

# Turkish primary school teachers' perceptions of school culture regarding ICT integration

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**Abstract** The current study aimed at identifying Turkish primary school teachers' perceptions of school culture regarding ICT integration in education. In addition, the current study was designed to investigate factors that might influence their perceptions. The participants were 1540 primary school teachers. The findings revealed that the teachers' perceptions regarding school culture in both motivational and technical aspects were not positive. Gender, ownership of a personal computer, Internet access, professional experience, and weekly computer use seemed to play an important role in the perceived school culture regarding ICT integration in education.

**Keywords** Instructor training and support · Policy · Teaching and learning · Improving classroom teaching · School culture

## Introduction

Information and Communication Technologies (ICT) is both an important economic resource and instrument in the competitive global economic system. Thus, as well as competition among countries, knowledge and proficiency regarding the ICT have been important factors in development and growth (ICEL 2001). Training individuals who possess the abilities which the e-economy requires and the innovative and ever-changing nature of ICT forced educational systems to change. As a result, many countries have developed national education policies based on the ICT. These politics include the improvement of the quality of education in the class, educating qualified individuals knowledgeable and proficient in the ICT and supporting the educational transformation (Tondeur et al. 2007, p. 962). The advantages and possibilities of the ICT contributed remarkably to the educational reform efforts and thus, is seen an integral part of school programs (Doornekamp 2002; Eurydice 2001).

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Consistent with “technological adoption” model (Yuen 2000), there have been ongoing efforts in many countries including Turkey to provide schools with hardware and software and to encourage teachers to use ICT in the classroom based on their national ICT policies (Doornekamp 2002; Kozma and Anderson 2002; Tondeur et al. 2007; Vallance 2008). As the World Bank’s Development Index (2010) reveals, countries allocated enormous budget for ICT and supported teachers’ ICT integration efforts in their classrooms. The basic belief behind the “technology adoption” model was: “build it, they will come, that is, if teachers were provided with access to computers, they would use it with their students” (Niederhauser and Perkmen 2010, p. 436).

Efforts to provide ICT infrastructure in Turkish schools started in 1984. Several national ICT projects have been implemented since then. For instance, financially supported by the World Bank, Basic Education Project I (MNE 2003) and II (MNE 2005) aimed to provide schools with computers and educate in-service teachers on how to use technology in the classroom. The Ministry of National Education budget report revealed that access is no longer a problem in ICT integration in Turkey (MNE 2008). 95% of the students were able to access to computers and the Internet in the schools. As of 2009, computer labs were set up in 28,000 public schools and students had broadband Internet access in 94% of the primary schools (State Planning Organization 2010). By the year of 2011, MNE (2009) aimed to educate 500,000 computer-literate teachers under the program called “Education for the Future”. MNE (2010) also started a new project (F@tih Project) with an enormous budget of 1 Billion dollars. The main purpose of this project was to make as many classrooms as possible ICT-based learning environment through providing them with smart boards, projectors, computers and the Internet.

In spite of the huge investments, research studies conducted in many countries including Turkey revealed that the ICT integration in schools were not at the desired level (Albirini 2006; Doornekamp 2002; Hermans et al. 2008; Iding et al. 2002; Kiridis et al. 2006; Tezci 2009). This suggests that simply accessing to ICT does not necessarily guarantee that teachers use it in their classroom (OECD 2004; Pelgrum and Law 2003). In addition to access, psychological and organizational factors play a critical role in the ICT integration (Ertmer 1999; Stuart et al. 2009).

Psychological and internal factors include personality (Paraskeva et al. 2008; Perkmen and Çevik 2010), self-efficacy, outcome expectations, interests (Niederhauser and Perkmen 2010; Paraskeva et al. 2008; Perkmen and Pamuk 2011), attitude (Albirini 2006; Cohen and Ball 1990; Niederhauser and Stoddart 2001), knowledge, ability (Anderson 2006) and beliefs (Iding et al. 2002; Smarkola 2008; Teo et al. 2008). For example, Niederhauser and Perkmen 2010 found that self-efficacy, outcome expectations and interests are interrelated and each is highly correlated with pre-service teachers’ willingness to integrate technology in their future classrooms. Niederhauser and Stoddart (2001) and Cohen and Ball (1990) indicated that attitude plays a critical role in ICT integration; however, many research studies revealed that internal factors such as attitude, beliefs are necessary but not sufficient factor in ICT integration (Hermans et al. 2008; Iding et al. 2002; Schug 1998; Smarkola 2008; Tezci 2009; Tondeur et al. 2007; Wang et al. 2004).

