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Creating technology-enriched classrooms: implementational challenges in Turkish education

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This paper provides an overview of the status of educational technology in Turkey. In the face of severe social and economic challenges, many developing nations, including Turkey, are looking to education as a potential remedy. Recognizing that in an increasingly technology-dependent world, information and communications technology skills and knowledge are critical in order to compete in the global marketplace, Turkey is firmly committed not only to improving its education system, but also to incorporating the use of educational technologies into the instructional strategy and curriculum used in schools. This is a critical initiative because, as research shows, technology-enriched educational environments can provide students with significantly expanded learning opportunities, which are linked with increased levels of academic achievement. However, like many other developing countries, Turkey is struggling to overcome a number of serious barriers to full technology integration at the classroom level, the most significant of which is non-compliance on the part of teachers. With respect to technology use in education, teachers are consistently failing to utilize technological tools for instruction purposes, for a variety of reasons. Turkey must address these reasons in order to ensure that the agenda of technology adoption into schools, an enormously expensive undertaking, does not fail.

Keywords: technology integration; technology use in education; Turkey; educational technology

Introduction

Sophisticated technologies have not only become an accepted component of our day-to-day world, but they have also had an enormous impact on virtually every facet of our lives. Increasingly, specialized technological innovations are being incorporated into a vast array of human activities, often with extremely positive results. One area in which the introduction of technological approaches holds particular promise is that of education. There is little argument that integrating technology into educational settings can enhance the learning experience, in part because it allows teachers to offer students a broader range of learning.
options and opportunities. Given the overall consensus concerning the positive value of technology in educational practice, we can anticipate not only that the use of technology in schools will increase, but will also continue into the foreseeable future. In fact, many nations have already assimilated technologically based strategies into their educational development plans, or are in the process of doing so. However, the transition from traditional educational approaches to technology-enhanced ones has proved a significant challenge for many countries.

In an increasingly complex and fast-changing global marketplace, most nations are being forced to re-examine their ability to compete and participate successfully, and to forge new strategies and relationships that will allow them to do so. For many countries, this entails a strong focus on equipping their populations with the critical knowledge and skills needed to utilize information and communications technology (ICT) effectively. A strong ICT-literate population is necessary if a country is to engage in exchange with other nations, but also to insure the access to information that will allow the country to respond in productive ways to the evolving social and cultural needs within its own boundaries. For that reason, many nations have dedicated massive economic resources towards providing technological tools (computers, projectors, smartboards, etc.) for primary and secondary schools in order to increase students’ familiarity, comfort level, and skills with respect to using ICTs themselves. Just as importantly, the availability of these technological tools contributes to an enriched learning environment, through which students’ general educational process may be significantly improved.

There is considerable evidence to support the expectation that adopting technology into the classroom can enrich and enhance teaching and learning. For the purposes of this discussion, ‘technology adoption’ can be defined as the ‘use of technology to enhance what we are doing in the classroom’ (Reigeluth 2003, 345). The benefits of having technology tools available in the classroom offers students ‘new instructional and learning experiences not possible without them; promote[s] deep processing of ideas; increase[s] student interaction with subject matter; promote[s] faculty and student enthusiasm for teaching and learning; and free[s] up time for quality classroom interaction’ (Earle 2002, 10). In addition, Hew and Brush (2007) cite research findings that demonstrate that student learning across all grades, from kindergarten through grade 12, can be markedly improved through the use of technology. Likewise, Becker (2000) suggests that when utilized properly, and under the correct conditions, technology represents a ‘valuable and well-functioning instructional tool’ (29), in other words, technology-enhanced learning is extremely effective when certain criteria are met: teachers are skilled with, and comfortable in using, educational technology; sufficient resources are available; and workload requirements for teachers are reasonable, so that they have sufficient time to dedicate to using technology resources. Clearly, then, the advantages are overwhelmingly positive, and well worth the effort and cost involved in implementing technology adoption.
However, both the successful integration of technology into the classroom, and the degree to which students can benefit from a technology-enriched environment, depends almost entirely on teachers. It is essential that teachers are willing to learn to use the technology themselves, in order to incorporate it successfully into their interactions with students in the classroom (Kozma 2003). Unfortunately, it is exactly in this respect that some of the most serious challenges in creating a fully technology-integrated educational environment arise.

