



# The Effect of Teaching Using Collaborative Learning (study group) on Academic Achievement of Postgraduate Students in Hamadan Azad University in 2011-2012

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## Abstract

This study examined one of the major issues in education (cooperative learning) in terms of its effect on students' academic progress. It also examined whether cooperative learning will lead to higher student achievements compared to traditional teaching (lectures) or whether the academic achievement of strong - medium – weak students are different in participatory teaching methods. This study is a quasi-experimental field one and was carried out from the beginning of the second semester in early February 1390 in Islamic Azad University of Hamedan. Achievement test developed by the researcher which is one of the explanatory tests was provided from the book of behavior modification and consisted of eight questions. In extensive explanatory tests there is no limit for the test subject. In this test, the total score was 20 and the criterion score was 10, those students with scores higher than 10 had high academic achievements and students with score lower than 10 had low academic achievement. Given that the significant level of F-statistic is less than 0.05, there is a significant relationship between the independent and dependent variables at the 95% confidence level. Thus teaching with cooperative learning (study group) improves the postgraduate student achievement in Hamadan Azad University in 2011-2012. The main research hypothesis is confirmed and the null hypothesis is rejected.

**Keywords:** Collaborative learning, academic achievement, study group.

## Introduction

We live in an age where learning methods and practices, have a decisive role. It has been pointed by great teachers. Herbart, the outstanding teacher of the eleventh century focuses on two important issues on the significance of teaching: The content of education and training techniques.

Today, most students will spend their lives in the future. Future-oriented purpose of education is to help today's youth in order to deal with the crises and recruit the opportunities that will come into existence in a changing world. Burdin encourages the future-oriented educators to use a clever and imaginative projection of events and circumstances that are happening in order to preserve the life encourages schools<sup>1</sup>.

To preserve the life encourages schools<sup>1</sup>. According to many researchers, community involvement is important that leads to learning. According to Wigotski, children learn that when the activities, habits, words and thoughts in their community is established. Formation of cooperative spirit is an essential part of learning in the school environment. Collaboration improves student achievement and enhances learning through interaction. Consequently, social activities are important and will bring more attention to students' assignments<sup>2</sup>.

Malcolm Nais in simpler terms can be interpreted that schools

should only provide the necessary training for life skills of students. But if we take this opportunity, however, instead of storing the information in the minds of students and spend way more information or other ways to express their learning to teach; we will create their capacity for lifelong learning.

There are several ways to learn some of these techniques rely on the brain and memory. The learner only deals with the contents provided by the teacher. However, some learning methods induce thinking. In these methods there is not only passive learning, but there are active ones among these methods, is the cooperative learning that the individual learns in group activities.

Views of some of the schools of philosophy and other factors led to the traditional view of teaching and training students to be changed and new ways to replace it. The activities of learners have been regarded by scholars of education, but this issue has attracted more attention in recent years and much research has been done in this area<sup>3</sup>.

Cooperative learning is a strategy that has sustained the students to work in groups and interact with each other raises. Teamwork is the main achievement of learning goals in the classroom. Learning fosters personal responsibility through participation in group interaction.

Although the students as a group to learn how to act, but their progress in learning is measured individually<sup>2</sup>.

Usually, students will work collaboratively towards experience faster and better than other departments to restructure and reform their own attitudes<sup>4</sup>. Using Cooperation methods creates the environment lively and useful ways for teachers and students and also has Social benefits and special courses. The advantage of this approach makes students learn to work easily with a large group of people outside the class. Observing turn, the ability to express themselves, their thoughts clearly, to encourage others to criticize their ideas and learn<sup>5</sup>.

## Review of Literature

**Theoretical framework:** The concept of learning can be defined as: Knowledge and information, different habits, different skills and different ways of solving problems, learning encompasses a very wide area. Hergnhan and Olson have said that "learning is one of the most important issues in psychology today, and yet one of the most difficult concepts to define. However, due to the importance of learning, there have been different the most popular definition of learning is as follows<sup>6</sup>:

Learn is the process of relatively permanent changes in behavior or behavior that can be said to be the result of experience and it cannot be attributed to the temporary body states such as those caused by illness, fatigue or decreased drug use<sup>5</sup>.