Some researchers focused on gender difference in ICT integration to examine if there is significant difference between males and females in terms of their attitude (e.g., Aydin 2007; Knezek and Christensen 2002; Li et al. 2001), perceived ability (e.g., Markauskaite 2006; van Braak et al. 2004), usage (e.g., Li and Kirkup 2007; Schumacher and Morahan-Martin 2001), self-confidence (e.g., Li and Kirkup 2007), experience (e.g., Schumacher and Morahan-Martin 2001; Tondeur et al. 2008a; van Braak et al. 2004) and perceived external support (Al-Senaidi et al. 2009). The studies focusing on attitudes produced mixed

results. While some researchers (e.g., Aydın 2007; Schumacher and Morahan-Martin 2001) found that males' attitudes towards computers were more positive than females, other researchers (e.g., Hong and Koh 2002; Roussos 2007; Sam et al. 2005; Shapka and Ferrari 2003; Teo 2008) did not identify a significant gender difference between males and females in terms of their computer attitudes. Males were found to see themselves as more competent ICT users than females (Kiridis et al. 2006; Markauskaite 2006; Meelissen and Drent 2008; Russell and Bradley 1997). Males were reported to use ICT more than females (Ocak and Akdemir 2008; Usluel 2007). While Li and Kirkup (2007), Russell and Bradley (1997), Shashaani and Khalili (2001) found that males were more confident ICT users, Murphy (2000), Roussos (2007), Sam et al. (2005) did not identify gender difference in terms of self-confidence. In addition, no gender difference was identified in terms of perceived external support (Al-Senaidi et al. 2009).

External factors such as organizational support are also necessary in ICT integration (Baek et al. 2008; Gosmire and Grady 2007; Neufeld et al. 2007; Kozma 2003). Organizational support includes the school administrators' behavior and beliefs, technology-based school. Kozma (2003) emphasized that the mere availability of ICT does not necessarily increase the likelihood of teachers' use it for instructional purposes in their classroom. The other factors such as administrative support, strategic ICT plan and policies that create technology-based school culture is necessary to help teachers to integrate ICT into their classroom (Tondeur et al. 2008a; Vanderlinde et al. 2009; Zhang 2007). Stuart et al. (2009) pointed that the school administrators' beliefs about the necessity of ICT usage in education and supporting technology-based school culture affect the level of teachers' ICT integration efforts. If the administrators believe that the ICT integration helps improve the quality of education, they tend to help teachers in their ICT integration efforts and develop policies and environment that support technology-based school culture. Thus, the behavior and beliefs of administrators and how teachers perceive the school culture and organizational support play an important role in the success of ICT integration (Baek et al. 2008; Gosmire and Grady 2007; Neufeld et al. 2007).

In spite of their importance in the success of ICT integration, organizational support and school climate (or culture) received little attention in the literature. Researchers typically concentrated on ICT integration barriers (Alghazo 2006; Al-Senaidi et al. 2009; Hong and Koh 2002; İşman et al. 2008; Lim and Khine 2006; Pelgrum 2001; Yıldırım 2007). These researchers surveyed teachers about barriers that hinder their ICT integration efforts or conducted qualitative studies. For instance, Davis, Preston and Şahin (2009) mentioned the importance of organization support and change: "The presence of the middle level of 'organizational support and change' emerged as a particularly discriminating factor, indicating that higher-quality teacher training supports change in the classroom and in the school" (p. 135) in a qualitative study. On the other hand, the organizational support was, in general, typically measured with one item (e.g., "Do your school support your use of ICT in the classroom?") under the construct of barriers in the survey studies. From the statistical point of view, measuring a construct with one item and examining its effects produce reliability and validity problems. In addition, it would be difficult to examine the perceptions of teachers' school climate and support comprehensively and thoroughly with one item. Thus, examining how teachers perceive school climate and organizational support as a separate construct with multiple items may help us understand why ICT integration in schools is not at the desired level in many countries.