Technology integration

Over the past two decades, numerous research initiatives have studied issues related to the integration of technology into the classroom. These studies, including several in Turkey, have demonstrated that in many cases technology adoption has not been effectively achieved. One of the most pertinent factors cited by many of the study findings is that rather than use technology as an instructional tool, many teachers utilize technology for very limited, non-instructional purposes (Akbaba-Altun 2006; Albion and Ertmer 2002; Becker 2000; Ertmer 2005; Hayes 2007; Kurt 2010; Lawless and Pellegrino 2007; McCannon and Crews 2000; Ozdemir and Kilic 2007). Cuban (2001), for instance, discovered that teachers of preschool and kindergarten children were using computers principally to complete administrative tasks, and for communicative purposes. A similar result with respect to elementary school teachers emerged from a study by McCannon and Crews (2000).

Cumulatively, these studies reveal a critical question: what factors are influencing teachers to use available technology in such a limited way, rather than as an integral part of their interactions with students in the instructional venue? And more importantly, how can these issues be resolved so that all of the potential benefits of technology adoption can be made available to students in a seamless way? Awareness of barriers that teachers may face, whether institutional, resource related, or attitudinal, is necessary in order to guide decisions about the use of technology in schools, to create strategies for successfully integrating technological tools into the classroom, and also for responding to changes in the educational environment over time.

For instance, earlier studies focusing on barriers to teacher compliance with respect to the use of technology for instructional purposes often found that the main obstacle was not a lack of willingness on the part of teachers, but lack of availability of technology tools, or lack of adequate access to the tools that were available (Ertmer et al. 1999; Guha 2003; Pelgrum 2001; Wang and Chan 1995). Recommendations emerging from these studies focused on the need to ensure that adequate resources were available for teachers, with the expectation that once the barrier of resource scarcity was removed, teachers would use achieve successful technology adoption. Although resource scarcity does admittedly still create a barrier in some underdeveloped or developing
countries, in most countries that is not the case. Due to the fact that technology has become a much more common element in the classroom, it is clear that overall this factor can no longer be considered a key deterrent for teachers with respect to technology adoption (Ertmer 2005; Mueller et al. 2008).

Another factor interfering with technology integration identified by a number of authors is a lack of adequate technological training for teachers (Guha 2003; Mentz and Mentz 2003; Tsitouridou and Vryzas 2004). In a global survey that involved input from schools nationwide, across 26 countries, Pelgrum (2001) found that the two most significant barriers to the use of technology by elementary and lower secondary school teachers were deficiencies in technological skills and knowledge, and a lack of opportunities for training so they could acquire the expertise required to effectively use technology tools in classrooms. Without such training and support, attempts at technology adoption are likely to fail. As Pelgrum concludes, ‘educational innovations usually do not succeed if teachers are not provided with the skills and knowledge needed to carry them out’ (165).

While lack of sufficient training in the uses of technology is clearly a serious issue, if teachers are to be encouraged to integrate technological tools into the learning environment, the solution – increased training opportunities and support for teachers – is fairly clear cut. However, Sugar, Crawley, and Fine (2004) identify another factor that has no such clear solution. Along with several other authors, they suggest that one of the most significant hurdles to full technological integration in the classroom setting is related to teachers’ beliefs about the role of technology in education, and its value in that respect. This means that ‘understanding teachers’ beliefs toward technology plays an essential role in successful technology adoption’ (Sugar, Crawley, and Fine 2004, 202). However, understanding the underlying beliefs that influence how teachers use technology may be further complicated because, as Belland (2009) observes, these beliefs may in turn be influenced by a second set of beliefs related to the barriers teachers encounter in their attempts to interact with technology, such as the aforementioned lack of technology training and scarcity of technological resources. Ertmer (2005) echoes this concern, saying that

