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Are Students Ready to Adopt E-Learning? A Preliminary E-readiness Study of a University in the Gulf Region

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ABSTRACT

As e-learning gains popularity in many Colleges and Universities worldwide, the evaluation of e-learning readiness is critical for the successful implementation of e-learning as a platform for various learning environments. Success in e-learning can be achieved by understanding the needs as well as the readiness of all stakeholders in a particular e-learning environment. This paper provides a discussion on the students' readiness and their perceptions towards the implementation of e-learning in a university located in the gulf region. The institution under study is in the beginning stages of implementing an e-learning environment for a number of its courses. Students in the College of Information Technology were volunteered to participate in this study. A survey was conducted to identify and analyze key components of e-learning readiness: technology, Internet usage, and general understanding of e-learning and culture at this institution. Study findings indicate that there is a high acceptance level in adopting e-learning in this particular institution. Results also show that a fairly high percentage of students think that e-learning could contribute positively to their learning experience. Finally, e-learning may ultimately help students build confidence in taking charge of their learning and become independent learners.

Keywords: *E-learning, E-readiness, Case Study, Higher Education, Gulf Countries*

1. INTRODUCTION

Advances in networking technologies, multimedia, and the Internet can have a significant impact on teaching and learning in higher education [1, 2, 3]. A review of the scientific literature resulted in numerous definitions of e-learning. For instance, Welsh, Wanberg, Brown, and Simmering [4] defined e-learning as the use of computer network technology, primarily over or through the Internet, to deliver information and instruction to individuals. Holmes and Gardner [5] indicated that e-learning provides us with access to resources that promote learning on an anyplace anytime basis. Rosenberg [6] stated a similar definition referring to e-learning as using internet technologies to deliver various solutions to learners. Arbaugh and Duray [7] stated that e-learning terminates the limitation of time and place, and therefore is more attractive to learners because of its flexibility. While the definitions of e-learning may vary, they all define e-learning in terms of technology and agree that e-learning provides a rich integrated environment. The focus is on a set of basic concepts which include learning, technology and access. Therefore, the principle of e-learning is in using new multimedia technologies and the Internet to improve the availability and quality of learning.

Based on the mode of content delivery, an e-learning environment could be classified in one of the following two categories: (a) distance education: completely online using, web-based technologies and (b) technology mediated learning: where on-campus teaching is complemented with web-based teaching.

Web-based learning (WBL) has become very popular and follows an upwards trend in demand from non-traditional students seeking alternative ways of learning. There are two major classes in WBL systems: *synchronous* and *asynchronous* [8]. Synchronous WBL systems are used to create virtual classroom environments where all students in a class are accessing the same information. Computer Supported Collaborative Work (CSCW) systems, on the other hand, are asynchronous in nature and designed to replace physical classrooms with the virtual ones [9, 10]. Most commonly available WBL systems are asynchronous in nature. In these systems, a web server hosts course contents and other teaching materials. Learners have access to this material at anytime from anywhere using any web-browser.

In technology mediated learning environment, the following factors contribute to an effective online learning system: using relevant and challenging assignments, having a coordinated learning environment system, adequate and timely feedback from instructors, developing rich environments for student-to-student interaction, and flexibility in teaching and learning. In a good technology mediated learning environment system students must be able to read, critically reflect, discuss, argue, generate and present new interpretations, share and exchange information and ideas. Learners are expected to be self motivated and share a responsibility for their learning. Classes are not just about gathering information; they need to be rich learning environments just like traditional classroom.

Traditional as well as completely online learning environments have their own limitations. Some of the limitations of traditional or face to face learning are [11, 12]: (a) students may be uninterested or simply assume an inactive role during the lesson in a way depending completely on the teacher to learn the material, (b) it is impossible for a single teacher to provide all means of learning when teaching a large number of students, and (c) traditional learning heavily depends on repetition/recitation. Some of the limitations of online learning are [13]: (a) lack of access whether it be for

economical or logistics reasons will exclude otherwise eligible students from the course, (b) both students and facilitators must possess a minimum level of computer knowledge in order to function successfully in an online environment, (c) technology is not 100 percent reliable, (d) online learning is an inappropriate learning environment for more dependent learners, (e) online programs will be weakened if its facilitators are not adequately prepared to function in the virtual classroom, (f) oftentimes administrators cannot see beyond the bottom line and look at online programs only as ways to increase revenues and are thus not committed to seeing online programs as a means of providing quality education to people who would otherwise not be able to access it, (g) if a class contains a large number of students (20 or more) then the online learning environment will not be used to its greatest potential, and finally (h) sometimes the curricula of online programs are not carefully considered and developed in order to be successful.

