

Impact of E-Cooperative Learning Modules on Interpersonal Communication Skills

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Abstract: - This research aimed to investigate the impact of e-learning modules with cooperative learning on students' interpersonal communication skills compared to individual e-learning modules (without cooperative learning). E-learning modules were designed developed based on the Activity Theory and delivered through the Blackboard (BB) as an e-learning management system at Qatar University, Qatar. A sample of 85 students were randomly distributed between two experimental groups, (42, 43). The result of this study showed that students using e-learning modules with cooperative learning (ELCL) attained significantly higher adjusted mean of the post-test scores on interpersonal communication skills than students using individual e-learning modules (IEL).

Key-Words: -Teaching, Technology, E-learning, Cooperative Learning, Communication Skills, Interpersonal Skills

1 Introduction

Currently, developments in information and communications technology (ICT) have a deep effect on many fields, especially on e-learning and higher education [1]. Modern approaches in education suggest using learner-centered approaches through using communication tools available on the Internet because these tools help students achieve more and helps them acquire social skills necessary for their success in life.

Some researchers defined e-learning as a type of learning based on the Web [2] ; [3] ; [4] ; [5]. E-Learning is an important tool used in teaching and learning environments emerged from the intensive usage of information technology. E-learning provides high quality educational supplements combined with the ease and convenience to both teachers and students at all levels of education [6].

There are many management and delivery systems for delivering e-learning courses; such as Web Course Tools (Web CT), Blackboard, Learning Space, Model, Top Class, E3, Cyber Psychology and Harvard [7]. Qatar University (QU) as an instructional institution has adopted the Blackboard system to deliver its courses online since 2006 and encourages faculties to incorporate technology in the delivery of their courses.

The Blackboard system has several useful features: announcement page, discussion board, course documents, grade book, communication tools; assessment component, and useful links. These features can be used by instructors and students to carry out many teaching and learning activities, for example: Instructor can create powerful learning content using a variety of Web-based tools; Evaluate a student's progress using Blackboard's assessment component. Use multiple formats of assessment such as true/false, multiple choice, completion, ordering, and essay; Facilitate students or groups assignments on reflections; Students can track their progress, access discussion boards and the virtual classroom tool that enables dynamic collaboration and communication in the learning environment (instructor-learner, learner-learner, learner-content). They can also access supplemental educational content and resources through Blackboard's customizable academic resources, web tab for discipline-specific news and events, journals, and periodicals and control student participation, communication, and collaboration; Students and instructors can engage in an enhanced collaboration and learning communities with asynchronous chat tool such as whiteboard feature, individual and group assignments and digital drop box [8].

E-learning with cooperative learning (ELCL) is a term used to describe a deliberate use of cooperative learning in an e-learning environment. ELCL aims to support the learning process, using systems that implement a cooperative environment playing an active role in analysis and control. Collaborative technologies allow production of shared knowledge and new community practices. Several related subjects of educational and technological order are involved in the construction and implementation of such environment[9].

Learning is a social process and technology-based learning environments play an important role in supporting active cooperative learning. Cooperative learning is a technique by which students are supported in the learning process, working together with other students and the instructors[10]. Cooperative learning is based on individual responsibility for the information gathered and positive interdependence so that the student feels that he will succeed if all students are successful and vice versa. Moreover, cooperative learning provides better understanding of the given material; development of interpersonal skills, which will be necessary in future life; development of skills to analyze the dynamics of a group and to work through problems; and ways to increase involvement of students in proposed activities [9].

Social skills are an important factor in the success of cooperative learning. Despite the presumed importance, however, social skills are less likely to be formally included as part of the higher education curriculum [10]. According to [11] there are three general categories of Interpersonal skills are social, presentational and listening skills.

