

## A Survey on ICT Usage and the Perceptions of Social Studies Teachers in Turkey

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### ABSTRACT

Turkey has been undertaking many projects to integrate Information and Communication Technology (ICT) sources into practice in the teaching-learning process in educational institutions. This research study sheds light on the use of ICT tools in primary schools in the social studies subject area, by considering various variables which affect the success of the implementation of the use of these tools. A survey was completed by 326 teachers who teach fourth and fifth grade at primary level. The results showed that although teachers are willing to use ICT resources and are aware of the existing potential, they are facing problems in relation to accessibility to ICT resources and lack of in-service training opportunities.

### Keywords

Information and communication technology, Social studies teachers

### Introduction

Throughout the world, many countries have introduced Information and Communication Technologies (ICT) into schools via different courses of action. Their use is also underlined by OECD (2001) as a necessity for improving quality in teaching and learning. The Ministry of National Education (MNE) in Turkey has also made huge investments in the hope of attaining the goal of improving the quality of education through enriching the learning environment with the help of educational software and technologies. Integrating ICT training into all levels of primary education and providing each student with access to ICT equipment and information sources were also among the objectives of the MNE. In 2001, 2837 ICT classrooms were established. The distribution of educational software purchased for these schools was also completed in the same year. ICT classrooms are equipped with computers, printers, instructional software, electronic references, video players, overhead projectors and TV. The policy makers in Turkey expected that the introduction of ICT into formal education settings would improve the academic performance of teachers by encouraging them to improve their ability to use and apply technology and software in their jobs. Programs have been organized for teachers to access to ICT in every circumstance (MNE, 2003). Furthermore, in-service training opportunities for many teachers in different subject areas have been provided. It was hoped that teachers' use of technology in education would improve educational outcomes, increase technological skills and reduce anxiety when preparing lessons. Technology usage is an important indicator of their preparedness to carry out the obligations of daily lessons. In fact, Woodrow (1992) asserts that any successful transformation in educational practice requires the development of positive user attitude toward new technology. The development of teachers' positive attitudes toward ICT is very significant factor not only for increasing computer integration but also for avoiding teachers' resistance to ICT use (Watson, 1998).

### The Need for ICT Integration in Schools

ICT integration in schools is needed in order to accomplish many objectives and improve the quality of lessons in all subject areas as well as social studies. ICT increasingly pervades various aspects of our daily lives like work, business, teaching, learning, leisure and health. Since ICT leads all processes based on information, every individual in a society should become technology competent. Thus, all schools have to be equipped with the necessary ICT in order to provide the next generations with the needed tools and resources for access and use and to attain the expected skills. Norris, Sullivan and Poirot (2003) point out the importance of accessibility as: "...teachers' use of technology for curricular purposes is almost exclusively a function of their access to that technology" (p. 25). Merely

providing schools with hardware, software and in-service training is not enough. Any in-service training needs follow-up support, peer coaching and peer dialogue to ensure successful utilization of new technologies. There must be active involvement of the teachers concerned in the whole change process so that there is the element of “ownership” of the innovation.

Just filling schools with the necessary ICT neither improves the quality of instruction nor creates more effective learning environments. However, embracing a broader vision and philosophy, schools should revise present teaching programs, practices and resources, and ICT should be integrated into all levels of an educational system from classrooms to ministries for use in management, teaching and learning activities. Thus, “Teachers must receive adequate ongoing training, technology use must be matched to curriculum’s philosophy and theory of learning, and adequate numbers of computers must be conveniently located within the classroom” (Al-Bataineh & Brooks (2003), p. 479). As also concluded by Kington, Harris and Leask (2002) “...it is not necessarily the technology that has to be innovative, but the approach to teaching and learning must be” (p. 35).

## **Teachers’ ICT Usage**

The integration of information and communication technologies can help revitalize teachers and students. This can help to improve and develop the quality of education by providing curricular support in difficult subject areas. To achieve these objectives, teachers need to be involved in collaborative projects and development of intervention change strategies, which would include teaching partnerships with ICT as a tool. Teachers’ attitudes are major predictors of the use of new technologies in instructional settings. Teachers’ attitudes toward ICT shape not only their own ICT experiences, but also the experiences of the students they teach. According to Zhao and Cziko (2001) three conditions are necessary for teachers to introduce ICT into their classrooms: teachers should believe in the effectiveness of technology, teachers should believe that the use of technology will not cause any disturbances, and finally teachers should believe that they have control over technology (p. 27). Demetriadis et al. (2003) reached similar conclusions in their research study: “Training efforts are generally welcomed by teachers but consistent support and extensive training is necessary in order for them to consider themselves able to integrate ICT in their teaching methodologies” (p. 35). According to Rogers (1995) one of the major factors affecting people’s attitudes toward a new technology is related to the features of the technology itself. Rogers points out five basic features of technology that affect its acceptance and subsequent adoption: relative advantage, compatibility, complexity, observability, and trialability. Thus, a new technology will be increasingly diffused if potential adopters perceive that the innovation: (1) has an advantage over previous innovations; (2) is compatible with existing practices, (3) is not complex to understand and use, (4) shows observable results, and (5) can be experimented with on a limited basis before adoption.

