Electronic learning in an IT Web-based course in UAE: a case study

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ABSTRACT

This research aims to investigate the web-based electronic environment and its implication to the quality of Information Technology (IT) learning and teaching in a tertiary educational institution in the United Arab Emirates (UAE). An extensive literature review on e-learning was deliberately tackled in order to better understand the entailment of web-based electronic environment to the quality of IT learners experiences when participating in online education. This study used a qualitative framework based on unstructured interviews, observations and classroom field-notes. The results of this research are compatible with these from the literature review suggesting that learners appreciate the online education in consolidating data collection for learning, although there are issues of low motivation and interaction between learners and learners, learners and educators and facilitators, and learners immersed in online education. The aim of the research is to introduce awareness to Emirati students to use a web-based platform to enhance their knowledge in undergraduate and graduate studies. This research emphasizes the significance of integrating IT course content to the learner satisfaction that is used to assess learning in the online environment that also has a positive impact in online education for future technology transfer to entrepreneurship in UAE.

Key words: Web-based platform, online education, electronic environment, e-learning.

INTRODUCTION

In the era of knowledge-based economy, universities need to reform and redirect their teaching and learning approaches to transfer university research to entrepreneurship. "If one looks around the world the most successful small countries have been those that invested heavily in research and development" (Abu Dhabi Municipality, 2009). UAE is second among Gulf countries to have initiated commercializing research (Abu Dhabi Municipality, 2009). Connecting university research, entrepreneurship, and commercializing innovations is vital for UAE and requires enhanced university education and research to transfer to productivity. The government needs to allocate money for these "transfer options" (Abu Dhabi Municipality, 2009). Using science to enhance productivity could be accomplished through a solid investment in the universities. Abu Dhabi Municipality, (2009) outlines the importance of availability of university researchers in the country who can be "good exponents of technology transfer." UAE educators attempt to redirect teaching and learning methods by employing the electronic education (e-education) in the tertiary educational institutions. It is the engagement of learners (aka students) and educators (aka instructors) in the process of e-learning, which Garrison and Anderson, (2003) considered as the foundation of a quality learning environment. The use of Information Technology (IT) in electronic education contributes to learning environment to enhance interaction, engagement, and motivation to learners and educators. Recent study showed that the level of engagement, interaction, and motivation among learners and educators was low to nonexistent. Howland and Moore (2002) were critical about learner experience in isolation from teaching and learning in the said situation. The impact of technology innovations to universities may vary from an arduous task based upon innovation novelties to a smooth transition from

traditional to online teaching. The connection between learners to learners, learners to educators, learners to facilitators define the flow of teaching and learners reflection as stated by Clayton (2003).

The aim of this paper is to present a better understanding of the participation and asynchronous online interaction that provides a new way of evaluation of the online learning environments. Online education is a new way of evaluating learning environments that use advanced technology to help the learners enhance their knowledge. The electronic environments allow learners to engage, interact and get motivated in learning and to explore course material with no constraints. In online education, the educator becomes a facilitator (Sherry and Wilson, 1997), providing learners with guidance, engagement, and motivation to electronic discussions. Online education helps the learners to generate more and deeper knowledge (Pallof and Pratt, 1999) while in the process of interaction between learners to learners and learners to facilitators. The literature review provides that facilitators play an important role in online discussions to guide and direct learners Ouzts (2006). The online interaction and motivation remain absent from literature review (Anderson, 2005).

This research uses an approach that identifies the quality of the learner knowledge when using a web-based e-learning platform in a web-based IT course. The findings of this investigation provide guidelines for developing an online instructional media with no regard to the pace of the online learning. Garrison and Anderson (2003) defined online education as an innovative method for course content transfer via technologies and it has come out across UAE tertiary educational institutions as a considerable replacement to the traditional classroom instruction. The investigation of learner practices and mechanisms they use in online education is essential for the pedagogical methods the educators and facilitators employ in online discussions (Sims and Salter, 2006). Engagement, interaction, and motivation have not been yet defined in the literature review. Examination of online engagement and interactions is still under investigation seeking to provide an understanding of learner and educator participation in online learning, which depends on the use of web-based platform that is used by learners (Friesen and Anderson, 2004). The use of web-based platform by learners and educators in online environments was reported by Petride (2002) as an efficient way for learners to engage in online learning. Howland and Moore (2002) studied students' perceptions of employing web-based learning. Study results outlined variety of critical issues, which have contributed to learners views of the web-based learning such as the following interactions; i) Learners to learners; ii) Learners to educators; and iii) learners to technology.

