



Effectiveness of E-learning in Public schools: Case of Bahrain

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Received: 5 June 2016, Revised: 31 August 2016, Accepted: 20 Sept. 2016, Published: (Oct) 2016

Abstract: Improved, modern education in developing countries provides the promise of meaningful employment for graduates, movement towards a knowledge-based economy, and rapid national economic growth. The building of the physical infrastructure as well as the knowledge infrastructure base such as teacher training, teaching materials and Internet facilities are necessary before the full benefits of the educational investments can be realized. Indeed, Bahrain has recently been leapfrogging communications technologies at a level and pace like any other country. This phenomenon of adopting e-learning technology brings hope to the possibility of schools being able to use new technologies to leapfrog over many of their problems such as a shortage of teachers, school books and low achievement levels, and to train their students in technologies and to have “21st century skills” such as creative thinking and problem solving. E-Learning may assist with this transformation. A new project has been started and is named in the patronage of the King of Bahrain, King Hamad Bin Isa Al-Khalifa. The King Hamad Schools have new technologies and ideas for teaching. This study will talk about how the project affect the quality of education in the Kingdom and the recommendations in how to develop the project further.

The paper aims to evaluate the effectiveness of E-learning project in Bahrain public schools in terms of staff training and engaging online learners among teachers and students. The findings of the study presents that the staff training helps to improve the teaching-learning process, and also E-learning improves students’ skills for career perspectives, as it will help students in their future life. Lastly, students do not find difficulties in using online courses and they prefer the online materials more than papers. The student nowadays like technology and enjoy their times when they use the online materials.

Keywords: Staff Training, Online learners, Educational technology, Web-based training, Computer network.

Introduction

The world is living in an electronic age, where more and more aspects of life are becoming digital and the influence of technology has entered every home across the globe. A growing trend of this period of time is the integration of technology with education. Thus E-learning has become a worldwide phenomenon and many believe that is the way forward in education

The term “e-learning” originates from electronically-assisted learning, or learning with and through the use of technologies. Other commonly used terms include online learning, computer-assisted learning or ICT in education. E-Learning incorporates both content

(curriculum) and instruction (pedagogy). E-Learning has become a term representing a new model of education that may incorporate an “ecosystem” of networked communities and a variety of learning resources. In education, it involves revised curriculum, infrastructure, teacher professional development, textbooks, and exams.

Conceptualizing Technology in Relation to Teaching:

In this blending of technology, pedagogy, content and knowledge, a theoretical principle has evolved known as TPACK which reflects the intersection among three domains of teacher knowledge: content, pedagogy and technology.



Research has shown that teachers can move from seeing content, pedagogy, and technology as independent

This conceptualization draws heavily on the work of MSU faculty Mishra and Koehler. In this framework, the starting point is an analysis of both the complexities of teaching and the nature of technology. The framework was developed as an extension of Shulman's influential conceptualization of pedagogical content knowledge. The conceptualization highlights what good teachers know about how to teach a particular subject matter in addition to their knowledge of what to teach. . In considering the relationship between technologies, pedagogy, and content, it is important to explore how teaching and learning can change as the result of using a particular technology. For example, the use of inexpensive digital cameras or cell phones with integrated cameras can shape decisions about content and pedagogy. Students can use these cameras to build their own bridges between content within the school environment and their daily lives. Students can explore the presence of geometric shapes in places that teachers would not have anticipated, thus creating their own applications of the ideas being taught in the classroom. Inevitably students will find new connections that teachers (and project designers) did not anticipate, connections that feed their natural curiosity and honor their contributions to the learning environment. Communities of Practice. Experience suggests that teachers most readily adopt and adapt technology when they join a community of practice under the guidance of mentors. This involves them in inquiry and problem solving, anticipating the complexities with which teachers and learners are faced and the need to enable teachers and students to respond flexibly and creatively. Participants learn about technologies when and only when they need these technologies to complete their projects rather than being taught technologies in case they may someday have opportunity to use them. A central strategy is thus to create communities of practice among educators. The importance of a grassroots approach has been repeatedly shown by research. It builds on collaboration and community building at all levels, and lowers the levels of resistance

compared to when authorities simply mandate ICT use. When teachers and other educators work within their peer groups, the rate of adoption is much higher. Teacher Networking. Mobile or internet-based networks will provide a critical impetus for teachers and mentors to use the computers in a creative and thoughtful mode, to try new approaches, and to communicate their successes and challenges.