Preparing students for real life in our technological and diverse world requires that teachers embed ICT in significant learning experiences (Braun & Kraft, 1995). However, research studies show that most teachers do not make use of the potential of ICT to contribute to the quality of learning environments, although they value this potential quite significantly (Smeets, 2005). Harris (2002) conducted case studies in three primary and three secondary schools, which focused on innovative pedagogical practices involving ICT. Harris (2002) concludes that the benefits of ICT will be gained “...when confident teachers are willing to explore new opportunities for changing their classroom practices by using ICT” (p. 458). As a consequence, the use of ICT will not only enhance learning environments but also prepare next generation for future lives and careers (Wheeler, 2001).

## **Research Questions**

The purpose of this study was to explore ICT usage, factors that support the use, barriers that hinder the use, and self-perceptions of efficacy and level of expertise, as well as the relationship of variables by looking at the social studies teachers in selected primary schools in Turkey. In order to shed light on these topics, this research study mainly focused on the following nine questions.

1. Which ICT resources (software, instructional tools and materials) do social studies teacher’s use?
2. What are teachers preferred methods for professional development?
3. What are the incentives that encourage social studies teachers’ technology usage?

4. What are teachers' perceptions of self-efficacy in relation to ICT usage?
5. What are the barriers social studies teachers face during technology usage in the teaching-learning process?
6. Is there any relationship between awareness and self-rated expertise level of teachers and, between self-perception of efficacy and self-rated expertise level of teachers?
7. Is there any relationship between teachers' computer related tools usage in the classroom and self-perceptions of efficacy?
8. Is there any relationship between teachers' computer related tools usage in the classroom and level of expertise?
9. Is there any relationship between having a computer at home and the expertise level of teachers?

## **Method**

Convenience sampling was used to reach the participants in this study. The participants for this study were 326 social studies teachers from fourth and fifth grade of various primary schools, who voluntarily participated in the study.

The "Information and Communication Technology Usage Survey" ( $\alpha = 0,84$ ) developed by the researchers, mainly based on discussions in the related literature (Iding, Crosby & Speitel (2002); Bielefeldt (2001); Haydn, Arthur & Hunt (2001); McCormick & Scrimshaw, 2001) was used to collect data for this research study. The survey was composed of five parts. The first part of the survey consisted of 24 items regarding teachers' software use, as well as other instructional tools and materials. The purpose of this part was to find out the self-expertise level of the social studies teachers. The second part consisted of 9 items about preferences for professional development on information gathering and support. The subsequent part consisted of 8 items about factors that encourage teachers' usage of technology. In the fourth part of the survey there were 18 items related to teachers' perceptions of self-efficacy. Finally, the last part was composed of 19 items regarding the barriers that teachers faced during technology utilization in the teaching-learning process.

## **Results**

In this part of the study, the results of the previously listed research questions are reported.

### **ICT resources used by social studies teachers**

The majority of social studies teacher in this study, 98.2% have access to a computer at work and among them 88.7% have access to the Internet. Daily computer usage of social studies teachers was found to be as follows: 53.1% uses a computer for less than one hour, 30.7% uses a computer for between 1 and 3 hours, 2.8% uses a computer for between 3-5 hours and 1.5% uses a computer for more than five hours a day.

The social studies teachers specified their level of expertise on thirteen types of computer software by using a three-point likert-type scale (that is, 2=Good, 1=Average and 0=None) ( $\alpha=0,93$ ). Over fifty-four percent of the participants rated their skills as average or high at word processing, spreadsheets, presentation software, computer aided instructional software, web browsers, search engines, electronic mail, chat/forum, electronic encyclopedias and instructional films.

The social studies teachers indicated their usage of eleven types of instructional tools and materials by using a three-point likert-type scale (2=Frequently, 1=Sometimes and 0= Never) ( $\alpha=0,81$ ). The preferred instructional tools according to usage rate are as follows: board, printed materials, overhead projector, television/video, radio cassette recorder, multimedia computer and slide projector.

### **Teachers preferred methods for professional development**

The social studies teacher's preferences for professional development, namely accessing knowledge (5 questions) and support services (4 questions), were taken through a three-point likert type scale (2=I prefer, 1=Neutral and 0=I

don't prefer) ( $\alpha=0.66$ ). Printed materials (99.4%), Internet resources (83.4%) and self-study (80.7%) and participation in seminars and workshops (79.1%) were the most favored knowledge resources for professional development. On the other hand, the majority of teachers favored every kind of support service: experienced teachers (96.9%), colleagues in the same field (87.7%) and technical support group within the school (81.0%).

### The incentives that encourage social studies teachers' technology usage

The participants used a three-point likert-type scale (i.e. 2=Important, 1=Neutral and 0=Not Important) to rate their level of importance on 8 statements about incentives for adoption (Table-1). All the statements were rated as important incentives by over 80% of the teachers. ( $\alpha=0.73$ ).