> Although the conditions for successful technology integration finally appear to be in place, including ready access to technology, increased training for teachers, and a favourable policy environment, high-level technology use is still surprisingly low. This suggests that additional barriers, specifically related to teachers’ pedagogical beliefs, may be at work. (1)

Other authors, however, conclude that the most serious problem with respect to how and when teachers use technology may arise from a fundamental disjunction between traditional teaching approaches and technology-enhanced teaching methods. For instance, Honey and Moeller (1990) argue that technology
adoption is incompatible with traditional teaching approaches, while Jones et al. (1996) suggest that the creation of a technology-enriched learning environment also requires the creation of entirely new instructional strategies. If that is the case, then the integration of technology into educational environments does not simply entail a transition, but a transformation from one approach to an entirely different one.

Whether teachers see the need for pedagogical transformation as an opportunity or a daunting prospect remains to be seen. But it does appear that many teachers are shying away from changing their teaching style and approach in order to incorporate more technology-based learning tools. Cuban (2001) cites evidence that even where technological resources are readily available ‘the overwhelming majority of teachers employed the technology to sustain existing patterns of teaching rather than to innovate’ (134). In other instances, teachers actively attempt to circumvent the use of technology in the classroom altogether. For instance, in a study of elementary school teachers’ behaviour in technology-enabled classroom settings, Evan-Andris (1995) observed a variety of avoidance strategies that teachers adopt, including allowing other (non-technology based) instructional activities to exceed their allotted time; as a result, there was not enough time remaining for activities that involve technology.

**Turkey and education**

As mentioned earlier, many developing and underdeveloped countries are attempting to address their pressing social and economic problems by providing their populations with adequate educational opportunities and resources. For instance, Turkey has made a strong commitment to improving both the accessibility and quality of education as part of a broader agenda of social and economic development. This emphasis on educational development is especially critical in Turkey’s case, however, because in comparison with most other European nations, an unusually high percentage of Turkey’s population of 70 million falls within the school-eligible age range. In fact, documentation released by the *Organisation for Economic Co-operation and Development* (*OECD*) disclosed that across all *OECD* participant countries in 1999, the percentage of the population falling within the 5–14 age range was not only the highest in Turkey, but also highest by a very substantial margin. The documents reveal much lower population percentages in the 5–14 age range for Iceland (16%), the USA, New Zealand and Ireland (15%), and Spain, Japan and Italy (10%), in contrast to 21% for Turkey (as cited in NCES 2005).

Since the 1920s, education in Turkey has been centralized under the *Ministry of National Education* (*MONE*), which is responsible for virtually every aspect of the educational process, including educational policy formulation and reform, curriculum design, approval of resources and textbooks, hiring of teachers, and decisions concerning school governance principles and implementation. In this sense, *MONE* is extremely influential concerning
what occurs at the classroom level, because it provides the guidelines and curriculum specifications that teachers will use in interactions with students. In an attempt to respond to the educational needs of its vast school-eligible population, the Turkish education system has undergone fairly radical and far-reaching changes within the past 15 years. For instance, prior to 1997, the length of compulsory education was five years, although children could continue at school past the first five years if they choose. However, in 1997, compulsory education was increased to eight years to include ages 6–14, and was offered free of charge for students enrolled in public schools (MONE 2002). This policy amendment, which effectively increased the educational opportunities available to public school students, was extremely significant for the overwhelming majority of Turkey’s young, particularly in light of the fact that 98% of students are enrolled in public schools, along with 96% of teachers (MONE 2002). In numerical terms, this equates to millions of public school students. In the academic year 2009–2010 alone, more than 32,431 public elementary schools were in operation. Inclusive of students attending one of the 879 private institutions also in operation, the entire elementary student body of Turkey for the same time frame was 10,916,643, taught by a total of 485,677 teachers (MONE 2010).

