Learning with Technology: Using Discussion Forums to Augment a Traditional-Style Class

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ABSTRACT

There is considerable evidence that using technology as an instructional tool improves student learning and educational outcomes (Hanna & de Nooy, 2003). In developing countries, pre-university education focuses on memorization, although meting the mission of AUST requires students to manage technology and to think more independently. This study examines the impact of incorporating a discussion forum on the achievement of university students enrolled in a Distance Education course, Educational Technology Department at Ajman University of Science and Technology (AUST), United Arab Emirates. The study was conducted with 34 students divided into two sections, one a treatment group and one a control group. Both sections were exposed to the same teaching techniques covering the same course material on Distance Education. Four weeks after the course had commenced they were given the same teacher constructed test. However, after the first test, the treated group was exposed to the use of a World Wide Web (WWW) interactive discussion forum. At the end of the semester-long treatment period, a final test was given to both groups, and student scores were analyzed for any statistically significant difference. Questionnaires and interviews were also conducted to see if students had enjoyed the experience. The results of the study indicated that students in both groups showed learning improvement over the course of one semester, but discussion forums had an obvious impact on student achievement and attitude in distance learning/ educational technology course.

Keywords

Computer mediated-communications, Blended learning, Student performance, Technology integration, Collaborative learning

Introduction

In view of the fact that "internet connections are only as useful as the people teaching with them" (Rivero, 2006), today, many educational institutions use web-based learning environments to deliver materials to, and communicate with, their students. These web-based learning environments could be ready-made products such as Blackboard or WebCT or internally developed personalized systems. In AUST's case (Ajman University of Science and Technology), United Arab Emirates, an electronic, ready-made Learning management system was still in a trial period and thus it was on the university's Local Area Network (intranet) rather than the internet. Thus, students could not access it from their dormitories or homes. Consequently, we created a substitute or at least some form of support to the existing Learning Management Systems, which resulted in our internally developed and personalized Web-based discussion forum (figure 1).

Figure 1. Main page of the AUST Web-based forum

Rationale

The use of this technology is not new in highly developed and technically sophisticated countries; however, the use of *E*-technologies as a means of instruction in education in many developing countries is "still *in its* infancy". Emphasis in *pre-university* education was heavily based on rote learning, Memorization based-assessment method resulting in less creativi*y* and individuality among students in a teacher-centred, traditional behaviourist stimulus-*response learning model.*

The problem with *traditional models* is that they can help students achieve only a fraction of the quality education they need in an informational age. On the other hand, the main mission of higher educational institutions in general and AUST in particular, is to educate students for the telecommunications/information technology revolution age. Today, students have to develop the competencies they need to live, learn and work successfully in a rapidly changing society. Therefore, this requires a shift to the *constructivist information processing model* as a replacement of, or at least as a support to the traditional learning / teaching model. Martin (2003) guaranteed that "as theories of learning have developed, so has the model of the learner, from a model of an empty pot to be filled with knowledge…through a behaviourist one of the learner as enthusiastic rat to be rewarded for displaying remembered behaviour or knowledge, to a constructivist model of an individual creating and re-creating his/her map of existence and planning/re-planning the way through it". (p. 5)

Research findings revealed that for the constructivist learning "…the teacher, as facilitator, is responsible for process design, creating the climate for learning and making resources available" (Dewald, 2003: 48). Alternatively, in the *traditional* approach, the roles of authoritarian teacher and passive learners still exist. The stress is on the teacher's role; the teacher must do all the work of analyzing and explaining the tasks through a structured sequence as the leading vehicle for learning (Tam, 2000).

It is believed that technologies that facilitate resources can be used effectively to promote lifelong learning, and support learner-centred approaches by being vastly available. However, *in* spite of its remarkable contribution to humanities as a whole, specifically to developing countries, technology is also "…creating new gaps within societies as well as between developed and developing countries, particularly through the so-called "digital divide". Now more than ever before, we need to achieve a more equitable sharing of knowledge and a smoother transfer of technology. Universities have a considerable role to play in bridging these gaps but they must do so within a context that is shifting as we speak" (UNESCO, 2001).

So, the institutions have to be committed to ensure that technology is used effectively to enhance learning/ teaching processes. Eventually, good online teaching according to Chickering and Ehrmann (1996) "…needs to eschew materials that are simply didactic, and search instead for those that are interactive, problem-orientated, relevant to real world issues and that evoke student motivation" (p.7).

Therefore, this study is a part of AUST's efforts in employing a variety of web communication technologies to aid passive traditional *"hush and listen"* learners, to be an active part of the knowledge acquisition and knowledge construction processes, and to detect their perceptions of using supplemental web- based instruction. It also examines ways in which teachers continue re-examining their traditional teaching strategies in light of new possibilities offered by web-based instruction.

Goals and Research Questions

The main goal of this study was to determine whether students who were enrolled in the class using online discussion forums significantly increased their distance learning knowledge and skills and contributes to positive student attitudes.

For this reason, statistical analysis of data collected in this study was performed to seek answers for the following research questions:
1. Do the pre-test scores for the treatment group and the control group show significant differences at the starting point of the study?