Table 1. Percentage of Assessed Factors that Encourage Social Studies Teachers' Technology Usage

Factors Encourage Technology Usage	Important (%)	Neutral (%)	Not Important (%)
Rewarding the technology usage efforts of teachers in instructional activities	80,4	8,3	10,4
Investments of the institution on infrastructure of instructional technologies	96,6	3,1	0
Investments of the institution on in-service education programs for instructional technologies	90,8	8,9	0
Investments of the institution on the support services of instructional technologies	84,7	12,9	0
Developing the policies and plans for diffusion of the instructional technologies	89,0	9,5	1,2
Providing support for the projects towards the expansion of instructional materials	92,0	5,8	1,8
Carrying out the studies for integration of technology into curriculum	88,7	9,2	1,8
Reducing work load to provide opportunities to teachers for developing instructional materials	91,7	4,9	3,4

### Teachers' perceptions of self-efficacy in relation to ICT usage

The participants used a three-point likert-type scale (i.e. 2=Agree, 1=Neutral and 0=Disagree) to specify their perceptions on 18 statements about using computers and instructional technologies ( $\alpha=0.62$ ) (Table-2). The results showed that teachers believe that technology will bring to them advantages, but they lack the basic skills of computer usage, and they also feel that their skills are lacking for other technologies which could also be used as an aid in the classroom.

Table 2. Perceptions of Social Studies Teachers about perceived self-efficacy on ICT Usage

Perceptions	Agree (%)	Neutral (%)	Disagree (%)
I don't use computers as much as other resources (books, overhead projectors etc.) for instructional purposes.	42,0	5,5	52,1
I know what to do for using computers in instructional environments.	48,5	29,8	20,6
I am aware of the opportunities that computers offer.	28,5	34,0	33,1
I can answer any question my students ask about computers.	19,3	16,3	64,1
I am not sure that I am computer-literate for use computers in my classes.	23,3	27,0	48,8
I don't want to use computers.	55,5	13,5	27,3
I think that I can use instructional technologies in class activities more effectively day by day.	70,9	18,7	10,1
I believe that tools like e-mail, forum and chat will make communication with my colleagues and students easier.	90,5	6,4	3,1
I think that technology supported teaching makes learning more effective.	95,7	2,1	1,8

I think the use of instructional technologies increases the interest of students toward courses.	97,5	2,1	0
I think the use of instructional technologies increases the quality of courses.	94,8	4,6	0,3
I think that usage of instructional technologies makes it easier to prepare course materials (assignments, handouts etc.).	90,8	7,1	1,8
It is hard for me to explain the use of computer applications to my students.	37,4	21,8	38,3
I can handle different learning preferences of my students having different learning styles by using instructional technologies.	25,8	44,8	29,1
I think technology makes effective use of class time.	77,9	17,8	4,0
I think using instructional technologies makes me more productive as a teacher.	94,2	4,9	0
I think that using technology makes it easier to reach instructional resources.	95,4	0,6	3,7
I don't prefer to be assessed about my instructional technology based applications by any other professionals.	54,2	19,3	24,2

### Barriers social studies teachers face during technology usage

The participants used a three-point likert-type scale (i.e. 2=Agree, 1=Neutral and 0=Disagree) to rate their level of agreement on 19 statements about barriers to adoption ( $\alpha=0.87$ ) (Table-3). Of the 19 statements, 17 have been rated by more than 50% of the teachers as major barriers to adoption of technology into the teaching-learning process. Of these 17 statements the top three are; (1) inefficiency of teachers' technical knowledge to prepare materials based on technology, (2) inadequacy of the technology courses offered to students and (3) lack of incentives for encouraging technology usage.

Table 3. Percentage of Assessed Barriers that Social Studies Teachers' Faced During Technology Usage in Teaching-Learning Process

Barriers to Technology Usage	Agree (%)	Neutral (%)	Disagree (%)
Inefficient time to prepare materials based on technology	67,2	9,2	23,9
Inefficiency of teachers' technical knowledge to prepare materials based on technology	94,2	4,3	1,2
Problems about accessibility to existing hardware (computer, overhead projector etc.)	70,6	11,0	18,1
Inefficiency of institutions computer laboratory	69,0	4,0	26,7
Inefficiency of institutions technical infrastructure about instructional technology	55,2	6,7	37,7
Inefficient number of media (printer, scanner etc.) for effective use of computers	62,3	11,0	26,4
Shortage of computers used by teachers	65,6	0,6	33,4
Absence of reward systems for encouraging technology usage	73,9	15,0	10,7
Poor technical and physical infrastructure of learning environments.	69,9	8,6	21,2
Inadequacy of computers used by learners	69,3	7,1	23,3
Inefficiency of guidance and support by administration	68,7	8,9	22,1
Insufficiency of financial resources for technology integration	69,6	16,9	13,2
Inefficiency of instructional software/electronic resources	62,6	13,8	22,7
Scarcity in resources on technology for attaining information	50,3	18,7	30,7
Deficiency in professional development opportunities for gaining knowledge and skill	65,3	16,3	18,1
Deficiency in support services in material development/technology usage	47,5	21,8	29,1
Lack of interest of teachers in technology usage	66,6	12,9	20,2
Difficulties of improper teaching methods for technology usage	54,6	34,4	6,1
Inadequacy of the courses of technology offered to teachers	80,1	9,5	10,1

