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The Effect of Cooperative Learning Based on Experts' Groups (Jigsaw 2) in the Direct and Postponed Achievements for Princess Rahma University College Students in English 99

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Abstract

This study aims to know the effectiveness of using the Cooperative Learning based on Experts groups' method on Princess Rahma University College students' direct and postponed achievement in English 99 course compared with the traditional method. The study sample consists of 141 students males and females from Princess Rahma University College organised in four sections, two sections were chosen randomly from the four sections to form the experimental two sections and their number was 75 students males and females taught by (Jigsaw 2) and the controlled group was 66 students males and females taught by the traditional way. The instruments of the study contains pre-cognitive test for assuring the equality between the two groups, and an achievement test whose validity and reliability was assured, and the results showed that there were statistically significant differences (a=0.01) between the controlled and experimental groups in achievements due to (Jigsaw 2) method which were in favour of the experimental group. Also, the results showed that there were no statistical differences due to gender or the interaction between gender and teaching method variants. The study has a number of relevant recommendations.

Keywords: Jigsaw 2; Direct and postponed achievement; English 99 course; Princess Rahma University College students

1. Introduction

The current educational system calls for the most effective interactive education based upon dialogues that stand on thinking and interactions within learning not on rote learning that's traditional. So we tend to the creative, practical, logical critical education. In order to achieve this education, educational institutions should prepare a generation of teachers who are creative and effective through applying current educational roles based on students as they play the most important roles in the learning process. So teachers should acquire theses roles such as guides, supervisors, counselors, facilitators, examiners...etc. So the educational process becomes more effective and based on democracy and flexibility (Al Ghbari 2000, Ghaith, Al Ghalgeli 2004)

Educators started reforming the effectiveness of teaching methods and the strategies used in schools as a reaction for what has happened in the recent years in the field of education, teaching, learning, learners and what we call the elements of the educational process in terms of the increasing numbers of learners and the changes that are imposed by globalism through the current educational perspective such as moving from concerning on teachers to concerning on learners since they are considered to be individuals not numbers among groups of learners (Al Helah, 2002). This is all for getting higher achievements for learners since achievement includes acquiring knowledge, emotions, thinking processes also it includes attitudes, values, skills that are all factors for forming individual's personality. (Al Kur 2003, Al Helah 2005).

So, a search for specific teaching strategies that makes the student more effective in the little village we live in or developing familiar strategies to be more effective. Cooperative learning means dividing students into groups and sub-groups then asking them to do an activity or a task in a comfortable climate that increases their motivation to work (Bane Arshid 2002). Cooperative learning is one of the most effective technology of teaching that is brought by the educational process in which researchers prove its positive effect on students' achievement. (Gaith,2003 Cooper, et. al, 1999). The previous concept isn't new for educators since they used group learning as one of their various learning activities from time to time but the problem is that most members of the group depend on one or two students for doing the work. But in cooperative learning teachers use an organisational system in which each individual in the group participates in the task and does it effectively (Al Galgeli, 2004)

In order to make cooperative learning really effective it should contain five basic principles in the groups' learning as mentioned by (Al Helah 2002, Cooper, et. al., 1999)

i-Positive mutual dependence among group members.

ii-Direct interaction among group members and other members.

iii-Questioning individuals and personal responsibility.

iv-The specific skills of the individuals' relationships with small groups.

v-The groups' achievements.

Cooper and others see cooperative learning as a learning activity organised to become more effective if done among groups effectively. (Cooper et. al., 1999) but Johnson who was indicated to in "Al Helah 2002" defined cooperative learning as learning within small groups of students (2 - 6) in which the teacher allocates the roles for each student as a leader, reader, summariser, corrector, registrar, encourager ...etc and those roles change within the same group.

The results of the experimental and field studies showed the importance and the effectiveness of cooperative learning in all its types and its positive effect on students' achievement as Slavin showed in (Algalgeli, 2004) in terms of students' motivation, interests and their decision-making. Also "Alazemi" 2002 assures the greatest effect of cooperative learning in increasing students' achievement in all stages of learning and in all cognitive levels. Also, its effect on the students' emotional dimension like respecting colleagues, obeying rules and instructions and accepting groups' opinions. Also, Algalgeli assures its effect on the psychological state of students in which they develop self-esteem and self-trust. Also, it increases students' creation and decreases anxiety as Cooper and others mentioned. (Cooper, et., al., 1999)

There are some features for cooperative learning such as using instruments, labs and computers (Alebiosu, 2001) in addition to students' interactions with learning materials i.e. each student has a learning computer but in the traditional learning he doesn't get one, also it overcomes the problem of the overload number of students in one class as mentioned by (Al Hersh and Megdade, 2000)

"Ghaith" and "El-Malak" (Ghaith and El-Malak, 2004) assured the benefits of cooperative learning which include increasing learners' independence, improving their interactions and the abilities of using different topics in different levels.