The term of school climate/organizational support regarding ICT was coined by Panastasiou and Angeli (2008). These researchers developed a 12-item school climate and support scale consisting of two dimensions: (1) Motivational Support (e.g., "The principal

encourages me to integrate computers in teaching and learning”) and (2) Technical support (e.g., The technical support in my school is adequate). Some researchers indicated that school climate and culture are similar and overlapping constructs (MacNeil et al. 2009). Climate is affected by an organization’s culture (Moran and Wolkweln 1992; Schein 1996). Bates and Khasawneh (2005) indicated that research on organizational innovation concentrated mainly on the role of culture instead of climate as a facilitator largely because of its great importance in learning and change. Climate is not the work environment as it is. Rather, it is how people perceive and respond to it. Berry (1998) elaborated on the difference between culture and climate:

Climate has been described as the attitudinal *warmth* of an organization and as the extent to which an organization is supportive to its members. Culture is the more solid and enduring foundation of organizational values and beliefs, which is shown through interactions of groups in the organization. Climate is more changeable and is the expression of culture (p. 363).

Culture is a broader term and source of climate and support. In addition, the researchers in the field of ICT integration mainly focused on the construct of school culture and examined its role in ICT integration level (e.g., Lim 2007; Tondeur et al. 2008b; Zhang 2007). Thus, the researcher focused on the term “culture” instead of “climate” or “support” in the current study.

School culture includes vision, plans, norms and values that are shared by school members (Maslowski 2001). Many researchers (e.g., Pelgrum and Law 2003; Tearle 2003) emphasized the importance of school culture in ICT integration. Pelgrum and Law (2003) indicated that effective ICT integration depends on the school leaders’ perception and vision regarding ICT and school culture rather than teachers’ ICT skills. Culture has a mediating role that influences teachers’ actions, beliefs and attitudes (Chai et al. 2009). Tondeur et al. (2008b) indicated that effective ICT integration takes place when a school has a shared vision, develop ICT policies, and its teachers “share the values expressed within the school policy and understand their implications” (p. 220). Tondeur et al. (2008a) found that cultural school characteristics such as the schools’ openness to innovation and the availability of a policy plan are related to ICT the use of computers as a learning tool. Hew and Brush (2007) indicated that technology integration plan helps create a school culture regarding ICT. Divaharan and Ping (2010) indicated that visible leadership involvement as perceived by the teacher, culture of sharing within the school and professional development are strong factors influencing the effective integration of ICT in education. Inan and Lowther (2010) found that overall support which they defined “teachers’ perception of administrative, peer and community support for their technology integration in their classroom instruction” (p. 142) influences ICT integration directly and indirectly through its influences on internal factors including teachers’ readiness and beliefs regarding ICT integration in education.

Yuen (2000) indicated that schools should adopt cultural integration model instead of technology adoption model for effective ICT integration to take place. The schools which adopt this model have innovative culture in which ICT are used as a cognitive tool to support student learning. The students use ICT in all kinds of extra-curricular activities and innovative projects (Allan et al. 2003). They learn through personalized learning in which they assume responsibility of their own learning. The teachers in such schools are not isolated in their ICT integration efforts. They receive pedagogical, technical and motivational support from their school leaders and colleagues (Anderson and Dexter 2005; Divaharan and Ping 2010; Tondeur et al. 2009). They gain necessary ICT integration skills generally through informal channels that take place through sharing their ICT integration knowledge and experience among themselves, learning from each other, observing their

colleagues' ICT-integrated lessons (Divaharan and Ping 2010). They are respected and trusted by their school leaders. Leaders in such schools do not give the teachers any pressure or time limit and encourage them to do student-centered activities in their classroom based on the social constructivist theory. They "mobilize people in the organization to become adaptive" (Allan et al. 2003, p. 169). McGarr and Kearney (2009) indicated that leadership is not centralized in such schools. Rather, it is decentralized meaning that there is no top-down management approach (Hadjithoma-Garstka 2011). In such schools, the teachers also serve as ICT coordinators and interact with each other. Schools are learning organizations. Flexibility and openness are the main characteristics of such schools (Dexter et al. 2002).

It seems clear that school culture plays a pivotal role in successful ICT integration in education. Research studies involving this construct are, in general, grounded in activity theory and use qualitative research methods (e. g. Demiraslan and Usluel 2008; Gao et al. 2010; Lim 2007). It should be noted that the activity theory is useful in understanding individual activities but offers a limited framework for understanding culture (Lim 2002).