### The relationship between awareness and self-rated expertise level of teachers and between self-perception of efficacy and self-rated expertise level of teachers

Correlation analysis was conducted to determine if there are any relationships between awareness and self-rated expertise level of teachers and, between self-perception of efficacy and self-rated expertise level of teachers. The

results indicated that there is no significant relationship between teachers' awareness and their self-rated expertise level. However, a significant correlation between teachers' self-perception of efficacy and teachers' self-rated expertise has been identified.

*Table 4. Correlational Analysis between self-perception of efficacy and self-rated expertise level of teachers*

		<b>Computer Software Usage</b>	<b>Self-Perceptions</b>
<b>Computer Software Usage</b>	Pearson Correlation	1	,552**
	Sig. (2-tailed)	,	,000
	N	316	288
<b>Self-Perceptions</b>	Pearson Correlation	,552**	1
	Sig. (2-tailed)	,000	,
	N	288	297

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### **The relationship between teachers' use of computer related tools in the classroom and self-perceptions of efficacy**

To determine the proportion of variance in the attitudes of teachers toward ICT in education that could be explained by the selected independent variables, simple correlations were performed. Simple correlations (using Pearson and Spearman analyses) were first performed to identify independent variables that individually correlate with self-perception of efficacy and related tools usage in the classroom for each of the four tools: multimedia computer, computer-aided educational software, computer-projector system and the Internet/Web Environment.

*Table 5. Correlational Analysis between Relationships of teachers' computer related tools usage in classroom and self-perceptions of efficacy*

		<b>Computer Software Usage</b>	<b>Self-Perception of Efficacy</b>
<b>Computer Software Usage</b>	Pearson Correlation	1	,553**
	Sig. (2-tailed)	,	,000
	N	326	325
<b>Self-Perception of Efficacy</b>	Pearson Correlation	,553**	1
	Sig. (2-tailed)	,000	,
	N	288	297

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Follow-up tests were conducted to evaluate pairwise differences among the means. The results of these tests, as well as means and standard deviations for multimedia computer, computer-aided educational software, computer-projector system and the Internet/Web environment are reported in Table-5. The results indicated that the groups who sometimes and frequently use multimedia computer and computer-projector system in the classroom have a higher self-perception of efficacy than the group that never uses them. Moreover, the groups that frequently use educational software and the Internet/Web environment have a higher perception of efficacy than the one who never used them. In other words, teachers who have high perception of efficacy tend to use computer related tools in the classroom more frequently than the others.

### **The relationship between teachers' use of computer related tools in the classroom and level of expertise**

The expertise level of teachers in a classroom motivates teachers' use of ICT more effectively. The expertise level of teachers has been analyzed here. Correlation analysis was conducted to determine if there is any relationship between teachers' use of computer related tools in the classroom and the expertise level of teachers. A one-way analysis of variance was conducted to evaluate the relationship between the level of expertise and computer related tools usage of social studies teachers in the classroom for each of the four tools: Multimedia Computer, Computer-Aided Educational Software, Computer-Projector System and the Internet/Web Environment.

Follow-up tests were conducted to evaluate pairwise differences among the means. The results of these tests, as well as means and standard deviations for multimedia computer, educational software, computer-projector system and the Internet/Web environment are reported in Table-6. The results indicated that the groups that sometimes and frequently use computer related tools in the classroom have a higher level of expertise than the groups that never use them. In other words, teachers who have a high level of expertise tend to use computer related tools in the classroom more frequently than the others.

*Table 6.* Correlational Analysis between Relationships of teachers' computer related tools usage in classroom and level of expertise

		<b>Computer Software Usage</b>	<b>Level of expertise</b>
<b>Computer Software Usage</b>	Pearson Correlation	1	,552**
	Sig. (2-tailed)	,	,000
	N	323	323
<b>Level of expertise</b>	Pearson Correlation	,552**	1
	Sig. (2-tailed)	,000	,
	N	288	297

\*\* . Correlation is significant at the 0.01 level (2-tailed).

### **The relationship between having a computer at home and the expertise level of teachers**

An independent-samples t-test was conducted to evaluate if there is a relationship between having computer at home and the expertise level of teachers. The results showed that teachers who have computer at home have higher level of expertise than the others ( $t(312) = -3,891, p < 0.01$ , Means 10,3849 vs 4,8261).

## **Discussion**

Educators wishing to support the integration of ICT into subject teaching need to overcome the organizational and political obstacles that occur as well as certain limiting perspectives, both personal and professional, that some teachers' may hold. There are few studies that have analyzed how subject cultures differentially affect teachers' use of ICT. Studying teacher perspectives on ICT allows us to suggest further methods for successful integration into the core subjects. This is the first attempt to make explicit how teachers go about integrating ICT into core subject social studies in Turkey.