Collaborative learning refers to the method in which learners work together in small groups and are strengthened for their collective achievements. An important feature of this method is that its members work together to achieve a common goal of both groups and individual members will benefit from it. According to Jolofh, "collaborative learning wants students to work together in small groups in order to raise the level of their learning, and other members of the group"<sup>6</sup>.

In cooperative learning, students "sink together, or swim together"<sup>2</sup>.

Johnson and Johnson have identified five elements of learning through participation as follows:

Face to face communication in heterogeneous groups of 2 to 6 persons: In sessions of this group learning, students will be arranged in such a way that they make direct eye contact.

Positive internal communication: "All for one, one for all." The students in learning groups, a common goal for research work and share their success as a group.

Individual responsibility: Although students learn to work in groups, but they are responsible for their own learning. Hence, as part of their individual performance has been measured and reported.

Communication skills: Students attempt in interacting with each other to achieve a common goal. They take advantage of to achieve their social skills to function successfully.

Assessment and Reflection: Students are given an opportunity to think and reflect on their learning<sup>7</sup>.

Emmer compared Competitive and cooperative structures in terms of their effects on students' self-assessment. In this study, and in the competitive situation, the students were divided into two groups and they were told that the winner takes the prize<sup>18</sup>. In a collaborative situation, the group was told that if they achieve a certain target groups are members of the group award. Result of the student's performance was manipulated in each group of students to perform better than others. In partnership opportunities, each of the groups found or not found target. s In this study, the partnership situation, the group won the result of a direct effect on students' perception of their ability to feel. Meanwhile, the group's success, negative self-perception of poor individual performance would change, and his perceived failure as a positive group of students who had done well reduced. This study shows that the failure of the competitive position relative to other competitive situations, the more damaging effects on their perceptions of students. In cooperative groups, those that are less efficient, as their performance is better than those who are involved in the success of the group, however, fracture leads to dissatisfaction regardless of how the person's performance has been. The success of Partnership Group can help build self-efficacy in people who have a good performance, But failure of the group will have a negative effect on self-efficacy as well as failure in competitive situation<sup>8</sup>.

## Background of Research

Today, education plays an important role in a person's life and future. Measuring the progress and identify factors that affect student are the issues which have attracted the attention of psychologists. Because achieving the positive results in the field of education (with the identification and control of factors affecting academic achievement), leads to all-round development of the students and the community.

"Holfyish Gordon" and "Phillip Smith" emphasized on the role of education in the capacity of individuals and analysis of information, thoughts, ideas and values. They consider the intellectual growth and social processes highly interconnected to each other and argue that developing skills in the analysis of social processes are the views of those who are involved in social interaction. They do not consider Understanding as the product of interaction of the environment and senses but consider it as the result of experience and interaction.

Interests in research on cooperative learning paradigm have recently arisen. Precise management practices that are now common, have a better ability in tests of fundamental

assumptions and estimates more accurate study of the implications of these patterns of behavior, individual and offerings. Three groups of researchers have done work which has highly shone.

Johnson and Slavin research groups have used different strategies and have carried out a set of studies in order to evaluate the assumptions of social learning models of family. In some of their studies, they evaluated the effects of reward structures on homework assignments based learning and collaborative learning has traditionally. Evidence greatly emphasize the fact that those who are feeling more positive to their assignments in their cooperative learning classes are more Predominate over those matters, and will form a better accountability and «Self»<sup>9</sup>.

Seln Herbert was the founder of the National Training Laboratories, has designed a model. In this model, a program is trying to teach, shape and dynamics of the democratization process is combined with academic probe. His goal is to create educational opportunities based on experience. This model is easy to implement at all stages of life and of its hallmarks is the degree of probe<sup>9</sup>. In this model, Seln speaks about helping other people who creates attempts and agreements. This model of teaching, group participation and engagement in the learning process is guided by the teacher.

Research shows that learning achievement is higher classes are well managed, Most of these classes have active learners and the learning process is organized at a high level<sup>10</sup>.

