Barriers to ITC Integration into Teachers' Classroom Practices: Lessons from a Case Study on Social Studies Teachers in Turkey

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Abstract: This study analyses the difficulties and obstacles faced by teachers of social studies education while using ICT-based teaching equipment and methods in their classes. Although ICT-based equipment and methods create important opportunities for the development of teaching, the literature shows that the ICT integration into teachers' classroom practices is not at the desired level. The study aims to use case study methods to analyze the reasons underlying this situation. Eighteen teachers of social studies education participated in the study. Classroom observation and semi-structured interview were used as data collection methods. According to the results of the study, the main barriers against the use of ICT-based methods and equipment in teachers' instructional practices are lack of ICT equipment in classrooms, lack of ICT-based teaching resources, the effect of traditional approaches on teachers' practices, inadequacies regarding in-service teacher training and lack of time.

Key words: Social Studies Education · Teachers' practices · Information and Communication Technologies (ICT) · Teacher Training · Turkey

INTRODUCTION

Information and Communication Technologies (ICT) has been developing rapidly in recent years and opens new horizons in the field of education. There have been many significant developments in ICT-based teaching techniques and materials. Governments have been spending a significant amount of resources on ICT equipment for schools. However, studies [1-5] show that in both developed and developing countries, serious difficulties are being experienced during the integration of ICT-based techniques and approaches in education.

The barriers to the integration of ICT into teaching and learning environments have been discussed in many studies. Ertmer [6] divides the barriers into two main categories: first-order and second-order barriers. First-order barriers refer to those obstacles concerning essentially different types of resources (e.g., equipment, time, training, support), which are extrinsic to teachers. Lack of adequate resources is a constraining barrier to any integration effort. If teachers do not have sufficient equipment, time, training, or support, it will be very difficult to achieve a meaningful integration. The second-order barriers relate to teachers' underlying beliefs about teaching and learning, teacher-student roles, curricular emphases, assessment practices, etc. "Learning to use new technology tools and taking major steps to change one's classroom practices will be a challenge for most teachers. Yet if teachers are prepared to confront both first- and second-order barriers, success will be more likely" [6, p.59].

In his paper analyzing the scientific literature related to barriers to the successful integration of ICT in instructional environments, Bingimlas [7] identifies two main categories of barriers: teacher-level barriers and school-level barriers. The major teacher-level barriers are lack of teacher confidence, lack of teacher competence, resistance to change and negative attitudes. The basic school-level barriers are lack of time, lack of effective training, lack of accessibility to ICT-based resources and lack of technical support in classroom. There are multifaceted relationships between the barriers and for a successful integration of ICT into teaching and learning environments, all of these components must be taken into account in the process.

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Some studies [7, 8] show that teachers are reluctant to use ICT in their teaching activities and they indicate that this is one of the main barriers to the integration of ICT. However, according to Underwood and Dillon [9], while this negative portrayal of the teachers may be valid in some cases, the results of longitudinal projects for the integration of ICT show that teachers have a rather positive attitude towards technological change. But the change of teachers' attitudes and practices is not linear and rapid. The integration of ICT into the classroom does not automatically bring about new forms of teaching and learning. The change is rather a process of gradual pedagogical evolution and it is brought about by a set of complex interacting influences.

Although there are different views in the literature on the attitudes of teachers towards the integration of ICT, studies clearly state that the teachers' beliefs about ICT affect their attitudes and applications in this respect. In the context of primary school teachers in China, Sang *et al*. [10, p.813-814] show that "ICT integration is influenced by the complex of teachers' constructivist teaching beliefs, ICT-related policy, computer motivation and computer attitudes in education" and "successful ICT integration is clearly related to the thinking processes of classroom teachers, such as teacher beliefs, motivation and teacher attitudes toward ICT".

Important steps have been taken to encourage the development of ICT equipment and ICT-based teaching and learning in Turkish schools. However, some studies [11-13] show that there are serious problems in the integration of ICT into classroom practices. Despite improvements in the level of ICT equipment in Turkish schools in recent years, most teachers do not use or rarely use ICT devices in their lessons.