In tandem with the extension of compulsory education in 1997, separate middle schools were eliminated so that students would receive their entire eight years of basic education at primary school. At present, the structure of the Turkish education system includes four levels: preschool, elementary or primary, secondary, and higher post-secondary education. However, a recent educational reform bill which was accepted in 2012 is expected to enhance the Turkish education system even further. Under this policy, which will be phased in gradually beginning in the 2012–2013 academic year, the 8-year compulsory education requirement will increase to 12 years. The time frame will be divided into three segments of four years each, rather than eight years of primary school, middle school will be reintroduced, so that students will progress through primary, middle, and high school sequentially. Although future students will be required to register at a secondary school after completion of middle school, students who are already enrolled in the current eight-year primary school schema will automatically be registered for high school. With the adoption of this new policy, students will be afforded more flexibility. For instance, once students complete the middle school segment of their education, they are free to either continue on to the secondary level in the same school, or choose to transfer to another secondary school.

**Technology and Turkish education**

While the newly adopted policy represents a vast improvement in the education system, and one which will clearly benefit students, Turkey still faces a variety of problematic issues with respect to education. Among the most serious
challenges are limited financial resources and rapid population growth, both of which contribute to further issues such as overcrowded classrooms and a lack of qualified teachers. Cumulatively, these factors impact negatively on Turkey’s ability to address the broader issue of educational inequality. This would entail both ensuring that every student has adequate access to educational resources, and that every student is provided with an equal opportunity to prepare for future participation in the global marketplace through exposure to the high calibre of academic programmes and standards required to do so. In other words, if one of the goals of Turkish educational reform is to equip the school-aged population with the skills and knowledge that will enable Turkey to compete successfully in the global arena, education programmes must be of sufficiently high quality to meet the standards of academic achievement attained by the developed countries with which Turkey seeks relationships.

Progress in this respect has been somewhat disappointing, as demonstrated by recent results obtained by the OECD’s Programme for International Student Assessment (PISA). A global study which includes both member and non-member countries of OECD, PISA ranks the scholastic achievement of 15-year old students in science, mathematics, and reading. The study confirms that in each of these three areas, Turkey’s ranking is significantly lower than the OECD average (OECD 2009). However, like many other developing nations, Turkey has adopted a strong focus on the integration of technology into the school environment as a promising remedy for the academic under-performance of its student population (DPT 2006). In fact, MONE places technology adoption at the top of its priority list, and has already begun to design and institute strategies aimed at creating technology-enabled classrooms. This goal has the full support of the Turkish State Planning Organisation. The principle institution for policy formation at the national level, the Turkish State Planning Organisation has clearly endorsed the integration of technology and education in at least two recently released long-term strategy reports (2001, 2006). In the second, the ‘Long Term Strategy and 9th Five Year Development Plan 2007–2013’, the report strongly stresses several technology-related goals, including the initiation of ‘computerised education at all levels of education with a special emphasis on primary education, providing Internet access for every school and producing curriculums as software programs’ (88). At a later stage, the report further reiterates the importance of technology in educational settings, and recognizes the need for pedagogical changes that will align with the goal of technology adoption. ‘Technological facilities, particularly computer technology shall be utilised at the utmost level . . . new educational methods using high technology shall be put into practice at all levels of education’ (89).

