IMPACT OF E-LEARNING-BASED COOPERATIVE LEARNING ACTIVITIES ON ACHIEVEMENT AND COMMUNICATION SKILLS AS PERCEIVED BY UNDERGRADUATE STUDENTS IN QATAR UNIVERSITY

BY

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LIST OF ABBREVIATIONS

ADDIE: Analyze, Design, Develop, Implement and Evaluate

ANCOVA: Analysis of Covariance

ANOVA: Analysis of Variance

AT: Achievement test

BeLCA: Blended E-learning Cooperative Approach

BB: Blackboard

CCP: Core Curriculum Program

CMC: Computer-mediated Communication

CMS: Content Management System

COPLS: Community of Practice Learning System

CS: Communication Skills

CSFs: Critical Success Factors

CSQ: Communication Skills Questionnaire

EL: E-learning

ELCL: E-learning with Cooperative Learning

ELMS: E-learning Management System

ESL: English Second Language

ICT: Information and Communication Technology

IEL: Individual E-learning

IEP: Intensive English Program

MSA: Modern Standard Arabic

MSLQ: Motivated Strategies for Learning Questionnaire

OFID: Office of Faculty and Instructional Development

QU: Qatar University

RQPI: RAND-Qatar Policy Institute

SILL: Strategy Inventory for Language Learning

SRC: Senior Reform Committee

STAD: Students Team Achievement Division()

TAs: Teaching Assistants

VLEs: Virtual Learning Environments

IMPAK AKTIVITI PEMBELAJARAN KOPERATIF BERASASKAN E-PEMBELAJARAN TERHADAP PENCAPAIAN DAN PERSEPSI KEMAHIRAN KOMUNIKASI DI KALANGAN PELAJAR PRA-SISWAZAH DI UNIVERSITI QATAR

ABSTRAK

Penyelidikan ini bertujuan untuk menyelidik kesan E-pembelajaran berbantu pembelajaran koperatif terhadap pencapaian pelajar dalam kursus ARAB 100. Penyelidikan ini juga bertujuan untuk membandingkan kemahiran komunikasi dikalangan siswa-siswi, menggunakan modul pembelajaran atas talian tanpa bantuan pembelajaran koperatif. Modul E-pembelajaran dibangunkan oleh penyelidik berasama panel pakar and telah digunakan melalui sistem pengurusan atas talian 'Blackboard'di Universiti Qatar, di Negara Qatar. Ujian pencapaian dan soal selidik mengenai kemahiran komunikasi telah direkabentuk dan dijalankan ke atas empat sessi kursus bahasa ARAB 100. Rekabentuk eksperimen kuasi faktorial 2 × 2 telah digunakan untuk penyelidikan ini. Pembolehubah bebas dalam penyelidikan ini ialah dua mod E-pembelajaran iaitu, E-pembelajaran berbantukan pembelajaran koperatif (ELCL) dan E-pembelajaran tanpa bantuan pembelajaran koperatif (IEL). Pembolehubah moderator ialah jantina (lelaki dan perempuan) sementara pembolehubah bersandar ialah pencapaian dan kemahiran komunikasi siswa-siswi.

Sampel yang terlibat terdiri daripada 170 siswa-siswi (80 lelaki dan 85 perempuan) yang dipilih dari pelbagai pengkhususan, di Universiti Qatar. Statistik diskriptif dan inferensi telah digunakan untuk menganalisi data yang diperolehi. ANCOVA analisis dua hala telah digunakan untuk menganalisis kesan utama dan

kesan interaksi terhadap pembolehubah bebas dan pembolehubah bersandar. Enam hipotesis telah diujikan dengan ANNOVA.

Dapatan dari kajian ini menunjukkan bahawa siswa-siswi yang menggunakan modul E-pembelajaran berbantukan koperatif (ELCL) mempunyai skor min ubahsuai yang lebih tinggi dalam ujian pencapaian dan kemahiran komunikasi berbanding dengan siswa-siswi yang menggunakan E-pembelajaran tanpa bantuan koperatif. Siswa lelaki yang menggunakan modul E-pembelajaran secara amnya mendapat skor min yang lebih tinggi berbanding dengan siswi yang menggunakan modul yang sama. Tidak terdapat perbezaan ketara terhadap skor min ubahsuai ujian post kemahiran maklumat di kalangan siswa dan siswi. Di samping itu, tidak terdapat kesan interaksi yang signifikan di antara mod E-pembelajaran dan jantina terhadap skor ujian post pencapaian dan kemahiran komunikasi.

Seolah-olahnya, pelbagai fitur yang terdapat dalam mod ELCL seperti penilaian sejawat, pendedahan terhadap pespektif alternative berganda dan pelbagai jenis refleksi; sokongan komuniti, pelbagai alat komunikasi; lebih bimbingan dan penyeliaan daripada rakan sejawat dan fasilitator; kepelbagaian sumber dalaman dan luaran; lebih penglibatan bersama system *Blackboard*; kepelbagaian strategi pembelajaran koperatif yang kemungkinan berpadanan dengan gaya pembelajaran pelajar dan lebih interaksi dan penglibatan dalam perbincangan telah membantu menambahbaikan secara signifikan terhadap pencapaian dan kemahiran komunikasi pelajar. Prinsip teori aktiviti dan teori konstruktivisma social patut dipertimbangkan dalam rekabentuk aktiviti pembelajaran koperatif berasaskan pembelajaran-e supaya dapat meningkatkan pembelajaran bahasa dan kemahiran komunikasi.