In spite of its importance in understanding ICT integration efforts, researchers paid little attention to creating likert-type scales measuring school culture regarding ICT integration. The only scale measuring this construct appears to be the school climate and support scale developed by Papanastasiou and Angeli (2008). Since the school culture and school climate are similar and overlapping constructs, and the researcher failed to identify a likert-type scale measuring school culture regarding ICT integration, the school climate and support scale is used as the data gathering tool in the current study to measure school culture regarding ICT.

The current study specifically concentrated on school culture as measured by perceived school climate and support and examined its relation to ICT usage. If a significant relationship between these constructs exists, it contributes to our understanding of ICT integration process. The success of educational reform efforts depend partly on creating a technology-based school culture which provide its teachers with both motivational and technical support. This fact and the lack of research involving this construct warrants a closer examination of the teachers' perception of school culture. From this point of view, this study may contribute to our understanding of the ICT integration problems and what can be done to overcome such problems.

The main purpose the current study was to explore the level of Turkish teachers' perception of school culture in relation to the ICT-Usage level. More specifically, the teachers' perceptions were examined from both technical and motivational aspects. In addition, the role of some background variables including gender, access and professional experience on school culture regarding ICT were investigated. Three research questions were addressed to meet the purpose of the current study.

- (1) How do teachers perceive school culture regarding educational use of ICT?
- (2) What is the relationship between perceived school culture and ICT usage level?
- (3) Which factors are related to the teachers' perceived school culture?

## Method

### Participants

The participants consisted of two groups of practicing teachers. The research instruments were initially validated with 272 teachers in the first group. The second group consisted of

1540 primary school teachers at 330 different public primary schools in 18 cities located in four different regions of Turkey. Of the participants, 844 (54.8%) were male, 696 (45.2%) female. 32% of the teachers had 1–5 year, 25.4% had 6–10, 22% had 11–20, 20.6% had 21 years or more teaching experience. 43% of the teachers were primary school teachers. The others were secondary school teachers such as mathematics, science, foreign language. 16.3% of the teachers indicated that they had never taken a computer course. Of those, 68% had 21 years or more teaching experience and 46% were elementary school teachers.

### Instruments

Three research instruments were used in the current study to help address the research questions. The instruments were (1) The Personal Inquiry Form, (2) The ICT-Usage for Educational Purpose Scale, (3) The School Climate and Support (SCS) Scale. The Personal Inquiry Form included demographics data about the teachers. The ICT-Usage for Educational Purpose Scale was designed to examine the teachers' level of use of 14 different ICT applications. The SCS aimed at investigating the teachers' perception of their school climate and support regarding ICT. In addition to the items in these three research instruments, two additional questions were asked to the participants. The questions included (a) what is the amount of your weekly computer use? (b) From where do you access the Internet?

The SCS Scale, developed by Papanastasiou and Angeli (2008), originally consisted of 12 items and was translated into Turkish by the researcher. To establish the face validity, three instructional technology and two linguistics experts examined the scale. Based on their suggestions, three new items were added to the original scale to measure the SCS more thoroughly, resulting in a final scale with 15 items. The new items included "There is no restriction in using computers in our school", "In order to enhance our ICT abilities, our school provides a supportive environment for teachers", "Our school organizes seminars and workshops on the computer-assisted education". The participants indicated their level of agreement on a 5 point scale ranging from 1 (not agree at all) to 5 (totally agree). Responses were added up and divided by the number of items. Scores ranged from 1 to 5 with higher scores indicating higher perceived SCS.

The SCS scale was 272 primary teachers employed in public schools to establish the construct validity of the scale. The principal component analysis resulted in a two-factor solution, which accounted for 57.914% of the variance among the scale items. The first factor (called "Motivational Support") consisted of 8 items and accounted for 29.293% of the variance. The second factor (called "Technical Support") consisted of 7 items and accounted for additional 25.874%. The alpha reliability coefficient of the entire scale was .89 with .88 and for the motivational support and .85 for the technical support. All of the scale items including the new three items loaded heavily on their respective factor, providing evidence for the construct validity of the scale. The cronbach alpha of this scale was found to be .90 for the current study involving 1540 teachers.