Howland and More (2002) investigated learner's views about online education. They concluded that learners with positive perceptions about web-based platform were constructive learners. In contrast to learners with negative views about online learning experience, they had expressed a concern for feedback from educators. Online learning is perceived as cognitive and internally directed learning (Garrison 2004), where learners become responsible to adapt to new course material, new environment, and construction of knowledge, interaction and participation online. Thurmond (2002) investigated learner's satisfaction when employing web-based learning environment and these findings affirmed the importance of the motivational role of technology in the electronic environment. Song's (2004) investigation asserted that the course content is also a motive to foretell satisfaction. Taylor and Maor (2000) indicated that the increased level of usage of web-based platform in e-learning motivates learner's encouragement of self reflection of their knowledge. Chin and Kon (2003) indicated that the quality of educator's instructions define the learning environment. Their work investigated the learning process of learners who use an e-learning platform in their IT courses. However, in UAE there has not yet been published an extensive research about e-education.

RATIONALE

The e-learning is seen as a mechanism that allows tertiary educational institutions to enhance their learning by constructing knowledge and sharing resources through network technologies (Garrison and Anderson, 2003). In alignment with this, the Ministry of Education (MOE) of UAE is in the process of improving their country education by employing policies to establish:

- A solid educational system that ensures a lifelong learning and its connection to the industry.
- An effective process of learning and teaching by using information and communication technologies (ICT).
- Engagement and motivation by learners and educators at the tertiary educational institutions to ensure quality teaching approaches and environments.
- A solid connection between university research, entrepreneurship, and commercialization of innovations (Draganova, 2010).

The integration of IT technologies in UAE tertiary educational institutions also requires the integration of content, instructional, and learning management systems (CILMS) to apply in conjunction with the learner information/management system (LIS)/ (LMS).

The hardware, software, networking that includes Wireless Internet connection, wide area network (WAN), local area network (LAN), management, and technical support systems allow educators and learners to interact freely with no regard to time and place. The e-learning platform in UAE is an innovative instructional and electronic comprehensive learning system. This provides learners and educators with engagement, interaction, and motivation in e-learning IT inquiry.

It is important to investigate UAE IT students who use e-learning platform mechanism, presuming that engagement, participation and interaction are some of the most important characteristics of the e-learning environment. This research investigated the experiences of UAE learners who participated in online IT course using an e-learning platform in a traditional face-to-face classroom.

RELEVANCE OF RESEARCH

The aim of this research is to investigate and analyze learning environments in UAE IT courses where learners and educators use an e-learning platform. It is important for learners and educators to develop a solid web-based platform to use in e-learning to optimize online activities. It is the author's expectation that the findings of this work will inform the leaders in education about the efficacy of the teaching approaches the educators need to employ in electronic learning environments. Effective interaction among learners and educators online is an encouraging learning environment that augments learner satisfaction (Draganova, 2010).

RESEARCH QUESTIONS

Currently, the Ministry of Education in UAE is placing big efforts to rebuild investments in e-learning into favorably constructive experience. This investigation of web-based IT course is important for the e-learning environment in UAE tertiary educational institutions with the purpose to document scholarly investigations about real online learning in UAE educational institutions that has not been published yet. Tertiary educational institutions in UAE are interested in adopting the open web-based platform (WBP) as a form of continuing enhancement rather than to comply with teaching and learning needs.

The author had different experiences along the investigation of web-based platform usage in e-learning. Many educators in the area of IT are not satisfied with the outcomes of e-education for variety of reasons that include the lack of IT web-based platform knowledge and that these electronic teaching experiences are not rewarded. Moreover, the present research aims to answer the following research questions:

- What are the practices of UAE learners who are employing a web-based platform?
- What is UAE learner's perception about the quality of electronic environments in the presence of an open web-based platform to support learning and teaching in an IT electronic environment course as per learner's experience?