Rapid growth and improvement in ICT have led to the diffusion of technology in education. Studies in controlled environments suggest that the use of technology under the right circumstances improves educational outcomes, and many educators believe that a new pedagogy that incorporates technology is necessary to prepare students for work in the information age. The study investigated the perceptions and ICT usage of social studies teachers. Perceptions and skills in relation to ICT have been universally recognized as an important factor in the success of technology integration in education. Findings from this study suggest that social studies teachers understand the benefits of ICT usage in education. Social studies teachers considered computers as a viable educational tool that has the potential to bring about different improvements to their schools and classrooms. The findings of the study indicated a very strong positive correlation between teachers' attitudes toward ICT in education and their perceptions of the advantages of the use of computers. However, teachers' perceptions of the compatibility of ICT with their current teaching practices were not as positive. Teachers pointed out that the class time is too limited for ICT usage. Hence, the introduction of ICT innovations into education requires promoting structural, pedagogical and curricular approaches. Cultural perceptions should be taken into consideration. This conclusion points to the need for considering cultural factors in studies conducted in developing countries (Albrini, 2006).

This study examined the extent to which teachers have access to ICT in assessing the frequency with which teachers used computers for various activities. Social studies teachers mostly preferred board, printed materials, overhead projectors, television/video, radio cassette recorder, multimedia computer and slide projector for instructional aims. Teachers most frequently used computers for accessing information on the Internet, communicating electronically, doing word processing and making slide presentations. Only a few teachers reported using ICT to help them learn

school material, and less than one-fifth regularly used educational software. Some teachers reported using ICT for programming, drawing, graphics or analyzing data with spreadsheets, but this is very rare.

Printed materials (99.4%), Internet resources (83.4%), self-study (80.7%) and participating in seminars and workshops (79.1%) were the most favored knowledge resources for professional development. On the other hand, the majority of teachers favored every kind of support service: experienced teachers (96.9%), colleagues in the same field (87.7%) and technical support group within the school (81.0%). Social studies teachers focused on elective courses and other short, in-service professional development courses and workshops for professional development. Teachers pointed out the need for some sharing of experiences and discussion of new technologies and contemporary issues, so that teachers receive support in trying to keep up with new developments in ICT. In addition to longer practical work, teachers needed more resource materials such as supplementary workbooks and a resource center where they could find teaching materials and ideas.

The majority of teachers acknowledged the importance of using ICT in their own teaching. The majority of teachers also reported a lack of confidence in applying ICT in their teaching. All teachers maintained an increased enthusiasm to apply ICT in their teaching in every circumstance. Based on these results, the training course succeeded in giving the teachers enhanced skills in pedagogical and technical use of the ICT-based learning, program components and an increased motivation for using ICT.

The self-expressed feeling of social studies teachers, that they lacked the “technical knowledge to prepare materials based on technology”, showed the importance of in-service training and paralleled the result on instructional tools and materials usage. Moreover, social studies teachers appear to be unaware of possible technologies that could be helpful in the teaching processes and the majority does not use ICT. On the other hand, all kinds of professional development preferences and support service opportunities were highly rated, showing the willingness of teachers to learn and highlighting the lack of in-service training opportunities.

What are teachers’ perceptions of self-efficacy in relation to ICT usage? ICT were introduced into schools not as a means, but as an end. There were no supplementary measures to enable educators to develop positive attitudes toward the new tools and to use them. This has often resulted in ad hoc approaches to implementation. It is necessary for teachers to have the appropriate skills, knowledge and attitudes to integrate ICT into the curriculum. That is, teachers should become effective agents to be able to make use of technology in the classroom. Ultimately, teachers are the most important agents of change within the classroom arena. This result is similar to that stated by Zhao, Pugh, Sheldon and Byers (2002): “...teachers need to know the affordances and constraints of various technologies and how specific technologies might support their own teaching practices and curricular goals. They also need to know how to use technologies” (p. 511).

The results indicated that there is no significant relationship between teachers’ awareness and their self-rated expertise level. However, a strong relationship between teachers’ self-perception of efficacy and teachers’ self-rated expertise has been identified (Pearson  $r = 0.552$ ,  $p < 0.01$ ). The lack of confidence in using ICT in teaching, as observed in this study, could be due to the fact that the in-service teacher training course was not tailored to the participants’ needs. These conditions need to have been met in order for the course to act as a positive enabling factor. The design of the in-service training should have followed guidelines in use, which states that a stepwise activity should be provided along with the combination of input, practice, reflection on practice and new input. In order to solve these problem in-service courses should be organized on the basis of introductory problem based-learning workshops, where teachers could learn and practice the method to be used during the implementation of the learning program. The results showed that although teachers are willing to use ICT resources and are aware of the existing potential, they are facing problems with accessibility to ICT resources and lack of in-service training opportunities. These two main points are also underlined by Galanouli and McNair (2001) when they state: “...schools must be supported and resourced properly, and teachers must have effective ICT training, before improvements in school-based ICT development for student-teachers can be achieved” (p. 396). It has been found that social studies teachers use computer technology, especially application software or tool applications. This shows a trend towards the use of application software in classroom teaching and learning. Thus, personal, reinforcing and enabling factors must be taken into consideration for the planning of ICT-based in-service teacher training. It is especially important to foster a feeling of ownership among the teachers towards the learning program in addition to support from colleagues and the school leaders.