The ICT Educational Purpose Scale (ICT-EPS) used in the current study was developed by Papanastasiou and Angeli (2008) and translated into Turkish by the researcher of the current study. To establish the face validity, three instructional technology and two linguistics experts examined the scale. The participants indicated the extent to which they use 14 types of software (e.g., word processing, web design) for an educational purpose on a five point scale ranging from 1 (never) to 5 (almost every day). Items were added up and divided by the number of items. Thus, scores ranged from 1 to 5. Using a sample of 272 teachers in the pilot study, the cronbach alpha of the scale was established at .88.

## Data analysis

The data analysis started with calculating descriptive statistics including means and standard deviations. A series of t tests were conducted to examine if there is any difference among participants in terms of gender, personal computer, internet access. One Way ANOVA test was used to examine the difference between participants' scores by their personal experience and weekly computer use. Moreover, the effect size was reported to shed light into practical importance of the findings. Lastly, a correlation analysis was conducted to examine the magnitude of the relationship between Perceived SCS and ICT-Usage.

## Results

### Descriptive statistics

Results revealed that 62.4% of the participants use computers 1–3 h 18.8% 4–7 h and 9.9% 8 h or more in a week. 9.7% reported that they never use computers for educational purposes. The participants weekly use of computers ranged from 0 to 10 with a mean of 2.23 (SD = .77). 41% indicated that they access to the Internet from their school. The others (59%) access to the Internet from other locations such as home, Internet Café. The participants' level of ICT usage for educational purposes was found to be low (M = 2.52, SD = .96). The most frequently used ICT was found to be the Internet (M = 4.08, SD = .86). The least frequently used ICT was Microworlds/Simulations (M = 1.32, SD = .77).

Regarding perceived school culture, the results presented in Table 1 revealed that the teachers' overall perceived school culture was relatively low (M = 2.67, SD = .50). That means, the teachers think that the school culture in both motivational and technical aspects were not supportive. The standard deviation of overall SCS (.50) indicates that there is little variability in the teachers' views regarding school culture. This suggests that the majority of the teachers do not perceive sufficient technical and motivational support.

### Group comparisons

The participants' perceived school culture was examined by gender, ownership of a computer, and Internet Access. Results presented in Table 2 revealed that there are significant differences among the participants in all of the three variables of interest. Those who have a personal computer (M = 2.71, SD = .46), access to the Internet from school (M = 3.04, SD = .38) and females (M = 2.81, SD = .48) perceive more support than those who do not have a personal computer (M = 2.27, SD = .62), access to the Internet from other places (M = 2.41, SD = .48) and males (M = 2.54, SD = .48). All of the

**Table 1** Descriptive statistics for sub dimensions and entire SCS

	Minimum	Maximum	Mean	Standard deviation
Motivational support	1.00	4.50	2.81	.53
Technical support	1.00	4.00	2.50	.60
Entire SCS	1.07	4.00	2.67	.50



**Table 2** Results of *t* test analysis

Variables	Group	N	Mean	SD	t	Sig	Cohen's d
Gender							
MS	Male	696	2.68	.53	-10.064	.000*	.52
	Female	844	2.95	.50			
TS	Male	696	2.38	.57	-9.264	.000*	.48
	Female	844	2.66	.59			
Entire	Male	696	2.54	.48	-10.975	.000*	.56
	Female	844	2.81	.48			
Personal computer							
MS	Yes	1373	2.85	.50	9.685	.000*	.70
	No	167	2.44	.66			
TS	Yes	1373	2.55	.56	10.034	.000*	.73
	No	167	2.08	.72			
Entire	Yes	1373	2.71	.46	11.200	.000*	.81
	No	167	2.27	.62			
Internet access							
MS	School	633	3.13	.45	22.665	.000*	1.20
	Other	907	2.58	.47			
TS	School	633	2.94	.46	30.184	.000*	1.57
	Other	907	2.20	.48			
Entire	School	633	3.04	.38	31.376	.000*	1.61
	Other	907	2.41	.40			

*SD* standard deviation, *MS* motivational support, *TS* technical support

\*  $p < .01$ ;  $df = 1538$

effect sizes indicated by Cohen's *d* values were found to be more than .30 (minimum threshold of a moderate effect size), indicating that the difference among participants have practical importance.

