Qatar's Educational System in the Technology-Driven Era:

Long Story Short

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Abstract

This paper provides an overview of Qatar's educational system. Specifically, it focuses on the national educational reform that has been unfolding since 2003, tracks its progress, and describes the extent to which educational technology is utilized within Qatari institutions of the higher education. The paper ends with recommendations for practice and future research.

Keywords: Educational Reform, Educational Technology, International Education

1. Introduction

Today's global workforce is increasingly dependent on technology systems to enhance professional performance and to facilitate job processes (Adams, 2002), and lack of technology skills remains one of the main concerns of employers (Kaminski & Bolliger, 2012). It is in this context that Qatar, the country that this article focuses on, launched a major education reform to establish the country as a fully-developed nation. Although Qatar's educational institutions have made substantial investments to increase the availability of technology equipment in the classroom (Weber, 2010), the availability of technology resources has been insufficient in improving the nation's educational system. This is believed to be due in part to teaching remaining mainly teacher-centered and focusing on developing students' lower-order thinking skills (Wiseman & Anderson, 2012). At the same time, there is an apparent absence of information technology curricula and a lack of tolerance for, or acceptance of, modern technologies, with the use of technology remaining ineffective and inefficient (Bahgat, 1999; Weber, 2010; Wiseman & Anderson, 2012). Now that the importance of technology has been established, it becomes imperative to examine the extent to which educational technology is utilized within Qatari institutions of the higher education.

2. An Overview of the State of Qatar

Qatar is a small Islamic state located on the Arabian Peninsula in the Persian Gulf (Kamal & Maruyama, 1990; Rostron, 2009). Qatar is a member state of the Gulf Cooperation Council (GCC) that includes Bahrain, Kuwait, Oman, Saudi Arabia, and the United Arab Emirates (Bahgat, 1999; Peterson, 2006). Qatari people speak Arabic, which is the country's official language, while foreign residents speak numerous other languages such as English, French, Urdu, and Persian. Before the discovery of oil, Qatar was a poor tribal nation where the main sources of income were pearl hunting, camel breeding, and fishing (Brewer et al., 2007; Rostron, 2009). In September 2011, "Qatar officially became the richest nation in the world, as measured by per capita gross domestic product" (Edwards, 2011, ¶ 1). With roughly only 250,000 Qatari nationals among the 1.7 million foreign residents (Edwards, 2011), the current gross national income per capita in Qatar is approximately $88,000 (Greenfield, 2012).

Although a small nation, Qatar exerts significant influence in the Middle East. Qatar is the home of the Aljazeera network (Krieger, 2008), the most controversial Arab news station that the Bush administration repeatedly accused of encouraging terrorism (Asquith, 2006; Peterson, 2006). According to Romanowski and Nasser (2012), the Aljazeera media outlet has been successful in exposing political and social issues that were never confronted by other Arab news agencies. Qatar also hosts Al Ueid, the largest American military base in the Middle East, from which the United States launched its war against the Iraqi regime in 2003 (Asquith, 2006).

Since its independence from the United Kingdom in 1971, Qatar strived to transform its tribal system into a modern civilization (Rostron, 2009). According to Bahgat (1999), Qatar has witnessed substantial transformations in all aspects of its socioeconomic and political systems in the late twentieth century. The educational system has also received its equal share of these transformations with the establishment of Qatar Foundation for Education, Science and Community Development in 1995 (Rostron, 2009). The development of Qatar's educational system has provided greater numbers of Qatari citizens with formal education opportunities in the late 1990s (Bahgat, 1999).

Qatar's natural resources (i.e., oil and natural gas) generate substantial revenues that enhanced the country's economic development (Rostron, 2009). For example, the rapid increase of oil prices in the mid 1970s provided the Gulf nations with significant surpluses of capital that led to the formation of their socioeconomic system and public bureaucracy, the growth of their agricultural and industrial sectors, and the enhancement of their social services including education and healthcare (Bahgat, 1999). The enhancement of the public educational system in Qatar was attributed to the rapid increase of oil revenues (Reilly, 2008). However, the expansion of education in the six Arab Gulf countries was strongly associated with the exportation of oil and "was not in response to a well-articulated development plan" (Bahgat, 1999, p. 129).