In spite of all cooperative learning features, educators and psychologists in Osten schools in Texas created a modern process called Jigsaw, since it looks like the jigsaw structure, to develop relationships between students from different origins as English, Spanish and Blacks. (Al-Gasreen, 1998). The results of applying this procedure showed that English students learn better than other nationalities and there were good relations between them and others at the end of the study. In brief this method creates positive results among students. (Al- Helah, 2005). Slavin who was mentioned in (Al-Gasreen 1998 and Al-Galgeli 2004) developed a modified process to Jigsaw which was called "Jigsaw 2" in which each student should work in a group that consists of 5-6 individuals and he\she was given a task different from any other student in the same group and this makes every student an expert in his\her part and after distributing tasks on students, they start re-arranging themselves and each group has the same task as group experts, and so each group makes its effort to succeed in its task. Then the teacher starts the exam by giving each individual his\her grade alone in the "Equal Chance Evaluation" in which the teacher evaluates the student by himself based on his\her previous achievement.

This Jigsaw 2 achieves the two conditions of the objective and individuals' and groups responsibility (Al-Galgeli 2004). Jigsaw 2 was called the cooperative learning by experts'

groups. Therefore, Jigsaw 2 is learnt through the ten steps mentioned in (Wedman, et. al., 1996, Al-Gasreen, 1998, Wajeh, 1998, Al-Azame 2002, Al-Helah 2005, Al-Galgeli, 2004)

They are as follows:

i. Choosing a learning unit from a book or any knowledge resource and dividing it into basic topics.

ii. Forming cooperative groups consisting of 5-6 individuals that differ in achievement.

iii. Distribution of experts' paper to each original group with a list of topics contained in the learning unit.

iv. Allocating parts of the topics to each member of the original group.

v. Asking students to study the allocated units at home or at class.

vi. Asking the different group experts to meet each other and discuss the topic and present a plan.

vii. After finishing the topic discussion, the experts start teaching the information related to their topics to the other groups.

viii. After that all students are examined and should answer questions.

ix. Results should be treated as grades and then announced.

x- The first eight steps should be repeated to all the following topics within the unit, and then groups' grades are calculated based upon students' improvement.

Therefore, with respect to the importance of Jigsaw 2 and the scarcity of studies that search for this topic especially in university teaching, and the researchers concern to achieve good graduates to be models of their students acquiring good strategies and methods of teaching which all studies search for and calls for, this study focuses on getting benefit from the current methods and techniques based on cooperation used in Jigsaw 2 in the direct and postponed achievement for Princess Rahma University College students in Eng. 99.

2. Study Thesis and Questions

This study aims to know the effect of cooperative learning based on experts' groups (Jigsaw 2) on Princess Rahma University College students' direct and postponed achievement in Eng. 99

Therefore, this study tried to answer the following main questions:

Are there any statistical differences (a=0.05) in the direct and postponed achievement in Eng.99 for Princess Rahma University College students due to the effect of (Jigsaw 2) and gender compared to the normal traditional learning. And this question contains the following questions:

i. Are there any statistical differences (a=0.05) in the direct achievement for Princess Rahma University College students due to (Jigsaw 2) compared to the normal traditional learning?

ii. Are there any statistical differences in the direct achievement for Princess Rahma University College students due to gender?

iii. Are there any statistical differences (a=0.05) in the direct achievement for Princess Rahma University College students due to the interaction between the gender and the method?

iv. Are there any statistical differences (a=0.05) in the postponed achievement for Princess Rahma University College students due to cooperative learning based on experts' groups (Jigsaw 2) compared with the normal traditional learning?

v. Are there any statistical differences in the postponed achievement for Princess Rahma University College students due to gender?

vi. Are there any statistical differences in the postponed achievement in for Princess Rahma University College students due to the interaction between gender and the method?

