

The Use of ICT in Turkey's K-12 Schools Teachers

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Abstract

The purpose of this study is to investigate current status of K-12 teachers' ICT usage in Turkey. The primary focus is to form a big picture about integration of ICT into K-12 schools by presenting current status in regard to ICT resources in schools, the use of hardware and software in classrooms, and the use of the Internet. The cross-sectional survey method was used in this study. The data were collected from K-12 teachers in 69 schools in 35 cities of 12 different regions in Turkey with convenience sampling method. The questionnaire was distributed to 3353 K-12 teachers requesting their participation in the study in April 2005. 1429 teachers responded the questionnaire. The data gathered through the questionnaire were by using descriptive statistics.

Introduction

At the beginning of this century, education has faced important challenges, such as large number of people to educate, poor economic conditions, training of trainers, and low quality of education. In this century, so-called information age, providing high quality education and training has become critical for all who need education, and have them benefit from it in the most cost-effective way. Educators and policy makers have tried to overcome these challenges by developing new approaches in education. Information and communication technology (ICT) is such a new approach as enhancing the dissemination of information and meeting these challenges. ICT included in education particularly to help teachers perform their teaching profession more effectively.

In these contexts, teachers' shifting role in 21st century involves an essential mission, which is being the frontier of applying technological innovations to teaching-learning process. With this aim, teachers should be equipped with the adequate skills and knowledge to perform their profession effectively. Every year, new teachers start their teaching careers and are required to be furnished with the skills to merge today's ICT into teaching-learning process that will stimulate and maintain students' interest while preparing the students for the future. Teachers are expected to integrate a wide variety of ICT into the curriculum effectively, and to be ICT leaders and role models for appropriate use of emerging types of ICT (Ozogul, 2002).

The importance of ICT in education is increasing worldwide. Turkey started ICT-related initiatives as early as 1984. Even though there have been some works going on related with integration of ICT in Turkey's educational system, the field lacks of extensive research studies to determine the existing situation of teachers in ICT integration. Therefore, the purpose of this study is to investigate the current status of K-12 teachers' ICT usage in Turkey. The primary focus is to form a big picture about integration of ICT into K-12 schools by presenting current status in terms of ICT resources, the use of hardware and software in classrooms, and the use of the Internet. Consequently, the research question addressed in this study is: What is the current situation of K-12 teachers' ICT usage in Turkey in regard to following:

- (1) Teachers' computer laboratory usage, if any,
- (2) Integration of ICT by the teachers in their courses,
- (3) Hardware the teachers use in their courses,
- (4) Software the teachers use in their courses,
- (5) Use of the Internet as a supportive tool by the teachers in their courses.

Method

Overall Design

The cross-sectional survey method was used in this study. The information was collected through a questionnaire at just one point in time to find out K-12 teachers' ICT usage in Turkey.

Population and Sample

The participants of the study included 1429 K-12 teachers in Turkey. Based on Ministry of National Education (MONE) statistics, there were 558,876 primary and secondary school teachers in Turkey as of 2004. First, cities from 12 regions in regard to Nomenclature of Units for Territorial Statistics (NUTS), and then 6‰ of the teacher population from these cities were selected through convenience sampling method. Hence, a representative sample of 3,353 teachers was selected from the total population of 558,876 (see Figure 1) K-12 teachers. The questionnaires were sent to 3,353 teachers from 69 schools in 35 cities of 12 different regions in Turkey. However, 1429 teachers responded the questionnaire with the return rate of 43%.