On the other hand, a hybrid approach that combines traditional teaching with online learning could provide the best of both worlds. Many universities around the world are experimenting with online course-building shells, such as Blackboard and WebCT to help create learning communities. Burge [14] argues that in a technology-mediated learning environment instructors are asked to articulate more clearly their goals and methods to the curriculum development team members and students are asked to take more responsibility for their learning.

2. UNITED ARAB EMIRATES READINESS

Online learning depends heavily on digital infrastructure, computers and Internet penetration, and connection costs. All these parameters vary from one Arab country to another. Some Arab counties have made good starts in online learning while others are at the concept stage [15]. The United Arab Emirates (UAE) is one of the most technologically advanced countries in the Gulf region and the Middle East. It has a modern state-of-the-art telecommunication infrastructure. Most residences have access to all kind of communication technologies that are available in western countries [16]. According to the latest survey by the Economist Intelligence Unit on E-Readiness rankings, the UAE has achieved the 32nd rank in the world [17]. The ranking was based on six pillars of e-readiness: connectivity and technology infrastructure, business environment, social and cultural environment, legal environment, government policy and vision and consumer and business adoption. The IT sector grew from $6.9 billion in 2003 to more than $11.4 billion in 2008 and this figure is expected to rise to $14.8 billion in 2011. Furthermore, ESCWA study [16] indicated that it is expected that Abu Dhabi, the capital of the UAE, to be fully connected with fiber optic cables, and the hope is to have 90 percent of UAE homes online by the end of 2011. Abu Dhabi will then become the world's first fully connected capital with eLite-the advanced optical fiber communication network, which uses the fiber to home (FTTH) technology. According to Business Monitor International (BMI), the penetration rate of mobile phone subscribers will climb to 241 subscribers per 100 inhabitants in 2011. This is a high percentage compared to other penetration rates in the world. For example, the penetration rate in Europe is 130-160 subscribers per 100 inhabitants [18]. Internationally, the UAE ranked first worldwide on how expensive the cost of mobile telephone calls are (along with Egypt, Italy, and Hong Kong), and on residential monthly telephone subscription. Even though the cost is the highest in the world, this is not so pessimistic because the UAE is a rich country with an estimated $230 billion GNP and with a $38,900 GNP per capita, ranked 23rd in the world [19].

3. INSTITUTIONAL READINESS

The UAE is a regional leader in Information and Communication Technology (ICT) connectivity. Almost all schools, private and public are wired [20]. Schools and universities administer exams online, as well as other applications. According to an ESCWA study [16] free access to the Internet is available in schools, universities and public libraries. The main objective is to facilitate research collaboration among various entities by providing access to databases. Several institutions use rich multimedia content and high definition video conferencing. The UAE has recently introduced an advanced network for research and education to connect academic and research institutions at high speed. The plan is to connect 28 sites of public universities, colleges, and schools to this network. Zayed University, the institution under study, is among these institutions. Other public and private institutions will be connected to the network at a later stage. This network will facilitate practical communication and collaboration between students, researchers, and institutions.

Institutions must provide adequate and reliable technical infrastructure to support e-learning activities. Zayed University has an excellent technology infrastructure, and seeks to optimize the use of technology in teaching and learning. Zayed University has adopted an outcome-based academic model and is committed to implementing technology-mediated programs to achieve the outcomes outlined in the Academic Program Model (APM) [21]. Zayed University aims to transform its educational setting into an information/knowledge base system. The computer penetration rate and the Internet diffusion at Zayed University are comparable to universities in various developed countries.

Students have access to a wealth of technology made available by Zayed University to assist them in their learning. Actually, Zayed University is known as the laptop university in this region. Moreover, the College of IT students have their own laptop loaded with software used in the courses help them to complete their work independently without having to be on campus after hours.

The IT College has an independent network infrastructure for teaching and research in addition to the university network. This infrastructure allows students to log into Linux servers to use tools needed for programming languages, databases and web development related courses. Students can also use Linux-based communication tools to collaborate with each other and with instructors. Students can access their university email accounts and Blackboard from anywhere at any time using a web client. Students have to be on campus to access all other computing and non-computing resources.

Blackboard Learn+[25] is used to post course related material. Blackboard allows instructors to create online course materials, communicate with their students, do online assessment, and generate course statistics. By using blackboard tools, teachers and students are involved in the learning activities in co-operative and collaborative environment. All University course syllabi are posted online, and an effort is underway to develop course content in a multimedia format.