2. Do overall distance learning knowledge and skills increase, from the pre-test to the post-test, among the treatment group and the control group?
3. Does the integration of the discussion forum as an interactive instructional tool have a positive effect on students' attitudes?

Literature Review

E-learning and Learner/ Instructor

In his article "The Emerging Online Life of the Digital Native," Prensky (2004) compared the internet generation to the generation that grew up in the age before the internet. He concluded that today's digital information-communication-technology is an important part of a student's life; therefore "our students have changed radically. Today's students are no longer the people our educational system was designed to teach." The following chart (1) summarizes his article to illustrate the unique characteristics of digital natives.
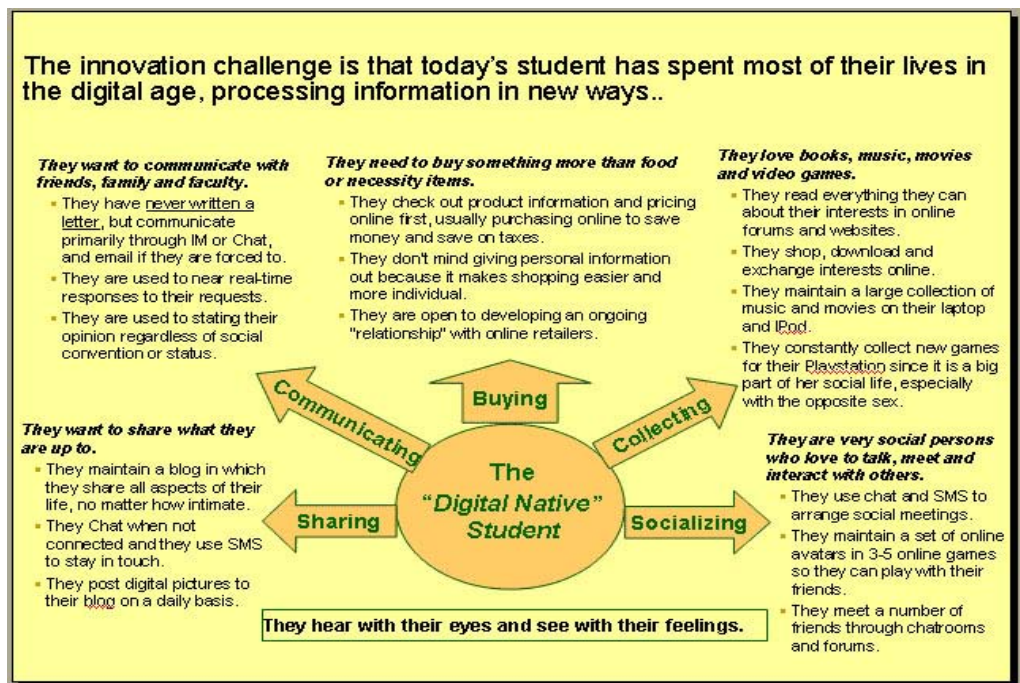

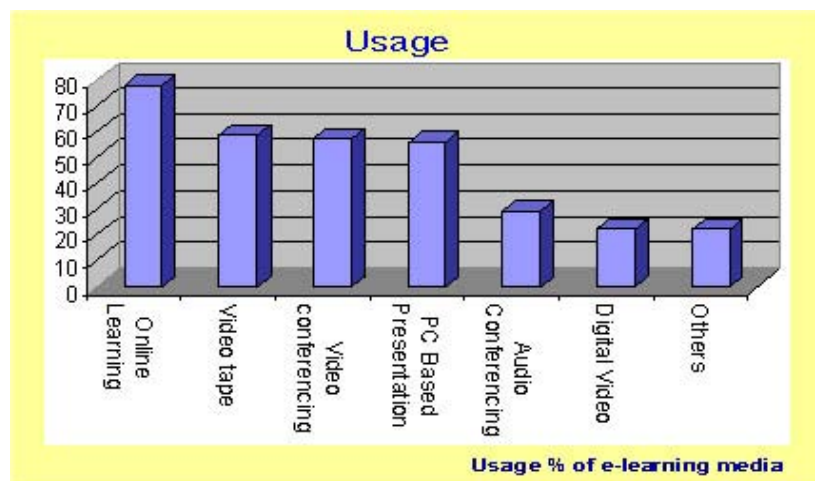*Chart 1.* Adopted from Prensky as cited by International Turnkey Systems

Chart 2. Adopted from International Data Corporation (2003) as cited by International Turnkey Systems

A review of related literature revealed substantial research indicating that online technology is the most used by today's students as illustrated in chart 2:

The key lessons learned from previous studies have led us to believe that online teaching and learning are not perfect "yet" (Alvarez, 2005). Alvarez stated that, "the online environment is not the ideal setting for all types of learning. Classrooms are not perfect either..." E-learning is not a 'one size fits all' magical solution that can resolve any educational problem and there are definitely some disadvantages to this type of learning. Consequently, there is no way to guarantee that 100% of the e-learning content will reach 100% of the intended audience. According to Shepherd (2003),"e-learning can be used on a just-in-case basis, but it can also be deployed just-in-time". Therefore, there is an urgent need to clearly understand what the right circumstances are and how e-learning can help to produce the best results.