Keramati and Husseini examined the impact of cooperative learning on student achievement in physics courses. 220 students were randomly assigned to an experimental group (107) and control subjects (113 subjects) from 7109 students from three area high schools. After 29 sessions of academic achievement physics teacher made test was used to assess progress. Results showed that the academic achievement of students who were trained in participatory methods than students who received conventional training. Moreover, the results indicate that girls benefit more than boys from collaborative learning<sup>11</sup>.

Ranjbar and Ismaili examined the effect of individual and collaborative learning on thinking. Method of this research was quasi-experimental (non-equivalent control group design form) in which the cooperative learning has been studied on their critical thinking of students. The sample consisted of 38 students from the School of Nursing and Midwifery at the time of the study. the instrument was the achievement test and the results indicated no significant difference between the mean scores of the two groups of cooperative learning and individual and also a significant difference was observed Between the mean scores of both groups as well as individual and collaborative learning in higher levels of the cognitive domain<sup>12</sup>. Sayufi examined the impact of participatory teaching methods

and styles of letters on the academic achievement of students and has concluded that student achievement is more significant in the participatory teaching methods compared with the traditional lecture method of teaching<sup>17</sup>.

Peterson and Miller compared the characteristics of the comparison group learning and teaching experiences of college students in larger groups and concluded that all the features of collective and collaborative learning experience was great. Especially in mental scores, student engagement, importance of work, and the coping skills of inference and optimal levels of participation students were more alert and were concentrated very hard on the issue during the collective learning<sup>13</sup>.

Johnson and Johnson and Smith investigated the collaborative learning of the course deals with secondary and vocational courses and have concluded that collective learning in secondary and college courses make significant progress and also increased interest in learning confidence and intimacy between them<sup>14</sup>.

Hashemian, Jalili far and Shariati poor in a study examined the effects of cooperative learning on college students' understanding of success. This study examined the impact of cooperative learning methods including, part of a student team successful (STAD), Survey (GI), which was looked on reading to learn. Using Nelson-test pre-secondary students of the College were selected randomly and were divided into 3 groups. Experimental groups (A, B) received training in accordance with procedures STAD and GI. The control group (C), according to traditional training methods taught. The test participants were trained in the same issue. The results show that the method STAD, the better, "reading" is more effective while they did not improve dramatically the traditional methods and GI "reading"<sup>15</sup>.

## Methodology

**Sampling Method:** In this study, cluster sampling was used. Because a full list of the statistical population of the study was not available, And other members of the select group of community members were allowed to choose more and more easily. Thus, the College of Engineering - Science and Art and Humanities were selected among the faculties of Islamic Azad University, Hamedan, (Why? you say that because of the nature of such methods for the human sciences rather than engineering) and Educational Psychology in the Faculty of Humanities was selected And the interdisciplinary fields of study. One class was taught with cooperative learning method and another one was taught with conventional method. The impact of collaborative learning as an independent variable on the level of student achievement and test anxiety can be determined as dependent variables.

Group of experimental consisted of 20 people and the control group consisted of 16 people and 4 people were removed

randomly. The two groups consisted of 16 people.

**Measuring Tools:** In this study, the explanatory test (extended response) was used for data collection:

Achievement test developed by the researcher which is one of the explanatory tests was provided from the book of behavior modification and consisted of eight questions. In extensive explanatory tests there is no limit for the test subject. Extensive explanatory test are the best questions to assess the goals, analysis, composition, and evaluation (highest classification of educational objectives, cognitive domain). In extensive explanatory tests there is no limit for the test subject. In this test, the total score was 20 and the criterion score was 10, those students with scores higher than 10 had high academic achievements and students with score lower than 10 had low academic achievement.

Validity of pre-test and post-test questions were reviewed and approved by two respected professors and Cronbach's alpha coefficient was used for the reliability of the study and was equal to 73%.

**Methodology:** This study is a quasi-experimental field one and was carried out from the beginning of the second semester in early February 2011 in Islamic Azad University of Hamedan. One class was taught with cooperative learning method and another one was taught with conventional method. The impact

of collaborative learning as an independent variable on the level of student achievement and test anxiety can be determined as dependent variables.

### Descriptive Statistics

Table-1 evaluates the statistical information related to the pre-test and post-test scores, the academic achievement of all students in cooperative learning.