3. The Importance of the Study

i - It's a respond to educators who call for developing and modernizing methods of university teaching with the change of teacher's roles and duties. Also, supporting students' roles in the learning process.

ii - Presenting a practical model of functioning the cooperative learning based on experts' groups.

iii - Developing the spirit of team work especially for students who acquire this strategy and this avoids what we call individual discussion which leads to selfishness.

iv - The scarcity of the Arab and English studies (in the border of researcher) that search for cooperative learning based on experts' groups (Jigsaw).

v - This study helps teachers and educators in developing and modernizing new methods of teaching in universities.

4. Procedural Definitions

Based on the study goal, the researcher defines these terms: **Cooperative learning based on experts' group (Jigsaw 2)** is the outcome of students' cooperation through forming experts groups consisting of five to six students in which each learner is given a learning task individually but not given to others in the same group which helps him\her to be as an expert

in his\her own topic, and then students organise themselves in experts' groups for studying the topic and teaching it to other students then they are examined and given grades or rewards.

The expert is the individual of the cooperative original group who is given a specific task that differs from others. The task is learnt and acquired in experts' groups and then taught to other mates in the same group.

English 99: It's a course taught at Princess Rahma University College that aims at making students acquire English concepts and grammar.

Achievement: The outcome of the cognitive field. It includes direct and postponed achievement concerning Bloom's educational objectives. It's measured through a test prepared by researchers, and then the validity and the reliability have to be assured. It consists of forty items- multiple choice questions that measure the learning outcomes.

Direct Achievement: it's knowledge and skills that the learner acquire in learning English 99. Also, it is the grade that the learner gets during the test which is applied after finishing this study.

Postponed Achievement: It's a system of knowledge and skills that the learner keeps after a period of time after completing English 99. Also, it is the grade that the learner gets on the achievement test which is applied after four weeks from applying the direct achievement test without telling the examinee that he/she is going to have an exam another time.

5. Study Limitation

The sample is the main limitation of this study. It's formed from first year students at Princess Rahma University College who specialise in Special Education, Social Work and Crime and delinquency who study English 99 for the year 2012-2013, so the researchers assume that this sample forms the study society and the environments of all Jordanian universities public and private are somehow similar.

6. Previous Studies

The Arab and English studies which compared between the cooperative learning based on experts' group (Jigsaw 2) and the traditional method were limited. They are:

"Mattingly and Vansickla 1991" study aims at comparing between cooperative learning based on experts' group and the classical method and their effect on students' achievement in 9^{th} grade in Geography in one American school in Germany. The sample was randomly distributed into two groups, one is experimental taught by cooperative learning based on experts' group (Jigsaw 2) with 23 participants and the other was taught by the traditional method with 22 participants. The study shows that cooperative learning based on experts' group was better than the classical one in students' achievement.

But “Epsten” that was shown in (Al Gasreen 1998) had a study that aimed to know the effect of (Jigsaw 2) and the traditional method in reading. The sample consisted of two groups one is experimental that studied reading cooperatively as experts’ group and the other is the controlled group that studied reading in the traditional way. The results of this study showed that the outcomes of the (Jigsaw 2) were very high in the achievement test, and the students’ average was better than the other group.

Wedman and others (Wedman,et. al. 1996) made a study which included a comparison between cooperative learning based on experts’ group and the traditional method concerning reading to the trainees teachers. The study showed that teachers who studied by Jigsaw 2 were better than those who studied by the traditional method.

Wajeh (1998) made a study to know the effect of (Jigsaw 2) on ninth graders in mathematics and their attitudes towards it compared with the traditional method in teaching. It was found that there were statistical differences for students who learnt by (Jigsaw 2). And there were no statistical differences in students’ attitudes towards mathematics.

Also, there was a study for “Al-Gasreen” (1998) which aimed to know the effect of cooperative learning based on experts’ groups (jigsaw 2) and the personal learning (Kelar’s Plan) in tenth graders’ achievement in History compared with the traditional method. The study showed that there were statistical differences due to the method of teaching for students who learnt by (Jigsaw 2) but there were no statistical differences due to gender in the direct and postponed achievement.

“Alebiosu” (2001) studied the effect of cooperative learning based on experts’ group (Jigsaw 2) on secondary school students in applied Chemistry in Nigeria. The results showed that there were statistical differences for the students who learnt by (jigsaw 2).

Another study was conducted by Ghaith (Ghaith, 2003) to know the effect of cooperative learning based on (Jigsaw 2) in reading, achievement and attitudes towards reading for eighth graders in English. The results showed that (Jigsaw 2) had positive effect compared with the traditional method.

