagogical Academy	93	71.0	**Computer experience (Years learning about or working with computers)**		
Bachelor	14	10.7			
Master's	19	14.5	1-5 years	31	27.0
PhD	5	3.8	6-10 years	46	42.7
Access to a computer at home			11-15 years	19	16.5
Yes	111	84.7	16-20 years	16	13.9
No	20	15.3	21 and more years	1	0.9
Access to the Internet at home					
Yes	104	79.4			
No	27	20.6			

Principals' self-perceived competence in using ICT

The results of the study indicate that, generally, principals do not feel very competent in using ICT. In particular, principals feel fairly competent in using ICT for personal purposes and for lesson planning and preparation (Table 2). This is not surprising since 78.6% have attended in-service training on ICT for personal purposes. They feel less competent in performing their administrative duties and this has its explanation since only 17.6% have attended in-service training for administrative and managerial purposes. Finally, they perceive to be even less competent in using ICT for teaching purposes, although 63.4% have attended in-service training for using ICT in teaching and learning. This can be justified since, on average, principals teach only eleven hours a week in classes and usually they teach lessons that are less demanding (Religion, History, Geography). These lessons have very few software programs available and it depends mostly on the efforts of each educator to find or prepare the appropriate software. Principals, with their heavy administrative workload and their habitual way of teaching, find it very difficult, time consuming, and perhaps ineffectual to alter their classroom practice just few years before their retirement.

Table 2. Principals self-perceived competence in using ICT

I feel competent in using ICT for	N	Mean	SD
personal purposes	114	3.26	1.15
lesson planning and preparation	114	2.98	1.35
administrative purposes	114	2.77	1.29
classroom practice	114	2.65	1.24

Scale: 1=not competent at all; 2=little competent; 3=fairly competent; 4=much competent; 5=very much competent

Primary school principals feel more than fairly competent in using word processor and the Internet (Table 3). They also feel competent in writing and sending an e-mail and in creating and using a software presentation (e.g. PowerPoint). Using a digital camera, spreadsheets and databases are tasks which principals do not feel competent to deal with. Similar results were found in many researches in other countries (Bishop, 2002; Felton, 2006; Gurr, 2000). The low competence of principals in creating and using spreadsheets and databases is a matter that should make policy makers aware, because these are applications that could facilitate principals' work and decrease their heavy administrative workload.

Table 3. Principals' self perceived competence in undertaking several tasks on computers

Tasks	N	Mean	SD
Use of basic word processing (Microsoft Word)	114	3.46	1.33
Use a search engine in the Internet	114	3.39	1.40
Write and send an e-mail message	114	2.78	1.54
Create and use a software presentation (PowerPoint)	114	2.67	1.37
Use an educational software	114	2.53	1.28
Use a video projector	114	2.52	1.34
Use a scanner	114	2.50	1.43
Use a digital camera	114	2.25	1.39
Create and use a spreadsheet (Microsoft Excel)	114	2.20	1.20
Create and use a database (Microsoft Access)	114	1.78	1.02

Scale: 1=not competent at all; 2=little competent; 3=fairly competent; 4=much competent; 5=very much competent

Principals' use of ICT at school and at home

Principals use the computer at school and at home few times a week (Table 4). This designates that computer has become part of the principal's life but, still, not a vital one. Researches around the world indicate that the majority of the principals use computers on a daily basis to execute their duties. An explanation of this difference with other countries could be the fact that only 65.6% of the principals had a computer in their office by the time that this survey was carried out. In addition, the absence of administrative software and the lack of training might be another rationale for this result, since principals are still enforced to perform many of their administrative duties with the traditional way. Only those with sufficient knowledge on computers have developed their own programs and use the computers, almost on a daily basis, to fulfil their administrative and managerial duties.

Table 4. Use of computer at school and at home by principals

Statements	N	Mean	SD
I use the computer at school	114	4.03	1.18
I use the computer at home	114	3.95	1.16

Scale: 1=Never used; 2=Few times a year; 3=Few times a month; 4=Few times a week; 5=Everyday

Frequency of ICT use for teaching, administrative and personal purposes

Generally, principals use the computer more frequently for personal purposes, then for administrative purposes and then for teaching purposes. Word processor and Internet are the computer programs/applications that are most frequently used by principals for personal, administrative and teaching purposes (Table 5). On the contrary, scanner, digital camera, spreadsheets and databases are never used or are used just few times a year for personal, administrative and teaching purposes. Special reference should be made to the use of spreadsheets and databases for administrative purposes. It is very clear that the principals are not aware of the potentials that these programs can offer concerning the execution of their administrative and managerial duties.