There are twofold characteristics of importance of the open web-based platform in this study. One is the practicality of the open e-learning platform that influences learners to maximize their use of web-based learning environment. The second is the way of e-learning platform that was employed into IT course that influences both learner views and learner use of the e-learning platform.

OBJECTIVES OF THE INVESTIGATION

The research aims to assess the quality of UAE tertiary educational institution experiences when using web-based platform to encourage and enhance teaching and learning in an IT course as for: **i)** demographics, **ii)** electronic environment, **iii)** learning experience, and **iv)** learners views. The findings of this research have the meaning of awareness to educators and learners, and university administration to grasp about learners behavior in IT course with a web-base learning environments based upon their views and learning approaches. This study aims to contribute to the literature of online discussions with regard to electronic environments with results to be used to enable university system of UAE to assess their college IT programs based on the findings and the recommendations done in this work.

RESEARCH METHODOLY

The purpose of this research is to investigate both interaction between learners and web-based platform in IT course and online learning to furnish an awareness of and a better comprehension of the electronic environment in the UAE higher education system. The author used qualitative methodology comprised of semi-structured interviews, documents, and direct observations.

Semi-structured interviews were prepared as per Newhouse`s (2001) and Clayton`s (2003) recommendation which consisted of seven questions: i) how comfortable the learners feel when using computers and Internet; ii) how adequate and user friendly are computers to learners; iii) how interactive learners are in online discussion; iv) to what extent educators guide and monitor learners in online learning; v) to what extent web-based platform helps learners to construct satisfactory knowledge and to provide essential feedback; vi) how satisfactory are online activities and course educational materials to learners to support their comprehension online; and vii) to what extent reflection of knowledge encourages and motivates learners to interact online.

The direct observation evidences learner' activities and interaction in traditional classroom. The emphasis of the observation is on learner's interaction with the web-based platform and learner's satisfaction. The interviews were used to collect and consolidate qualitative data obtained by direct observation. Documents about course content, assignments, and student papers were used to gather information to investigate and analyze the use of web-based platform to corroborate already gathered information and witnessed it through interviews and observations.

The participants in the study consisted of 21 first year IT major female students in the College of Information Technology at Zayed University in Dubai. About 50% of the IT course content was taught using the web-based platform and the rest was taught in the traditional face-to-face fashion. A computer-based content management system (CMS) was employed to provide online lectures and instructions to discuss learner's assignments, and to record their grades. The course was a three credit hours course of seventy five minutes for two days per week. The course was a required course for junior students, focused on concepts of IT principles, including hardware, software, operating system, networking, and security. Broadband Internet and mobile phone services and mobile phone were used for the interviews. Data on recorded interviews were transcribed for analysis. Feedback from interviewed students showed great deal of satisfaction in light of their understanding, perceptions, and concerns with e-learning

Information about online learning and interaction was also gathered by conducting observations within a period of one week apart. The second-time observation was extended to reassert whether there had been changes in learners' behavior. Each observation lasted the length of the class of an average of 75 minutes.

During the times of observation, several documents were collected such as course outlines and online discussion messages. The responses obtained by the interviewed learners were analyzed, their sense of meaning identified, and codes were developed to specify educator's support, e.g. facilitatation for online discussion, learners' interaction, knowledge of computer skills, reflection of knowledge construction, and organization. These categories were examined in the light of the research questions by using a constant comparative method (Merriam, 1998).

FINDINGS

Data were analyzed and findings were presented satisfying the major research questions in this work. Findings indicated that the use of web-based platform in IT course helped the learners to participate more vigorously in online learning, however there no clear indication of the level of learners' interaction online. Learners indicated that the interaction between educators and learners is a function of learners' performance data rendered by the web based platform.

Learners reported that they feel comfortable with new technology and that they enjoyed studying IT. Many interviewed learners supported the use of Internet as a valuable resource. There were interviewed learners to have been fully satisfied with the web technology used to improve their learning. Observation Emirati participants appeared to prefer activities that correspond to their favored learning styles and learning approaches. Some of the observed participants were reluctant to rely entirely on the web-based learning, but only to use it for browsing purposes that showed their difficulties with the basic technology skills.