The participants' perceived school culture was also examined by professional experience and weekly computer use. Results presented in Table 3 revealed that there are significant differences among the participants in these two variables of interest. In general, as the professional experience increases and the weekly computer use decreases, the perceived school culture becomes more supportive. For example, those who have 21 years and more professional experiences ( $M = 2.86$ ,  $SD = .50$ ) and use computers 1–3 h a week ( $M = 2.71$ ,  $SD = .41$ ) perceive higher support than those who have 1–5 year of professional experience ( $M = 2.50$ ,  $SD = .52$ ) and use computers 8 h or more a week ( $M = 2.33$ ,  $SD = .65$ ).

### Correlation analysis

Lastly, a correlation analysis was conducted to examine the relationship between perceived school culture and ICT-Usage level. These two constructs were found to be moderately correlated ( $r = .44$ ,  $p < .01$ ). This result suggests that as the perceived school culture becomes more positive, the teachers' ICT-Usage level increases.



**Table 3** Analysis of ANOVA

Scales	Science field	N	Mean	SD	Mean square	F (3,1536)	p	f <sup>2</sup>	Tukey
Professional experience									
MS	a 1–5 year	493	2.65	.55	9.065	34.178	.000*	.26	a < b < c, d
	b 6–10 year	391	2.77	.52					
	c 11–20 year	339	2.90	.46					
	d 21 years and more	317	3.00	.51					
TS	a 1–5 year	493	2.33	.62	10.588	31.501	.000*	.25	a < b < c, d
	b 6–10 year	391	2.47	.53					
	c 11–20 year	339	2.62	.52					
	d 21 years and more	317	2.69	.62					
Entire	a 1–5 year	493	2.50	.52	9.748	42.331	.000*	.29	a < b < c, d
	b 6–10 year	391	2.63	.46					
	c 11–20 year	339	2.77	.42					
	d 21 years and more	317	2.86	.50					
Weekly computer use									
MS	a Never	150	3.19	.49	14.095	55.188	.000*	.33	a > b < c > d
	b 1–3 h	961	2.84	.46					
	c 4–7 h	277	2.66	.52					
	d 8 h and more	152	2.51	.70					
TS	a Never	150	2.94	.58	21.856	69.585	.000*	.37	a > b > c > d
	b 1–3 h	961	2.56	.51					
	c 4–7 h	277	2.29	.61					
	d 8 h and more	152	2.12	.73					
Entire	a Never	150	3.07	.48					
	b 1–3 h	961	2.71	.41	17.453	81.088	.000*	.40	a > b < c > d
	c 4–7 h	277	2.46	.49					
	d 8 h and more	152	2.33	.65					

SD standard deviation, MS motivational support; TS technical support

\*  $p < .01$

### Results and discussion

The main purpose of the current study was to identify Turkish teachers' perception of school culture regarding ICT and to examine its relation to other factors. The results revealed that teachers perceive school culture in both motivational and technical aspects not supportive. Gender, ownership of a personal computer, internet access, professional experience and weekly computer use appeared to play an important role in the perceived school culture.

To begin with, several research studies conducted in Turkey revealed that Turkish teachers' usage of ICT in the learning and teaching process was low (Tezci 2009; Usuel 2006; Yalın et al. 2007; Yıldırım 2007). Some researchers investigated the influence of internal factors such as gender, experience and attitudes on ICT usage level (Butler and Sellbom 2002; Cuckle et al. 2000; Hakkarainen et al. 2001; Kiridis et al. 2006; Tondeur et al. 2007). However, the researchers paid little attention to the external factors such as school culture and support. Ertmer (1999) indicated that both external and internal factors

influence ICT integration process. She further indicated that without removing external barriers, the internal factors play little role in the ICT integration process. The current study revealed that the perceived school culture was moderately related to the ICT-Usage. This might explain why ICT integration process is going slowly in Turkey. In addition, the participants' perceived school culture in the current study was found to be unsupportive in both the motivational and technical aspects. Future research in this area may focus on identifying the relationship between this construct and ICT usage in education in other countries.

Two factors (ownership of a computer and Internet access) appeared to play the most important role in the perceived school culture. The perceptions of teachers who do not own a computer regarding school culture were found to be much more negative than those who own a personal computer. This result suggests that those who do not own a personal computer might need additional external supports in their efforts to integrate technology in education. In addition to ownership of a computer, internet access appeared to play an important role in the perceived SCS. That is, the perceptions of teachers who have little access to the Internet in their schools regarding school culture were much more negative than teachers who have access to the Internet in their school. This result was expected since the schools should provide an environment in which they can easily access to the Internet for their teachers. In such environment, teachers probably believe that their schools provide sufficient technical infrastructure when they integrate ICT into education (Chitiyo and Harmon 2009).