3. Traditional and Modern Education

In the 1950's, Qatar lacked a traditional education system (Rostron, 2009). During that period, the most popular form of education in Qatar was the *kuttab* (Bahgat, 1999; Rostron, 2009). A kuttab is an informal class held at mosques where children of different ages memorize passages of the Quran and learn basic writing and arithmetic skills (Rostron, 2009; Weber, 2010). Historically, educated men and women knowledgeable in the field of Islam administered kuttabs for Qatari children (Rostron, 2009), while the sons of the ruling elites were privately taught by prominent Muslim scholars known as *ulama* (Bahgat, 1999).

Rostron (2009) reviewed Qatar's educational history and reported that Hamad ibn Abd Allah established in 1949 the first modern school in Doha where he alone taught 50 boys. The school received government funding in 1951 and three other schools for boys were established in 1954. Students were taught Islamic religion, history, Arabic, English, arithmetic, and geography. In 1956, Qatar witnessed the inauguration of the first modern school for girls that taught the Quran, Arabic, arithmetic, health, and ethics. During the same year, the Qatari government established the Ministry of Education, which was then replaced by the Supreme Education Council in 2002. The Ministry of Education in Qatar adopted the Egyptian educational model and utilized textbooks published in Saudi Arabia, Syria, Jordan, and Lebanon (Brewer et al., 2007). According to Bahgat (1999), the development of education in the Arab Gulf region was accomplished with the assistance of foreign teachers from neighboring Arab countries, primarily Lebanon, Egypt, Jordan, and Syria.

Established in 1973, Qatar University (QU) is the first and only public higher education institution in Qatar that provides local and international students with more than 60 educational programs (Kindilchie & Samarraie, 2008). More importantly, QU is internationally recognized and an active member of the Union of Arab Universities, the League of Islamic Universities, and the International Association of Universities (Al Attiyah & Khalifa, 2009). QU faculty members are distinguished scholars and researchers from different Arab and foreign countries who are supporting the university in developing its research and educational infrastructure (Kindilchie & Samarraie, 2008).

Since its inception in 1995, Qatar Foundation (QF) has aimed to provide Qatari citizens with advanced educational and research opportunities through attracting the world's most prestigious universities to its Education City complex in Qatar's capital, Doha (Brewer et al., 2007; Rostron, 2009). Today, six American universities that include Texas A&M, Weill Cornell Medical College, Virginia Commonwealth University, Carnegie Mellon, Georgetown University, and Northeastern University have established branch campuses in Doha's Education City (Asquith, 2006; Brewer et al., 2007; Chester, 2005; Rostron, 2009). Education City is an educational project overseen by QF and was envisioned by Qatar's former Emir, his Highness Sheikh Hamad bin Khalifa Al Thani (Asquith, 2006). Krieger (2008) indicated that QF is a national multibillion-dollar endowment to finance the operating costs of universities that agree to setup branch campuses in the Education City of Doha. For example, QF paid $750 million to cover Weill Cornell Medical College operating costs for the first 10 years (Asquith, 2006). In addition to the fully financed operating costs, QF gives all universities a gift that ranges between 10 and 50 million dollars. More importantly, the government pays the tuition fees for all Qatari students who constitute 50% of the total enrollments (Asquith, 2006; Krieger, 2008).

At all levels, public education is fully financed by the Qatari government. Education is provided at no cost to local students including textbooks, uniforms, transportation, and other necessities. In some instances, monthly allowances are provided (Asquith, 2006; Bahgat, 1999; Krieger, 2008). Bahgat (1999) explained that the governmental funding

of public education has created a strong association between the ruling families and universities, which in turn limits both political and academic freedom. According to Romanowski and Nasser (2012), Qatari citizens do not challenge the status quo because they are afraid of losing the social entitlements that the government provides. These entitlements and privileges include a share of the oil profits and include jobs, housing, education, healthcare, and other types of services. More importantly, the oil wealth has turned Qataris to passive consumers who do not contribute to their country's fast-paced socioeconomic development (Romanowski & Nasser, 2012). As a result, Qatar became more dependent on foreign workers to meet the requirements of modernization (Bahgat, 1999; Romanowski & Nasser, 2012; Rostron, 2009). This issue is problematic because it increases the unemployment rate among local citizens (Bahgat, 1999).