When classrooms were observed, there were differences from the traditional face-to-face environment; the classes used software called Packet Tracer to demonstrate concepts about hardware, software, operating systems, and troubleshooting. Educators facilitated the classroom environment by instructing students on how to navigate the program they were using to simulate concepts and configurations of devices used in the IT course. Learners did not have difficulty to move from one viewed screen to another. The students participating in electronic discussion were continuously asking questions to facilitators and interacting among themselves. The observation in class revealed that course content showed originality in the visual design. The links provided were relevant to the course content. Navigation for the class design was satisfactory.

Seventy eight percent of participants stated: "*The interaction between students to students and between students and instructors are free of limitations with regard to time and place in this type of learning environment*". Two said, "*I wish to have more classes like this IT class*". All participants appear to agree that online instructions were providing tools for students to engage and interact in collaboration with each other, recommending the collaboration to be a viable characteristic of the online environment. Most participants liked the technical support from the facilitator. One learner stated: "*We are glad to receive feedback from our instructor. It seems like the instructor is 24 hours online*".

The investigation findings indicate that the web-based platform is viewed as effective communication tool that educators use to provide learners with feedback. This suggests that for UAE learners, the Web tends to inspire their curiosity and to motivate them to increase their use in the IT course. This explains the wide collaborative mechanism available on the Web. The voice of some participants indicated that they knew the e-mail and the way to use it, however, they would rather use the electronic environment that offers them an effective instructional tool and that "We like to use it for the purpose of this IT class".

Learners were satisfied with the use of IT course content using the web-based platform and had viewed the experience as a positive one. Some learners were observed interacting with different links while simulating different IT concepts. Learners were observed to be glad to see a well organized chapter outline that would help them find the required information for the topic of discussion. Some learners explained that "*the course design was logic and made a great deal of sense to clarify the concepts in the electronic environment conce frustrated and confused*". One interviewed learner said, "*I found the information I*

needed; the course outline was easy to comprehend and comply with". Most learners indicated that, "*The content was explicitly presented online*".

When learners investigated the extent to which reflective studies were encouraged and motivated, learners were observed to have worked on hand-on exercises using the electronic environment to simulate and create activities. They were engaged in researching, investigating, and solving IT problems. Learners were enthusiastic, participants were also observed doing activities with self-direction more than traditional face-to-face classroom learners. When interviewed, one interview learner stated," I enjoy learning in this environment". Other learner said, "*Using the Web makes us more motivated...you can see that everyone is working and asking others for discussion of the activity*". . The vast majority of learners interviewed stated that " *online teaching and learning is suitable, the online IT course is friendlier to us... we can study everywhere with the computer on hand ..."* Another learner interviewed reported, "*We all work in problem solving and talk to each other while doing it ... this kind of learning allows us to interact and share ideas"*, we always have problem to formulate an appropriated response "*.... Participating in online learning encourages our curiosity in reading more about the IT concepts that are beyond regular classes... *". Another learner said that, "75 minutes are not enough *to fully explore IT concept, but stimulate them to continue working on the activities and link to useful information* ".

Impact of electronic environment in IT course

Many web-based platform innovations are developed with the intent of improving e-learning. Effective improvement is noted when learners were using the web-base platform that supports the adaption to innovation. This research has a considerable impact on the theoretical base for tertiary educational institutions to effectively adopt an electronic platform in online learning to improve online education. The use of web-based platform in e-learning depends upon learners' understanding of its implementation for enhancing their IT skills. This implication could be applied within a specific IT course. The full incorporation of web-based platform in IT courses is strongly dependent on course content design that outlines all learning activities for effective online learning such as:

- Inception of a competent and user-friendly environment;
- Comprehensive IT ability to satisfy learner prospects;
- Dissemination of effective and successful instruct of online communication strategies among learners, learners to instructors and facilitators to accent their roles and participation in online learning;
- Strong IT course content that satisfaction of learners' expectations online;
- Engagement and facilitation of IT course activities including participation and interaction online.