The relationship between gender and perceived school culture was also noteworthy. Male teachers' perceptions regarding school culture were less negative than female teachers. This result might stem from the fact that the field of computer is considered to be a masculine profession (Albirini 2006; Li and Kirkup 2007; Li et al. 2001; Macleod et al. 2002; Torkzadeh et al. 2006). Thus, one can expect that female teachers need more technical and motivational support in their ICT integration efforts than male teachers. For this reason, they might perceive their schools' culture were more positive than male teachers. Since the males, in general, have better computer skills than female students (Knezek and Christensen 2002; Schumacher and Morahan-Martin 2001), they do not need as much assistance as females do. The findings of the current study provided evidence that gender factor should be taken into account in the administration of ICT integration process in schools.

Weekly use of computers was also found to be related to the perceived school culture. The weekly use of computers was inversely related to the perceived school culture. That is, as the weekly use of computers increased, perceived school culture, in general, became more negative. One possible explanation for this finding might be that those who use computers frequently need less technical and motivational support in their ICT integration efforts. Thus, they might believe that they do not receive sufficient organizational support. In other words, the more teachers use ICT, the more they encounter problems and the more they need additional support.

It is also important to highlight the relationship between professional experience and the perceived school culture. As the professional experience decreased, perceived school culture, in general, became more negative. One possible explanation for this finding might be that younger teachers are more technologically savvy than the older teachers, are more motivated to use ICT in the classroom (Inan and Lowther 2010; National Center for Educational Statistics 2006) and need less technical and motivational support. Thus, they might believe that they do not receive sufficient organizational support.

As indicated in the introduction, many countries allocated enormous budget for the ICT infrastructure. It is important to note that technology, by its nature, is ever-changing. Thus, it becomes critical to create environments in which teachers can use ICT in their classroom confidently and effectively. This might be possible through creating school culture and organizational support for teachers. Otherwise, investments will most probably fade and thus not increase the quality of education.

It is widely acknowledged that internal factors (e.g., attitudes) play an important role in ICT integration; however, a number of research studies revealed that positive changes in ICT attitudes do not necessarily increase the ICT-Usage (e.g., Garland and Noyes 2004; Iding et al. 2002; Schug 1998; Tezci 2009; Tondeur et al. 2007). This points out that external factors might come into play when using ICT. A number of researchers (Butler and Sellbom 2002; Mouza 2003; Smarkola 2008; Yıldırım 2007) found that as the organizational support increased, teachers' likelihood of ICT usage in the classroom increased. The current study revealed that the teachers' perceptions regarding school culture and organizational support in both motivational and technical aspects were not positive.

As the current study reveals, school culture regarding ICT might play an important role in ICT integration. Thus, this construct should deserve a closer attention in the field of educational technology. Instead of using "technology adoption" model, "cultural integration" model (Yuen 2000) which requires openness to innovation and support student-centered learning can be used in schools to encourage teachers' ICT integration efforts. Schools which use this model have a vision shared by its teachers (Tondeur et al. 2008a; Vallance 2008). Administrators or leaders in such schools create an environment in which teachers share their ICT experiences, technology-based lesson plans, materials and problems with other teachers (Chitiyo and Harmon 2009; Hew and Brush 2007; Lim 2007; Yuen 2000). The administrators carefully listen to teachers' problems and come up with solutions to their problems. In such environment, teachers probably do not feel alone in their ICT integration efforts and believe that their school will support them when they encounter ICT integration problems.

Suggestions for future research include replicating this study in different contexts; exploring the effects of school culture in combination with other variables (e.g., attitude, self-confidence and knowledge levels) on ICT-Usage level. Because of the correlational nature of the current study, cause-effect relationship could not be determined. That is, it is not easy to draw strong conclusions regarding the role of gender and professional experience on the perceived school culture. Future researchers can conduct qualitative studies with male and females and teachers with different professional experiences to shed light into why teachers in the same school perceive school culture differently. It is hoped that through future research the variable of school culture will contribute to our understanding of ICT integration process in many countries.

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