IMPACT OF E-LEARNING-BASED COOPERATIVE LEARNING ACTIVITIES ON ACHIEVEMENT AND COMMUNICATION SKILLS AS PERCEIVED BY UNDERGRADUATE STUDENTS IN QATAR UNIVERSITY

ABSTRACT

This research aims to investigate the impact of e-learning-based cooperative learning on students' achievement in the Arabic Language Course (ARAB100) and their perceptions of communication skills. E-learning modules were developed by the researcher with a panel of experts and delivered through the Blackboard system at Qatar University, State of Qatar. The achievement test and communication skills questionnaire as perceived by students were also developed and administered to four sections of the Arabic Language Course (ARAB100) before and after the treatment. A quasi-experimental design was used and a 2 X 2 factorial analysis was applied in this research to examine the main effect of e-learning approach as an independent variable which has two levels: e-learning with cooperative learning (ELCL) mode and individual e-learning (IEL) mode as well as the main effect of the gender as a moderator variable, on two dependent variables: Arabic language achievement and level of communication skills as perceived by students. The 2 X 2 factorial analysis also was used to examine the interaction effect between the e-learning approach and gender.

The sample consisted of 170 undergraduate students (85 male & 85 Female) from different majors at Qatar University. Descriptive and inferential statistics were

used to analyze the quantitative data collected. Six hypotheses were postulated and tested using analysis of Two-way ANCOVA procedures. The findings of this research showed that students using e-learning modules with cooperative learning (ELCL) attained significantly higher adjusted mean of the post-test scores on both the Arabic language achievement and the perceptions of communication skills than students using individual e-learning modules (IEL). Male students using e-learning modules in general attained significantly higher adjusted mean of the post-test scores on the achievement test than female using the same modules. There is no significant difference between the male and female students on adjusted mean of the post-test scores on the perceptions of communication skills. Also, there is no significant interaction effect between EL modes and gender on the achievement and perceptions of communication skills. Male and female students using ELCL attained significantly higher adjusted mean of the post-test scores on both the Arabic language achievement and perception of communication skills than male and female students using individual e-learning modules (IEL).

Apparently, the various features available in the ELCL mode such as, diversity of communication tools available on the BB system, more guidance and supervision from peers and facilitator, a great variety of internal and external resources, diversity of cooperative learning strategies that may met the learning styles of students; more interaction and participation on the discussion board were able to significantly improve the achievement and the communication skills.

In conclusion, the principles of Activity Theory and Social Constructivism Theory need to be considered in designing e-learning-based cooperative learning activities in order to promote language learning and communication skills.

CHAPTER ONE - INTRODUCTION

1.1 BACKGROUND

Currently, developments in information and communications technology (ICT) have a deep effect on many fields, especially on e-learning and higher education (Gajnakova, Vaculik & Vasko, 2010). The development of computer technologies and the Internet have increased ways of teaching and learning. E-learning is becoming a useful learning environment that offers new possibilities, such as the ability to reach new populations of students; the freedom for students to choose to learn anywhere and anytime; the flexibility to allow students to interact with content in their preferred ways of learning; and the opportunity to support lifelong learning.

Mapuva and Muyengwa (2009) indicated that the Internet has and will play a major role in changing the commonly known methods of learning, particularly in higher education institutions. This change leads to more interactive methods, such as interactive video, where the professor will not need to stand in front of students to deliver a lecture and students do not need to travel to the university. Instead, a new method will be replaced which is known as distance learning through electronic instructor (e-instructor).

Charp (2000) conducted a survey for UNESCO in which he reviewed 90 studies from different countries about integrating the Internet in education. The results of Charp's study showed that the Internet has a positive impact on students' motivation towards self-learning and improved their computer skills. Charp's study

also showed that searching for information on the Internet makes the learning activity interesting because the content may also include animations, pictures and multimedia effects.

E-learning is seen as a cost effective way to reach a large number of students and ease budget constraints in many higher education institutions. In addition, higher education institutions that do not embrace e-learning will be left behind in the race for globalization and technological development (Singh, O'Donoghue & Worton, 2005). In order to make the maximum use of e-learning, higher education institutions must follow design and delivery standards that require them to identify and understand the critical success factors affecting the delivery of e-learning (Chibueze, 2008).

A number of studies (Mahdizadeh, Biemans & Mulder, 2008; Zinal, 2008; Dabbagh, 2003; Garrison & Anderson, 2003) pointed out that e-learning is very effective in some areas of education and has increased communications between instructors and students and among students. This aids in overcoming the element of boredom and monotony of traditional methods of teaching by bringing a multimedia perspective to the classroom and with it more enjoyment that attracts students' attention. An important characteristic of e-learning is that it promotes individualized instruction that is helpful in meeting individual differences among learners. Individualized instruction requires teachers to create learning environments in which individuals learn according to their abilities.

For delivering e-learning courses, there are many management and delivery systems. Abdulhamid (2005) discusses several, such as Web Course Tools (Web CT), BlackBoard (BB), Learning Space, Model, Top Class, E3 and Cyber Psychology. Qatar University (QU) as an instructional institution has adopted the BB system to deliver its courses online in 2006 and encourages faculty to incorporate technology in the delivery of their courses.

Hutchinson (2007) emphasized that 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. Cooperative learning is based on individual responsibility for the information gathered and positive interdependence so that the student feels that he/she will success if all students are successful and vice versa. Cooperative learning provides better understanding of the given material; development of interpersonal communication 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 (Borges, Santos & Santoro, 1999).

Hyo and Brush (2008) state that cooperative learning approach can be supported by two dimensions: computer-mediated communication (CMC) as a technical dimensions and social constructivism as a pedagogical dimension of e-learning. The CMC tools are technical dimensions of collaborative learning play an important role in facilitating group learning processes among group members who

may live in different areas and have different learning styles. The second dimension, social constructivism, has influenced the pedagogical dimension of e-learning.