Furthermore, students are required to build an electronic portfolio with details of their academic accomplishments to fulfill the graduation requirements laid out in the APM. Zayed University provides a strong commitment to the APM which was developed by faculty to emphasize learning as opposed to the traditional lecturing style. This is a shift in the teaching paradigm where the focus is on student learning and where College and University learning outcomes are used to improve both the curriculum as well as teaching and learning practices. Therefore, the APM focuses more on what students can actually do after they graduate rather than what they retain from their courses. Details about the academic program model can be found in the Zayed University website.

A major milestone that was achieved in 2008 by Zayed University is its accreditation by the Middle States Accreditation Board (USA). Moreover, the college of IT submitted the 1st draft of self analysis to ABET and therefore it is in the process to become accreditation from ABET in the near future!

4. CASE STUDY METHODOLOGY

A student's success in an e-learning course often depends on the foundation of his/her readiness. Therefore, prior to implementing any e-learning initiative, the institution must take into careful consideration the readiness of students. In the fall of 2010, a questionnaire was developed and distributed in-class to 67 students taking the Introduction to IT and Systems course (four sections) at the College of IT. This course is being taught as a blended learning approach where face-to-face teaching is accompanied with online material including online curriculum and online exams. The material and exams follow the Cisco IT Essentials course, version 4.1 [22]. Questionnaires were distributed in hard copy to assess the students' views and impressions on e-learning readiness according to the following categories:

- Infrastructure
- Internet use
- Students' computer skills
- Confidence development
- Preferred mode of communication
- Students' perception of e-learning

5. SURVEY ANALYSIS AND RESULTS

5.1 Infrastructure

As e-learning success depends on ICT infrastructure, respondents were asked about their ownership of a computer at home. All students indicated that they own a laptop and/or desktop computer at home. It is to be noted that students are required to purchase a very recent laptop that they are supposed to carry while they are on campus. Each faculty member owns a laptop similar to the ones students own. All laptops come with a three-year replacement schedule.

5.2 Internet Use

One of the good things about e-learning and online courses is that students can take courses from anywhere. This concept results in diversity that might not happen in traditional settings. Therefore, a basic requirement for e-learning is the access and availability of a stable Internet connection as well as a dependable computer. To investigate the readiness along technology access, the students were asked about whether they have access to the Internet at home. Almost all students (99%) indicated that they do have access to the Internet at their place of residence.

In order to understand the effective use of available technology to facilitate student learning, students were asked two questions: The first question was about the ability to remotely access online material from home. About 84 percent of the students responded as having no problems accessing online material remotely. The second question was about the ability to access online material when on campus. About 94 percent of students responded as having no problems accessing online material on campus.

5.3 Technical Skill Development

Students who take an online class need to be self disciplined and very motivated. Students need to be independent learners who can take responsibility for completing assignment on time and meeting deadlines. In order to learn about whether the students' technical skills have improved using e-learning resources, such as posted course material, online resources, availability of electronic library resources, and doing online exams, two questions were asked in this survey section: The first question was whether e-learning has improved the students' technical skills, 93 percent of students responded with agree. The second question was whether e-learning has contributed

positively to students learning experience, 79 percent of students responded with agree.

5.4 Confidence Development

In order to learn about the impact of e-learning on the students confidence in taking charge of their learning and whether using online material improved the students' ability to become independent learners, two questions were asked in this survey: The first question was about the impact of e-learning on the students' ability to become independent, 93 percent of the students responded with agree. The second question was "I feel that e-learning has improved my performance" and close to 85 percent of students responded with agree.

5.5 Preferred Mode of Communication

The culture and values have significant influences on the adaptation of e-learning. The use of e-learning must be taken into account whether or not it fits in the UAE culture context since the UAE culture is different from western cultures. Zayed University has evolved from an all female university to a university that also accepts male student that are located in a separate campus. Male faculty is allowed to teach on either of the two campuses. Due to the local customs, some female students prefer not to interact with male faculty directly and may be more comfortable using other modes of communication. Therefore, one component of this survey consisted of a question to learn about the students preferred mode of communication. Two choices were offered: face to face communication, or virtual. We sorted the answers based on gender. Results show that 78 percent of male students reported that their preferred mode of communication is face to face, followed by 22 percent preferring virtual communication. Results for the female students show that 63 percent of female students prefer face to face communication, followed by 37 percent preferring virtual communication with their instructors. The authors' experience in teaching both traditional courses and completely online courses is that students who have taken online courses are more connected to their professors than in the traditional classroom.