These networks have the dual advantage of 1) promoting information exchange among teachers and mentors that is interactive and tailored to individuals' needs, and 2) stimulating the use of ICT by teachers for purposes that go beyond simple cookbook applications. Research indicates that teacher networking significantly increases the interest in and use of new technology and other pedagogical approaches.

ICT as a Tool to Foster Learning:

To foster learning through the use of technology, it is useful to examine the pedagogical principles behind teaching and learning with ICT. Technology is a powerful and effective tool, but if teachers use it only as a delivery vehicle, the outcomes will be less than its potential. The challenge is to make full use of technology so that it doesn't become simply a substitute teacher. Indeed, instructional content can be embedded in the technology and then delivered to the student with the assumption that if you deliver content the students will learn. But by blending the use of technology with teaching by the teacher, students have been shown to have much higher learning outcomes. Technology should thus be used as an engager and facilitator of thinking and knowledge construction.

Technology as tools to support knowledge construction:

For representing learners' ideas, understandings, and beliefs. For producing organized, multimedia knowledge bases by learners.

Support learning-by-constructing:

For accessing needed information. For



comparing perspectives, beliefs, and world views.

Technology as context to support learning-by-doing:

For representing and simulating meaningful real-world problems, situations and contexts. For representing beliefs, perspectives, arguments, and stories of others for defining a safe, controllable problems space for student thinking.

Technology as social medium to support learning by conversing:

For collaboration with others. For discussing, arguing, and building consensus among members of a community o For supporting discourse among knowledge-building communities.

Technology as intellectual partner to support learning-by-reflecting:

For helping learners to articulate and represent what they know for reflecting on what they have learned and how they came to know it o For supporting learners’ internal negotiations and meaning making o For constructing personal representations of meaning for supporting mindful thinking.

Technology as information vehicles for exploring knowledge: The US Department of Education (1998) developed a simple visual that has become standard of the basic changes that occur in a shift from traditional to e-learning (Table 1).

These are the basics behind teaching students what has become known as 21st Century learning and innovation skills (critical thinking and problem solving, communication, collaboration and creativity)

Analysis of e-Learning Table 1

Traditional Learning Environments	New Learning Environments
Teacher centered instruction	Student centered instruction
Single sense stimulation	Multisensory stimulation

Single path progression	Multipath progression
Single media	Multimedia
Isolated work	Collaborative work
Information delivery	Information Exchange
Passive learning	Active/exploratory/inquiry based learning
Factual, knowledge-based	Critical thinking and informed decisions
Reactive response	Proactive / planned action
Isolated, artificial context	Authentic, real-world context

Table1

Traditional and New Learning Environments. Source: DOE 1998.

Considering the relationship between technology and pedagogy thus leads to understanding how teaching can change as the result of using a particular technology. As such, new technologies encourage teachers to confront basic educational issues in new ways.

E-Learning Technologies and Configurations in Schools:

There are many e-learning settings and technologies available to use in schools, each with their own advantages and applications. Often the best solution is a combination of technologies depending on the particular need and learning environment. In a multi-media classroom, educational content is delivered to students in a one-to-many approach. This is cost efficient per pupil, and can provide a large amount of educational resources to students. Classrooms would be equipped with a projector, screen (or large LCD), speakers and a classroom computer. The teacher could display various types of content that is housed either on the classroom computer or on the teacher’s laptop or other device. The teacher would be able to adapt and project various content (e.g., videos, PowerPoint slides, augmented reality, multimedia presentations, the teacher drawing