Social constructivism is based on the idea that an individual constructs his or her own knowledge through communicating with others. Specifically, this constructivist view of learning is associated with the theories of Vygotsky (1978) and Engestrom (1987) that propose that a learner's cognitive development is highly dependent on social interaction and collaboration with peers. For the past decade, social constructivism has influenced e-learning pedagogy to shift the delivery of content knowledge to collaborative methods of learning aiming at the acquisition of higher learning skills (Hyo & Brush, 2008).

Based on the social-constructivist view, cooperative learning is a constructive process during which students' co-construct knowledge and meaning while interacting with peers, instructor, tools and content (Hyo & Brush, 2008). In addition, learning is a social activity and students learn better when they interact frequently with instructor and peers (Soon, 2009). Thus, an e-learning system provides tools that support various kinds of student-teacher and student-student interactions and allows learners to interact by providing synchronous and asynchronous communication tools (Charalambos, Michalinos & Chamberlin, 2004), thus supporting social construction of knowledge.

Several researchers (Obaid, 2009; El-Deghaidy & Nouby, 2008; Panagiotes, Vitalaki & Gertzakis , 2008; Foudah, 2003) have confirmed that collaborative learning strategies can provide learners with several advantages, such as

opportunities to experience multiple perspectives of other learners from different backgrounds; to develop critical thinking skills through the process of judging, valuing, supporting, or opposing different viewpoints; building self-confidence; and developing various social relations among students. Moreover, cooperative learning may help the students acquire communication skills they need in their lives.

E-learning with cooperative learning (ELCL) is a term used to describe a particular 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 environments (Borges et al., 1999).

According to Nussbaum et al. (2009), two kinds of technologies can be used in a cooperative learning environment: asynchronous communication technology such as e-mail, blog and synchronous communication technology such as chat and discussion board. The use of one or the other or their combination determines the interaction degree among students.

Gender-related differences are evident in cooperative online learning in terms of language styles, conversational behavior and participation patterns (Song, 2006). Herring (1994) asserted that men's language tends to be assertive and challenging. It is often self-promoting, authoritative and includes presuppositions and rhetorical questions. It is often either humorous or sarcastic. In contrast, women's language

tends to be more tentative and includes apologies, justifications and questions. Overall, women's language is more personal and supportive of others.

Graddy (2006) found that in the case of conversational behavior the tone of male postings is more optimistic than that of female postings. Female conversations used words that may reveal social isolation and the rejection of social constraints when participating in electronic media where their identities were concealed. Opposite findings are also reported. Davidson-Shivers, Morris and Sriwongkol (2001) found that contributions to computer-mediated communication (CMC) settings (e.g., bulletin board system) are equal in amount by gender. These mixed findings suggest that gender differences have the potential to affect online interaction. In analyzing interaction participation patterns, Hsi and Hoadley (1997) found that females participated more than males in electronic discussions and reported feelings less often. It remains unknown whether gender and cooperation in e-learning environments may interact to impact student achievement and communication skills.

Srigayathridevi and Thamaraiselvi (2006) clarified that communication skills is a vital part of any individual as the basis for exchanging information. People spend more time in communicating than anything else: talking, listening and interacting with others. According to Hollandsworth (2005), communication is essential to our personal, professional and civic lives. The need for effective communication tends to be increasing due to globalization, science, technology and trade. It is essential for the next generation to be well equipped with the basic skills of communication because of the enormous requirement for competency in the digital society today. In

the digital era, students are expected to acquire communication skills to demonstrate their abilities in their career and instructional institutions should take into account the best way to develop students' communication skills (Hollandsworth, 2005).

Focusing on using e-learning systems to deliver individual learning without incorporating interaction and cooperation among students is likely to encourage individual working habits rather than cooperative working habits. Consequently, learners might possibly face problems and difficulties when joining others in cooperative tasks. In addition, individual learning would not support students' communication skills. Moreover, individual learning might be an obstacle for students in interacting with others; thus, students might not be equipped with helpful interpersonal communication skills (Hassan, 2002). In addition, based on the above discussion and the researcher's experience as an senior instructional development specialist at QU, faculty members frequently ask facilitators in cooperative learning workshops if they can apply this method in large groups of students within a 50-minute lecture. This inquiry encourages the researcher to investigate the benefits of utilizing features of the BB system, specifically its communication tools, to support cooperative learning. In addition, the researcher has not been able to find current studies that indicate that these two crucial trends, e-learning and cooperative learning, are currently being combined in education in the Middle Eastern region. It is important to find a method to combine the advantages of these two approaches; thus, this study is designed to provide this unique combination and to study the impact of using e-learning with cooperative learning on the Arabic Language achievement and communication skills as perceived by students in QU.

1.2 PROBLEM STATEMENT

E-learning systems are increasingly being integrated into universities as a new means of learning and teaching (Ishtaiwa, 2006). E-learning systems have many advantages to support learners using multimedia systems, but are not used effectively by faculty members in most universities (Jeong-Hoon & Kwang-Seok, 2006).

QU plans to increase the use of information and communication technology (ICT) in teaching and learning (QU Strategic Objectives, 2008). Accordingly, QU has adapted the BB system as a university–wide system for managing and delivering academic courses. The researcher noticed that the rate of BB usage at QU has increased dramatically. Table 1.1 presents the increased rate of using the BB system annually and provides evidence to support the newly initiated trend of using e-learning through BB at QU.