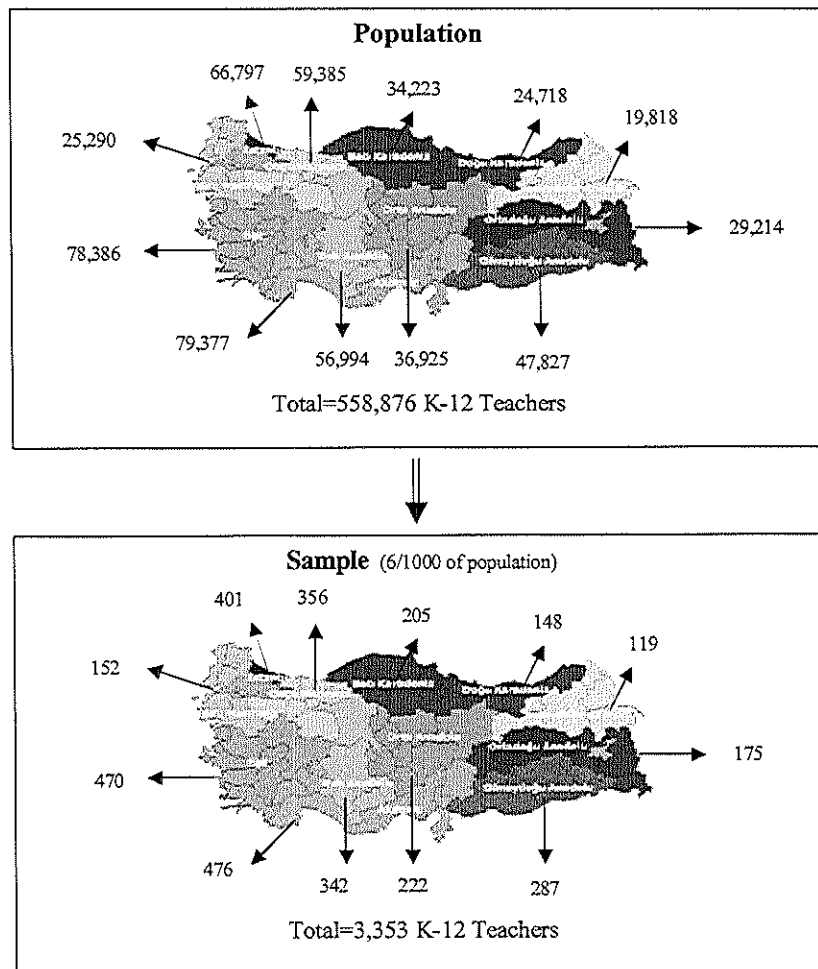


Figure 1: The Number of K-12 Teachers in Terms of NUTS Level 1

Data Collection and Analysis

A questionnaire was used to gather data in regard to teachers' ICT use in their schools, and consisted of 16-items with multiple close-ended items, 5-point Likert-type items and 4 open-ended questions. The questionnaire was developed by the researchers based on the review of related literature (Queitzsch, 1997; MirandaNet, 2000; Orhun, 2000; and SCRTEC, 1998). Seven experts examined the questionnaire, and in regard to the feedback gathered from the experts, the instrument was revised. After the revision, a pilot test was conducted with 121 teachers, and the Cronbach alpha coefficient was calculated as .81 denoting a satisfactory reliability. Subsequently, a factor analysis was applied to the scale whether the items measure two factors.

After the pilot test, the questionnaire was distributed to 3353 K-12 teachers requesting their participation in completing the questionnaire. A follow-up questionnaire was sent for the second time to the teachers who did not respond to the first query. 1429 K-12 teachers responded the questionnaire, and the Cronbach alpha coefficient was recalculated as .97 indicating a satisfactory reliability. Subsequently, a factor analysis was calculated to identify whether the items measure two factors. The Cronbach alpha of the Factor 1 was .97 and the Cronbach alpha of the Factor 2 was .94.

The data gathered through questionnaire were analyzed by descriptive statistics, and frequencies, means, percentages, and standard deviations of questionnaire items were calculated. In this paper only a part of the data gathered from the questionnaire were used.

Results

Use of Computer Laboratories

The results related with computer laboratory usage of the teachers were presented in Table 1. The findings of the study indicated that more than 1/3 of the teachers (35%) do not use the computer laboratories at all. While 1/4 of the teachers (25%) use the laboratories, almost 1/5 of the teachers (19%) use the laboratories rarely. The results also showed that 16 percent of the teachers do not have sufficient computer laboratories at their schools.

Table 1: K-12 teachers' computer laboratory usage

Computer Laboratory Usage	N	Percentages (%)
I do not use computer laboratories	490	35
I use computer laboratories	361	25
I rarely use computer laboratories	267	19
The schools do not have any/sufficient computer laboratories	233	16
Missing	78	5
TOTAL	1429	100

Integration of ICT into Courses

The teachers were asked if they were integrating ICT into their courses. As it is presented in Table 2, 37.5% of the teachers did not integrate ICT in their courses. While 1/4 of the teachers (25%) indicated they were integrating ICT in their courses, 1/3 of the teachers (34%) percent were partially integrating ICT in their courses. 4 % (N=51) did not respond to this question.

Table 2: K-12 teachers' ICT integration in their courses

ICT Integration into Courses	N	Percentages (%)
No	536	37.5
Partially	482	34
Yes	360	25
Missing	51	3.5
TOTAL	1429	100

Hardware Used by the Teachers

The teachers who were using ICT in their courses ranked the frequency (never, rarely, often, and all the time) of their hardware usage in their courses. As it is shown in Table 3, the most frequently used hardware by the teachers in their courses is computer (M=3.69), and then printer (M=3.53). The least frequently used hardware by the teachers in their course is camera (M=2.5).