Table 5. Computer applications that are used for teaching, administrative and personal purposes by principals

Purposes	Teaching			Administrative			Personal		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
Word processing	109	2.75	1.40	108	3.47	1.51	113	3.32	1.40
Internet (use of web search engines etc)	108	2.30	1.43	108	2.70	1.58	113	2.82	1.65
Educational software	109	2.02	1.05	107	1.64	0.93	113	1.88	1.00
Video projector	109	2.01	1.07	107	1.67	0.90			
Presentation software (e.g. PowerPoint)	109	1.94	1.01	107	1.80	1.00	113	1.92	1.04
E-mail	108	1.77	1.17	108	2.63	1.52	113	2.73	1.55
Scanner	109	1.70	0.97	108	1.76	1.00	113	1.85	1.05
Digital camera	109	1.66	0.97	107	1.64	1.01	113	1.85	1.15
Spreadsheets (e.g. Microsoft Excel)	108	1.58	0.87	108	1.90	1.09	113	1.85	1.05
Databases (e.g Microsoft Access)	108	1.35	0.69	108	1.50	0.82	113	1.46	0.78

Scale: 1=Never used; 2=Few times a year; 3=Few times a month; 4=Few times a week; 5=Everyday

Discussion and implications

The findings of this research indicate that, generally, the principals do not feel very competent to use ICT. They feel fairly competent to use ICT for personal and lesson planning and preparation purposes, whereas they feel less competent to use ICT for administrative and teaching and learning purposes. Using a word processor, searching the Internet and writing and sending e-mails are the computer tasks that they feel more competent to undertake. On the contrary, they do not feel competent at all in creating and using spreadsheets and databases. Additionally, the research found that principals use ICT at school and at home few times a week first for personal purposes, then for administrative purposes and finally for teaching purposes. Based on these findings it can be inferred that Cyprus primary school principals do not feel competent enough to undertake several tasks on computer and as a result they do not use ICT to the extent that it should be used, especially for administrative purposes. This can be attributed to the low access to a computer at the principal's school office, the insufficient official in-service training on ICT for administrative purposes, the absence on any special designed software programs for administrative purposes and to the resistance to change that some principals show. Moreover, according to the study, principals use ICT for teaching and learning purposes rarely, although the vast majority of them have attended relevant in-service training sessions. Even young principals with postgraduate studies, do not use ICT for teaching and learning purposes regularly. The heavy workload, the kind of subjects that they teach, the inadequate content of the in-service training that they received and the resistance to change are the possible explanations for this reality. Nevertheless, this finding is very worrying, because several researches concluded that modelling computer use and being the instructional leader of the school are two strategies that principals should apply in order to enhance ICT integration in their schools (Anderson & Dexter, 2005; Gurr, 2000). These two strategies do not seem to be used by the majority of the Cyprus principals. Therefore, the promotion of ICT integration in the teaching and learning process could be achieved only if primary school principals model the routine, intentional, and effective use of technology.

The study indicates that the in-service training that is provided to the principals should be enhanced. First of all, special organized sessions about the use of ICT for administrative and managerial purposes should be organized by MOEC. Moreover, it has been found that principals have very low self-perceived competence in creating and using spreadsheets and databases which are programs that could be widely used to fulfil several of their administrative duties. Thus, in-service training should focus also on these programs.

A notable finding of the research is that, although in-service training for teaching and learning purposes can make the difference, principals, who attended this kind of sessions, to a great extent, do not use ICT for teaching and learning purposes in practice. Among other reasons, this could be attributed to the framework of the sessions which were mostly concentrated on providing technical skills to the participants. Thus, in-service training sessions should mainly concentrated on practical ways that principals could integrate ICT in their lesson daily and not on the acquisition of more technical skills. Enough money has been spent until right now and the desired change through the ICT integration in our schools has not come yet. Maybe, the time has come for investing more in the professional development of the principals in order to strengthen their leadership capability to lead this innovation. After all, "If school principals are to effectively inspire and lead a staff in integrating technology across the curriculum, then professional development opportunities must be available for principals to develop these skills and dispositions" (Flanagan & Jacobsen, 2003, p.140).

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