Table 1.1 Number of E-courses and Students Using the BB System from Fall 2007 to Fall 2009.

Semester	**No. of e- courses BB**	**No. of student**
Fall 2007	316	5081
Spring 2008	551	8254
Summer 2008	570	8438
Fall 2008	674	10671
Spring 2009	789	11799
Summer 2009	822	11817
Fall 2009	903	13590

(**Source:** QU, 2010: Information Technology Services Unit)

Table 1.1 shows that the number of courses being delivered using BB is increasing gradually each semester. From the researcher's experience, the majority of those courses do not use all the features available, such as the communication tools and the adaptive release features. To encourage QU faculty to use the BB system

effectively and to benefit from the main features of such a system, the administrators of QU have decided to provide an annual award, initiated in 2008, for those who use the BB system effectively in delivering their courses.

QU is trying to achieve its mission by preparing students to accept individual responsibility, to take initiative and to work effectively in teams. Accordingly, students need to gain the academic skills required for critical thinking, effective communication and independent learning. Faculty members assess these academic skills through different methods and tools, such as achievement tests, homework, in-class activities, presentations and projects, which may increase the learning gains of students as reflected by their Grade Point Average (GPA).

One of QU's policies is that students whose grade point averages (GPA) fall below 2.0/4.0 for one semester are placed on probation for the following semester. If they get grades averaging below 2.0 in three consecutive semesters they are suspended from the university (Joy, Tora, Bikson, Richard, De-Sisto, Al-Hamadi & Al-Thani, 2009). Table 1.2 and Figure 1.1 show the number and the percentage of students who had GPAs of less than 2.0/4.0 during the fall 2008 spring 2010 semesters.

Table 1.2 Number and the Percentage of Students Who Had GPAs of Less than 2.0/4.0 during the Fall 2008 – Spring 2010 ((Source: QU, 2010)

Term	#Males (m)	#Warnings (m)	% (m)	#Females (f)	#Warnings (f)	% (F)	Total (m & f)	Total Warnings (m & f)	% (m) & (f)
Fall 2008	1961	159	**8.1**	5800	255	**4.4**	7761	414	**5.3**
Spring 2009	1756	177	**10.1**	5497	394	**7.2**	7253	571	**7.9**

Fall 2009	1814	190	**10.5**	6055	356	**5.9**	7869	546	**6.9**
Spring 2010	1705.0	201.0	**11.8**	5856.0	543.0	**9.3**	7561	744	**9.8**
Average	1809	182	**10%**	5802	387	**7**	7611	569	**7.5**

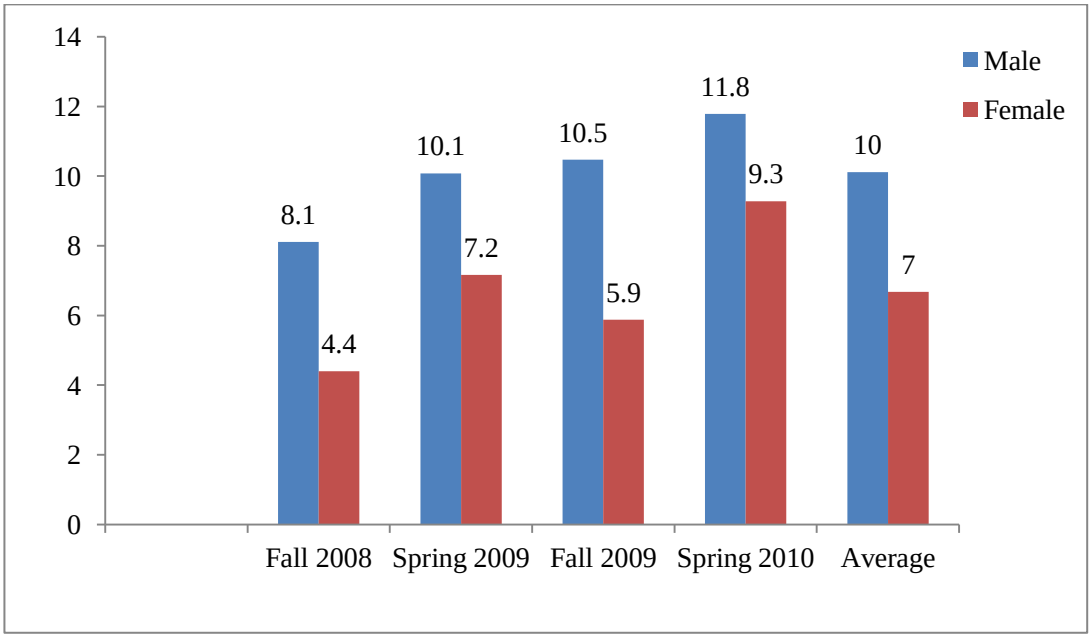

Figure 1.1 Percentage of Male and Female Students Who Had GPAs of Less than 2.0/4.0 During the Fall 2008 – Spring 2010.

Table 1.2 and Figure 1.1 show that approximately 569 students received warnings per semester (7.5%); the average for male students was 182 per semester with 10% and the average for female students was 387 with 7%. Such figures indicate that the achievement of male students is less than the achievement of female students. These figures suggest that gender could be an issue when cooperative learning activities are used as the major resource in promoting e-learning (Lai & Kuo, 2007).

One of the main objectives of the Core Curriculum Program (CCP) at QU is to equip students with communication skills. In addition, the CCP aims to increase

the level of achievement of CCP learning outcomes at both the course and program levels. Within this framework, an indirect assessment tool, the *Student Feedback Questionnaire,* is administrated at the end of each semester to estimate the level of achieving the learning outcomes and communication skills as perceived by students (Fakhroo, Abdulmoneam, Fawzi & Salim, 2008). Students' achievement of communication skills is self-reported on a Likert scale, with answer choices including Very Small Extent, Small Extent, Large Extent and Very Large Extent.