The strategic plans detailed in these two reports, and the emphasis on the critical importance of technology in a comprehensive educational agenda, leaves little doubt that incorporating technology into the educational system of Turkey has become a non-negotiable necessity. And in fact, these reports
have had a significant influence on MONE’s approach to education technology, as evidenced by the fact that MONE has gone so far as to suggest that technology adoption can be considered an essential duty (MONE 2010). In light of this responsibility, MONE recently initiated a number of projects, two of the most noteworthy being the Basic Education Program (BEP) and the Secondary Education Program (SEP). Funded by the World Bank, the European Union (EU), and MONE, both programmes were primarily focused on fostering technology adoption at the classroom level. The BEP was a seven-year initiative (1998–2007) which aimed to introduce ICT resources into elementary schools. By the end of the programme in 2007, an impressive array of results had been achieved: 221,000 elementary teachers had been trained in computer literacy; 7190 computer laboratories had been installed in 5800 elementary schools; 43,000 computers (and related hardware such as scanners and printers), as well as educational software, had been provided to 22,854 individual schools; and school inspectors were equipped with 1630 laptop computers (MONE 2008). The SEP, which ran from 2005 to 2010, was similarly focused on providing technological resources to encourage an increase in the use of ICTs in both general and vocational secondary schools.

As encouraging as these numerical results are, however, there is a considerable body of evidence that suggests that the intended technology adoption has not been as successful as hoped. For instance, in examining the actual effectiveness of BEP and SEP, many studies have found that even where technological tools are readily available, many teachers are failing to incorporate technology-assisted learning and other technology-dependent activities into their teaching methods and classroom interactions with students (Akbaba-Altun 2006; Ozdemir and Kilic 2007; Ozdemir 2010; Somyurek, Atasoy, and Ozdemir 2009; Yilmaz 2011). In addition, although teachers were offered in-service training as part of the BEP and SEP initiatives, one of the most common reasons cited for the teachers’ low levels of technology adoption in actual practice is a lack of adequate pre-service and in-service education in the area of technology integration, coupled with insufficient support for teachers with respect to the use and the available technology in the classroom environment. A second finding that emerged quite clearly from these research studies is that despite MONE’s distribution of significant resources, as mentioned earlier, many teachers still face problems in gaining access to technological tools such as computers. However, as Al-Bataineh and Brooks (2003) observe, the successful creation of an effective technology-enabled classroom environment requires a number of criteria, including that ‘teachers must receive adequate ongoing training, technology use must be matched to the curriculum’s philosophy and theory of learning, and adequate numbers of computers must be conveniently located within the classroom’ (479).

Very recently, Turkey has initiated a major new project, FATIH, with the express purpose of addressing the areas in which BEP and SEP have proved to be not especially effective. The stated goals of FATIH are to ensure that
ICT becomes ‘one of the main instruments of the education process’ and to help ‘teachers and students use these technologies effectively’ (MONE 2012). Under the agenda of FATIH, between 2011 and 2014, nearly 600,000 classrooms across 40,000 schools will be technology-enabled with computers. In addition, classrooms will be equipped with interactive smart boards that are compatible with tablet PCs that both teachers and students alike will be provided. Further plans include the harmonization of curriculums in support of technology adoption, the creation of educational e-content, and the formulation of new e-books and other educational resources for each course. In the pilot phase of FATIH, 12,800 ninth-grade students in 52 schools across 17 provinces have received tablet PCs as of early 2012. The anticipated total financial investment of FATIH is between 7 and 8 billion USD, which constitutes the most sizable single allocation of resources to education in modern Turkish history (Milliyet 2012).

Clearly, the success of FATIH as an avenue for technology adoption ultimately depends on the willingness of teachers to use technology in the classroom, and on their knowledge and skills in being able to do so effectively. However, as previously mentioned, even where technological tools and training are available, many teachers are reluctant to utilize them (Akbaba-Altun 2006; Kurt 2010; Ozdemir and Kilic 2007), and prefer to adhere to the traditional teaching methods and orthodox approaches to learning (Akyac 2011; Celikkaya and Kus 2009; Temizoz and Ozgun-Koca 2008) with which they are both familiar and experienced. In a developing country, such as Turkey, which has limited financial resources, and has heavily invested in technology adoption, the failure of FATIH would be nothing short of catastrophic. For the future of education in Turkey, then, it is critical that the various barriers that are preventing teachers from embracing technology in the classroom. Obstacles to teacher compliance, including those emerging during the course of the BEP and SEP initiatives, must be clearly identified and addressed, if FATIH is to deliver the positive outcomes for which it was designed.