As the favored incentive, the social studies teachers selected the item “Investments of the institution on infrastructure of instructional technologies”. This finding highlights the fact that access to ICT resources should be one of the primary goals to be met. Related to this topic, Zhao, Pugh, Sheldon and Byers (2002) state that; “Although in recent years there is a great progress in bringing computers and networks to schools, we found that in many schools teachers did not have easy access to either of the two infrastructures” (p. 512), which is also similar to the case in Turkey. The national programs have been of limited success not only because they were formulated in non-educational realms, but also because they were not based on research.

Social studies teachers pointed out that one of the main barriers to technology implementation is insufficiency of teachers’ technical knowledge to prepare materials based on technology. This shows us that equipping schools with ICT is not enough for attaining educational change. The introduction of ICT into education requires an equal level of innovation in other aspects of education. The inadequacy of the technology courses offered to teachers and the lack of incentives for encouraging technology are further barriers to ICT usage. Teachers’ attitudes toward computer technologies are also related to teachers’ computer competence. Teachers’ computer competence is a significant predictor of their attitudes toward computers. Teachers who have difficulty using ICT maintained that the main barriers were lack of knowledge and skills with computers that would enable them to make “informed decisions”.

The results related to self-efficacy validated the findings of both inefficient use of technology due to lack of knowledge and strong belief in the potential of using technology in and out of class activities. Besides these, results once more indicated that most of the social studies teachers are computer-illiterate and they need in-service training. This finding was also paralleled by the finding that the major barrier stated by almost all of teachers was “inefficiency of teachers’ technical knowledge to prepare materials based on technology”. The findings show that social studies teachers have high awareness (Mean=15.24, SD 1.27), but low expertise level (Mean=9.96, SD 6.74), which also indicated the lack of necessary in-service training opportunities.

Usage of ICT in education is a complex process where many agents play different roles. Forces that may influence or impede ICT usage outside formal schooling should be taken into consideration. Contrary to this fact, much of the early research on computer use in education has ignored teachers’ attitudes toward the new technologies. Studies focused on ICT and their effect on teacher’s competence; thus overlooking the psychological and contextual factors involved in ICT applications. However, it should not be forgotten that successful implementation of educational technologies depends largely on the attitudes of educators, who ultimately determine how they are used in the classroom: teachers’ attitudes are the major determining factor in the adoption of technology. According to Rogers (1995), people’s attitudes toward a new technology are the key element in its diffusion. Since Rogers uses the terms innovation and technology interchangeably (p. 12), the diffusion of an innovation framework seems particularly suited for the study of the diffusion of ICT. This suggests that studies at the early stages of technology implementation should focus on the end-users’ attitudes toward technology.

A significant relationship has been found between the proximity of computers and the number of access resources (both at home and school) on the one hand, and, on the other, teachers’ attitudes toward computers. Teachers who have a high perception of efficacy tend to use computer related tools in classroom more frequently than the others. The results showed that teachers who have computer at home have a higher level of expertise than the others.

All the results reported brought us to a conclusion which is also stated in the literature by many researchers: the goal of the integration of technology into the social studies area, like in all other areas, has yet to be reached (Barron, Kemker, Harmes & Kalaydjian (2003); Bielefeldt (2001); Mills & Tincher (2003)).

## **Conclusion**

By the 1930s, Turkish schools had teaching materials such as maps, laboratory equipment, and filmstrip projectors for instructional use. Although they had teaching material such as maps and other equipment they did not use them. Until the 1940s, mostly printed instructional materials were used in schools. Between 1950 and 1970, schools had technologies such as audio cassettes and overhead projectors. During the 1970s, several new teaching materials were provided for schools and introduced to teachers. In addition, some big universities started to offer graduate programs aimed at training professionals in the field of traditional educational technology. Though some of these traditional technologies are still in use to prepare students, educational policy makers in Turkey believe that schools must give

students the knowledge and skills they will need in the future. Therefore, computers have gained more importance than any other educational technology (Usun, 2004).

In order to improve ICT facilities and the skills of teachers, the Ministry of Education is making investments, providing in-service training and providing accessibility to resources. Besides equipping selected schools with IT classrooms, another arrangement was made to provide accessibility to these resources to other schools nearby. Furthermore, the Ministry of Education has planned a project to provide each teacher with his/her own laptop computer. These kinds of innovations will support all teachers in Turkey in becoming competent teachers in terms of ICT usage, besides furnishing access to the many other advantages that technology provides. The diffusion of many new technologies in society has not been equitable. Rogers (1995) theorized that people who are innovative and quick to adopt new technology tend to be younger and better educated, and to earn higher incomes than later- and non-adopters of technology. Socio-economic status, access to resources and equity in outcomes are important issues in education. For instance, the availability of computers at school enables many teachers to use them even though they may not have a computer at home.