In spring 2008, the average of achieving the learning outcomes of the Arabic Language Course (ARAB 100) at QU shows that only 53.27% of students taking this course achieved the learning outcomes at the Very Large Extent and Large Extent of Likert scale. This level did not meet the desired key performance indicator (benchmark), which was set at the 80% level. Table 1.3 shows the learning outcomes, key performance indicators and the percentages achieved for each learning outcome. In light of these results, it was recommended that corrective actions be taken to increase the percentage of student achieving learning outcomes of Arabic Language Course (ARAB100) to target levels (Fakhroo et al., 2008).

Table 1.3 Levels of Achieving the ARAB 100 Course Learning Outcomes as Perceived by Students

Learning Outcomes	**Achieved Percentage**
Read a text intensively, critically, loudly, silently or just scanning.	52.0%
Identify main and sub - ideas in a written or oral text.	56.4%
Define the meaning of words in a text	58.7%
Suggest contemporary alternatives for traditional vocabulary.	38.3%
Identify the meaning of words within a context.	66.7%
Speak fluently using contemporary "phsoha".	46.2%
Introduce yourself to others using dialog etiquettes and techniques.	65.3%
Suggest pre - listening ideas on a topic that you will listen to.	46.5%
Take notes while listening to a lecture.	57.3%
Identify facts and opinions in an oral text.	53.0%
Overall Average	**53.27%**

A weakness in Arabic language is not only found among QU students, but also among students at other Arab universities. For example, Mhailan (2010) found in her study on the effect of specialization, acceptance program, year of study, nationality and gender on Arabic skills among students at the University of Jordan that there were weaknesses in Arabic skills among students and that there were statistically significant differences in the Arabic skills among the means of scores of students in terms of their field of specialization, acceptance program, nationality and gender.

In view of the previous information, there is a need to think about new methods to increase students' achievement and their communication skills and decrease the gap between male and female students in these areas using the latest technologies. The main purpose of this research is to investigate the impact of e-

learning-based cooperative learning in developing students' achievement in the Arabic Language Course (ARAB100) and their perceptions of communication skills, specifically if there are any significant differences in achievement and communication skills between students taught via the e-learning with cooperative learning (ELCL) mode and those taught via the individual e-learning (IEL) mode.

1.3 RESEARCH OBJECTIVES

There are four 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 in the Arabic Language Course (ARAB100) and their perceptions of the communication skills.
3. Evaluating the impact of e-learning modules on male and female students' achievement in the Arabic Language Course (ARAB100) and their perceptions of communication skills.
4. Identifying the interaction effects between the e-learning modes and gender on achievement and communication skills as perceived by students.

1.4 RESEARCH QUESTIONS

The research answers the following questions.

1. What is the impact of e-learning modules with cooperative learning (ELCL) on student achievement in Arabic Language Course (100) versus individual e-learning modules (IEL) regardless of gender of the students?

2. What is the impact of gender on students' achievement in Arabic Language Course (ARAB100) regardless of the e-learning mode?
3. What is the interaction effect between the e-learning modes (ELCL & IEL) and gender (M & F) on achievement in Arabic Language course (ARAB100)?
4. What is the impact of e-learning modules with cooperative learning (ELCL) on communication skills as perceived by students versus individual e-learning modules (IEL) regardless of gender of the students?
5. What is the impact of gender (M & F) on communication skills as perceived by students regardless of the e-learning mode?
6. What is the interaction effect between the e-learning modes (ELCL & IEL) and gender (M & F) on communication skills as perceived by students?

1.5 RESEARCH HYPOTHESES

Based on the literature review on ELCL, the researcher found that several number of studies (e.g. Merino et al. 2010; Mikkel, 2009; Soon, 2009; Monahan, 2008; El-Deghaidy & Nouby, 2008; Nguyen, 2008; Jonsson, 2005) comparing computer support cooperative learning ELCL and IEL environments in university settings have demonstrated that ELCL can achieve better results in terms of student learning outcomes. In addition, many studies confirmed that the effectiveness of ELCL on acquiring communication skills is better than IEL. Examples of these studies include Al-Sharaabi (2009), Norton and Hathaway (2007) and Nevgi et al. (2006).

Regarding the gender difference on achievement and communication skills, studies by Tanhan and Kilic (2011), Song (2006) and Benbunan-Fich and Hiltz

(2002) found that female students got higher grades than male students. As shown in Table 1.2 and Figure 1.1, the results of these studies were supported by the QU report (2008). Furthermore, Table 1.2 and Figure 1.1 reveal that 10% was the average percentage for male students received warnings per semester as a result of their low GPAs and 7% was the average percentage for female students. Thus, percentages given Table 1.2 and Figure 1.1 reflect the low achievement of male students compared to the achievement of female students.

Based on the findings of studies provided in this section, two alternative hypotheses were formulated, and the level of significance Alpha in this research was set at 0.05.

H1: Students using e-learning modules with cooperative learning (ELCL) mode will attain a significantly higher adjusted mean score (X) on the achievement test than students using individual e-learning modules (IEL) mode, that is:

$X_{(ELCL)} > X_{(IEL)}$.

H2: Female students using e-learning modules will attain a significantly higher adjusted mean score (X) on the achievement test than males using the same modules regardless of e-learning modes, that is: $X_F > X_M$.

H3: There is a significant interaction effect between the e-learning modes (ELCL & IEL) and gender on achievement in Arabic Language (ARAB100).