5.6 Students' Perception on E-Learning

The majority of students (78 percent) think that e-learning features contribute positively to their teaching/learning experience and some remarked that e-learning features (essentially lecture notes, announcements, exams, grades) make it easier for them to actually learn. Another question was asked to learn whether the e-learning system enables them to learn more effectively. Results show that 75 percent of the students believe that taking an e-learning course helped them to learn more effectively. The last two questions in this section were to learn about whether students think e-learning is a good idea and about their readiness to take another e-learning course. Survey results show that 81 percent of the students responded with agree to the statement "Using e-learning is a good idea". Furthermore, the majority of the students (78 percent) feel that they are ready to take any e-learning course.

6. SUMMARY AND CONCLUSIONS

Key components of e-learning readiness are technology, human resources, and culture. This study examined the readiness towards the implementation of e-learning at one institution in the Gulf region. Findings show that there is a high level of acceptance towards the adoption of e-learning in this institution. It is evident from the students' feedback that students have no problem accessing the Internet and online material either within the university campus or from their home. Students are mostly content with the available technological infrastructure. Moreover, results show that a fairly high percentage of students think that e-learning can contribute positively to their learning experience. Actually, students felt that e-learning helped them learn more effectively and consequently they feel ready to take any other e-learning course.

The preferred student-teacher mode of communication was face to face followed by virtual communication. However, the percentage for female students was lower than that of male students. This is due to the fact that some female students prefer not to interact with male faculty directly and may be more comfortable using other modes of communication.

The survey results also showed that e-learning has improved students' technical skills and has contributed positively to the students learning experience. Furthermore, e-learning helped students build confidence in taking charge of their learning, become independent learners, and has contributed positively to their learning experience.

REFERENCES

[1] Smith, M.and Winking-Diaz, A. (winter 2004). Increasing Students' Interactivity in an Online Course. The Journal of Interactive Online Learning, Vol. 2, No. 3.

[2] Hodges, C. (Winter 2004). Designing to Motivate: Motivational Techniques to Incorporate in e-learning Experience. The Journal of Interactive Online Learning, Vol. 2, No. 3.

[3] Muhlhauser, M. and Trompler, C.(2002). Learning in the Digital Age: Paving a Smooth Path with Digital Lecture Halls. Proc. HiCSS 35th Hawaii

Intl. Conference, Waikola, HI, Jan. 7-12, 2001. pp. 352-361, IEEE CS press, Los Alamitos, CA.

[4] Welsh, E., Brown, K. and Simmering, M. (2003), E-learning: emerging uses, empirical results and future directions. International Journal of Training and Development, 7(4), 245-258.

[5] Holmes, B. and Gardner, G. (2006). Book: E-Learning Concepts and Practice. TJ International, ISBN: 10-1 4129-1110-9.

[6] Rosenberg, M.J. (2001). E-learning: Strategies for delivering knowledge in the digital age. Boston, MA: McGraw-Hill Professional.

[7] Arbaugh, J., and Duray, R. (2002). Technological and Structure Characteristics, Students Learning and Stisfaction with Web-based Courses: An Exploratory Study of Two On-line MBA Programs. Management Learning, 33(3), 331-348.

[8] Neubauer, M. and Lobel, M. (April 2003). The Learning By Doing eClassroom, Journal of the USDLA, Vol. 17, No. 2, pp. 5-17.

[9] Marsic, A. Krebs, B. Dorohonceanu, and Tremaine, M. (2002). Designing and Examining PC to Palm Collaboration. In Proceedings of the 35th Annual Hawaii International Conference on System Sciences (HICSS'02).

[10] Litiu, R.and Prakash, A. (December 2000). Developing Adaptive Groupware Applications Using a Mobile Component Framework. In Proceedings of the ACM 2000 Conference on Computer Supported Cooperative Work (CSCW 2000), Philadelphia, PA.

[11] Assari, M. (2005). Adult Learners and E-Learning Readiness: A Case Study. 2005 European College Teaching and Learning Conference, June 13-17, 2005, pp. 1-5.

[12] Tucker, J. and Gentry, G. (2009). Developing an E-Learning Strategy in Higher Education. Society for Information Technology and Teacher Education, March 2-6, 2009, Charleston SC, USA, pp. 2702-2707.