Developing countries are vitally dependent on substantial foreign assistance to ensure the development of ICT. However, it is often very difficult to persuade donors to focus on ICT. These countries are perennially short of foreign exchange to acquire the latest technologies. Most developing countries are undergoing 'Structural Adjustment Programs' under the auspices of the IMF. Cost-efficiency of an ICT is another major factor that is important in determining its growth. Developing countries have to ensure that the technology that is adopted is easily accessible to the target group and also fulfills all the functions that are expected of it. Such a scenario essentially implies that a costly technology need not always be the best technology. However, it is often seen that developing countries invest in the latest technologies without considering whether the target audience can be reached effectively or whether the target audience is interested in the technology (Usun, 2004).

In the last decade, there have been a number of parallel projects related to the integration of ICT in Turkey's educational system. At the end of National Education Development Project (with the World Bank and HEC), faculties of education reconstructed their curriculum to train teacher candidates with abilities and skills to use ICT effectively in their subject areas in 1998. After this year, the number of ICT projects increased. For instance, the first phase of the basic education project (with the World Bank) started in 1998. The scope of the project was to build information technology classrooms in at least two primary education schools in 80 cities and every town, and the identified schools were grouped according to the number of students. In that context, 2,834 information technology classrooms have been scheduled to be built in 2,451 primary education schools all over the country. This number has increased to 2,802 with 351 newly constructed schools. The establishment of information technology classrooms in these schools has been completed in all cities and towns (Goktas & Yıldırım, 2003).

The key points of this study on the ICT usage of social studies' teachers are as follows: As a developing country, Turkey is attempting to foster a culture of acceptance amongst the end-users of ICT. Therefore, teachers' attitudes are indispensable to ICT usage in the classroom. The key is double-headed: on one side there is the human factor and on the other is the technological factor. Some limitations such as teachers' lack of ICT usage skills and insufficient infrastructure supporting ICT impede ICT usage. Hence, it is necessary to promote these skills as a prerequisite to delivering ICT facilities. The other main barriers to the implementation of ICT as perceived by the teachers in this study are the mismatch between ICT and the existing curricula and the class-time frame. It follows that placing ICT in schools is not enough to attain educational change. The introduction of ICT into education requires equal level of innovation in other aspects of education. Both policymakers and teachers share this responsibility. Policy-makers should provide additional planning time for teachers to experiment with new ICT-based approaches. Reducing the teaching load for the teachers may attain this. Teachers' preparation necessitates not merely providing additional training opportunities, but also aiding them in experimenting with ICT before being able to use it in their classrooms. If decision makers want to involve teachers in the process of technology integration, they need to find ways to overcome the barriers perceived by the teachers.

## **Suggestions**

Here are some suggestions for effective usage and implementation of ICT. It would be useful to provide ICT knowledge as modules so that teachers may integrate ICT into lessons. The ICT materials should therefore be based

on classroom research and provide excellent teaching ideas and activities for developing and strengthening students' concepts, skills and meta-cognition. Teachers and researchers can make even better use of ICT facilities together. ICT has vast potential in education but its effective use must be carefully tried out and planned by researchers and teachers who know what to do with it in the teaching-learning process. They have to determine what strategies are needed for certain learning situations and how learning processes can be enhanced using the technology. Merely providing schools with hardware, software and in-service training is not enough. Any in-service training needs follow-up support, peer coaching and peer dialogue to ensure successful use of the new technologies. Teachers must be part of the decision making process with respect to the implementations of ICT innovations in schools, so that they may commit to the innovation with conviction. Easy access to databases of the available curricular resources and strategies would provide very useful information for communication among teachers. There is a need for localized resource centers to provide support for schools within a certain district. Workshops for teachers and students in the area could be conducted to promote cooperative projects and sharing of experiences and expertise.

Most teachers rely heavily on textbooks and blackboards; we can re-vitalize education with ICT. In subsequent training workshops, key personnel and trainers could each have opportunities to present an aspect of ICT concept or use in the classroom. These presentations could be about a feature of some ICT concept, resource or application in the teaching and learning of a subject, a useful web site, or to show the work of pupils themselves. The presenters could bring along handouts for every teacher as well, so that teachers can compile the materials into a guide or resource book. Repeat sessions may be necessary if there are too many teachers for one group. There are also difficulties with the maintenance of hardware and the purchase of new equipment and software because of the high costs involved. It would also be useful to have technicians available to assist the schools. Educators find it difficult to integrate and introduce ICT for everyone in schools due to the high cost of the provision and updating of networked equipment needed in an already overloaded curriculum, and with teachers knowledgeable in ICT in short supply. Teachers stated that they attended some courses, which the principals selected for them. The instructors were not competent in using computers and their knowledge of computer was average. Providing continuing courses and sharing workshops planned throughout the implementation of the project might be useful for these teachers. Independent teachers will be able to achieve the project objectives with minimum support from key personnel. A regular newsletter or bulletin would be useful for teachers to write about good teaching ideas, that they have found to be effective and successful, and for sharing with others throughout the country and beyond.