According to table-1, we can conclude that the mean of total scores of participants in both experimental and control groups of post test were more than pre test. The distribution of test scores in post test as 0.06 was more than pre test. Highest scores obtained in pre test and post-test were t respectively, 6 and 20.

Table-2 evaluates the statistical data related to the students' pre-test scores for each group (control and experimental).

The table above shows that the pre test scores of the experimental group was more than the control group and also the highest and lowest scores obtained in the two groups were equal.

Table-3 evaluates the statistical data related to students' post-test scores for each group (control and experimental).

**Table-1**  
 Description of the useful markers of pre-test and post-test maximum cooperative learning

| (Minimum) | (Maximum) | (Variance) | (Std/Deviation) | (Mode) | (Mean) | Accurate values (N) | scores    |
|-----------|-----------|------------|-----------------|--------|--------|---------------------|-----------|
| 0         | 6         | 3.32       | 1.82            | 0      | 2.03   | 32                  | Pre test  |
| 13        | 20        | 3.38       | 1.83            | 17.25  | 16.61  | 32                  | Post test |

**Table -2**  
 Description of the useful markers of pre-test scores for each group

| (Minimum) | (Maximum) | (Variance) | (Std/Deviation) | (Median) | (Mean) | Accurate values (N) | Group        |
|-----------|-----------|------------|-----------------|----------|--------|---------------------|--------------|
| 0         | 6         | 3.13       | 1.77            | 2        | 2.25   | 16                  | Experimental |
| 0         | 6         | 3.62       | 1.9             | 1        | 1.81   | 16                  | control      |

**Table -3**  
 Description of markers useful in the post-test for each group

| (Minimum) | (Maximum) | (Variance) | (Std/Deviation) | (Median) | (Mean) | Accurate values (N) | Group        |
|-----------|-----------|------------|-----------------|----------|--------|---------------------|--------------|
| 14.25     | 20        | 3.16       | 1.77            | 17.37    | 17.4   | 16                  | Experimental |
| 13        | 18.25     | 2.49       | 1.58            | 15.75    | 15.82  | 16                  | Control      |

The table above shows that pre test scores of the experimental group was more than the control group and also the highest and lowest scores obtained in the experimental group was 20 and 14.25 and in the control group was 18.25 and 13.

Table-4 evaluates the statistical information related to the pre-test scores of students according to gender (male and female).

The above table shows that the average pre-test scores in men is more than women. The range of scores obtained in the two groups is equal.

Table-5 evaluates the statistical information related to post-test scores of students according to gender (male and female).

The above table shows that the average post-test scores in females is more than men. The standard deviation of the range of scores obtained scores in women is higher than men.

**Inferential Statistics:** Before the study of the research hypotheses, Kolmogorov – Smirnov was used to assess the normality of the study variables. Table 6 presents the study of normal variables.

According to the above table it can be concluded that the

Significant levels of explanatory post-test and pre-test variables and test anxiety are more than 0.05. Therefore, these variables are normalized, thus the normality of above variables can justify the use of parametric tests to infer the research hypotheses.

**Analysis of data:** Hypothesis: Teaching using collaborative learning (study group) improves the academic achievement of postgraduate students of Islamic Azad University of Hamedan.

MANOVA test is used to confirm the hypothesis. In this hypothesis, cooperative learning is as the independent variable and the academic achievement and test anxiety are as dependent variables.

Table-7 deals the homogeneity of variance matrix using the Box test.

Since the significance level is greater than 0.05, thus the variance matrices are equal and identical, so one of the conditions of the test is confirmed.

Table-8 examines the variance using the Leuven test.

Table-9 confirms the main hypothesis of the study using above test.