Another study was conducted by Ghaith and El-Malak (Ghaith and El-Malak, 2004) to study the effect of cooperative learning based on experts’ group on reading in English. The results showed no statistical differences between the experimental and controlled groups.

In surveying the previous studies especially those concerning the effect of cooperative learning based on experts’ group, the researchers didn’t find any studies that include comparing between (jigsaw 2) and the traditional learning in universities except Wedman’s study in 1996. Therefore, this study is so important and considered to be the first one applied on Al Balqa Applied university students in Eng.99.

7. Procedures and Methods

7.1 Study Community

It includes all Princess Rahma first year students, that's one of the colleges of Al Balqa Applied University, who are registered in Eng. 99 for the first semester 2011-2012 and they were three hundred and seventy-seven females and males distributed on four sections in halls.

7.2 Study Sample

The study Sample was 141 Eng. 99 students, females and males,

The researcher chose two sections from the four sections randomly then chose two sections as an experimental group which consisted of 75 students, males and females, who learnt Eng.99 using Jigsaw 2 method. And the second group consisted of 66 students, males and females, that learnt by the traditional method.

7.3 Study Instruments

The study used the following instruments:

i.: The English learning topic which included two units distributed on three weeks with three credit hours weekly expect the hours allocated to the first, the second and the final exams and these units are "getting started" which includes the following topics: introducing oneself, numbers, classroom language, personal information, adjectives and the second unit entitled "people" includes grammar, vocabulary, listening, speaking and pronunciation.

There was an allocated time of 75 minutes to each lecture and there were two lectures weekly, the learning unit was distributed to students on time, and references related to the course were given to them.

ii.: Achievement Test: the researcher prepared a test to measure students' achievement after analysing the units into its objectives and forming a specification table and forty items were written to cover all the objectives and the test was used in its final shape as a pre-test to be sure of the equality of the study groups and a post-test for students' achievements and a postponed test for measuring the kept learning.

7.3.1 Test Validity

To make sure of the validity of the test, it was displayed to a judge committee of seven judges who work in public universities and are specialized in methods of teaching English, and they were asked to give their opinion about the clarity and the suitability of the test items. According to their opinions, there were some changes in the exam items lingually, scientifically and educationally.

7.3.2 Test Reliability

To make sure of the reliability of the exam, it was applied on a sample of forty students, males and females, from Princess Rahma University College and the Koder and Richardson's equation (20) (Kr 20) that measures the internal consistency was used and the stability

coefficient was (84) and this value is enough for the study aims.

7.4 Study Procedures

It includes the following:

a: the procedures of controlling the experiment: In order to control the experiment, the achievement test which was prepared by the researchers (Course Instructor) was applied as a pre-test on students to find out their previous knowledge concerning the units allocated by the researcher and to know the equality of the allocated groups according to their previous knowledge and their results were taken to be analysed statistically.

b: the procedure concerning the cooperative learning based on experts' groups (Jigsaw 2) (the experimental group):

i-The researcher met the experimental group to let them know the method, its definition, its steps, its conditions, its ways of evaluation and its exams also the teacher's role in this method.

ii-The researcher divided the experimental group randomly into nine cooperative groups (experts' groups) with 8-9 individuals in each group. Then researcher allocated the two learning units and their references and he\she explained the instructions in which each group should take one task and then the groups are rearranged so that each group with one task assemble with other groups to form what is called experts' group. So each experts' group has one learning task and each individual in the group will be an expert in that content.

iii-The researcher showed the experimental group an experimental learning situation, explaining how to perform the cooperative learning based on experts' group (Jigsaw 2) and answered students' questions.

c: The general procedures for the experimental and controlled groups:

After performing the study, the researchers allocated the date of the direct exam for the groups which was within the second exam at college and the exam consisted of forty multiple choice items which was applied as a post-test and results were registered.

7.5 Study Design

Semi-experimental design was used and its variances were as follows:

Independent variable that consisted of:

* of learning which has two levels: (cooperative learning based on experts' group (Jigsaw 2) and the traditional learning).

* Method Students' gender which has two levels: (males and females)

* Dependent Variable: Achievement has two levels: (direct and postponed).

7.6 Statistical Treatment

The researcher used the comparison of Arithmetic means and standard deviations and the

associated analysing variable (ANCOVA) in analysing the study results by using (SPSS) the social science statistics.