Politics and Turkish education

One of the factors of importance in understanding Turkish educational reform is that typically the process of change in Turkey follows a common pattern. Since the establishment of the Turkish Republic in 1923, there have been multiple reformation efforts, virtually all of which share a ‘top-down’ structure. In other words, the elite class determines what reforms are necessary, and then attempts to implement sweeping changes to the whole of society. However, little attention is usually paid to the desires, needs, and opinions of the majority of the Turkish population. Özdalga (1999) describes this sort of top-down social change motivated by a small subsection of the population as reform ‘for the people in spite of the people’ (15). Some authors, including Fullan (2001), express doubt that the top-down approach can ever work, suggesting instead
that a synthesis of top-down and bottom-up strategies that involves input from the entire population, is a better alternative (1993). Fullan believes that ‘What is required is a different two-way relationship of pressure, support and continuous negotiation’ (1993, 38).

However, even a brief overview of Turkey’s history demonstrates that this synthesis has rarely been either sought or achieved. For instance, in a relatively short period of time during the early years of the Turkish Republic, many significant changes occurred, often without any attention to the impact these changes might have on Turkish society and culture. For instance, during the Ottoman Empire which existed prior to the establishment of the Turkish Republic, education for all age groups was based on Islamic principles and traditional Turkish culture. However, the leaders of the new Turkish Republic were eager to create a new social structure based on the model of the Western world. Realizing that in order to succeed in this vision, the Turkish people would have to be introduced to, and induced to accept, Western ideas and principles, the leaders focused on education as the most appropriate vehicle to support the requisite social change (Kazamias 1966). In other words, as Kazamias observes, education was seen as something that could be used as a source of ‘power and as the leverage in transforming and uplifting the entire society’ (115). Or as Turan (2000) puts it, both in the early days of the republic and even today, ‘The political and official elite see schools as the centre of dissemination of their political ideologies’ (549).

Among the first changes was a move to unify and centralize educational activities within the whole of the new Turkish Republic under the jurisdiction of MONE. By virtue of laws introduced in the 1920s, MONE became responsible for regulating and administering all levels of education. However, as Turan (2000) observes, these policy reforms were completed without input from either teachers or experts in the field of education, and disregarded the impact that a centralized, effectively homogenized educational agenda might potentially have on the existing cultural diversity of the country. Observers, however, raised a number of concerns. John Dewey, for instance, received an invitation from the new Turkish government to visit the country for the purposes of studying the educational agenda and offering recommendations. Dewey’s two month long visit, which occurred only a few months after the Law of Unification of Education came into effect, prompted him to comment on what he saw as the potential dangers of the newly introduced education reforms. Dewey (1988) wrote that:

While Turkey needs unity in its educational system, it must be remembered that there is a great difference between unity and uniformity, and that a mechanical system of uniformity may be harmful to real unity. The central Ministry should stand for unity, but against uniformity and in favor of diversity. Only by diversification of materials can schools be adapted to local conditions and needs and the interest of different localities be enlisted. Unity is primarily an intellectual matter, rather than an administrative and clerical one. It is to be attained by so equipping
and staffing the central Ministry of Public Instruction that it will be the inspiration and leader, rather than dictator, of education in Turkey. (281)

Although Dewey had been expressly invited to submit his recommendations concerning the reforms, they were never heeded (Turan 2000). Turan (2000) observes that:

More than seven decades after Dewey’s recommendations, the Turkish government in the 1990s re-emphasized the importance of the Law of Unification of Instruction of 1924 and passed new laws to reinforce these outdated laws and approaches to education. The supporters of educational uniformity, mostly the intellectual and political elite who control information and power, fail to recognize the crucial role of pluralistic education. (552)