a graph, etc.). A connected classroom would have wireless or wired communications to a “cloud” of resources. The teacher would thus have access to a wide range of content from the library on the cloud. The computer housing the content could be locally based at the school (which would obviate the need for inter-school communications, and be reliable), at a district or national educational headquarters, or elsewhere. Connected multi-media classrooms would permit distant classroom teaching, in which a teacher in one school or from a studio could deliver live, interactive lectures to classrooms in other schools. The distant classrooms would need to be outfitted with video cameras and microphones, as well as projectors and speakers, to communicate with the distant teacher. Computer Lab A computer lab is among the most recognizable form of e-learning technologies. A computer lab usually consists of many single personal computer stations. This is a common arrangement found in schools throughout the world. There are many educational software packages available that could be installed for student use. Separate stations permit individual students to move at their own pace through material. Teachers can also lead students or student teams through guided exercises, with each following on their own station. Free computer time itself is a valuable educational resource. Installing separate computers is an easy to set up, since it is simply single stations behaving independently. Computer labs can be, however, more expensive per student due to the individual computers and software licenses. They may also have higher power consumption demands, depending on the computer or device, necessitating low-cost power solutions. Multi-seat computing consists of using one powerful personal computer with extra video cards to support up to eight independent “seats” (each with its own monitor, keyboard and mouse running separately). They can be put in a computer lab for students or teachers to use, or in classrooms. There are several commercially available multi-seat operating system software options including by Microsoft and Linux. This system has the advantage of using much less power than other options. It is usually the least expensive per user as well as single station, personal computers.

A variety of types of single station devices are available:

- 1) Personal computer (PC). A PC is a common approach for using computers in homes and offices. It consists minimally of a computer, one or two monitors, a keyboard and mouse. Each computer has its own operating system and software programs. From a setup and maintenance standpoint this type of system is advantageous. It is easy to maintain and does not generally require a specially trained computer technician to fix most hardware and software problems. However, if each student were to have a computer, this would be among the more costly options to implement, particularly in rural areas reliant on solar power. This would be useful particularly for teacher stations or single stations in the back of classrooms.
- 2) Micro Computer. A microcomputer is similar to a standard single station except that it uses a small form factor case with a generally slower processor. Power consumption can be much lower than a single station and thus suitable when power is limited. The computers are, however, difficult to repair and may be prone to theft and overheating; the lifespan of these devices is not yet known. Software maintenance is similar to a standard single station.
- 3) Laptop or notebook. Laptops and notebooks are among the easiest educational solution to set up. They usually come with software preinstalled and only a power outlet is needed to begin using the system. The power consumption is low compared to a personal computer. Hardware maintenance can be difficult, but software maintenance is standard. One of the disadvantages is product lifespan; they are easy to steal and are prone to accidents (a spill on the keyboard can easily destroy it; new rugged laptops reduce this risk). New design and battery technologies are lengthening battery life in some machines. Laptops may be an excellent solution for teachers. Teachers could bring a laptop to work from home, and then connect it to the classroom projector. Small, Personal Devices Small,



personal devices such as tablets, smart phones and e-readers are similar in that they are all relatively new technologies. They are rapidly gaining popularity due to their declining price, large number of web-based software applications, powerful graphics, and enjoyment of use. Educational uses could include listening to audio lessons or audio books, gaming, watching videos, and reading. Writing is more difficult if the device doesn't have a keyboard. Schools and teachers can develop teaching material applications for mobile devices using existing software. An example of how rapidly this is occurring is that over 10,000 pieces of content (learning materials) for U.S. schools are already available from one education company (Study by App). As discussed in the ICT section above, penetration of mobile cellular Internet is rising rapidly in Bahrain and other developing countries because of the availability and relatively low cost of Internet access, text and voice through cellular networks, especially compared to broadband Internet. The cost of Internet or telecommunications time for teachers, students or schools is no longer a limiting factor.