Studies which analyze the barriers to the integration of ICT show that the obstacles in Turkey are similar to those in other countries. The inadequacy of ICT equipment at schools and particularly in classrooms is the most important of these obstacles [11, 12, 14, 15]. The other primary obstacle is the lack of teachers' knowledge and skills to use ICT-based teaching methods [13, 16, 17, 18]. Another obstacle which is frequently mentioned in the literature is the inadequate ICT integration in pre-service and in-service teacher education [11, 14, 15, 16]. Other important obstacles are the difficulties to access the ICT-based teaching software and materials [12], lack of time to develop ICT-based teaching materials [15, 17] and the lack of technical staff to help teachers [11].

MATERIALS AND METHODS

Purpose of the Study: The purpose of this article is to analyze obstacles against the use of ICT-based teaching method equipment and materials in teachers' classroom practices. Although the huge number of studies in the literature explore this issue, the difficulties being experienced for improving the ICT integration, show that it is essential to continue to develop a better understanding of the problem. The research was carried out at the primary school level and in the teaching of social studies in Turkey. It aims to use a case study to examine holistically the various impediments against teachers' development of ICT-based teaching practices. In other words, the main aim is not to state general descriptive information about the problem, but rather to analyze the different aspects of the problem in detail.

Research Participants: Eighteen teachers of the social studies education participated in the study. It was carried out in the province of Canakkale, which is in the western part of Turkey. Official permission necessary for the study was obtained from the provincial directorate of national education in Canakkale. The principals and teachers at the examined schools were informed about the study. Finally, eighteen voluntary teachers were selected to participate in the study.

In selection of teachers, their gender and years of experience were taken into consideration. Teachers from different age groups and years of experience were chosen. Nine of the participants were male and nine of them were female. Six of the teachers have 1-10 years of experience, eight of them have 11-20 years of experience and four of them have more than twenty years of professional experience. The study took place in the central city and two towns and three villages in Canakkale. Six of the participants work in the centre, nine of them work in towns and three of them work in villages. The study followed teachers in fourteen different schools.

Method: Semi-structured interview and classroom observation were used to collect data for the study. The data was collected in the spring term of the 2010-2011 school year. The researchers did not interfere any way with the teaching during the observations, because the aim was to observe the natural behavior of the teacher and students. The observations took place in 6th, 7th and 8th grade social studies classrooms. Each teacher was observed for three class hours.

After the observation, the researchers interviewed the participants. A semi-structured interview form developed by the researchers was used for this study. The questions were asked orally to the participants and their answers were recorded in writing. Extra questions not in the form were asked when necessary to understand participants' opinions in detail.

The topic of the research is not limited to the integration of ICT into teachers' practices. By analyzing the data collected, researchers hoped to understand the problems faced in the use of innovative teaching methods and materials in general. In this paper, out of the whole data collected in the research, only the part related to the integration of ICT was analyzed.

RESULTS AND DISCUSSION

Lack of ICT Equipment in Classrooms: The findings of this study show that the facilities of ICT equipment at schools and particularly in classrooms environment, significantly affect the use of ICT-based methods and materials by teachers in their teaching practices. This result supports the studies [4, 11, 13, 15, 19] which show that issues related to ICT equipment is the most important determiner of integration of ICT into teaching practice.

There are ICT equipment (computer and projector) in eighteen of the participant teachers' classrooms while there is not any ICT equipment in six of the classrooms. There are other types of ICT equipment in schools where there are not any ICT equipment in the classrooms environment. This equipment includes computer laboratories, shared classrooms where there are ICT equipment, portable computers and projectors, etc.

