



Women's College  
For Arts, science and Education  
Department of Curricula & Methods of teaching

**The Effect of Synchronous and Asynchronous  
Communication in Co-operative learning across the Web  
to Develop Students' of Instruction Technology Skills of  
Communication through the Network**

A Thesis Submitted for the Master Degree in Education  
(Specialization: Instruction Technology)

**Submitted by**

**Mr. Ahmed Mohamed Fahmy Youssef**  
**Demonstrator of Instructional Technology – Fayoum University**

**Supervised By**

**Prof. Dr./ Mohamed Attya Khamis**  
**Prof. of Instructional Technology**  
**Women's College**  
**Ain Shams University**

١٤٢٩-٢٠٠٨

## Abstract

In the past two decades Instruction Technology witnessed a rapid and successive development. This matter is led to the emerging of a new communication and instruction technology. As a result, Technology Enhanced Learning became an important mean for information, learning and training as well. These contemporary challenges imposed upon learning to be changed in the modalities or ways of transferring information in addition to interacting between learners so as to convey distance learning to them.

Web-based learning is a new innovation that has been brought about by instruction technology and that imposed itself strictly upon educational organization as an interactive distance learning environment, where it is easy for learner through it to attend online lectures, present multiple interactive means, write notes, discuss, ask questions, interact with learners through video conference, share opinions as if they were in a single classroom working together like a single team work in order to build up their own learning, specify and plan for their instructional tasks, and search for information in many resources through websites, databases and web-based different programs relevant to their topic of learning. Hence, they can keep communicating with each other through cooperative learning to consult and solve problems across interactive computer video conferences. Thus, they can show results they reached on news channels or send it to each other by e-mail or through mail chats.

### **THE RESEARCH PROBLEM:**

Upon what has been mentioned above, we can formulate the research problem in the following words "There is a difficulty concerning identifying one of the two forms of synchronous and asynchronous communication in cooperative learning across web to be more effective than the other ". Also, the problem can be formulated in the following main question:

"What is the effect of synchronous and asynchronous communication - in cooperative learning across web - on developing communications skills across web for students of instruction technology department?"

### **Out of the main question come these subsidiary questions:**

- ١- What are communication skills across web that should be available for students of instruction technology department?
- ٢- What are the standards of designing three programs for developing these skills? One of these programs is set by using

synchronous communication; the other is by using asynchronous communication and the third by using both forms.

- ۳- What is the form of the three programs design in the light of the criteria and on the basis of an appropriate model of instructional design?
- ۴- What is the effectiveness of the three programs based on synchronous and asynchronous communication and both two forms - in cooperative learning across web - that it has on the developing of communication skills across web for students of IT department?
- ۵- Which one of the three programs depending on synchronous and asynchronous communication and both two forms is more effective - in cooperative learning across web - on developing communication skills across web for students of IT department?

#### **THE RESEARCH OBJECTIVES:**

The objective of the current research is to design three programs: the first is based on synchronous communication while the second depends on asynchronous communication and the third is based on both of the two forms of communication in addition to measuring the effectiveness of each of them in training students of IT department on communication skills across web. The research objectives can be identified in the following:

- ۱- Identifying standards of designing e-learning programs that are based on synchronous and asynchronous communication and both of the two across web.
- ۲- Designing the three programs based on synchronous and asynchronous communication and both of the two forms across web.
- ۳- Measuring the effectiveness of the three programs and identifying which one of them to be the most effective in cooperative learning across web in developing communication skills across web.

#### **THE RESEARCH IMPORTANCE:**

The research comes as a response to the recommendation of the studies that "Researches in the field of IT should use modern educational styles and communications technology across computer in web-based learning that raise student's interest and provide them with opportunities

for cooperation and playing an active and positive role as well as interacting with various educational situations”.

**The importance of the research can be indicated as follows:**

- ١- The research contributes in finding out the effectiveness of e-learning environments in which communication technology across CMC computer plays a part by using cooperative learning strategy.
- ٢- Making use of identifying communication skills across web (synchronous and asynchronous) in training students (Teachers) in the faculties of education (Diversified Education) in various disciplines.
- ٣- The research is a useful tool for designers of e-learning programs in designing programs considering the standards and that are more effective.
- ٤- The research is useful when detecting the best educational strategies that are convenient for e-learning.

**THE RESEARCH HYPOTHESIS:**

- ١- There are differences with statistical significance at the significance level ( $\alpha$ ) between the three groups average in the pre and post achievement.
- ٢- There are differences with statistical significance at the significance level ( $\alpha$ ) between the three groups average when achievement.
- ٣- There are differences with statistical significance at the significance level ( $\alpha$ ) in the three groups between the pre and post achievement in favor of the post achievement.

**THE RESEARCH METHODOLOGY:**

The current research depends on the technological methodology in the organizational development that includes:

**١- Descriptive Method:**

In identifying communication skills across web and that should be developed for students of the faculty of diversified education in addition to standards and specifications of the programs based on web besides the studies that emphasize its effectiveness and how to make use of it in cooperative learning and presenting cooperative learning strategy across web by using CMC communication technology.

### ٢- *Experimental Method:*

To test the three programs that has been prepared (set) and compare between groups. Experimental design includes the following:

<b>Processing Group</b>	<b>Pre Tests</b>	<b>Program</b>	<b>Post Tests</b>
<i>Group (A) ٢٠ students</i>	√	<i>Synchronous</i>	√
<i>Group (B) ٢٠ students</i>	√	<i>Asynchronous</i>	√
<i>Group (G) ٢٠ students</i>	√	<i>Both synchronous and asynchronous</i>	√

### **THE RESEARCH RESULTS:**

- ١- The research has proved the validity of the first hypothesis, that there is a statistically significant difference between the three groups in the pre/post application in favor of the post application leading to proving the effectiveness of the three programs.
- ٢- The research proved that there is no statistically significant difference between group (A) that uses the asynchronous communication system and group (B) that uses the asynchronous communication system.
- ٣- The research proved that the integrating in using both systems of synchronous and asynchronous communication together is more effective, where there are statistically significant differences between the third group that studies according to the system uses both synchronous and asynchronous communication together and the two groups (A) and (B) in the post application of the test in favor of the third group.

### **THE RESEARCH RECOMMENDATIONS:**

In the light of the research results, the following recommendations could be highlighted:

١. Using e-learning programs based on synchronous and asynchronous communication in cooperative learning across web in training students on different skills.
٢. Applying design basics and standards which the researcher followed so as to produce this program when designing other instructional programs.

۳. The necessity of making use of *Mohamed A. Khamis model* in designing instructional programs produced across web.
۴. Developing and designing educational syllabuses in Arabian and Egyptian universities across web in order to face problems of crowded terraces.
۵. The responsible committees adopt preparing IT specialist – in the faculties of education (*Diversified Education*) – who can prepare programs similar to the program that has been used in the current research in teaching different syllabuses in IT specialist preparing program. This contributes in overcoming many problems that face students when learning and acquiring practical skills such as lacking available possibilities and in increasing students numbers in practical lessons.
۶. Preparing training courses for IT specialist while working so as to be trained on skills of e-learning programs producing, which accommodates the results of studies and researches.
۷. The team that designs and produces e-learning programs across web should combine a group of individuals in different disciplines that include educational, artistic and scientific specialists.
۸. Developing officials awaring of e-learning based on synchronous and asynchronous communication and the necessity of preparing IT specialist in order to cope with these innovations.