Discussion Forums

According to Kearsley (2000), the most significant applications of computer-mediated communication in E-learning environments are discussion forums. Web discussion forums provide a way for students to extend the classroom discussions. It provides better cognitive and exploratory learning (Haggerty et al., 2001), increased student-to-student discussion and cooperation (Kassop, 2003; Stodel et al. 2006), superior learner empowerment (Kassop, 2003), and upgraded critical thinking skills (Shapley, 2000; Collison et al., 2000).

The literature reviewed provided valuable knowledge regarding the effect of discussion forums and "e-technology" on learning outcomes. However, judging the efficacy of student learning based on learner feedback in online learning is particularly difficult because of the following:

- The literature is limited and the overwhelming majority of it focuses on American students (Eom &Wen (2006), Wheeler (2006), and Young (2006). However, the difference between reported computer usages between different racial/ethnic groups continues to intensify as reported by Sax, et al. (2004). Accordingly, "there is a strong possibility that e-learners in Taiwan or Hong Kong have a different idea about learner needs, success, and satisfaction than e-learners in the American Southwest who attend a local community college." (Tomasson 2007)
- In view of the fact that the emergence of online learning in the late 1990s created many unique challenges for the teaching/learning process, much of the online learning research had been done in the late 1990s and early 2000s. Undoubtedly, due to the enormous expansion of online learning, this research is considered to be somewhat outdated.

According to Parson (1998), discussion forums can be ineffective for the teaching/learning process and thus can end up as an open-ended, non-productive learning activity. Researchers emphasized the need of knowing how the new technology can affect learning outcomes when it is used by different types of learners under different circumstances. It is obvious that just making discussion forums available does not result in effective use. In several cases, forums were created with eagerness but ended up in a digital disappointment. Oblinger (2003) gave the following elaboration on this problem:

- Making use of Web-based communication technologies in the teaching/learning process does not guarantee critical thinking and effective learning and teaching.
- The accessibility of music/video, freeware, and the ability of file sharing, does not mean that "digital work is everybody's property".

Accordingly, further inquiry is required to establish the extent to which research conducted on other continents of the world is applicable to the non-traditional American student. Ajman University of Science and Technology (AUST) believe that its goal as an educational institute is to stay as "an organization that is constantly making its future rather than defending its past." (Hamel &. Valikangas, 2003, p. 54). Therefore, AUST is taking into consideration the need for continuous enhancement of its educational practice in order to prepare students for the intuitive changes that such technology produces.

The Study

Research Design

The purpose of this study was to determine the effects of using discussion forum on the achievement of the educational technology freshman students. The study was based on a quasi-experimental design; the non-equivalent-groups design (Campbell & Stanley, 1996). The independent variable was the incorporation of discussion forum into the instruction, while the level of student achievement on the post-test was the dependent variable of the experiment.

Methodology

The research study was implanted in a first year level educational technology course (580122, Introduction to distance education). Having an actual course for the Web-based discussion forum research provided a normal environment for the study as shown in figure 2.

Figure 2. Distance learning course on a Web-based forum

The study was conducted with 34 students from the Department of Educational Technology, AUST. The study was designed so that there was a treatment group to whom the discussion forum was administered and a control group to whom the discussion forum was not administered. The control group used the textbook and other course materials that had been previously adopted for use in this course, while the treatment group used the discussion forum. The design of web-based discussion forum was based on the John Keller's ARCS Model (1987). According to this model there are four steps for endorsing and supporting motivation in the learning process: Attention, Relevance, Confidence, and Satisfaction. Based on this, and in order to motivate students to participate, students were asked to respond to a weekly topic in order to gain 5% for participation. Both groups were tested their first test on the 4th week of the 2nd semester of 2005, prior to the discussion forum's introduction, and a final at the end of semester on the 16th week. Therefore, the first test for both the treatment group and the control group was considered as pre-test and the final exam considered as a post-test.

Analysis was conducted only for students who remained in the study from pre- through post-testing and took their test on the assigned date. A total of 4 students were excluded (that is, about 2 students per section), primarily because they were absent on the days of the tests.

Instrumentation

Two instruments were used in this study:

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- Multiple Choice Tests
- Student Questionnaire and Interview

Multiple Choice Tests:

In order to rule out any effects caused by a teacher on a course taught by two different teachers, the same teacher taught both treatment and control classes. The tests were instructor-made, paper and pencil, objective, multiple-choice tests. The instructor is experienced and has been teaching this course for the last four years. Therefore, through an item analysis at the end of the term, and after the deletion of the questions that are missed by top-level students, a pool of reliable questions was available.

Since the testing purpose was to evaluate the students' understanding of the main concepts and ability to understand or perform specific competencies, the pre-test and a post-test were constructed. Each of the two tests contained a set of 50 multiple choice questions. The questions had five choice answers rather than four with only one correct answer in order to reduce the likelihood of guessing the correct answer. In addition to answer choices such as "all of above" or "none of the above" or "both a & b" were eliminated for being confusing and misleading. The purpose of this procedure of setting up the questions is to make the correct answers hard to recognize unless the student truly understands the material. The test was also validated using experts' judgment from the Faculty of Education and Basic Sciences, AUST. Their comments, advice and recommendations were taken into consideration.