H4: Students using e-learning modules with cooperative learning (ELCL) mode will attain a significantly higher adjusted mean score on the perception of communication skills (CS) than students using the individual e-learning modules (IEL) mode, that is $PCS_{(ELCL)} > PCS_{(IEL)}$.

H5: Female students using e-learning module will attain a significantly higher adjusted mean score on the perceptions of communication skills (PCS) than male students using the same modules regardless of e-learning modes, that is: $PCS_F > PCS_M$.

H6: There is a significant interaction effect between the e-learning modes (ELCL & IEL) and gender on the perceptions of communication skills.

1.6 SIGNIFICANCE OF THE RESEARCH

As has previously been mentioned, there is segregation by gender in QU and recorded differences in the achievement of male and female students. The current research may help contribute to solving such an important issue through using the BB system. BB may help increase achievement level and communication skills among male and female students because it has several features that allow for communication between students. The instructor can create powerful learning content using a variety of BB tools and evaluate students' progress using BB assessment components. Multiple formats of assessment are available, including true/false, multiple choice, completion, ordering and essay. Faculty may facilitate students or groups using engaging assignments that cause them to reflect on their work. Students can follow their own progress and access discussion board and the virtual classroom tool that enable dynamic collaboration and communication in the learning environment (instructor-learner, learner-learner, learner-content). Students can also access supplemental educational content and resources through BB's customizable academic resources. Students and instructors can engage in enhanced collaboration and learning communities with synchronous and asynchronous tools such as the e-mail, whiteboard, individual and group assignments and the safe assign.

These communication features allow for the diversity of instructional methods that are the focus of this study.

Further, understanding the effects of gender and e-learning with cooperative activities on achievement and communication skills may have potential impact on how e-learning can be more appropriately prepared, delivered, organized and managed. This research can be constructive for both online course designers and instructors to make rational decisions regarding how to facilitate Internet-based instruction, how to minimize gender-related differences online and how to optimize the online learning environments in which both online learners and instructors can make the most of the mediated learning and teaching experiences.

Faculty teaching CCP courses may also benefit from the findings of this research since the implications of the results might provide some guidelines for structuring and facilitating cooperative learning activities in online environments.

The results of this research may supply those responsible for CCP courses with recommendations and suggestions, which may increase efficiency of implementation of the accompanied e-learning by cooperative learning in teaching those courses. The present research may provide those responsible for designing educational site on the Internet with educational and psychological guidelines for delivering e-learning courses. This research is considered an extension of other research in the field of implementing e-learning environment in university curricula.

1.7 RESEARCH FRAMEWORK

The research framework in Figure 1.2 shows the relationship between the different variables under investigation.

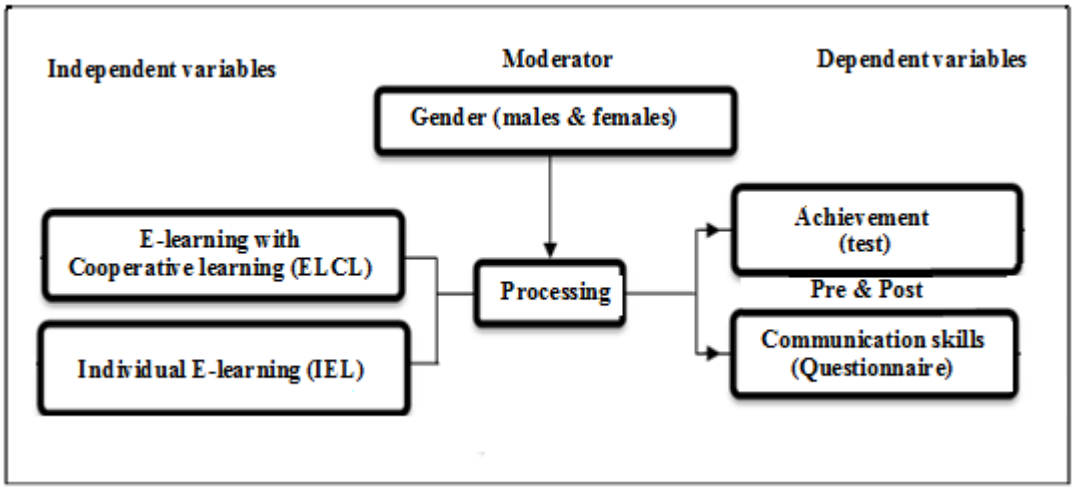

Figure 1. 2 Research Framework

The research framework depicts three variables: independent, moderating and dependent. The independent variable of the research is the e-learning approach that includes two modes: e-learning with cooperative learning (ELCL) and individual e-learning (IEL). The dependent variables of the research are students' achievement and communication skills as perceived by students. The moderating variable is gender, which has two categories, male and female. The moderating variable gives strong contingent effect on the relationships between the independent and dependent variables. The effect of using the two modes of e-learning on achievement and students' perceptions of communication skills were identified by achievement test and communication skills questionnaire that was distributed to male and female students registered in the Arabic Language Course (ARAB 100) at QU before and after the treatment.

1.8 THEORETICAL FRAMEWORK

The theories underlying this research are as follows:

A. Social Constructivist Theory (Vygotsky, 1978)

B. Activity Theory (Engestrom, 1987)

1.8.1 Social Constructivist Theory

Vygotsky (1978) introduced social constructivist theory that contains three major principles or concepts. The first principle indicates that the educational process has four major players: the learner, the faculty member, the learning point or problem to be mastered and the social context of the learning experience. The second principle concerns the environment that learning occurs. The third principle concerns the path taken to develop the concept. In online learning, this means selecting the correct technology and using it efficiently by basing the learning sequence on a proven and well-established learning theory (Boettcher & Conrad, 2004).