Table 3: Hardware used by the teachers in their courses (N=1429)

	Mean	Std. Deviation
Computer	3.69	.96
Printer	3.53	.97
Television	3.15	.95
Data Projector	3.10	.97
OHP	3.09	.94
Scanner	2.93	.97
Video	2.90	.91
IC Recorder	2.81	1.03
Camera	2.50	.82

Software Used by the Teachers

The results, related with the teachers' use of software in their courses, were presented in Table 4. The teachers use "word processing" software (M=3.57) at the highest level, "Internet" (M=3.31) for the information search at the second level, and then "receiving/sending e-mail" (M=3.21) at the third level. The results indicated that the use of "LMS" (M=1.97) by the teachers in their courses is listed as the least used item in the list.

Table 4: Software used by the teachers in their courses (N=1429)

	Mean	Std. Deviation
Word Processor (Example Word)	3.57	1.09
Web Browsers (Example Internet Explorer)	3.31	1.17
Receiving/sending e-mail	3.23	1.22
Spreadsheets (Example Excel)	3.20	1.07
Operating Systems (Example Windows)	2.93	1.28
Presentation Programs (Example Power Point)	2.88	1.02
Game	2.51	.91
Image Editing (Photoshop)	2.47	.95
Chat	2.39	.90
Databases (Example Access)	2.36	.88
Web Programming (Example HTML)	2.27	.93
Reference Programs (Example Dictionary)	2.27	.91
Forum	2.26	.87
Animation Programs (Example Flash)	2.25	.85
Web Page Development (Example FrontPage)	2.22	.83
Simulation	2.18	.83
Programming Language (Example Visual Basic)	2.16	.90
Desktop Publishing (Example Corel Draw)	2.12	.75
Video Conference Programs	2.08	.73
Tutorials	2.06	.74
Authoring Languages (Example Authorware)	1.99	.69
Learning Management System (WEB CT)	1.97	.67

Internet Usage of the Teachers

As it is presented in Table 5, 1/4 of the teachers (25%) stated that they use the Internet as a supportive tool in their courses, and 1/3 of the teachers (34%) mentioned that they use the Internet partially in their courses. However 37.5% of the teachers do not use the Internet at all (see Figure 4).

Table 5: K-12 teachers use of the Internet as a supportive tool in their courses

Internet Usage	N	Percentages (%)
No	548	37.5
Partially	428	34
Yes	317	25
Missing	136	3.5
TOTAL	1429	

The Internet Tools Used by the Teachers

The teachers who were using the Internet in their courses as a support tool were asked how they were using the Internet. As it is indicated in Table 5, 47.3% of the teachers mentioned they use some web pages to prepare their lectures. 36% of the teachers use search engines to prepare their courses. The least used tools by the teachers are forum (4.5%) and chat (3.6%).

Table 6: Teachers' the Internet tools usage (N=1429)

	Use		Not Use	
	Frequency	Percent	Frequency	Percent
I use some web pages for prepare my lectures	676	47.3	753	52.7
I use search engines	514	36	915	64
I have web page for supporting my lessons	323	22.6	1106	77.4
I use e-mail	259	18.1	1170	81.9
I use forum	65	4.5	1364	95.5
I use chat	51	3.6	1378	96.4

Conclusion

The findings of the study indicated that at least ¼ of the K-12 teachers were using computer laboratories and integrating ICT into their courses. The remaining teachers either do not integrate ICT into their courses or they lack of sufficient ICT facilities. The majority use computer and computer related hardware, and word processing, Web browsing and communication software. Majority use the Internet to support their courses, and they use some Web sites, search engines and e-mail for this purpose. Even though one needs to cautious in generalizing these results, it is interesting that while teachers rated the Learning Management System (LMS) as the least used application, 22% of the teachers have their own Web pages to support their lessons. This result may indicate that the teachers may not have convenient LMS system to integrate into their courses. If such a system is provided by Ministry of Education, they may use and integrate it into their courses. The results showed that majority of the teachers were using Web to support their courses. Rather than expecting all activities related with ICT integration from the teachers, Ministry of Education may form an online support system that includes variety of instructional/learning activities. The teachers may download these activities, modify and use in their courses. They may also upload their own activities for other teachers' use. Ministry of Education started such project, but richness of the resources are not enough yet. Another act needs to be performed by Ministry of Education is that all schools should be provided with appropriate facilities so that ICT related resources can be reachable by the teachers.

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