Student Questionnaire and Interview:

The questionnaire included five questions around the attitudinal aspect of the students' experience in using the web discussion learning method to support face-to-face accomplishments. The questions and the percentages of responses yes or no to each are shown in table 1. Results were analyzed to see if students enjoyed using the discussion forum, and whether they think that the web interaction with peers and instructors enhanced their learning. The open-ended questions were mainly for getting more elaboration on the students' answers for the questionnaire.

Table 1. Learning experience questions and responses

Question posed	Yes	No	Elaborate(optional)
Is combining face-to-face classes with discussion forums potentially useful?	93%	7%	
Does 24/7 instead of 3 hrs/ week class interactivity support learning?	86%	14%	
Is there anything that you currently do in face-to-face classes that might be better done online?	86%	14%	
Can discussion forums be an alternative to face-to-face classes?	33%	67%	
Would you like to participate in a similar exercise in the future?	100%	0%	

Although it was not compulsory to explain or elaborate on student's own answers, students were encouraged to do so. They were assured that giving reasons for answering "Yes" or "No" will give greater weight to their answers. Accordingly, 86% of the students chose to explain their answer.

Students answering "yes" to this to questions 1, 2, 3 and 5 gave the following reasons for supporting the web discussion forum:
- Reading different replies can promote new ways of thinking and help generate new ideas.
- Assist students in developing language skills.
- Offers wide range of views and ideas, generate course-related questions and feedback.
- Prepared students to work together in class, to discuss and evaluate each other's work.
- More intellectual interactions and connections, lead to more possibilities of shared knowledge, understanding, thinking and reflection.
- Acquiring help quickly and easily makes learning accessible
- Reinforce the skills taught/learned in a face-to-face setting.
- Can encourage shy students to feel more confident

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- Gives a chance for all students to participate, while class discussion is short and limited to few students

The following are a summary of reasons for answering "No" to questions 1, 2, 3 and 5:
- Students found themselves struggling against time consuming, endless, addictive, distracting discussions and debates.

In response to question 4, a great bulk of respondents (67%) prefer to use the discussion forum as a support to the traditional face- to- face education. According to them, an online instruction is not out to replace face-to-face instruction but to enhance it; hence, they answered "no". Moreover, respondents specifically mentioned the positive features found in the traditional classroom environment that virtual learning environments may *lack*. These features include:
- The visual & social communication cues
- The richness of face-to-face personal interaction
- Face to face cues may result in lack of trust

To build on the previous students' responses, the researcher developed an interview composed of two open-ended questions:
1. What do you think has worked well in the discussion forum experience? Specify the best activity in this experience.
2. What do you think should be done differently in the online discussion process?

Selected students were interviewed during the development of questions in order to confirm that the questions and responses were interpreted as intended. Students had different interpretations that led to their various answers. Consequently, this led to major modifications made to improve reliability and reduce the risk of misinterpreting questions.

Subsequently, all students were interviewed for an average duration of approximately 15 to 30 minutes per student. The two questions were in English but to exclude the language "barrier," questions were translated to Arabic.

Constructive data for this study was collected through the open-ended interview questions. Here is a summation of students' comments and conclusions drawn by them:
1. What do you think has worked well in the discussion forum experience? Specify your favourite & satisfying activity in this online experience.
   - Flexibility of learning: accessing the course resources anywhere/anytime.
   - Cost savings: no travelling or spending extra time away from work.
   - Self-paced: revisiting the material many times.
   - Track learners: provide proof of their work and skill development.
   - Accessibility: on-demand access.
   - Faster learning: skipping familiar material.
   - Consistent message: avoiding the problems associated with different instructors.
   - Immediate feedback: inspiring, reinforcing and motivating.
   - Satisfying experience: participating actively.
   - Updated and revised content: updating by uploading the revised version.
   - Vivid and 'lifelike' experience: using rich media when appropriate.
   - Recalling & retention: presenting information in more than one medium.
   - Risk-free environment: eliminates the embarrassment of failure in front of a class.

More than 80% of students who used the discussion forum acknowledged that the most favourable and satisfying online activities are:
- Interacting and *sharing* ideas and materials with other students and with the instructor
- Taking exams online, turning-in and getting back assignments with prompt feedback and grades.

2. What do you think should be done differently in the online discussion process?

- Wider range of Information and Computer/Technology Skills necessary to successfully accomplish the assignments.
- Handy documentation on help and tips for getting the maximum value from the resources.
- More explicit connections between the discussions in class and the online discussions to help see the online discussion as an integral to the class and not as an add-on or luxury activity.