3.1 The Impact of Gender Inequality and Religion on Education

There are some Muslim scholars who often resisted the education of girls claiming that it contradicts Islamic traditions and tribal customs (Bahgat, 1999). In Qatar and the GCC states, gender segregation is not a trivial issue and was firmly established in their societies that "never accepted the notion of equality between men and women" (Bahgat, 1999, p. 133). Today, all government schools including QU are segregated by gender due to cultural and religious norms that define all facets of people's lives (Breslin & Jones, 2010; Romanowski & Nasser, 2012; Rostron, 2009). Even in international universities where segregation does not exist, female and male Qatari students avoid interacting with each other, self-segregate in classrooms, and refuse to work together in groups (Asquith, 2006).

Religion and traditions control people's lives and govern the political, economic, legal, social, and educational aspects of the Qatari society (Romanowski & Nasser, 2012). Rostron (2009) indicated that "Islam provides an all-encompassing framework of human existence, with every facet of life as an integral component which becomes significant and meaningful only through its Islamic interpretation" (p. 223). Romanowski and Nasser (2012) argued that Islam is the central element of the Qatari regime of truth, which is the framework that guides inquiry in the Qatari society. The authors explained that the regime of truth imposes boundaries that impede the development of students' critical thinking skills by discouraging oppositional knowledge and through preventing students from considering alternative perspectives. For example, international universities in Qatar are criticized and opposed by Muslim scholars, parents, and local teachers because they emphasize the principles of liberal arts education that require students to challenge existing values, ideas, and beliefs (Rostron, 2009).

3.2 Qatar's Educational Reform

In the last several decades, the educational policies in Arab Gulf countries did not account for the local societal needs creating a "mismatch between traditional and modern education, an imbalance between local and foreign workers, and a gender gap between men and women" (Bahgat, 1999, p. 129). For example, the schooling system in Qatar mainly emphasized transmission and reception of knowledge through memorization and replication of revealed concepts (Rostron, 2009; Weber, 2010), and higher education institutions were established to "prepare citizens for employment in the expanding bureaucracy" (Bahgat, 1999, p. 130).

In 2001, Qatar's government was concerned that the country's educational system was "not producing high-quality outcomes and was rigid, outdated, and resistant to reform" (Brewer et al., 2007, p. iii). As a result, the Qatari government consulted RAND Corporation, a nonprofit American institution that assists organizations in policymaking decisions through research and analysis to examine Qatar's educational system (Romanowski & Nasser, 2012; Rostron, 2009). After conducting an overall assessment of Qatar's educational system in 2001, RAND found that graduate students were not academically qualified to meet employers' expectations and were unprepared for competitive university programs (Brewer et al., 2007; Rostron, 2009). More importantly, RAND reported that Qatar's educational curriculum is "unchallenging" and "emphasized rote memorization" (Brewer et al., 2007, p. xviii).

In an effort to develop a strong educational system that meets the country's changing needs, Qatar embarked on an educational initiative to reform both its K-12 and higher education systems (Stasz et al., 2007). In March 2003, Qatar's education reform was officially launched as *Education for a New Era* (EFNE) and was extended to higher education in March 2005 with the inauguration of the Higher Education Institute that provides Qatari students with scholarship programs at Education City universities, Qatar University, and selected universities abroad (Brewer et al., 2007). The primary goal of this reform initiative is to enhance Qatar's human capital and ensure that Qatari citizens can contribute positively to the development of their socioeconomic system (Stasz et al., 2007). Qatar's education reform initiative was expected to be complete within 10 years (Brewer et al., 2007), however, due to unforeseen circumstances, the program time frame was extended few more years.

Qatar's educational reform sought to develop students' critical thinking skills in order to prepare a new generation of skilled professionals who could replace foreign workers in both public and private sectors (Rostron, 2009; Stasz et al., 2007). According to Bahgat (1999), the nationalization of the labor force has always been a primary goal for Arab Gulf governments because it decreases the unemployment of their local citizens. This strategy is better known as *Qatarization* and is currently effective in Qatar (Rostron, 2009). Khodr (2011) explained that Qatarization is an effective policy for local human development and an initiative to increase the number of employed Qataris in both the private and public sectors. More importantly, Brewer et al. (2007) reported that EFNE has drastically transformed the country's archaic educational system by creating a set of high quality schools that develop human capacity through training, and has successfully changed the small Gulf state into a country "of global prominence" (p. 13).