Analysis of e-Learning

1. Tablet. A tablet personal computer is similar to a laptop but with a touch screen, and often a smaller hard drive and screen. Tablets may or may not have a keyboard. A touch screen permits a new form of human-machine interaction, the uses for which are becoming increasingly apparent. As educational software is developed to take advantage of touch screens, tablets may become useful for e-learning.
2. Mobile Phone/Smart Phone. Today, cellular Internet coverage is often available, even in rural areas (especially compared to broadband). With the rapidly declining cost and increasing features of mobile phones, there is potential to use mobile phones as a web based e-learning technology. They can also, for example, be used by students in the classroom as a virtual clicker (to answer questions teachers ask in class), or for games or quizzes by using text messaging interfaced to an instructor's computer or phone. They may be used as an e-reader, or for communicating with other students or teachers.
3. E-Readers. E-Readers are becoming popular as a relatively low-power, inexpensive replacement for traditional textbooks. Their purchase price is declining. One e-reader could contain multiple textbooks or other readings, and the content could be easily updated. E-readers often have high resolution, monochrome screens making them good for reading text but not for multimedia applications. Where books are expensive, hard to find or need to be frequently updated, e-readers may be very useful. It would be easy to upload in-class "handouts" to student e-readers as well. Copyright agreements and revenue sharing would need to be arranged with the book's publisher.

The Kingdom of Bahrain's E-learning Future project is one of the keys to improve the e-learning tools in Bahrain. King Hamad Bin Isa Al-Khalifa, has adopted new educational plan to make all the government schools adopt to e-learning at nationwide level by 2008/2009. This project provides classrooms from Year 1 to Year 12 with new technology workstations like computers with web cams and headphones, smart boards and printers, online learning applications in smart phones.

It is in this line that the paper studied the effectiveness of e-learning project in public school in kingdom of Bahrain, and the educational strategy that aims to take the education to use the newest methods.

Specifically this paper attempted to answer the current status of the E-learning project in public school in the Kingdom of Bahrain, and if there is a significant difference on the perception of the respondents on the current status of the E-learning project in public schools in the KOB. also the problems encountered in implementation of the E-learning project as well as the recommendations offered by the respondents.

The following null Hypothesis was tested



in this study that there is a big difference between the status and level of effectiveness in E-learning, the implementation of programs as needed by the staff training, and engaging the learners with the online materials.

This paper, by and large, contains information about how E-learning project could help Bahrain public school future to have better education in the coming years.

Research Design

The qualitative and quantitative analysis method fulfilled this research. The study is descriptive in nature and made use of Purposive Sampling. The respondents of the study essentially included the Teachers and student from two public Schools and made use of two research instruments, survey and personal interviews. The mean, t- Test, N, standard deviation, mean difference, Sig (2 tailed) and the decision were used in statistical treatment of the study.

Results and Discussions

In terms of staff training statistical inference, the current status of E-learning project showed that teachers strongly agreed with a highest mean 4.92 that staff training is important for teachers as it enhances teaching experience. Also they strongly agree that training helps teachers to be more independent and more competitive with a mean 4.84. Moreover, they strongly agree that staff training is regularly implemented in schools for making teaching and learning process easier with the mean of 4.84. The lowest means are 4.76 and 4.76 that strongly agree the Staff training on E-learning enhances teachers and student efficiency and capabilities and Staff training is regularly implemented in schools for making teaching and learning process easier.

The current status of E-learning project in public school of kingdom of Bahrain in terms of engaging online learners. The Teachers agreed with highest mean of 4.07 and 4.00 that student can find information easily through smart boards, animations, Video casts etc. Also, E-learning improves learner's capabilities in career perspective, The lowest mean of 3.84 and 3.84 agreed that teaching and learning

is easier for tutors & student as its improve communication between them. Students prefer online materials more than papers as it improves learning capabilities. Moreover, they moderately agree with mean 2.69 of that students find difficulties in using online course.

On the other hand, the student strongly agreed with highest mean of 4.66 and 4.58 that E-learning improves learner's capabilities in career perspective and they prefer online materials more than papers as it improve learning capabilities. The lowest mean of 2.83 is moderately agree that student find difficulties in using online course and also they agree with a mean of 4.25 that student can find Information easily through smart board, animations Video casts etc.