The Participants

Participants in this study were 34, first-year, female students enrolled in Educational Technology course during the second semester of 2005 at AUST, Fujairah Campus, United Arab Emirates. They were mainly from the UAE and Sultanate of Oman and their ages ranged between 18 and 24. Twenty percent of them were married and a 10% are working part-time. About 50% lived in the dormitories. In addition, all of the participants had completed studying two major courses in the first semester, 580111 Instructional Print and Audio Media 3(1- 4) and 580112 Modern Educational Technology (3 credit hrs). They had also been oriented to electronic learning system at the beginning of the 2nd semester. They are familiar with IT and have access to the Internet. English is the medium-of-instruction of educational technology AUST. Therefore, their English language is proficient and Arabic is their mother-tongue. Therefore, to get the maximum experience, they were allowed to use both languages with a recommendation not to use Arabic unless it is very necessary, translation services were offered to help them deeply understand the course materials as shown below.
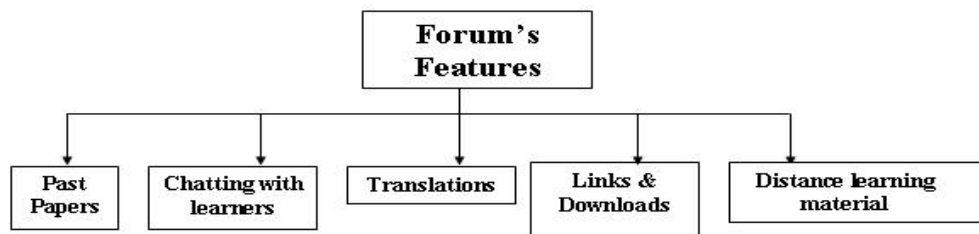

Figure 3. Features of the forum

The Treatments and Interventions

Web-based discussion forums are much like face-to-face discussions: they require preparation and active management in order to facilitate student learning. However, online environment needs special care for producing a comfortable conferencing system that helps students communicate clearly without the aid of the body language. As a result, the intervention did not start at the beginning of the course; it started after the first test. This helps student get acquainted with their class environment and classmates, and feel more protected and confident. The objectives, units, project tests and other components of the course syllabus were discussed with both groups and then the treatment group got introduced to the discussion forum and its features.

Since students know that others will read their posts, they often take their time, and put significant thought and effort into them before posting. The web based exchange of ideas results in higher quality work than if students were left on their own. For this reason, roles and responsibilities for discussion forum participants were analyzed (figure 4).

To help students become comfortable with the discussion board, the intervention starts with the instructor posting a welcoming introduction; followed by asking students to privately reply to their instructor expressing their first impressions of online communication. Subsequently, students participate in a group discussion about previous knowledge of the course topic, and their objective for taking the course. Students were encouraged to share links to websites pertinent to the course. These non-graded tasks are designed to ensure that all students can get connected to the conference and know how to send messages.
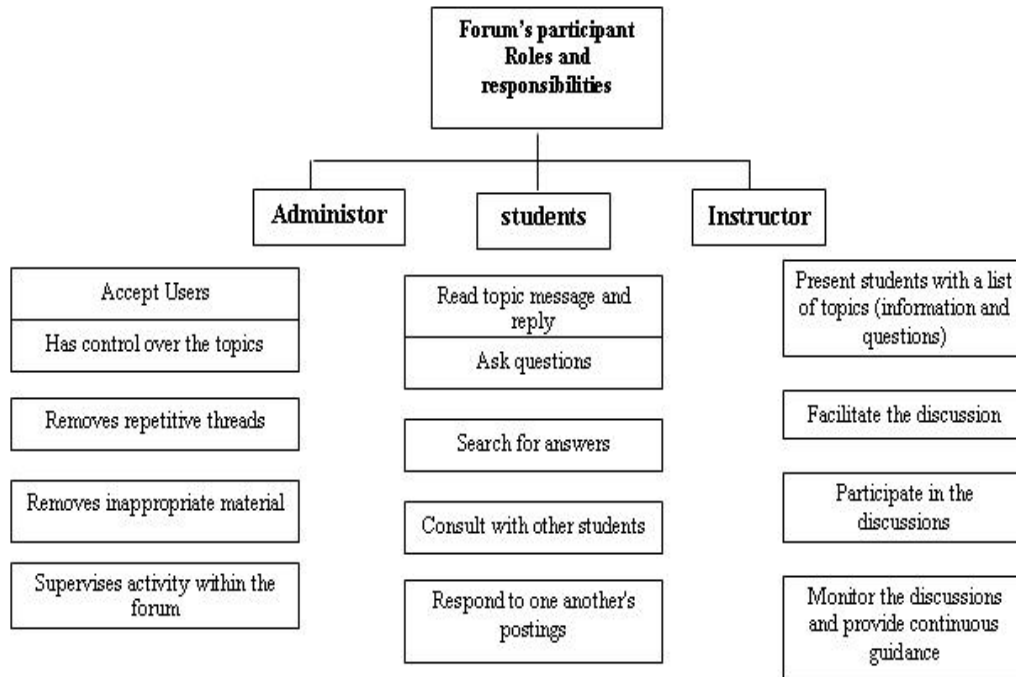
Figure 4. Roles and responsibilities for discussion forum participants

To enhance integration of the discussions, and help participants show their insights, students are asked to use their discussions as data for an assignment; the assignment is to evaluate a distance learning course/program. Since an evaluation rubric has to be designed, each week students have to discuss one topic related to criteria for effective distance learning according to their course units which are listed below:

- Foundations of Distance Education
- Definitions, History & Theory
- Distance Education Technologies
- Instructional Design & Distance Education
- Learning Strategies at Distance Education
- Teaching at Distance Education
- Assessment and Evaluation For Distance Education
- Copyright and Distance Education
- Distance Education Research

Students initiate, discuss and reorganize the comments made; analyzing the main contributions, and incorporating their peers' comments as illustrations or examples in the assignment.

