



The Impact of E-Learning System on Conventional Teaching Environment

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Abstract

The role of Information and Communication Technology (ICT) is increasingly visible and has many applications in our routines. One such application that currently has profound impact is e-learning systems. The growing potential of online educational systems and their robust utilities are leading to a re-examination of conventional teaching-learning systems all around the world. In this context, this study inquires into learners' and instructors' attitudes towards e-learning systems in a conventional teaching-learning environment, focusing on a few institutes of higher education operating under the approval of the UAE's Ministry of Higher Education. Based on the survey data generated from 66 instructors and 96 students, the educational institutions should move to adopt e-learning systems along with their conventional teaching learning systems to a greater degree than is currently the case, since such systems have wide acceptance both from instructors and students, expanding e-learning opportunities may be a way to maintain higher levels of quality in the teaching-learning exercise. Although many institutions are moving towards more e-learning, it should be given more emphasis. In particular, educational institutions should recruit instructors with high levels of ICT ability in order to encourage an environment more conducive to the migration of the teaching-learning system in the direction of e-learning systems; the high level of student acceptance of instructor-assisted learning confirms the importance of instructors in the teaching-learning environment as a whole. However, educational institutions should work toward finding the optimal mix of instructor-assisted and e-learning-based teaching-learning environments, such an optimal mix will contribute significantly to maintaining quality in the institutes of higher education. The instructors in various educational institutions should incorporate a greater mix of multimedia instruction in their pedagogy, since there is resounding acceptance of the use of multimedia systems. From the students' perspective, institutions should take steps to develop multimedia presentations that can enhance the quality of the teaching-learning environment as a whole. such a mix also presents good business opportunities for software & multimedia. Educational institutions whose instructors have lower levels of ICT expertise should implement training on ICT for such instructors in order to enable them to face the challenges of the future, particularly as they related to increased use of e-learning-based systems. Thus, this study opens up an avenue for discussing the implications and possible adoption of e-learning systems in the conventional teaching-learning setting currently employed in the UAE.

1. Introduction

The new millennium has emphasized the vital role of information technology and telecommunications in business development. The past decade has witnessed spectacular improvements in the computational capabilities of calculators and computers and, more recently, thrilling advances in their communication capabilities. The marriage of these two functions—computation and communication—has produced powerful information technology tools that have important implications for education. IT, and within this broader designation, its educational, instructional, and learning technology applications, facilitate collaboration, interactive learning, and new pedagogical approaches that can lead to changes in the way students and faculty interact. The rapid pace of change in information technology increasingly impacts the creation, publication, and dissemination of educational materials. Regardless of the rapidity or direction of change offered by revolutionary new technologies, the true challenge for developing guiding principles for their appropriate implementation lies in the inclusion of all students at all types of academic institutions, with secure and tangible links to the public and private sectors.



Personal attitudes are a major factor in individual use of information technology, so understanding users' attitudes toward electronic learning facilitates the creation of appropriate electronic learning environments for teaching and learning. However, methods of assessing electronic learning cannot be evaluated using a single linear methodology, so there is a need to build a multidisciplinary approach in order to survey individual attitudes toward electronic learning (Liaw, 2000; Liaw, in press; Wang, 2003).

The measurement of e-learning must incorporate different aspects of user perceptions to form a useful diagnostic instrument (Wang, 2003). In addition, from the point of view of Liaw (2000), constructing user attitudes toward computer and Internet technologies can be divided into three major kinds of measurements: affective, cognitive, and behavioral. Affective measurements (such as perceived enjoyment) and cognitive measurements (such as perceived self-efficacy and perceived usefulness) have a positive effect on behavioral measurements, such as the intention to use e-learning as a teaching or learning tool (Liaw & Huang, 2003).