Most of the teachers observed in this study, who have ICT equipment in their classrooms, use ICT-based methods and materials in their lessons. It was observed that 8 of the 12 teachers who have ICT facilities in their classrooms use them very frequently in their lessons. During the interviews the other 4 teachers stated that they used ICT equipment occasionally in their classes. As a result, it can be concluded that the presence of ICT facilities in the classrooms effectively promote teachers' use of ICT in their lessons. However, it was observed that six teachers who do not have ICT equipment in their classrooms do not benefit much in their lessons from the ICT facilities of their schools. Studies [4, 11] indicate that in cases where there is not enough ICT equipment in classrooms and where teachers only have access to

shared ICT classrooms or laboratories, they cannot use ICT facilities as much as they want and there are even conflicts among teachers.

Other problems related to ICT equipment also were observed. The Internet connection does not exist in the classrooms in most of the schools where the study was carried out. This is one of the most important obstacles against the use of web-based methods and materials for in-class teaching practices. The other important obstacle is that ICT equipment in classrooms is old; therefore there are inadequacies and breakdowns. Most of the teachers participating emphasized such problems.

Lack of the ICT-Based Teaching Resources: Within the scope of this study, it has been observed that the support to teachers by school managers and other authorities is very limited in terms of ICT-based teaching resources and materials. Similarly, the resources obtained from expert institutions or bought from professional producers are extremely rare.

Teachers who use ICT resources in their classes receive most of their resources from other teachers. Teacher resource-sharing websites play a crucial role in the transmission of ICT resources. All of the participant teachers who use ICT resources in their classes stated that they benefit from these websites. This situation is positive because it facilitates resource sharing among teachers. Ultimately, cooperation and collaboration among teachers are important factors for a successful integration of ICT to learning environment [20].

However, this situation brings some problems in terms of the quality of resources. It has been observed that most of the teaching materials used by the participant teachers were provided from resource-sharing websites and many of them were rather inadequate in both content and teaching methods. Nearly all of these were PowerPoint presentations. Their contents included mostly factual information about the topic, but there is no much teaching activities reflecting the innovative and constructivist approaches. Otherwise, their visual qualities are generally very poor.

The ICT-based teaching materials used in observed classrooms in this study do not much include the innovative teaching methods offered by ICT. For instance, ICT tools provide important innovations for the use of maps in social studies education, particularly in the themes related to history and geography [21]. Interactive and animated maps are particularly beneficial [22, 23]. In classrooms observed within the scope of the study,

teachers did not use resources and materials including interactive and animated maps. All of the ICT-based maps used by the teachers were two-dimensional maps or images scanned from printed materials. In other words, digital maps used in the classes did not reflect the innovative potential provided by ICT.

Walsh [24, p.4] state that "information technology is of no value in itself or by itself". The potential of the ICT-based resources depends on their innovative qualities regarding teaching methods and content knowledge. The ICT-based resources used by the teachers observed in this study are not adequate in terms of pedagogic approach, content knowledge or technological design. The lack of innovative and quality teaching resources is a very important obstacle against the effective and productive integration of ICT into teachers' classroom practices.

Teachers' Beliefs and Practices; Effects of Traditional Approaches: As stated above, most of the participant teachers who have ICT facilities in their classrooms (eight out of twelve) use them frequently. Additionally, the teachers who could not use ICT-based teaching methods due to the lack of adequate equipment have positive attitudes towards ICT-based teaching. Most of those teachers described the lack of ICT equipment in the classrooms as an important deficiency and the teachers stated that they would use them if they had them. They also believed that using ICT would contribute greatly to their teaching. As a result, it can be stated that participant teachers, in this study, have generally positive attitudes towards using ICT methods and materials in their classroom.

However, this does not mean that traditional approaches and practices do not have an effect on teachers' ICT-based teaching activities. The participant teachers' answers to the interview questions about the function of ICT in their classes reflect their belief that the function of ICT-based materials is mostly limited to the visual aspect of the lesson. Almost all the teachers who expressed their opinions about the function of ICT stated that the use of ICT in the lessons "prospers the lesson visually" and "increases students' interests in the lessons." Apart from that, teachers' opinions barely focus on the innovative and student centered methods and approaches provided by ICT.