In response to RAND's recommendations, the Qatari government abolished the Ministry of Higher Education, ended its affiliated programs, and established the Supreme Education Council (SEC) in 2002 by Law Decree No. 37 (Brewer et al., 2007; Nasser & Romanowski, 2011). The role of the SEC is to gradually transform ministry schools and private Arabic schools into independent schools (Brewer et al., 2007), which has been compared to North America's charter school system (Nasser, Cherif, & Romanowski, 2011). The development of independent schools decentralized education, enhanced schools' autonomy and accountability, and provided the local community with more schooling alternatives (Romanowski & Nasser, 2012). Today, all Qatari independent schools are granted autonomy to define their mission statements and make decisions about policy, personnel, and allocation of resources (Brewer et al., 2007). In addition, all independent schools are now subject to financial scrutiny and required to meet the established curriculum standards in Arabic, English, science, and mathematics (Nasser & Romanowski, 2011).

Another major outcome of Qatar's educational reform was the establishment of Education City in 2003 (Brewer et al., 2007). Prior to establishing Education City, Qatar's brightest students received scholarships to study abroad, however this strategy often fell short because "Qatari parents were hesitant to expose their children to Western influences" (Reilly, 2008, p. 533). To address this issue, Qatar invited a number of research centers, think tanks, and international universities to establish branch campuses in its Education City in Doha (Reilly, 2008; Rostron, 2009). Although establishing Western universities in Qatar's Education City provided students who are not able to travel and study abroad with better educational opportunities and international learning experiences, these universities are often criticized and accused by local citizens of having a hidden agenda of Westernization (Rostron, 2009).

In the same context, QU launched a reform initiative in 2003 to articulate both a new vision and mission and to create an action plan for achieving them (Qatar University as cited in Stasz et al., 2007). Al Attiyah and Khalifa (2009) reported that QU's educational reform emphasizes accountability and decentralization, and aims to improve its administrative efficiency and enhance the quality of instructional and educational services. Today, QU is in the midst of a systemic education reform and in the process of developing a substantial research and educational infrastructure (Kindilchie & Samarraie, 2008).

Notwithstanding the major reforms that have taken place recently in Qatar, the community is still essentially tribal and considered to be strict and highly conservative (Rostron, 2009). Religion, history, and language are deeply rooted into Qatar's public education system and are considered essential in terms of preserving the nation's culture (Brewer et al., 2007; Rostron, 2009). According to Rostron (2009), Qatar is a "country in transition, trying to embrace new opportunities while at the same time seeking to re-assert its conservative Muslim, Arab, Bedouin identity" (p. 221). This is often considered problematic because the inadequate use of modern technologies and limited access to information have widened the gap between existing traditional and religious type of learning and modern educational systems (Bahgat, 1999). Finally, Bahgat (1999) concluded that there is a need for more acceptance and tolerance of modern innovations and information technology systems if Arab Gulf states are to develop their human capital and reduce their dependence on foreign workers.

3.3 Latest Updates on Qatar's Educational Reform

Earlier this year, a Royal Emiri decree restated the Ministry of Higher Education and abolished the SEC. Today, the Ministry of Higher Education is the official body that governs all aspects of education in Qatar. Little is known whether Qatar's EFNE will be brought to an end, however. In case the latter is true, it is more likely that billions of dollars invested in transforming the nation's outdated educational system into a modern one went in vain.

4. Technology Integration in Qatar's Context

Despite the significant achievements in terms of creating a modern economic infrastructure and improving their educational system, research suggests that the quality of education in the GCC still lacks the elements that prepare students for the job market because technical training, science, and information technology curricula are not

emphasized in their academic programs (Bahgat, 1999; Wiseman & Anderson, 2012). Today, employers in Qatar are in need of skilled professionals in the fields of technology and business in order to sustain the nation's economic development (Al-Jaber & Dutta, 2008; Stasz et al., 2007).

In an effort to address these issues and develop a knowledge-based society, the Qatari government established the Supreme Council of Information and Communication Technology (ictQatar) in 2004 to encourage the use of technology by creating an advanced information and communication technology infrastructure that promotes ICT in schools and enhances Qatar's human capital (Nasser et al., 2011). Al-Jaber and Dutta (2008) indicated that ictQatar is the regulator and enabler of the ICT sector and is responsible for creating a knowledge-based online community, establishing the country as a developed nation, and enhancing the nation's technology literacy in order to overcome the country's shortage of professional workers.