The level of effectiveness of E-learning project in public school of kingdom of Bahrain in terms of Staff Training :The teachers feel that staff training facilitates the e-learning process by improving teaching-learning process is very effective with mean of 4.53. Also they feel that staff training is important for teachers as it enhances teaching experience and Staff training helps teachers to be more independent and more competitive is effective with the mean of 4.46 and 4.38.

The level of effectiveness of E-learning project in public school of kingdom of Bahrain in terms of Engaging online learners The Teachers feels that E-learning improves learner's capabilities in career perspective and Teaching and learning is easier for tutors & student as its improve communication between them is effective with mean of 4.23 and 4.07. Also, they feel that the students can find information easily through smart boards, animations Video casts etc is effective with mean 3.92 .moreover the teachers feel that student find difficulties in using online course they rated it 3.23 which mean neither.

On the other hand the students feel that students prefer online materials more than papers as it improve learning capabilities with a mean of 4.33. Also, they feel that E-learning improves learner's capabilities in career perspective is effective with mean of 4.16. Moreover, the students feel that they can



find Information easily through smart board, animations Video casts est. they rated it 4.00 which mean effective. also the student rated ineffective that student find difficulties in using online course with mean of 1.50

Potential Contributions of E- learning Program:

It was noted that some of the important potential contributions of e-learning programs in such educational systems include:

1. Addresses the shortage of teachers, especially science and other specialty teachers. It can do this by providing high quality teaching materials, such as videos, interactive software or information from a “cloud” on the Internet or a local computer. In a distant classroom or video conferencing approach, the number of students who receive live instruction from teachers in specialty subjects can be much larger.
2. Addresses the shortage of learning material such as textbooks for students. The material is made available on hand-held devices such as e-readers or mobile phones. Interactive features such as quizzes or games could improve the level of learning and understanding.
3. Improves the quality of education by providing improved informational content and learning approaches. Interactive, communicative e-learning may promote the development of skills in students (so called “21st Century Skills”) such as critical thinking and problem solving, communication, collaboration and creativity.
4. Provides students information and communications technology skills. The graduates are better equipped to contribute to the knowledge-centered globalized economy of their counties.

Conclusions and Recommendations

The results have identified several significant and interest findings on the current situation regarding the adoption of e-learning by the public schools at Kingdom of the Bahrain. The result indicates that e-learning is essential tools for teaching in the schools these

days. This can be revealed from the different systems that are adopted for the e-learning. The results demonstrate that most of the universities are adopting Blackboard, while the other is adopting WebCT and Moodle. Benefits obtained from the implementation of E-learning in Bahrain are, it improves students’ skills in career perspective, it facilitates the process of teaching and learning and also it improves the quality of education.

There is a presence of awareness the benefit of online educational systems. The study also found that all the materials can be easily available through the internet.

The impact of e-learning

Identifying the actual impact that e-learning programs have had on students, schools and their countries is, however, difficult. Because of the newness and diversity of the programs and the complexity of factors affecting outcome, measuring e-learning’s impact is an emerging science. Nevertheless, some direct and indirect outcomes can be discerned. They are presented below by e-learning’s impacts on students, teaching, the economy and lastly on society.

1. The impact of e-learning on student achievement is complex and mediated by a range of other factors affecting achievement. It is clear, however, that:
 - a. Their effectiveness is closely related to how the technology is used as an educational tool. Students learn best with e-learning when interactively engaged in the content. Using technology can motivate students, particularly underachieving students, to learn.
 - b. Teachers report that tutorials in subjects such as math and science significantly improve student performance. Word processing software improves writing skills.
 - c. Providing technology on its own has little impact on achievement. Substantial effort must be put into infrastructure, teacher training, curriculum development, assessment reform, and formative evaluation.

The effect of e-learning on teachers and



teaching parallels that of students. It includes:

- a. The pedagogy often shifts from a teacher - centered classroom environment to a more learner - centered environment, allowing more effective use of technologies.
- b. Teachers report that they gain confidence, self-esteem and renewed motivation in e-learning environments.
- c. There are significant barriers to teachers in Bahrain that need to be overcome including their lack of ICT skills and ICT-related pedagogical skills.