8. Study Results and Discussion

8.1 Results Concerning Pre-achievement Test

Table 1: Results of the unilateral analysis of variance between the experimental and controlled groups' on the pre-achievement test

Variable source	Sum of standard deviations squares	Freedom degrees	Mean of deviations	F- value
The two groups	90.80	1	90.80	3.62
Error	3484.83	139	25.07	
Total	3575.63	140		

The researchers applied the test on the students groups before applying the experiment and according to the mean and standard deviation of the students' grades in the two groups on the pre-achievement test. To know if there are any statistical differences between the average of students' grades in the study group on the pre-achievement test, the researchers used the unilateral analysis variance on two independent samples for testing the significant difference between the average of the achievement of the experimental group and the controlled group as shown in table 1. It is clear from table 1 that the F-value is 3.62 and this is less than the F-value (3.84) and this means that there are no statistical differences between the study groups on the pre-test and shows the study groups are equal on pre- information.

8.2 The Results Concerning the Direct Achievement Require Answering the First, the Second and the Third Question

1: Are there any statistical differences (a=0.01) in the direct achievement for English 99 students in Princess Rahma University College due to cooperative learning based on experts' groups (Jigsaw 2) compared with the traditional learning?

2: Are there any statistical differences (a=0.01) in the direct achievement for English 99 students in Princess Rahma University College due to gender?

3: Are there any statistical differences (a=0.01) in the direct achievement for English 99 students in Princess Rahma University College due to the interaction between gender and method?

In order to answer these questions, the arithmetic means and standard deviations were calculated on the post direct test according to method and gender and the results were as follows in table 2.

Table 2: The arithmetic means and standard deviations for the study groups on the post achievement test (total mark=40)

Group	Gender	No. Of participants	Arithmetic mean	Total no.	Standard deviation
Controlled	Males	30	20.76	66	6.55
	females	36	23.05		7.24
experimental	Males	32	27.78	75	6.22
	females	43	25.16		6.46

Table 3: The results of the binary analysis of variance for the study groups on the direct achievement test according to methods of teaching and students' gender

Variable source	Sum of standard deviations squares	Freedom degree	Average of standard deviations squares	F-value
Method of teaching	668.55	1	638.55	14.49
Student's gender	1.18	1	1.18	0.03
Interaction between students' gender and method of teaching	210.34	1	210.34	4.78
Error	6034.58	137	44.5	
Total	6884.65	140		

*statistically significant at level (a=0.01)

Table 2 shows that there are statistical differences among arithmetic means for the study groups, and the arithmetic mean for the controlled group was (21.91) and its standard deviation was (6.90) but the arithmetic mean for the experimental group was (26.47) and its standard deviation was (6.34) and these differences require a statistical test at level (a= 0.01) and the binary analysis of variance was used as clarified in table (5).

Table 3 showed that the F-value (14.49) is bigger than the tabular F-value (6.63) and this means that there were statistical differences at level (a=0.01) due to method of teaching and there were no statistical differences at level (a=0.01) of the direct achievement test due to students' gender since the F-value (0.03) is less than the tabular F-value (6.63) and there were no statistical differences in the interaction between method and gender since the F-value (4.78) is less than the tabular F-value (6.63).

8.3 The results concerning postponed achievement that require answering the fourth, the fifth and the sixth question as follows

4: Are there any statistical differences at level (a=0.01) in the postponed achievement for Eng.99 students in Princess Rahma University College due to cooperative learning based on experts' groups (Jigsaw 2) compared with traditional learning?

5: Are there any statistical differences at level (a=0.01) in the postponed achievement for Eng.99 students in Princess Rahma University College due to cooperative learning based on

experts' groups (Jigsaw 2) compared with traditional learning?

6: Are there any statistical differences at level (a=0.01) in the postponed achievement for Eng.99 students in Princess Rahma University College due to the interaction between method of teaching and gender?

In order to answer these questions the arithmetic means and standard deviations were calculated on the postponed test according to method and gender and the results were as shown in table 4.

Table 4: Arithmetic means and standard deviations for the study groups on the postponed achievement test according to method of teaching and students' gender

Group	Gender	No. Of participants	Arithmetic mean	Total no.	Standard deviation
Controlled	Males	30	22.76	66	7.54
	females	36	22.92		7.84
experimental	Males	32	28.56	75	5.25
	females	43	25.53		6.86

Table 5: Results of the binary analysis of variance for the arithmetic means of students' grades for the study groups on the postponed achievement test based on the method of teaching and students' gender

Variable source	Sum of standard deviation	Freedom degree	Average of standard deviations	F-value
Method of teaching	542.97	1	542.97	11.21
Student's gender	74.52	1	74.52	1.54
Interaction between method of teaching and students' gender	93.42	1	93.42	1.93
Error in squares	6635.06	137	48.43	
Total	7345.97	140		

*statistically significant at level (a=0.01)

Table 4 showed that there were statistical differences between the means of the study groups since it was (22.84) for the controlled group and the standard deviation was (7.96) but the mean for the experimental group was (27.05) and the standard deviation was (6.06) and to be sure of the statistically significant differences at level (0.01) the researchers used the binary analysis of variances that is clarified in table (7) and table 5.