Since the point of web discussions is to have students talking to each other the first two weeks of the intervention, the instructor's presence was intensive at first, gradually reducing with time. Instead, senior students were encouraged to participate in the discussion and take the role of the instructor. This strategy worked well and proved to be beneficial to all students.

Data Analysis and Findings

Multiple Choice Tests

The program used in the computational steps of this study was SPSS version 11. The hypothesis is that the means are equal; the alternative hypothesis is that they are unequal.

The first step was to determine the distance education knowledge and skills level before starting our interventions. So, it was very important to determine whether there was a statistically significant difference between the *control group (C1) and the treatment group (T1)* in the in 1 pre-test score. For finding out the difference between the treatment and control mean pre-test scores, a *t-test* was used. The measure used in this analysis was the raw score of the distance education exam (pre-test). Analysis of the mean scores shows that results were statistically equivalent. Therefore, *there were **no** significant differences* at the starting point of the study as shown in the table 2.

Table 2. The mean of pre-test scores for both treatment and control groups

	Paired Differences							
			Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Mean	Std. Deviation		Lower	Upper			
Pair 1 C1 - T1	.36667	4.03762	1.04251	-1.86929	2.60263	.352	14	.730

The next step was to decide whether there is an improvement in students' achievements during the semester. This can be done by determining whether there was a statistically significant difference between *the pre-test and post-test scores for students in the treatment group (T1 &T2) and the in the control group (C1&C2)* For this, a *t-test* on the difference between the mean pre-test and post-test scores for both groups was used. Analysis of the mean raw scores shows that *students, in the treatment group, using the web based discussion forum program showed significant improvement in overall test score**s*** from the pre-test to the post-test. While, *students in the control group, using their current textbook programs showed moderate improvement in overall test scores* from the pre-test to the post-test. These differences are statistically significant at the 95% level of confidence as shown in the Tables 3 and 4 below.

Table 3. The pre-test and post-test scores for students in the treatment group (T1 &T2)

	Paired Differences							
			Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Mean	Std. Deviation		Lower	Upper			
Pair 1 T1 - T2	-7.83333	4.56566	1.17885	10.36171	-5.30496	-6.645	14	.000

Table 4. The pre-test and post-test scores for students in the control group (C1&C2)

	Paired Differences							
			Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Mean	Std. Deviation		Lower	Upper			
Pair 1 C1 - C2	-2.40000	4.33919	1.12037	-4.80296	.00296	-2.142	14	.050

In addition, it was crucial to compare the achievements' improvements in both groups to validate the efficacy of the intervention/treatment by verifying if there is *a significant difference between the control (C2) and treatment group (T2) on the post-test*. For this, a *t-test* on the difference between the mean post-test scores for both groups was used This analysis shows that *the overall mean post-test scores for the treatment and control group are significantly different as shown in the table 5 below*.

Table 5. Scores of the control group (C2) and treatment group (T2) on the post-test

	Paired Differences							
			Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
	Mean	Std. Deviation		Lower	Upper			
Pair 1 C2 - T2	-5.06667	1.22280	.31573	-5.74383	-4.38950	-16.048	14	.000

Student Questionnaire

When questioned about the experience of using web-based discussion forums as a way of discussing topics related to the course instruction, the majority of students (93%) stated that it was beneficial and 86% of the participants considered interactivity as an essential factor for effective learning. The participants felt that traditional class discussions are short and limited to few students, while the discussion forum is more comprehensive, lively, gives a chance for all students to participate, and better prepared students to work together in class. The web forum can also deeply benefit shy students who may have problems contributing in face-to-face discussions. This set the foundation for intellectual interaction and collaborative learning.

Even though most students found web discussions to generate critical thinking and meaningful learning, there has been some concern regarding the idea of using discussion forums as an alternative to face-to-face traditional learning; indicating that the most noteworthy difference between face-to-face and discussion forum conversations is the absence of body language clues which help with interpreting the learner's reaction to remarks and ideas of classmates. In addition, they indicated that the process was relatively time-consuming, addictive, sometimes distracting and thus inappropriate to completely replace the traditional face-to-face setting.