**Table-4**  
**Description of the useful markers of pre-test scores according to gender**

| (Minimum) | (Maximum) | (Variance) | (Std/Deviation) | (Median) | (Mean) | Accurate values (N) | Gender |
|-----------|-----------|------------|-----------------|----------|--------|---------------------|--------|
| 0         | 6         | 5.12       | 2.26            | 2        | 2.37   | 8                   | male   |
| 0         | 6         | 2.86       | 1.69            | 2        | 1.91   | 24                  | female |

**Table-5**  
**Description of the useful markers of post-test scores according to gender**

| (Minimum) | (Maximum) | (Variance) | (Std/Deviation) | (Median) | (Mean) | Accurate values (N) | Gender |
|-----------|-----------|------------|-----------------|----------|--------|---------------------|--------|
| 14        | 17.25     | 1.66       | 1.29            | 15.87    | 15.78  | 8                   | male   |
| 13        | 20        | 3.72       | 1.93            | 17.25    | 16.89  | 24                  | female |

**Table -6**  
**Evaluation of the normal status of variables**

| Test Anxiety | Explanatory pre test | Explanatory post test | Variables Useful statistics               |
|--------------|----------------------|-----------------------|---|
| 0.885        | 0.585                | 1.035                 | testKolmogorov-Smirnov Z                  |
| 0.414        | 0.884                | 0.234                 | Significance level Asymp. Sig. (2-tailed) |

**Table-7**  
**Homogeneity of variance Matrix in the main hypothesis of the study**

| Significance level | Second DOF | First DOF | F-statistic | Box test. |
|--------------------|------------|-----------|-------------|-----------|
| 0.515              | 162000     | 3         | 3.48        | 11.26     |

**Table-8**  
**Evaluation of the variance in the main hypothesis of the study**

| Significance level | Second DOF | First DOF | F-statistic | Variables            |
|--------------------|------------|-----------|-------------|----------------------|
| 0.835              | 30         | 1         | 0.044       | Academic achievement |

**Table-9**  
**Confirming the main hypothesis of the study**

| Eta squared parabola | Significance level | F-statistic | Test value |                            |
|----------------------|--------------------|-------------|------------|----------------------------|
| 0.249                | 0.016              | 4.8         | 0.249      | Pillai's Trace effect test |

The above table shows that the effect of F-statistic is less than 0.05, so there is a significant relation between independent variables with dependent variables at the 95% confidence level. The eta squared contribution is greater than 14%, which indicates a high effect size. Thus Teaching using collaborative learning (study group) does not reduce test anxiety of postgraduate students in Islamic Azad University, Hamedan. The main hypothesis of this study is confirmed and the null hypothesis is rejected.

Teaching using collaborative learning (study group) reduces test anxiety of postgraduate students in Islamic Azad University, Hamedan in 2011.

Hypothesis  $H_0$ : Teaching using collaborative learning (study group) does not reduce test anxiety of postgraduate students in Islamic Azad University, Hamedan in 2011-2012.

Hypothesis  $H_1$ : Teaching using collaborative learning (study group) reduces test anxiety of postgraduate students in Islamic Azad University, Hamedan in 2011-2012.

$$H_0 : \mu_1 = \mu_2$$

$$H_1 : \mu_1 \neq \mu_2$$

To confirm the above hypothesis, parametric test of ANOVA was used. In this hypothesis, the variable of cooperative learning is examined as the independent variable and test anxiety is examined as the dependent variable.

Table-10 evaluates the relationship between dependent and

independent variables using the above test.

The table above shows that the significance level obtained from the F-statistic is less than 0.05, thus there is a significant relationship between the dependent and independent variables at the 95% confidence level. Thus Teaching using collaborative learning (study group) reduces test anxiety of postgraduate students in Islamic Azad University, Hamedan in 2011-2012. The second sub-hypothesis of this study is confirmed and the null hypothesis is rejected.

### Conclusion

According to table-10, the hypothesis with the values of  $f = 7.36$ ,  $df = 1$ , significance level of  $p < 13\%$  it was concluded that Teaching using collaborative learning (study group) does not reduce test anxiety of postgraduate students in Islamic Azad University, Hamedan in 2011-2012. The main hypothesis is confirmed and the null hypothesis is rejected.

It should be noted that academic Achievement is one of the main factors that affect one's life opportunities and productivity<sup>16</sup>.

Importance of different aspects of achievement is noteworthy, since each educational system in order to achieve the best results and eliminate deficiencies and obstacles throughout the process of education and the efficient use of inputs and finally, the product of education graduates are also eligible for some of the features have been achievement can be one of the most important and most objective criteria to evaluate the performance of educational systems.