Social skills: The life skills which enable us to get on with others and include the ability to control non-verbal behavior effectively; to offer recognition to others; to emphasize; and to offer feedback in conversation. Operationally, social skills are the scores that students received on the social skills observation sheet. **Listening skills:** refers to such activities as giving positive feedback to the speaker, asking check questions, and paying attention to what is said as much as how it is said. Operationally, listening skills are the scores that students received on the listening skills observation sheet. **Speaking skills** defined as skills that are used when presenting ourselves to others, when making formal oral presentations, when talking to members of the public, they are fundamentally about controlling verbal and non-verbal behavior, in order to present an appropriate persona. Operationally, speaking skills are the scores that students received on the speaking skills observation sheet.

In this study, the e-learning module is defined as a small learning unit of a certain topic of Arabic Language Course (ARAB100) delivered in the electronic format using the BB system, accordingly, the researchers used the terminology e-learning modules. Each module contains instructions, learning outcomes, pre-test, activities, materials, presentations, additional resources, post-test, and feedback. For the purpose of this research, e-learning modules are developed by the researchers in collaboration with the instructors of Arabic Language Course (ARAB100). There are two formats for using the learning modules: printed format (hardcopy) and electronic format (softcopy). In this research the modules are offered in the electronic format using the BB system, accordingly, the researcher used the terminology e-learning modules.

The design of e-learning modules (Arabic Language course of five unites) followed the Principles of Activity Theory of Engestrom[12] who argues that an activity is composed of a subject as the individual or a group engaged in the activity, and the community, as specific people interacting with the individual, all have roles (i.e., division of labour), all act within a certain set of rules and all use tools in order to achieve the objectives. The mediation can occur through the use of many different types of tools, e.g. material tools as well as psychological tools, including culture, ways of thinking and language. E-Learning tools might be an online discussion forum, an online or paper notebook [13]. Figure 1 shows the different components of an activity system.

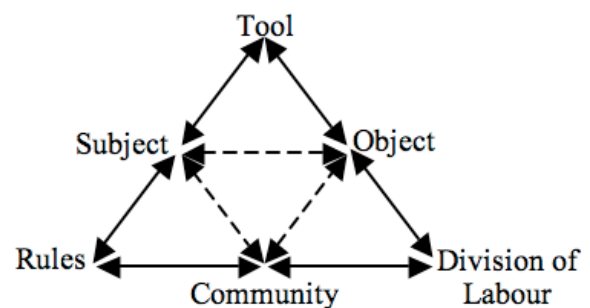


Fig.1 Engestrom Model of a Human Activity System [16]

The object of e-learning modules is to provide the students with necessary information and skills and awareness so that they can collaborate in the development of their knowledge. The outcomes are the interpersonal communication skills. The communication tools included email, discussion board, forum, white board and visual classroom

which were used to support the development of understanding and encourage engagement. The community consists of the students, instructors, the academics and the learning designers/technicians who are supporting them in solve technical problem. The division of labour determines the roles taken on by the individuals in learning the e-learning modules. Finally, the rules regulate the use of time, the online behaviours, the measurement of outcomes, and the criteria for rewards.

2 Problem Statement

One of the main objectives of the Core Curriculum Program (CCP) at Qatar University (QU) is to equip students with communication skills. The overall assessment policy of CCP learning outcomes is focused on using direct and indirect assessment tools to assess the level of achieving learning outcomes related to communication skills. Within this framework, a student questionnaire is administered at the end of each semester to estimate the level of achievement of the learning outcomes related to the communication skills as perceived by students.

In spring 2008, the achievement level of communication skills did not meet the desired key performance indicator (benchmark) which is 80% of students would perceive their achievement level of communication skills to be strongly agree and agree. The result showed that 71% of students achieve the learning outcomes on communication skills to be at the strongly agree and agree. In light of this result, it was recommended that corrective actions be taken to increase the percentage of student acquiring the communication skills at the desired level [14]. One of these correction is using the E-learning modules with cooperative learning strategies. In view of the gap, the researchers sought to design e-learning modules using the BB system effectively in such a way to help increase students' interpersonal communication skills and to investigate the impact of e-learning modules with cooperative learning on interpersonal communication skills.