Therefore, 93% of the participants favoured combining face-to-face classes with discussion forums, and confirmed that often forum discussions built basis of in-class comments and discussion. With respect to the third question, participants agreed that reading others' replies is a fruitful experience that would not normally be obtained in a traditional face-to-face setting. They also added that it was rewarding to see shared views with others; it provided support to what they had been studying and boosted their self-esteem. All treatment group students suggested that they increased their knowledge as a result of this experience, and would be happy to participate in a similar one in the future. Comparisons between the students' responses are illustrated in the chart 3 below.
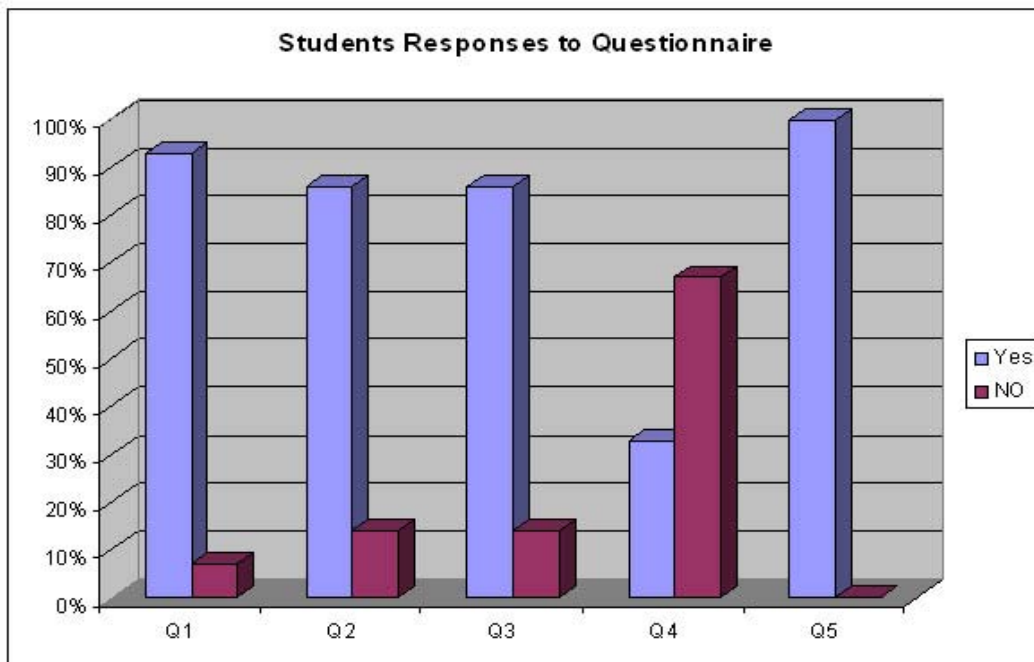

Chart 3. Comparison between the students' responses

Student Interview

The data obtained from the interview conveyed the students' positive comments that in turn indicate students' positive perception of the discussion forum as teaching/ learning tool as shown in the chart 4.
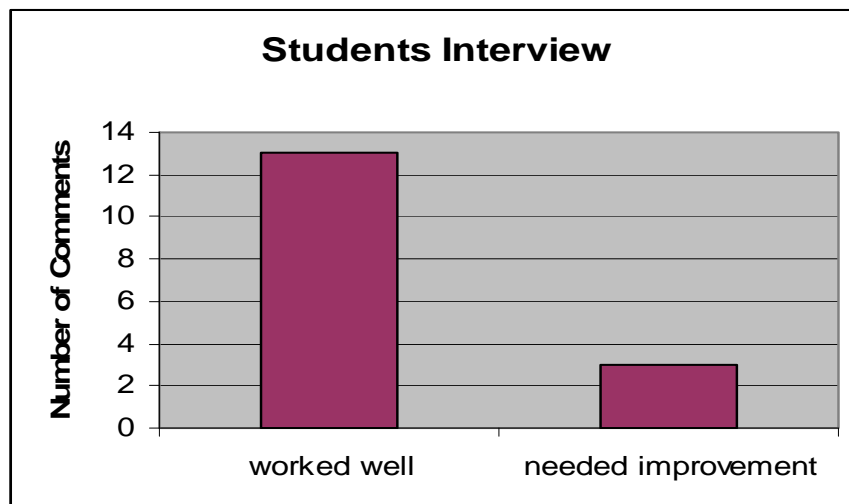
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Students Interview

Chart 4. Students' perceptions of the discussion forum

Generally, the results of the above questions suggest that students found online discussions beneficial and useful to them. Many students felt improvement in their learning skills and quality. Their positive feedback describe it as flexible, convenient, attractive, motivating, satisfying, safe, rewarding and "learner-friendly".

Students' negative responses to the quality of online discussions are also essential for improving the current teaching quality, and help identify some of the weaknesses. Weaknesses included: not enough training for some students needed in Information and computer/technology skills, more guidance on how to implement the acquired skills, and more handy documentation on help and tips for getting the maximum value from the resources. They also suggested a stronger connection between in-class material and online discussions, stressing possible links between online and face-to-face discussion, so that the interaction can be unbiased to bring participants the best of both modes. This in turn helps reinforce using discussion forums as a teaching/learning tool to support in-class activities, and helps students develop mastery of concepts and emphasize the students' understanding of their course skills.

The interview data also reveals that our targeted students share similar perceptions of the most beneficial activities in their discussion forum environment to be interaction, sharing ideas and materials with other students and the instructor, in addition to turning-in and getting back assignments with prompt feedback and grades. While weaknesses seemed to be associated significantly with: the necessity for more tips, help and training in information and technology skills, in addition to developing a stronger link between discussions in class and online.

These comments will be considered when creating the evaluation criteria framework to design online courses and a basis for future online discussion forums research and design.

Lessons Learned

Some of the lessons learned from implementation of discussion forums for students unaccustomed to constructivist and e- learning:

- Knowledge cannot simply be generated by instructors and linearly transmitted to students to use; it is built up through the synthesis of social experiences that occur in the learning environment. Therefore, discussion forum learning environment requires *careful and complete preparation* for the effective experience where students become the focus and thus plays an active role in the teaching and learning process. This learning environment should help create opportunities to generate and construct new knowledge through interactions between instructors and learners, learners and learners, and learners and learning materials.
- The discussion forum has to be learner centred, task oriented, non-threatening and a safe space where the student could ask and express their feelings and convey their ideas and point of view freely and openly. Students will not engage as fully as they desire if they do no feel safe and comfortable.
- As with the introduction of any new technology into the classroom, we must be able to:

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     o   Demonstrate the new technology's value,
     o   Point out both its contributions and its deficiencies,
     o   Justify its positive contribution because students must be able to trust that the actions taken by authorities are correct.