Based on social constructivist theory, Jonassen and Ronrer-Murphy (1999) proposed a model for a constructivist-learning environment. This model suggests the importance of posing an appropriate problem for the learning to focus on and supporting it with various interpretative and intellectual systems. The support tools or system for this constructivist learning environment are related cases, information resources, cognitive tools, conversation and collaboration tools and social or contextual support systems.

In this research, the design model of each module may contain problems as activities. Students will work in cooperative groups to find a solution for these

problems using BB's collaboration tools (discussion board, groups, messages, blog and e-mail) to access the information resources available in each module. According to social constructivist theory, during the process of learning and communicating, students' knowledge can be constructed and their communication skills be developed.

1.8.2 Activity Theory

Activity theory, a sub-theory of sociocultural theory, is one of the most popular theories in language acquisition (Wen, 2008). Activity theory is considered to be a philosophical and interdisciplinary framework for the purpose of examining various practices of human beings as developmental process; it emphasizes that human practices are all associated with individual level as well as with social level (Kuutti, 1995). Engestrom (1987) argued that an activity includes a subject and a community element; while the subject can be an individual or a group engaged in an activity, the community element represents the collective group and those people who interact with the individual (subject) or shared interest in the object and outcomes of the activity. All members of community have roles (i.e., division of labor); all act within a certain set of rules; and all use tools in order to work on the object to achieve the learning outcomes. The mediation includes 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, which can be used, are such as online discussion forum, blogs and group work (Joyes & Chen, 2007). Figure 1.3 shows the different components of an activity system.

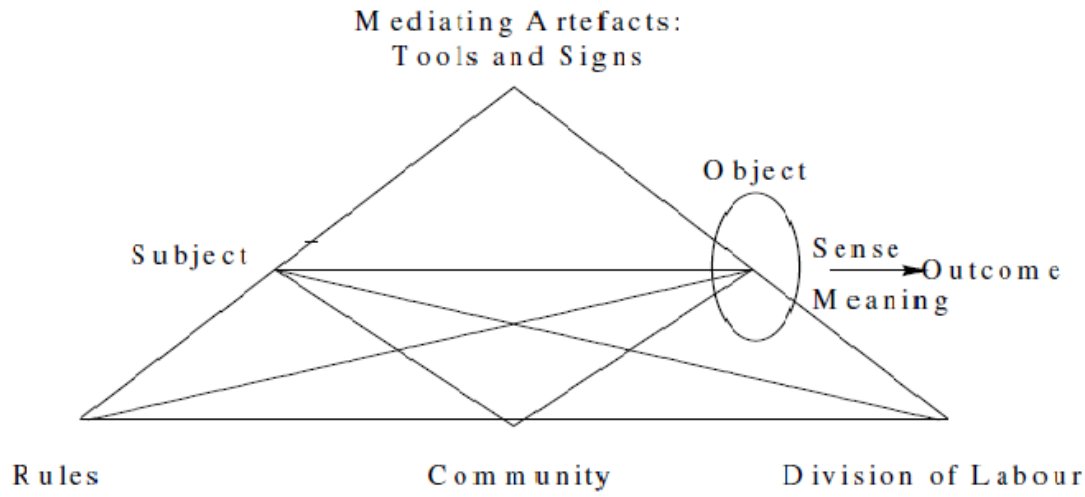

Figure 1.3 Engestrom Model of A Human Activity System (Engestrom, 1987, p. 78)

Based on the activity theory, human activity is carried out through three levels: actions, the subject's conscious goals and operations. Actions are controlled by the subject's conscious goals, which are the anticipation of the future results of the action. Actions are realized through a series of operations, each accommodated to the concrete physical conditions of the action. Operations describe how the action is realized, adjusted to the actual material conditions of the action. The human activity is guided by anticipation at these three levels (Li & Bratt, 2004).

According to (Engestrom, 1987) an activity system has seven main elements which are:

1. Subject. The individuals are involved in the activity.
2. Instruments. The elements that mediate the activity: resources, supports, online tools and environments .
3. Object. Products are acted on by the subjects during the activity.
4. Community. represent the collective group and those with a shared interest in the object and outcomes of the activity.

5. Rules. Evaluation criteria and regulations about social interaction.
6. Division of Labor. The division of labor element represents responsibilities, which subjects assume when carrying out an activity.
7. Outcome. The overall intention of the activity system (Jonassen, 2002; Jonassen & Rohrer-Murphy, 1999).

Principles and ideas from social constructivism and activity theories are to be incorporated in this study in order to address the various issues such as designing the e-learning modules and developing online cooperative learning activities and tasks.

1.9 CONCEPTUAL FRAMEWORK OF THE RESEARCH

To integrate the various requirements of e-learning modules design, the researcher used the activity theory to analyze cooperative learning online. In this research, activity theory is utilized to design the e-learning modules (ELCL & IEL) to be implemented in the Arabic language course (100) which was subscribed by registered male and female students. Table 1.4 shows how the researcher applied the activity theory elements for ELCL.