Teachers' perceptions of using ICT in the lessons are also parallel to the quality of materials they use. As stressed above, the content of most of the ICT-based

lesson presentations used by participant teachers included informative and visual documents related to the class subject. Ample similar knowledge already exists in course books and other printed class materials, however. Therefore, the only contribution of ICT-based materials in participant teachers' practices is that it provides more visual documents compared to printed examples. Although this is positive, it is still a limited contribution when the vast development of ICT-based methods and approaches in recent years is taken into consideration.

In general, participant teachers are not enough knowledgeable about innovative ICT-based instructional methods and practices. Therefore, the use of ICT-based equipment by teachers does not create a fundamental change in their teaching approaches and practices. The study carried out by Usluel *et al.* [13] show that teachers in Turkey perceive the use of ICT positively but they are not competent enough to implement ICT-based methods to their full potential. Teachers generally use software programs like PowerPoint to prepare class presentations. On the contrary, they rarely use teaching software programs or innovative ICT-based methods and materials [18, 25].

This problem has been observed in studies carried out in other countries. In his research on Australian case, Hayes [19, p.394] states that teachers generally use ICT to replicate comparable tasks completed without ICT and "when ICT is simply substituted for these other technologies, the results are often unsatisfying for both teachers and students because of the limited availability and varying functionality of ICT." Demetriadis *et al.* [26, p.29] show, in Greek case, that teachers express considerable interest in using technology in their teaching practices, but they mostly adopt "a kind of ICT supported teacher-centered teaching; an adaptation of ICT tools to the traditional mode of school teaching directly connected to established teacher's conceptions of how students should learn."

Problems Related to Teachers' In-service Training: The fact that teachers are not enough knowledgeable about innovative ICT-based methods and approaches brings up problems related to teacher training. Only one third of participant teachers (six teachers) stated that they received in-service training about ICT. The other twelve teachers did not have any professional formation about ICT.

Another related problem is that the training given about ICT is mostly for general knowledge and skills. Interviewed teachers state that the in-service training they

received did not include generally ICT-based methods and approaches for teaching social studies. Within the scope of in-service training only general skills of using ICT equipment were emphasized, without relating them with teaching methods and content knowledge.

Problems Related to Lack of Time: The results of the study reveal that problems related to lack of time is another obstacle against the use of ICT-based methods and materials. During the interviews with the participant teachers, half of them stated that they experience such problems. The teachers particularly emphasized that they could not use video teaching materials often due to limited time. The teachers generally use ICT-based resources with others materials such as textbooks. In addition, due to the fact that the course content of social studies is very extensive, teachers cannot spare enough time for different ICT materials.

CONCLUSION

The integration of ICT-based methods and approaches into teaching and learning environments is dependent on many different factors, making it a profoundly complicated phenomenon. In the context of this study, it is clear that there are five interrelated barriers against the integration of ICT into teachers' practices. First of all, the presence of adequate ICT equipment in the classroom environment is a determining factor in teachers' practices. Teachers rarely use ICT equipment when they in some other room at school, rather than the classroom. Apart from the lack of ICT equipment, frequent breakdowns of the equipment and lack of internet connection in the classroom are other important physical factors affecting teachers' practices.

Additionally, problems related to the supply of innovative and quality ICT-based resources and materials are another obstacle against the productive and successful integration of ICT in teaching practices. Most of the widely-used ICT-based resources reflect traditional approaches and their resulting contribution to the teaching environment is very small. Teachers' choice of methods and resources is directly related to their practices and approaches to the use of ICT. Teachers generally use ICT in their classes in order to support traditional teacher-centered teaching methods with visual documents. Therefore, the use of ICT does not provide systematically the use of innovative methods and materials. Most of the teachers who have ICT equipment in their classrooms are quite willing to use them in their

classes. However, due to the fact that innovative ICT-based methods and materials are not used, the use of ICT in classes does not provide adequate contribution to the improvement of teaching and learning environment.

Another important cause of ineffective ICT use is inadequate teacher training. There are problems related to the extensiveness and quality of teacher training programs. Finally, problems related to lack of time impede the integration of ICT into teachers' classroom practices.

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