Perhaps the most important lesson learned was regarding how to evaluate the success of present experience. Since different sample size, year group, technological skills and different teaching/learning styles present different needs and demands, contributing to the outcomes of the experience; there was consensus that it has to be an ongoing evaluation process. Consequently, there is a definite need for AUST to engage in practical and ongoing monitoring, reporting, evaluating activities, it is necessary to make the appropriate adjustments to meet its goals.

Implications for the Future

The Goal:

To develop new student-centred modes of learning, and improve learning environments to better fulfil the needs of the community, workplace, and the AUST learner.

Actions Recommended for Achieving Goals:

Throughout the student's learning experience at AUST, students are encouraged to take an average of three courses (12 credit hours) through out-of-classroom experience along with other non-traditional activities such as: E-learning, internships, learners' instruction etc. So there is a true value in web-based teaching/ learning. Online learning can be attained almost entirely at the student's convenience, and it can be tailored and customized to their needs; enhancing all students' higher education experience including on-campus resident students (Lorenzetti, 2005).

Furthermore, based on the author's personal experience, the author believes that the logistical flexibility offered by online learning can provide new educational opportunities for Arab women. Especially for women wanting to get married while studying, or pursue graduate studies while building their career or raising their kids. Online learning can enhance and increase their access to education to achieve their desired goals.

Moving learning beyond the recall of facts needs greater flexibility in the provision of learning. This is perceived as a chief motivation for developing online classes to support the convenience and flexibility of college study. Implementing an e-learning program requires careful consideration such as:

Furthermore, to become successful E-learners and prepare them to be active participants in an online environment; it's compulsory to carry out appropriate preparatory training for faculty, staff and students. To avoid any confusion or frustration students may face, instructors are encouraged to gradually increase student online involvement over time as follows:
- To help integrate the online and face-to-face mediums, instructors should acquaint themselves with the available resources, and then analyze what works well in asynchronous and synchronous environments. Consequently, instructors could develop tasks where some aspects are to be completed online and others through face-to-face setting. When doing so, the instructions and directions are supposed to be explicit without being complicated
- In view of that, students are encouraged to use the web as Course Electronic Recourse Centre, a media-rich interactive site that provides faculty and students with comprehensive resources in this manner:
  - *For students:* It will include all materials required for the course such as syllabus, course calendar, PowerPoint presentations, handouts, exercises, recommended references and links to related sites etc.
  - *For Instructors*: Course instructor's support in the forms of implementation manual, technological support, assessment and evaluation tools and professional development to foster sound decision making on how to best manage students learning activities in a an online environment
- Accordingly, start shifting other course activities to online mode. For example, each instructional unit began with a lesson plan that can be linked to online learning activities, video, exercises, and lab activities. Then, introduce a digital "drop in box" to hand in assignments, followed by online testing, posting of the graded online test results in the students and instructors grade books, tracking student performance …etc until students and instructors are ready to meet the challenges a whole online course.

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Study Limitations

This study has several limitations which may have affected the results. These limitations include the small size of the samples (total number of the class); the gender of the participants being limited to females; varied students' experience with the internet; the instructor's teaching style and his familiarity with the web based learning environment and the nature of the course itself, results might be quite different with other courses.

Discussion and Conclusion

Both the treatment group using the web-based discussion forum and the control group using their current adopted textbook and other assigned materials, showed significant learning improvement over the course of a full semester. Both groups accomplished gains in all distance education skill areas and in their overall raw scores. Yet, when comparing the level of improvement for both groups, the treatment group showed more significant improvement. The data presented in this study also indicates that, in addition to these earlier findings, the researcher's assumption proved to be correct, in that students do better because they participate more and are more actively involved in the web discussion forum. It also affirmed students' satisfaction with on-line discussion and instruction especially when e-learning is used as a supplement to face-to-face instruction.

The findings of the study affirm that educational systems in the Arab world need to further progress and advance. As more countries participate in the global economy, Arab countries have recognized that technology is not a luxury, but is a must for competing in a global economy and workplace and that "the best way for Arab youth to assimilate globalization, is to continue to harness the vehicles of information and communication technology" (UNDP, n.d.).

On the other hand "it cannot be assumed that simply providing teachers/learners with appropriate tools and task materials will result in their spontaneous engagement with contextual thinking…..the potential of computer mediation to foster knowledge depends less on what learners use, than on how they use it".(Thompson, 1999) The results of this study have thus demonstrated the integration of e-technology to traditional learning situations in which students are passive recipients of information and facts. It illustrated the conversion of the one way flow of instructions to threaded discussion to encourage active engagement with course material which in turn leads to a better and more meaningful learning experience.

Thus, this study is considered as a preliminary analysis that needs further investigation on best practice in the electronic and blended learning environment, which best matched the vision and needs of AUST and similar institutions in the region and worldwide.

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