The potential transformative role of e-learning to develop 21st century skills in many countries may require, thus, integrating e-learning into the system from curriculum development to teacher professional development. Taking advantage of e-learning's potential despite the numerous e-learning models and technologies available, a few key, common elements in successful e-learning programs have emerged.

Case studies and the literature provide clues to what has and has not been successful. For example, countries that successfully integrated a sustainable e-learning have executed a multi-level program from the national policy level to the classroom that included developing e-learning related curriculum, teacher standards, and infrastructure.

There are some recommendations that can benefit Bahrain educational vision such as training teachers to use smart boards, because it is a very important to teach the students, also it draws students attention and also makes them more interactive. Further, the need of additional computer labs that will help the students to find more available computers when they need, so that will speed up the learning process.

Regarding the challenge faced by the users of e-learning, it has been noticed, that the schools are facing challenges with their systems. The top challenges for instructors are relating to the network and technology infrastructures stability and reliability include the network Access/usage problems, system errors and bugs and network/software crashes during classes.

The results indicate that academic staffs are ready in term of knowledge and skills to participate in e-learning. However, they are not provided with the robust and reliable tools and platforms. This confirmed the results that most of the respondents were agreed on that they are facing a challenge with the "Inconsistent of the platforms, tools, and software". In my opinion there are some recommendations that may help the E-learning project such as to cooperate with other companies to support the King Hamad project, so it can be implemented faster and all the students can get the benefit of e-learning, teachers must provide some lessons online, so the students can refer to it if the need to and that will increase the quality of learning, and Government should provide iPad and laptops instead of books and notes. Finally, each school should have a technical support team that is ready to help if there is any problem.

Moreover case studies and the authors' experience indicate that there are some particular activities in e-Learning programs that are remarkably successful and encourage educators to sustain and expand their use of e-learning. The activities that have been found to work well include:

- 1) the full integration of e-learning into the curriculum, textbooks and tests
- 2) a strong program of training teachers to both use and teach with technologies,
- 3) the establishment of a pedagogical foundation for e-learning to assist teachers in integrating it into their teaching
- 4) providing ongoing support for teachers
- 5) educators joining a community of practice.



The level of effectiveness of E-learning project in public school of Bahrain in terms of staff Training& engaging online learners

5. Very Effective	4. Effective	3. Neither	2. Ineffective	1. Very Ineffective
Staff Training	Teachers			
	Mean	D1		
Staff training facilitates the e-learning process by improving teaching-learning process	4.53	Very Effective		
Staff training is regularly implemented in schools for making teaching and learning process easier	4.30	Effective		
Staff training is important for teachers as it enhances teaching experience.	4.46	Effective		
Staff training on E learning enhances teachers and student efficiency and capabilities .	4.30	Effective		
Staff training helps teachers to be move independent and more competitive.	4.38	Effective		
Total	4.39	Effective		

Table 2 : The perception of the respondent on the Level of Effectiveness of E-learning

Engaging online learners	Teachers		Student		Total	Compass mean	Interfrere
	Mean	D1	Mean	D1			
Student prefer online materials more than papers as it improve learning capabilities.	3.69	Effective	4.33	Very Effective	8.02	4.01	Effective
Student find difficulties in using online course.	3.23	Neither	1.50	Ineffective	4.73	2.36	Neither
Teaching and learning is easier for tutors & student as its improve communication between them .	4.07	Effective	3.75	Effective	7.82	3.91	Effective
Student can find Information easily through smart board , animations Video casts etc.	3.92	Effective	4.00	Effective	7.92	3.96	Effective
E-learning improves learner’s capabilities in career perspective.	4.23	Effective	4.16	Effective	8.39	4.19	Effective
Total	3.82	Effective	3.54	Effective	7.36	3.68	Effective

Table 2 show the perception of the respondent on the Level of Effectiveness of E-learning project in public school in Bahrain, with total mean of 3.68.



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