Al-Jaber and Dutta (2008) reviewed Qatar's recent developments in the field of ICT, provided an overview of the country's transformation into a technology-driven nation, and examined the factors that obstruct ICT initiatives in education, healthcare, business, internal security, and integrated government. The authors reported that Qatar's unfolding technology revolution takes into account the country's unique requirements and aims to develop an information-based economy, universalize access to social services, and transform all sectors of the national economy. In terms of K-12 and higher education, ictQatar launched the e-education initiative that supports teaching and learning and creates flexible learning environments through technology. In addition, Al-Jaber and Dutta indicated that the purpose of Qatar's e-education initiative is to transform classrooms into global learning centers by providing parents, teachers, and students with technology tools that enhance communication and link homes, schools, and the society with international research databases. Although the e-education initiative focuses on enhancing schools' performance through technology, ictQatar offers adults with career-enhancement opportunities by providing them with technology portals that prepare them to enter the workplace and develop their levels of proficiency and expertise (Al-Jaber & Dutta, 2008).

In an attempt to improve faculty and student performance in schools, ictQatar and the SEC launched an e-education project that includes technology programs such as Knowledge Net, E-Schoolbag, Global Gateway, and Model e-school (Al-Jaber & Dutta, 2008). Table 1 summarizes these programs.

Table 1. Types of Technology Programs (Al-Jaber & Dutta, 2008)

E-Learning Programs	Description
Knowledge Net	A three-way communication portal that allows parents, teachers, and students to communicate effectively
E-Schoolbag	Includes tablet PCs programmed with science, mathematics, and English curricula that meets the established national educational standards
Global Gateway	A partnership with the British Council that allows teachers to communicate and share their experiences with international educators
Model e-school	Brings the world's best ICT educational practices and standards to local schools

Although Qatar is in the midst of a systemic technology revolution, a number of factors that include stakeholders' resistance to change, shortage of skilled workers, social norms, and misconceptions about technology impede the implementation of ICT in Qatar's public sectors (Al-Jaber & Dutta, 2008). For example, in Qatar, the government's Internet censorship prevents access to knowledge and perspectives that contradict with Islamic traditions and national policies (Romanowski & Nasser, 2012). This issue is problematic because it discourages individuals to rely on information technology as a means to improve their expertise and performance. Bahgat (1999) indicated that the free movement of information in the Arab Gulf countries is not allowed for security reasons, and Internet services are provided by proxy servers that block socially and politically sensitive websites. Shirazi, Gholami, and Higon (2009) explained that government interference and social demands in the Arab world obstruct the development of ICT infrastructure and education. Similarly, Wiseman and Anderson (2012) suggested that ICT is not effectively utilized in knowledge development due to restrictions imposed by cultural norms in Arab Gulf states. In Qatar, the issue of inappropriate content obstructs the adoption of technology where parents prevent their children from using the Internet and refuse to enroll them in e-learning initiatives due to parental anxieties (Al-Jaber & Dutta, 2008).

Al-Jaber and Dutta (2008) argued that Qatar's position as a late entrant into the field of modern technology, the small size of the country's population, and the relatively low number of technology-based educational programs are the

reasons behind the lack of professional human capital. Kindilchie and Samarraie (2008) reported that 69% of QU's faculty members believe that their students face a number of difficulties in using the Internet such as poor knowledge in accessing online research databases and the lack of assistance in using e-resources. In a related vein, Weber (2010) explained that the lack of Arabic-based educational technology tools in the Arab Gulf region represents a major challenge for teachers trying to integrate technology into their instruction. Finally, language issues in Qatar represent a major barrier preventing students from using e-resources because electronic publishing is not common in Arabic (Kindilchie & Samarraie, 2008).

In terms of establishing an educational technology infrastructure, Chester (2005) reported the major challenges faced by Texas A&M University at Qatar (TAMUQ). According to Chester, Internet and network reliability, telecommunications law, and the national trade policy were among the difficulties the university encountered during the implementation of its ICT infrastructure. First, since trade is highly regulated in Qatar, TAMUQ could not purchase software and hardware products from the U.S. As a result, university officials ordered equipment from local resellers whose prices are significantly higher from U.S.-based vendors. Second, when an earthquake in Algeria damaged an undersea fiber cable that provided Qatar with Internet services, the university's Internet access was limited to a low-bandwidth satellite connection for two weeks. Finally, since the government controls the Internet, the university was not able to benefit from the voice over Internet protocol (VoIP) services because these are illegal.