Table 1.4 Availability of Activity Theory Elements on E-learning Modes

Activity Theory Element	How to apply Activity theory to the ELCL
Subject	- Arabic Language (100) students who work on the e-learning modules.
Mediation Tool	-Resources: lecture captured session, Video clips, Multimedia and the content of the e-learning modules. -Technical tools and environments: The BB system and computers. - Supports: Video clip to guide student How to study the EL modules via BB system.
Community	Composed of instructors, Students as groups, IT technicians and learning system coordinators .
Division of labour	- Roles of Instructors: design the tasks. Create the roles, moderate the interaction. Evaluate the products of students. Give feedback. - Role of students: solve the tasks. Post the task on the discussion board, Evaluate the work of other groups.
Rules	- Deadline for doing the task. - Criteria of evaluation. - Criteria to advance to the next module (90% on post-test).
Object	- Acquiring knowledge and skills as a result of studying e-learning modules on the BB and completing the activities.
Learning out comes	- Through the interaction between all elements of the system, the object will transfer to learning outcomes which is improvement of achievement as measured by achievement test and communication skills as perceived by students (measured by questionnaire).

The visual conceptual framework of the research is shown in Figure 1.4.

the object was to acquire knowledge and skills as a result of studying e-learning modules on the BB system and complete the activities either individually or in groups which leads to the achievement of the learning outcomes which were developing both their Arabic language achievement and their communication skills. The BB system includes tools for communication such as email or a discussion board, which may be used to support the interaction between learning community (students-students, students-content and students-teachers. To complete the task, the division of labour determines the roles taken by the individuals (students) in learning the e-learning modules. During the interaction, the members of a

community should have a rule to keep students on track. Finally, the rules regulate the use of time, online behaviors, measurement of outcomes and criteria for rewards.

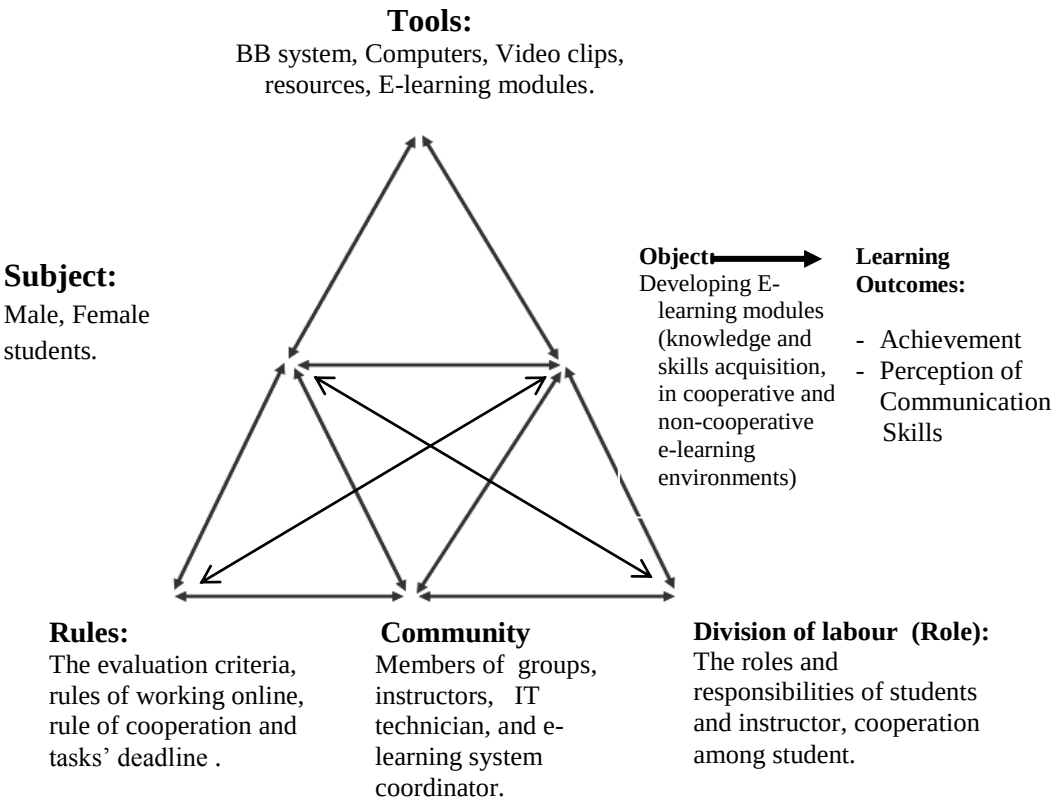

Figure 1.4 Conceptual Framework of the Research, readapted from Engestrom Model (1987**)**

1.10 RESEARCH LIMITATIONS

As with any study, there are limitations to this investigation that should be considered. These are as follows:

Due to the segregation between male and female students at QU, the results of this research should not be generalized to other universities which do not have the system of segregation between male and female students.

1. Although there are many systems for delivering e-learning environment, the present research focused on the BB system which the system adopted by QU. The results of this research should not be generalized to other e-learning

system because the features available on the BB are different from the other content management system (CMS).

2. The present research is limited to one course (Arabic Language 100). This is one of the Core Curriculum Courses that all QU students must take regardless of their majors. Due to the varied learning outcomes in courses which may result in different levels and reciprocal online interaction among learners. These results should not be generalized to other courses in QU.
3. The final limitation is associated with measuring students' perceptions of communication skills that were assessed via questionnaire. This assessment may be insufficient because there were no verbal reports that measure the direct observation of the students' interaction and strategy used and its development.
4. Due to the possible effects of students' abilities in using Information and Communication Technology (ICT) on the results of the current study, the result of this research should not be generalized for undergraduate students in any other universities in which students do not have the experience and knowledge in using Information and Communication Technology (ICT). This is because students at QU are required to take ICT courses in the foundation program before starting their major courses.

1.11 DEFINITION OF TERMS

1.11.1 Communication Skills as Perceived by Students

In this research, students' perceptions of communication skills refer to their abilities to reflect and judge that they are able to communicate and interact with others during