The past decade has witnessed spectacular improvements in the computational capabilities of calculators and computers, and more recently, inspiring advances in their communication capabilities. The marriage of these two functional modes—computation and communication—has produced powerful information technology tools that have important implications for undergraduates, registrars, graduates, and many other academic areas. The computational and communication capabilities of information technology offer great promise for supporting continual improvements in all aspects of the learning process and underscore the need for credible research into the practical benefits and limitations of teaching and learning in settings enhanced by information technology Zemsky, R. & Massy(2004). Information technology now makes it possible for learning and teaching to take place in new settings, inspiring and facilitating lifelong education. Given the importance of individuals in predicting and improving the use of e-learning technologies, information technology has become an urgent necessity in United Arab Emirates Universities and colleges. Thus, the goals of this study are:

- To determine the willingness of instructors to adopt e-learning tools
- To analyze the impact of instructors' cognitive factors, affective factors and the perceived quality of e-learning systems on their willingness to use such systems
- To determine the relationship between the instructors' willingness to use e-learning systems and their perception of the quality of such systems
- To measure students' perception of the quality of e-learning tools
- To define the students' preferences for assisted instructor tools in e-learning systems
- To define the students preferences for multimedia tools in e-learning systems

Literature Review

People learn in different ways. They tend to remember 10 percent of what they read, 20 percent of what they hear, 30 percent of what they see, 50 percent of what they hear and see, 70 percent of what they discuss with others, 80 percent of what they try to do, and 95 percent of what they teach to others (Bush, M., 1997). Thus, we distinguish between learning and education, since learning is a process that brings together cognitive, emotional, and environmental influences and experiences for acquiring, enhancing, or making changes in one's knowledge, skills, values, and world views (Ormrod, 1995), while education is the learning of knowledge, information and skills during the course of life. People learn from their experience, while education is given and govern by specialized institutions like colleges, universities, and schools.

E-learning. From this standpoint, the definition of e-learning is "pedagogy empowered by digital technology" (Nichols, M., 2008, p.17). Electronic learning, sometimes called distance learning, is a planned teaching/learning experience that uses a wide spectrum of technologies—mainly Internet or computer-based—to reach learners. In this paper, we concentrate on e-learning in terms of formal education content and initiatives, sometimes classified as the fifth generation of learning. In 1981, the Japanese announced a program of research on the fifth generation of computing systems (FGCS) that would integrate advances in the integration of database systems, artificial intelligence, and humans in a



new range of computers that are closer to people in their communication and knowledge-processing capabilities (Gaines, 1984). E-learning has been introduced at many universities and colleges as one strategy with which to transform teaching and learning. The appropriate use of information and communication technologies at many universities and colleges reflects a blended approach to teaching and learning, with asynchronous online communication tools, such as email or online discussion forums forming an essential part.

Attitudes toward e-learning (Liaw, Huang & Chen, 2007).

Many institutions of higher education have turned to e-learning for authentic learning and to enhance learning performance, while other schools are jumping on the bandwagon simply because they do not want to be left behind). When instructors exhibit more positive attitudes toward e-learning, then they have more behavioral intentions to use it. Indeed, no matter how advanced or capable a technology, its effective implementation depends on users' having a positive attitude toward it. Thus, as individuals become more positive toward e-learning, they will have greater behavioral intention to use it. Although the concept of attitude toward computers has gained recognition as a critical determinant in the use and acceptance of computer technology, there is no single, universally accepted definition of the computer attitude construct (Liaw, 2002). Previous research (Triandis, 1971) has suggested that attitude consists of affective, cognitive, and behavioral components: the affective component is the emotion or feeling, which includes statements of like or dislike toward certain objects; the cognitive component refers to statements of beliefs; and the behavioral component is what an individual actually does or intends to do (Liaw, 2002). The three-tier technology use model (3TUM) is a conceptual approach for investigating user perceptions toward information and Internet technologies. The original concept of 3-TUM was derived from TAM (the Technology Acceptance Model), a popular approach for surveying user attitudes of information technologies (Davis, Bagozzi & Warsaw, 1989). TAM suggests that two specific behavioral beliefs, perceived ease of use (EOU) and perceived usefulness (U), determine an individual's behavioral intention to use technologies. Based on the 3-TUM (Fig. 2), individual attitudes toward information technology form three different tiers: the tier of individual experience and system quality, the affective and cognitive tier, and the behavioral intention tier Wang, S. (2003). The tier of individual experience and system quality evaluates how individual experience and system quality influence individual affective and cognitive components. The affective and cognitive tier investigates how affective and cognitive components change individual behavioral intentions. In the behavioral intention tier, the 3-TUM predicts individual behavioral intentions to use technology for a particular purpose (e.g., search engines as learning-assistance tools or computers).