A successful use of the web-based platform is considered as an achievement when it is used by all UAE tertiary educational institutions. The web-based platform in online learning contributes to learner engagement, interaction within electronic learning environment and eventually leading to enhanced learning experiences. The problem seems that many IT instructors have minimal experience to properly employ the system. The IT instructors require training on how to comply with complicity of the design of web-based platform, content, and application to IT courses. As usage of web-based platform continues to augment across UAE universities, research is to be conducted for the determination of the following:

- Engagement, motivation, and interaction as a result of the implementation of web-based platform in online learning;
- Facilitation and guidance between learners and facilitators online when using the web-based platform;
- Cultural issues learners may encounter when using the web-based electronic environment;
- Implication of web-based platform to online learning with the extent to improve IT blended teaching.

Jonassen (1991) stated that assessing student learning reflects both process and the product. The assessment on the learning process determines the way the students prepare and complete the learning tasks, work in

groups to finalize the product, or increase knowledge collectively by using the Web-based platform. The process assessment (writing e-portfolios (Barret, 2006), online journals, and student evaluations) aims to investigate the quality of learning. The forms of assessment are twofold: electronic and traditional writing assessment. The first assessment includes electronic testing, and PowerPoint presentation. The traditional writing assessment includes answering short questions on paper and writing a paper-based project.

Barriers for e-learning in UAE

The advantage of electronic learning could be positive provided tertiary educational institutions employ the concept in an efficient way. Information technology plays an important role in online learning and tertiary institutions need to have effective IT infrastructures to provide anticipated positive learning outcomes. Electronic learning barriers were aligned with the literature. Tertiary educational institutions in UAE need not view technology as a final solution to education; they need to employ technology to the benefit of the students and educators.

Online learning has flexibility in location, pace and time and it is used to provide students with well structured online course materials. However, there are some barriers that include computer illiteracy, fear to accept new technology in the online learning process, students' reluctance to use online instructional material, lack of encouragement, motivation, and interaction amongst students to students and students to educators.

LIMITATION TO RESEARCH

Marshall and Rossman (1999) indicated that research proposals usually have limitations as it is shown in the current research. The use of web-based platform in online learning has constraints. The research was limited to university IT courses in UAE and not learners in other subjects. Educator views about the implication of web-based platform and their competence in using the platform could be an extension of the current research. Further study might investigate instructor capability of being IT instructors, and develop criteria for assessment of less competent IT instructors with the purpose to improve themselves.

There were barriers and challenges encountered in this research with regard to online learning using the web-based platform. The investigation in the study was limited to IT courses in one tertiary institution and could not be comprehensive for UAE. Further research could investigate and analyze the factors and quality of online learning in UAE. The quality of IT course had a large emphasis on the IT skills that learners and educators need to develop. Future research may apply to provide additional awareness of the barriers to electronic learning in UAE and the efficacy of online environments.

CONCLUSIONS

This study aims to evaluate the quality of UAE learner experiences when using web-based platform to support learning and teaching in a first year IT course. This research investigated the proposal that an open source web-based platform can deliver to learners and educators new ways to engage learners in a successful online learning. In UAE the e-learning starts to increase its role in all students learning process. The web-based learning becomes demanding in light of the usage of online approaches and experiences created in this process. Students (called learners) in this study faced considerable challenges. The challenges encountered by the UAE learners in using open source web-based platform to support teaching and learning has stemmed a number of issues that can be assessed by the designers of electronic platforms.

The current study in concurrence with available research recommended that quality of e-learning factors was essential characteristic in online environments. Web-based platform designers are in need to implement satisfactory guidelines for the design of electronic environments. The results of this research provide an apprehension of the importance of web-based platform satisfaction by learners and teachers. UAE learners

evidently appreciated multimedia, computers, motivation, interaction, facilitator guidance, and reflective activities offered by online learning environments.

It is essential to provide training and information on the implementation of the criteria for the web-based platforms. In UAE, instructors can't determine the design and tools for the web-based platform that is used online. Therefore, it is critical for the instructors to use the web-based platform as a mechanism of electronic environment in online teaching and learning. This research helps the instructors to use web-based platform in the IT course. The author indicates that the integration of usability characteristics into online environments can benefit learners and teachers in improving the online learning.

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