3 Objectives of the Research

There are two objectives of this research:

1. Designing and developing two modes of e-learning modules, particularly: e-learning with cooperative learning mode (ELCL) and individual e-learning mode (IEL).
2. Evaluating the impact of e-learning modules with cooperative learning on QU students'

achievement and communication in the Arabic Language Course (ARAB100).

4 Research Hypotheses

Students using e-learning module with cooperative learning (ELCL) mode will attain significantly higher adjusted mean score on the interpersonal communication skills (ICS) than students using individual e-learning modules (IEL) mode, that is: $ICS_{(ELCL)} > ICS_{(IEL)}$.

5 Method and Procedures

The researchers used a quasi-experimental research design. This design was selected because the research aims to identify the distinctive cause and effect of using different e-learning modes (ELCL & ICL) as independent variables in interpersonal communication skills level as a dependent variable. The quasi-experimental research design is used when it is not feasible for the researcher to randomly assign subjects within the sample [15]. In this research, two sections of the same course were compared, and thus the random assignment of subjects to either group was not within the researcher's control.

The courseware (five e-learning modules) was developed for the (ARABIC 100) Course. This course is one of the core curriculum courses offered university-wide regardless of the students' majors. In addition, the faculty members of the core curriculum courses are encouraged to incorporate technology in the delivery of their courses. The students enrolled in this course came from different specializations. Two out of six (ARABIC 100) classes were selected randomly. These classes were randomly distributed into two experimental groups.

The researcher used Two experimental groups: (1) Experimental group (I) consisted students who were taught using e-learning with cooperative learning. (4students). (2). Experimental group (II) was a group of students who were taught using e-learning with cooperative learning (43 students).

6 Research Instruments

The Interpersonal Communication Skills Observation Sheet (ICSOS) was developed by the researchers with the assistance of a panel of experts. It contained 25 items divided into 3 categories: Listening Skills (6 items), Speaking Skills (9 items), and Social Skills (10 items). The items of observation sheets were estimated on a scale of 1–5.

(1= To a Slight Extent; 2= To Some Extent; 3= To a Moderate Extent; 4= To a Large Extent; 5= To a Very Large Extent).

The instruments were given to 4 experienced faculty members in the field of Curriculum & Educational Technology and Evaluation at Qatar University. They reviewed it to make sure that the items were adequate to achieve the goals of the research. Their comments led to some Items being rewritten. That gave an indication of the validity of the three categories.

To examine the reliability of the Instrument, the researchers conducted a pilot study at QU. A total of 108 students from QU colleges, Education, Arts & Sciences, Engineering, Business & Economics, Law, Sharia and Pharmacy, were participated. Based on

the pilot study, the statistical reliability of the instrument was assessed using Cronbach's alpha coefficient of internal consistency for the questionnaire. Cronbach's alpha coefficient was used because it is the appropriate type of reliability when the instrument has a range of possible answers for each item [16]. It was calculated for the Instrument as a whole and separately for 3 categories: listening, speaking, and social skills. As shown in Table 1, these analyses produced a 0.92 coefficient alpha value for the whole instrument, 0.86 value for listening skills category, 0.852 value for the speaking skills category, and 0.91 value for the social skills and 0.86 value for the listening test. According to Muijs et al.[17], this Instrument has a high value coefficient alpha.

Table 1 Cronbach's Alpha Coefficient for the Communication skills Observation Sheets

Category	Alpha Coefficient
Listening skills Observation sheet	0.86
Speaking skills Observation sheet	0.852
Social skills Observation sheet	0.91
Whole instrument	0.92

7 Findings

To test the hypothesis of this study, Descriptive statistics and a one-way analysis of covariance (ANCOVA), using general linear model (GLM) were used to identify the effect of e-learning modes (ELCL compared to ICL) on interpersonal communication skills. To reduce the statistical error, the pre-test scores was used as the covariate variable and a comparison was made between the two groups (ELCL versus ICL). Assumptions of homogeneous regression coefficients and linearity of Y on X were

examined and found to be appropriately met. F values were assessed for significance at $\alpha = 0.05$.