In a similar context, QU's quality assurance committee conducted peer observation visits to all college classes (Al Attiyah & Khalifa, 2009) in an attempt to attain international accreditation and enhance the quality of its instructional and educational services. The results of the observations revealed that faculty members lacked access to instructional technology tools especially in the art classes. Therefore, QU's administration decided to supply all classrooms with the latest technologies, equipment, and software in order to attain the benefits of educational technology. Nevertheless, the availability of educational technology resources in the Arab Gulf countries is not an evidence of technology integration into national education systems because teaching remains essentially traditional and instruction is mainly teacher-centered focusing on developing students' lower-order thinking skills (Wiseman & Anderson, 2012).

According to Riley and Gallo (2000), both academia and industry consider technology as a powerful instructional tool that makes education and training more efficient, effective, flexible, and immediate. It is in this context that many countries around the world continue to garner support for the integration of technology into learning and strive to gain the educational benefits of technology (Abouchedid & Eid, 2004). However, this argument presents difficulties in Arab academic circles (Nasser & Abouchedid, 2000). Abouchedid and Eid (2004) argued that Arab policymakers have done little to narrow the technology gap between Arab nations and the global information society. For example, the Arab Human Development Report (2002) showed that the Arab region, which constitutes 5% of the world's total population, has only 0.5% of the world's Internet users.

More importantly, Abouchedid and Eid (2004) explained that the lack of Arabic content and expensive Internet charges are among the factors that impede the implementation of e-learning programs in the Arab world. The Arab Human Development Report (2002) indicated that educational access and illiteracy in the Arab world are the major barriers to access to technology in educational institutions, where 65 million people out of a total population of 250 million are illiterate. Another major factor that obstructs the implementation of technology into the curriculum is the value of online degrees in the Arab world. Sadik (2013) explained that the value of online degrees is negatively perceived in Arab societies because employers do not consider them as valid employment credentials. Little is known about how any of these factors play out within Qatari schools and universities, however.

5. Recommendations for Practice and Future Research

In order to realize Qatar's national vision in creating a technologically skilled workforce and establishing the country as a fully-developed nation, Qatari educational leaders and policymakers are required to formulate context specific strategies that propel the paradigm shift from teaching to learning. This can be achieved through launching further research and implementing evidence-based programs that aid in the facilitation of the use of technology during instruction. The following is a set of recommendations for practice and future research.

5.1 Recommendation for Practice 1

In order to enhance faculty technology proficiency and enable them successfully integrate technology into curricula and instruction, it is recommended that Qatari educational institutions apply the following:

1. Evaluate faculty technology skills using multiple data collection tools (e.g., classroom observations, course evaluations, examination of lesson planning materials, pre- and post-treatments, etc.).

2. Develop professional development programs that address faculty skill deficiencies. Professional development

programs should include an action plan that identifies main objectives, persons involved, required resources, timeline, the implementing bodies, and the monitoring committee.

3. Conduct professional development programs and record faculty progress.

4. Revaluate faculty technology expertise and compare pre- and post-treatment results to determine whether the training program yielded positive results or not. If negative results are evident, institutional leaders are required to identify and solve shortcomings through action research.

5.2 Recommendation for Practice 2

Educational leaders should enhance faculty members' self-confidence, encourage them to take the next step, be very appreciative of what they do to improve their performance, and dissipate their fears of their own abilities. In part, this could be achieved when faculty are constantly evaluated against the required performance standards and provided with feedback that demonstrates the extent to which their technology skills are improving.

5.3 Recommendation for Practice 3

Educational leaders should provide faculty members with empirical evidence that clearly shows both professional and academic benefits of technology when applied effectively inside the classroom. Once faculty members have envisioned the educational benefits of technology, they are more likely to integrate it into their daily teaching practices.

5.4 Recommendation for Research 1

A correlational study that examines the relationship between cultural restrictions and technology integration would enrich the existing knowledge base on educational technology in Qatar and the Arab world.

5.5 Recommendation for research 2

Given the Qatari's government commitment to being globally competitive and the compelling need to have a technologically qualified workforce, a study that brings to light faculty members' attitudes toward integrating technology into their instruction and their understanding of the factors that promote technology integration seems timely and important.

5.6 Recommendation for Research 3

Additional research on the effects of technology integration into learning and instruction on students' academic achievement should be conducted at public and private educational settings in Qatar. In addition, researchers should explore how different types of software applications and hardware affect student learning outcomes. This will be especially beneficial for educators because it will allow them to experience the educational benefits of technology, align specific technology resources with course content, and use appropriate software applications and hardware based on the learning objectives of their lessons.

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