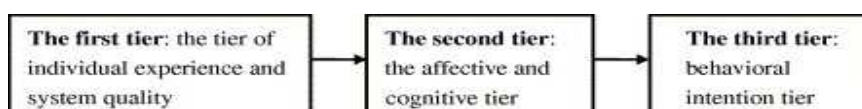


Fig.2: the three-tier use model (3-TUM).
Source: (Liaw, Huang & Chen, 2007)

Research Hypotheses

- H1: Faculty members' willingness to use e-learning systems does not depend on their perception of the quality of such systems, supported by cognitive and affective aspects of using such systems.
- H2: Faculty members' willingness to use e-learning systems does not differ with their perception of the quality of such systems.
- H3: Students' perception of the quality of e-learning systems does not differ with their liking for the instructor assisting the learning in such systems.



Research Methodology and Sampling Details

The survey for this study was conducted in two major institutions of higher education in UAE. The valid sample size of survey respondents was 162, comprised of 96 students and 66 faculty members.

Research Findings

- The instructors who participated in the present study showed high levels of willingness to adopt e-learning systems in their pedagogy. In this context, their willingness to adopt e-learning systems is strongly affected by three major factors: cognitive factors, affective factors and perceived quality. A significant level of dependency was also noted between the instructors' willingness to adopt e-learning systems and their cognitive measurements and perception of the quality of such systems.
- A significant level of association could be found between the Instructors' willingness to use e-learning systems and their perception of the quality of such systems. More specifically, this kind of association exists among those who have higher levels of perceived quality of e-learning systems. Thus, it's also found that the instructors with low levels of perceived quality of e-learning systems have low levels of willingness to use them.
- A significant level of association was found between the students' preference for instructor-assisted learning and their perception of the quality of e-learning systems. More specifically, this kind of association exists among those students who have higher levels of preference for instructor-assisted learning, so e-learning systems can be an excellent supplementary tool for conventional teaching pedagogy, although they may not totally replace more conventional methods of teaching and learning.
- Both the instructors and the students showed high levels of perceived quality of e-learning systems and willingness to use e-learning systems. In fact, e-learning systems have higher levels of operational acceptance with the students and instructors who have higher levels of perceived quality on such systems.
- Less than 5 percent of students expressed a dislike of e-learning tools, while 95 percent accepted them.

Implications and Conclusion

Based on our findings, we see several implications of the study and can make several suggestions related to its findings.

- Educational institutions should move to adopt e-learning systems along with their conventional teaching learning systems to a greater degree than is currently the case. Since such systems have wide acceptance both from instructors and students, expanding e-learning opportunities may be a way to maintain higher levels of quality in the teaching-learning exercise.
- Although many institutions are moving towards more e-learning, it should be given more emphasis. In particular, educational institutions should recruit instructors with high levels of ICT (Information and Communication Technology) ability in order to encourage an environment more conducive to the migration of the teaching-learning system in the direction of e-learning systems.
- The high level of student acceptance of instructor-assisted learning confirms the importance of instructors in the teaching-learning environment as a whole. However, educational institutions should work toward finding the optimal mix of instructor-assisted and e-learning-based teaching-learning environments. Such an optimal mix will contribute significantly to maintaining quality in the institutes of higher education..
- Educational institutions whose instructors have lower levels of ICT expertise should implement training on ICT for such instructors in order to enable them to face the challenges of the future, particularly as they related to increased use of e-learning-based systems.



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