Table 5 showed that the calculated F- value (11.21) is bigger than the tabular F-value (6.63) and this means that there were statistical differences at level (a=0.01) due to the method of teaching. Also, it was noticed in the same table, that there were statistical differences at level (a=0.01) on the direct achievement test due to students' gender since the calculated F-value was (1.54) which is less than the tabular F-value (6.63). Also, in table 5, it is noticed that

there were no statistical differences in the interaction between method and gender and the calculated F-value was (1.93) which is less than the tabular F-value (6.63).

9. Results Discussion

The results of the study indicates the effectiveness of (Jigsaw 2) since the controlled group students achieved less grades on the direct and postponed achievement test than the experimental one. Also, the results showed that there were no interaction between the method of teaching and the students' gender on the direct and the postponed achievement for Princess Rahma University College Eng.99 students. And there were no differences in achievement between males and females. The results showed that there were differences between the means of students 'grades who learnt by Jigsaw 2 and the students' achievement who learnt by the traditional method and the differences was in favour of students who learnt by Jigsaw 2.

These results agree with the results of the studies conducted by (Mattigly and Vansickle, 1991, (Epsten) that is indicated to by Al Gasereen, (1998), Wedman, et., al., 1996), Wajeeh, (1998), Abebiosu, 2001, Gaith, 2003, Gaith and El-Malak, 2004, and Al Galgeli 2004).

The superiority achieved by (Jigsaw 2) upon the traditional learning is due to the following reasons:

1) The interaction between the experts' groups, discussion of their tasks and their use of different learning resources which helped them understand and teach their colleagues to increase their knowledge since they play the role of the planner who decides what techniques and methods to use to help them become trustful as mentioned by (Gaith and El- Malak, 2004) and Al Galgeli.

2. The repetitive tests that students go through while working cooperatively in Jigsaw 2, since each student passes an individual exam in every single topic he/she finishes. And he/she is imposed to a final test for examining the concepts and skills he/she learnt from the whole unit and this helps him/her to keep knowledge and increase achievement as assured in (Al Gasereen, 1998).

3. This greatest achievement in Jigsaw 2 is due to the decrease of anxiety level and fear of failure for students since this kind of learning needs a high degree of relaxation and dependency on one-self, also this method encourages students to work with each other in groups. These factors let students keep knowledge for a long time and this is assured by (Alebiosu, 2001).

4. Responsibility that each student has in one group and considering him/her as the main core that the learning process revolves around in Jigsaw 2 may help students enjoy their work and makes them more active and they keep knowledge for a long time as assured by (Gaith, 2003) and (Al Galgeli, 2004).

5. Feedback and all its forms from different sources: (teacher, colleagues, learning

source) plays the greatest role in Jigsaw 2 since it helps students modify their behavior within the group according to the task and activity. Also, feedback helps students control their cognitive behavior through forming and reforming i.e the student can control his/her behavior within Jigsaw 2, and this increases his/ her success as assured by (Al Heleh, (2005), (Al Galgeli, 2004), (Gaith, 2003), and (Gaith and El- Malak, 2004)

The study showed that there were no differences due to gender or the interaction between the method of learning and the students' gender, this is because both males and females are imposed to the same learning task without separating them in the learning and teaching process.

Consequently, they are imposed to the same variables, conditions and information. And this means that the effect of the learning method of is bigger than the effect of students' gender which leads to no interaction between the learning method and students' gender as indicated by (Al Gasereen, 1998).

10. Recommendation

According to the results of the study the researchers recommend the followings:

1- Researchers who are responsible for preparing programmes for teachers before entering service recommend that university courses should include academic courses concerned with modern techniques used in teaching.

2- Make more studies concerning the effect of jigsaw 2 on direct and postponed achievement in different courses.

3- Make more studies concerning the effect of jigsaw 2 on students' achievements in different topics in schools and universities.

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