Table 2 shows the descriptive statistics of students' scores on the pre- and post-interpersonal communication skills. No significant difference observed on the mean of pre- observation of communication skills between the two experimental group (M= 149; 151). To adjust for differences in pre-test scores, ANCOVA was applied using general linear model (GLM). Following the adjustment for the pre-test scores as covariate, the adjusted mean of post- test scores was 156.3 for the group with individuale e- learning (IEL) and 165 for the experimental group with e- learning with cooperative learning (ELCL), suggesting that students' interpersonal communication skills of the group with ELCL is higher on the adjusted mean of the post- test than the group with IEL.

Table 2 Mean and Adjusted Mean of Pre-test and Post-test scores of Communication skills

Group	N	Pre-test		Post-test		Adjusted Mean
		Mean	SD	Mean	SD	
Group 1: ELCL	42	149	11.22	165	9.45	165.45
Group 2: IEL	43	151	11.4	156.3	13.32	155.4

Table 3 shows a significant difference between the two groups for, $F(1,88) = 14.42$, $p = 0.000$. Thus, the null hypothesis of no significant difference among the adjusted means on the dependent variable was rejected. Overall, the results suggest that the online learning supported by cooperative learning is significantly more effective than the online learning with without cooperative learning.

Table 3 Results of ANCOVA on Students' Post-test Scores with Pre-test Scores as the Covariates

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Pretest	3099.2	1	3099.2	39.05	0.000
Group	1144.2	1	1144.2	14.42	0.000
Error	6983.450	88	79.357		

8 Discussion and Recommendation

This research showed how the Activity Theory could be used as a framework to design and managed an e-learning collaborative learning environment. Students using the e-learning modules with cooperative learning (ELCL) mode attained a significantly higher adjusted mean scores on interpersonal communication skills than students using the individual e-learning modules (IEL) mode. This results may be explained by many factors, such as combination of the e-learning modules with cooperative learning, students reinforcing their knowledge and skills through peer evaluation, exposure to multiple, alternative perspectives, and various types of reflections; scaffolding from community diversity of communication tools; tasks delivered through social contexts; student ownership of learning; more guidance and supervision from peers and facilitator; a great variety of internal and external resources; more engagement with the BB system; diversity of cooperative learning strategies that may met the learning styles of students; and more interaction and then more participation on the discussion board.

The features of the Blackboard system integrated with the features of the learning modules based on the Activity theory were able to enhance interpersonal communication skills. Apparently, the e-learning environment supported by cooperative learning approach provided students with the ability to control the sequence of the instructional materials, engage their various senses, learn interactively at their own pace, and learn from each other and improved their interpersonal communication skills during the use of the communication tools.

This result is consistent with the findings of some studies which support the propositions of instructional theorists in the applications of various instructional strategies, such as the selection of the appropriate delivery medium of instruction, to promote learning [10]; [18]; [19]. Based on activity theory, instructional theorists have indicated that the selection of the instructional strategies should be based on the theoretical models of the connections between the learner's environment and the internal events of cognition and learning.

Since the e-learning module supported by cooperative learning design was more effective than the e-learning module not supported by cooperative learning design in improving the interpersonal communication skills, it is recommended that the e-learning modules supported by cooperative learning be used in developing e-learning environments at the university level when offering courses that focus on developing communication skills. Also it is

recommended that more research on designing e-learning environments using the e-learning module supported by cooperative learning approach be conducted to explore the impact of such e-learning environments on other aspects of students' performance related to learning outcomes other than interpersonal communication skills.

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