[13] Weaknesses of Online Learning (2011). Illinois Online Networking: Weaknesses of Online Learning. Retrieved on July 8, 2011 from http://www.ion.uillinois.edu/resources/tutorials/overview/weaknesses.asp

[14] Bruckner, M., and Tetiwat, O. (2010). Evaluation of E-Learning Readiness: A Study of Information Behavior of University Students. Retrieved on July 10, 2011 from http://www.gelbukh.com/polibits/2009_40/40_12.pdf.

[15] Guessoum, N (2011). Online Learning on the Arab World. Retrieved on July 10, 2011 from http://www.elearning.org/subpage.cfm?section=articles&article=40-1Kinshuk, and Young, A. (April 2003). Web-based asynchronous synchronous environment for online learning. Journal of the USDLA.

[16] ESCWA (2011). National Profile of the Information Society in the United Arab Emirates. Retrieved on July 8, 2011 from http://www.escwa.un.org/wsis/reports/docs/UAE-09-E.pdf.

[17] The Economist Intelligent Unit (2010). Digital Economy Rankings 2010 Beyond-Readiness. Retrieved on July 8, 2011 from http://www-935.ibm.com/services/us/gbs/bus/html/ibv-digitaleconomy2010.html.

[18] Gulf News (2011). UAE's mobile phone growth may hit its peak next year. Retrieved on July 8, 2011 from http://gulfnews.com/business/features/uae-s-mobile-phone-growth-may-hit-its-peak-next-year-1.658434.

[19] The world Fact Book (2011). Retrieved on July 12, 2011 from https://www.cia.gov/library/publications/the-world-factbook/geos/ae.html.

[20] Telecommunication Regularity authority (2011). Retrieved on July 8, 2011 from http://www.tra.gov.ae/ICT_sector_uae_php.

[21] Zayed University Academic Program Model (2011). URL: http://www.zu.ac.ae.

[22] Cisco Networking Academy (2010). http://www.cisco.com/web/learning/netacad/index.html.

[23] Al-Doub, E., Goodwin, R., Al-Hunaiyyan, A. (2008). Student's Attitudes Toward E-learning in Kuwait's Higher Education Institutions. 16th International Conference on Computers in Education. Taipei, Taiwan. http://www.apsce.net/icce2008/.

[24] Aydin, C. H., and Tasci, D., 2005. Measuring Readiness for E-Learning: Reflections from an

Emerging Country. Educational Technology and Society, Vol. 8, No 4, pp. 244-257.

[25] Blackboard Learn+, 2011. http://www.blackboard.com/Platforms/Learn/Overview.aspx.

[26] Bui, X., Sankaran, S., Sabastian, M. (2003). A Framework for Measuring National E-Readiness. International Electronic Business, Vol. 1, No.1.

[27] Corrocher, N., and Ordanini, A. (2002). Measuring the Digital Divide: A Framework for the Analysis of Cross-country differences. Journal of Information Technology, Vol (17), pp. 9-19.

[28] Holmes, B. and Gardner, J. (2006). E-learning: Concepts and practice. Thousand Oaks, CA: Sage Publishing.

[29] Lopes, C. (2007). Evaluating E-Learning Readiness in a Health Sciences Higher Education Institution. IADIS International Conference E-Learning, pp. 59-67.

[30] Mercado, C. (2008). Readiness Assessment Tool for An eLearning Environment Implementation. Fifth International conference on eLearning for Knowledge-Based Society, December 11-12, 2008, Bangkok, Thailand, pp. 1-11.

[31] Oliver, R. (2001). Assuring the Quality of Online Learning in Australian Higher Education. Proceedings of Moving Online II Conference, pp. 222-231.

[32] Paulini, A., and Oppenheimer, K. The Do's and Don'ts of E-Learning. Franchising World. July/August, pp. 53.

[33] Saunbang, p., and Petocz, p. (2006). E-Learning in Thailand: an analysis and Case Study. International Journal on E-Learning, 5(3), 415-438.

[34] Servage, L. (2005). Strategizing for workplace e-learning: some critical considerations. Journal of Workplace Learning, 17(5/6), 304-317. Retrieved on July 8, 2011, from ProQuest Education Journals database. (DocumentID: 896750491).

[35] Wolcott, P., and Press, L. (2001). A Framework for Assessing the Global Diffusion of the Internet. Journal of the Association for Information systems, Vol 2, No. 6.

[36] Zaid, A., Khairala, F., and Al-Rashid, W. (2007). Assessing E-Readiness in the Arab Countries: Perceptions Towards ICT Environment in Public Organizations in the State of Kuwait. The Electronic Journal of E-Government, Vol 5, Issue 1, pp. 77-86.