Perhaps unsurprisingly, the top-down pattern is also evident with respect to BEP and SEP, the origins of which date back to the mid-1990s. In 1996, the Virtue Party, a predominantly Islamic party, won the election. However, the Virtue Party was extremely unpopular with the Turkish military, which is strongly in favour of a secular republic, and in fact essentially sees its role as that of protectorate of secularism. For that reason, in the monthly National Security Council meeting between the government and the military in February, 1997, the military exerted its power to force the government to take action against ‘fundamentalist’ Islamic movements. In the immediate aftermath of this meeting, the Islamic Virtue Party had little choice but to step down, leaving the way open for the establishment of yet another new government. This incident is considered a post-modern coup by many (CIA 2007), and on a side note, as of April 2012, the individuals responsible for effectively forcing the resignation of the Virtue Party are in prison, facing trial on charges of plotting to overthrow the civilian government.

However, the military opposition to the Virtue Party, and the fact that the government was forced to take action against certain religious groups, had serious implications in the area of education. Prior to 1997, when the new law increasing the length of compulsory education from five to eight years, the education system consisted of three levels: primary schools (grades 1–5); middle schools (grades 6–8); and high schools (grades 9–11). In addition, there were specialty schools serving grades 5–11, including religious schools called Imam-Hatip. One implication of the military opposition towards religious groups was that the National Security Council recommended that the Imam-Hatip schools, which were extremely popular, ‘be closed for children before they had completed their first eight years of ordinary education’ (Özdalga 1999, 6). In other words, children would no longer be able to receive a full education at the religious Imam-Hatip schools. Then, with the introduction of the newly revised compulsory education law in 1997, which also required the unification of primary and middle schools so that children could complete all eight years of basic education at the same school, the
Imam-Hatip schools came under virtual attack once more. Although there was little opposition to lengthening the number of years of compulsory education, many people supported a ‘5+3’ formula that would allow children to change to another school after completing primary school. However, the ‘crucial item in the list was the uninterrupted 8-year basic education school which in effect meant the closing of middle sections of the Imam-Hatip schools’ (YOK n.d.). Subsequently, high school students enrolled at Imam-Hatip schools were barred from admission to the university, except to study Theology. Understandably, as a result of this example of ‘for the people in spite of the people’ politics (Özdalga 1999), the Imam-Hatip schools experienced a substantial decrease in popularity, which seems somewhat ironic in light of Özdalga’s (1999) comment that the ‘Turkish people have been told that religion should not be used for political purposes. What about using basic education as a weapon in the struggle for political power?’ (16).

Implementing new educational law, both with respect to unifying primary and middle schools, and to providing the resources needed to cover the increased length of compulsory education, proved to be enormously expensive. And this financial pressure is inextricably tied to the origins of BEP and SEP, which effectively provided the financial support required to comply with the new law (World Bank 2002). However, there were other, less tangible costs involved as well. As a teacher at a school which had recently undergone unification and had just started to serve grades 5–8, I witnessed firsthand the chaos and disruption that accompanied the implementation of this new law. The school in which I taught during the 1998–1999 academic year was sorely in need of additional teachers, resources, and supplies, but they were rarely provided, which meant that I, like many other teachers, was faced with the prospect of teaching a variety of unfamiliar subject, ranging from Traffic Safety to English, to students in grades 4–8. Needless to say, the quality of education these students received undoubtedly suffered as a result.

Global effects and Turkish education

Since its establishment, the Turkish Republic has been constantly focused on Westernizing, which has led to the establishment of various far-reaching social, economic, legal and political reforms, as well as educational reforms. At the same time, Turkey has been strengthening its ties with the Western world. Turkey joined the United Nations in 1945; become a member of the North Atlantic Treaty Organization (NATO) in 1952; joined OECD in 1960; and became an associate member of the European Community in 1964. Recognized as a candidate for inclusion in the EU in 1999, Turkey has been engaged in membership negotiations with the EU since 2005.