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## Appendix (Information and Communication Technology Usage Survey)

(This survey is presented here without directions and “other please specify” items appearing under each heading as the last item)

Do you have your own computer? Yes ( ) No ( )  
 Do you have computer at school? Yes ( ) No ( )  
 Do you have Internet connection at home? Yes ( ) No ( )  
 Do you have Internet connection at school? Yes ( ) No ( )  
 Daily Computer Usage: Less than one hour ( ) 1-3 hours ( ) 3-5 hours ( ) More than 5 hours ( )

<b>Software Usage</b>	<b>Good</b>	<b>Average</b>	<b>None</b>
Word Processors (Word etc.)			
Spreadsheets (Excel etc.)			
Presentation Software (PowerPoint etc.)			
Databases (Access etc.)			
Computer Aided Instruction Software			
Web Page Development Tools (FrontPage, dreamweaver etc.)			
Web Browsers (Netscape, Explorer etc.)			
Search Engines (google, yahoo etc.)			
Electronic Mail (e-mail)			
Discussion Lists and Newsgroups			
Chat and/or Forum			
Electronic Encyclopedia and/or Atlas			
Instructional Films (video, CD, VCD etc.)			
<b>Usage of Instructional Tools and Materials</b>	<b>Frequently</b>	<b>Sometimes</b>	<b>Never</b>
Board			
Overhead Projector			
Opaque Projector and/or Document Camera			
Multimedia Computer			
Computer – Projector System			
Internet/Web Environment			
Television/Video			
Radio Cassette Recorder			
Video Camera			
Slide Projector			
Printed Materials (journals, books, worksheets etc.)			
<b>Professional Development about ICT</b>			
<b>Information Resources</b>	<b>I Prefer</b>	<b>Neutral</b>	<b>I don't prefer</b>
Internet			
Printed Materials (manual or journal etc.)			
Self experiment			
Participating seminars or taking courses			
In-service Education			
<b>Support Resources</b>	<b>I Prefer</b>	<b>Neutral</b>	<b>I don't prefer</b>
Experienced teachers on ICT			
Colleagues			
Other colleagues in different schools			
Technical support units in the schools			
<b>Factors Encourage Technology Usage</b>	<b>Important</b>	<b>Neutral</b>	<b>Not Important</b>
Rewarding the technology usage efforts of teachers in instructional activities			

Investments of the institution on infrastructure of instructional technologies			
Investments of the institution on in-service education programs for instructional technologies			
Investments of the institution on the support services of instructional technologies			
Developing the policies and plans for diffusion of the instructional technologies			
Providing support for the projects towards the expansion of instructional materials			
Carrying out the studies for integration of technology into curriculum			
Reducing work load to provide opportunities to teachers for developing instructional materials			
<b>Perceptions about use of ICT</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>
I don't use computers as much as other resources (books, overhead projectors etc.) for instructional purposes.			
I know what to do for using computers in instructional environments.			
I am aware of the opportunities that computers offer.			
I can answer any question my students ask about computers.			
I am not sure that I am computer-literate for use computers in my classes.			
I don't want to use computers.			
I think that I can use instructional technologies in class activities more effectively day by day.			
I believe that tools like e-mail, forum and chat will make communication with my colleagues and students easier.			
I think that technology supported teaching makes learning more effective.			
I think the use of instructional technologies increases the interest of students toward courses.			
I think the use of instructional technologies increases the quality of courses.			
I think that usage of instructional technologies makes it easier to prepare course materials (assignments, handouts etc.).			
It is hard for me to explain the use of computer applications to my students.			
I can handle different learning preferences of my students having different learning styles by using instructional technologies.			
I think technology makes effective use of class time.			
I think using instructional technologies makes me more productive as a teacher.			
I think that using technology makes it easier to reach instructional resources.			
I don't prefer to be assessed about my instructional technology based applications by any other professionals.			
<b>Barriers to Technology Usage</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>
Inefficient time to prepare materials based on technology			
Inefficiency of teachers' technical knowledge to prepare materials based on technology			
Problems about accessibility to existing hardware (computer, overhead projector etc.)			
Inefficiency of institutions computer laboratory			
Inefficiency of institutions technical infrastructure about instructional technology			
Inefficient number of media (printer, scanner etc.) for effective use of computers			
Shortage of computers used by teachers			
Absence of reward systems for encouraging technology usage			

Poor technical and physical infrastructure of learning environments.			
Inadequacy of computers used by learners			
Inefficiency of guidance and support by administration			
Insufficiency of financial resources for technology integration			
Inefficiency of instructional software/electronic resources			
Scarcity in resources on technology for attaining information			
Deficiency in professional development opportunities for gaining knowledge and skill			
Deficiency in support services in material development/technology usage			
Lack of interest of teachers in technology usage			
Difficulties of improper teaching methods for technology usage			
Inadequacy of the courses of technology offered to students			