**Table-10**  
**The study of the Relationship between dependent and independent variables in the first sub-hypothesis**

| Significance level | F-statistic | The mean square | Degrees of freedom | The sum of squares |             |
|--------------------|-------------|-----------------|--------------------|--------------------|-------------|
| 0.013              | 7.036       | 19.92           | 1                  | 19.92              | Inter-group |
| -                  | -           | 2.83            | 30                 | 84.94              | Intra-group |
| -                  | -           | -               | 31                 | 104.87             | sum         |

Level of academic achievement is one of the performance criteria of the education system. Systems in which the amount of low academic achievement and perfect way to show weakness and advanced educational systems in all their efforts to improve the quality of education to employ. Since one of the effective methods of cooperative learning is learning that is supported by strong theoretical and has rigorous empirical support, This is evidence that the group will be strengthened for success and all the individual responsibility for group members to help advance their, then cooperative learning achievement levels of learners in all educational and work-based learning, from basic skills to problem solving.

Accordingly it can be concluded that teaching using collaborative learning (study group) does not reduce test anxiety of postgraduate students in Islamic Azad University, Hamedan in 2011-2012.

**Suggestions for Future Studies:** According to the research that took part in this study, there are some suggestions for further works as follows: It is recommended to test this research in other levels such as elementary, secondary, high schools and bachelor degree. It is recommended to test this research on bigger population and sample to have more generalizability.

## References

1. Wolfgang Brzyka, The role of education in today's world, (Translation Mhrafq Baiburdi, 1986). Tehran: Center for Academic Publication, (2001)
2. Aghazadeh Muharram, New methods of teaching, Tehran: Ayij, (2009)
3. Adibnia Assad, Psychology of learning and studying, Tehran: Doran (2004)
4. Saif Ali Akbar, Modern educational psychology, Tehran: Doran, (2007)
5. Khalili, Teaching based on cooperation and collaboration, Isfahan (2004)
6. Saif Ali Akbar, Valuation measuring and evaluating training, Tehran: Doran, (2005)
7. Aghazadeh Muharram, New methods of teaching (brain-based research establishment, Constructionism Cooperative learning, meta-cognition, etc.), Tehran: Ayij (2005)
8. Pntryj, Paul R. and Shank H. Dale, Motivation in education (theory, research, and strategies). (Translated by M. Shahraray), Tehran: Treasure Shayegan, (2007)
9. Joyce Bruce, Kalhvn Emily and Hopkins David, Tools for teaching and learning patterns, (Translation Mahmoud Mehrmuhammdi and Lotf Ali Abedi), Tehran: the side, (Release date is not the primary language), (2010)
10. Good T.L. and Brophy J, Contemporary educational psychology (5th ed.), USA: Longman, (1995)
11. Keramati M and Husseini Bibi Maryam, The impact of cooperative learning on student achievement in high school physics, *Journal of Psychology*, **38**, 2 (2008)
12. Morid Ranjbar H. and Ismaili Habibullah, The effect of individual and collaborative learning, critical thinking, nursing and midwifery students, *Journal of Nursing and Midwifery*, Hamedan:, **14**, 1-7 (2006)
13. Peterson S and Miller J., Comparing Quality of students experiences during cooperative, (2004)
14. David W, Johnson Roger T, Johnson Karl Smith, The state of cooperative learning in postsecondary and professiona settings, published online, **19**, 75-29 (2007)
15. Mahmood Hashemian; Alireza Jalilifar and Parisa Shariatipour, The Effect of cooperative learning Techniques on college students' reading comprehension Achievement, Islamic Azad University, Ahvaz science and research Branch, Received Data, *Journal of Faculty of letters and Humanities* , **5(16and17)**, (2010)
16. Hemmati Z, Relationship between intelligence beliefs and achievement goal orientation falcon high school students in the first grade in school year, 90-89 (2012)
17. Sayufy, Teaching methods combined with the impact of collaboration (collaborative learning) on students' academic achievement and attributional style (1994)
18. Emmer E.T. and Evertson C.M., Synthesis of research on classroom management, *Educational Leadership*, **38(4)**, 342-347 (1981)