Given these significant relationships, a convincing argument could be made to the effect that external influences have contributed, and continue to contribute, to the reform of Turkish education through the various projects and
programmes they operate within Turkey. For instance, as of 2006 OECD is involved in 16 separate projects with diverse focuses, including investigating the relationship between the human brain and learning, and promoting social inclusion through educational equity. Similarly, the EU has provided funding for numerous programmes, including the Support to BEP, Strengthening the Vocational Education and Training System in Turkey, and Modernization of Vocational Education and Training in Turkey.

At the same time, since quality education is one of the key criteria for membership in the EU, Turkey is extremely motivated by EU pressure to continue its efforts to improve its educational system and standards. One strong focus, for instance, is on addressing the marked gender discrepancy in school attendance through a concentrated effort to increase elementary school enrolment rates for girls, particularly in the eastern regions where the problem is particularly severe. Another initiative recently instituted by MONE is aimed at ensuring that children from low income families are not disadvantaged in the classroom by distributing free text books to schools at the elementary level. In addition, an EU Desk has been established within MONE, primarily for the purpose of facilitating an exchange of information between Turkey and European countries about education. The EU Desk is also involved in collecting and collating statistical information about education in EU member countries, and enjoys a certain amount of autonomy with respect to reporting on projects performed in relation to the EU.

Conclusions

Given the many countries are already heavily invested in technology adoption in schools, or have begun the process of incorporating technological tools and technology-enhanced teaching methods into their educational agendas, it is clear that technology is quickly becoming a permanent part of the classroom environment. Although there is almost universal consensus concerning the positive value of providing students with a technology-enriched learning environment, for many countries the successful implementation of technology adoption has proved extremely challenging, for a variety of serious reasons.

As mentioned earlier, how successfully technology adoption can be achieved depends to a very significant degree on whether teachers utilize technological tools in their classrooms, and how effectively they do so. However, one major challenge that consistently arises concerns various barriers that teachers encounter with respect to technology use at the level of practice. Often, these barriers are related to the availability of adequate financial resources to ensure that schools are equipped with appropriate technological tools. Clearly, when teachers do not have access to technology, or cannot use the technology that has been provided because it is outdated, it is virtually impossible for them to adopt technology-enriched teaching methods.
However, many countries do allocate massive financial resources to technology adoption with the goal of increasing the quality of education that students receive, in the hope that this will result in greater educational productivity and achievement for the nation as a whole. In other words, most countries are committed to technology adoption because they realize that in an increasingly technology-centred world, a population that has the skills and knowledge to use technology will be able to contribute to the future well-being of the country in important ways. For that reason, in many developing countries, the problem of technological resource scarcity at the classroom level is no longer the major barrier to technology adoption that it once was.

Nevertheless, numerous studies demonstrate that even where adequate and appropriate technological resources are available, very often teachers fail to incorporate technology into their instructional practice for a variety of reasons, including insufficient training and support, heavy workloads that reduce the amount of time available for technology use, and difficulties that arise because of incompatibilities between technology-enriched teaching methods and traditional pedagogical methodologies. All of these factors represent effective barriers to technological adoption at the classroom level, and must be effectively addressed if they are not to negatively hinder the educational goals of the country. Simply providing adequate technological resources may not be enough, for Guba (1988) points out, ‘innovative solutions to practical problems, the best packages of problems, can have no effect on practice if they are not diffused at the level of the practitioner’ (292).

Resolving these barriers at the level of practice is especially critical for developing countries like Turkey, in part because many ICT integration projects in Turkey are funded through foreign financial support. If the agenda of technology adoption appears to be failing, both investors and tax payers may withdraw their support, and pressure political powers to discontinue or decrease efforts in that direction. Rather than risk that eventuality, Turkey must take advantage of research from other countries which focuses on similar barriers, and more importantly, on research initiatives that illustrate potential solutions. Sharing experiential and statistical data and research findings among countries engaged in technology adoption is clearly beneficial for all countries involved, but it is especially important for countries like Turkey that have limited financial resources, and cannot afford to make the kind of costly educational mistakes that may result from a trial-and-error approach.

Notes on contributor
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