

# EFFECT OF COOPERATIVE LEARNING ON THE ACADEMIC ACHIEVEMENT AND SELF CONCEPT OF THE STUDENTS AT ELEMENTARY SCHOOL LEVEL

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## ABSTRACT

The main purpose of the study was to see the effect of cooperative learning on the academic achievement and academic self-concept of the students at the elementary school level. The study also investigated these effects across the gender. In this particular study all the 5<sup>th</sup> class students comprise the population of the study. The sample of the study consists of 40-students of class 5<sup>th</sup> selected randomly and equated on the basis of pre-test from Nayab English medium School Dera Ismail Khan. Two instruments were used for data collection. One was self-made academic achievement test which was made valid and reliable through experts view. This test was to check the academic achievement after experiments. The second instrument was modified version of the Self-description Questionnaire–I prepared by Marsh (1992) which was used to check the academic self-concept of the students. The result shows that the Cooperative learning method was better than the lecture method in the development of academic achievement and academic self- concepts of the students. Across the gender the self-concept of female was significantly better than the male while there was no difference on academic achievement across the gender.

**Keywords:** cooperative learning, academic self-concept, academic achievement, gender, experiment

## INTRODUCTION

It has been found through various dictionaries that to cooperate means work together to achieve shared goals. It has social, economic and biological meaning and interpretation. In a social context, Cooperation means social activity which gives mutual benefits to all participants. In economical context, production, purchase and distribution are different economic activities while cooperation is a joint effort towards these activities. In biological sciences, Cooperation is the sensible or insensible behavior of living organisms for joint survival (Iqbal, 2004).

Cooperative learning is defined as “A small group of individuals working jointly to solve a problem and complete task”. The cooperative learning model needs students' goal, reward, interdependence and cooperation in all types of matters (Artz & Newman, 1990).

Self-concept comprises the combinations of concepts and attitudes about something. Self-concept is a scheme which organizes our concepts, emotions and approaches. But this scheme may not be static; it varies from situation to situation (Woolfolk, 1989).

According to Hamachek as cited in Aasma-Tuz-Zahra (2010) “Self-concept explains that particular aggregate of ideas, concepts and attitudes about oneself at any specific moment of time.

Personality is a sum total of characteristics and multidimensional constructs. The term personality is also multidimensional, it includes character, temperament and self (Jerome Kagan, Segal, Havemann, Baum, & Dsmith, 2009).

Coleman (2008) indicates that several conditions are needed to improve positive self concepts which includes a feeling of being a part of the group, acceptance and

respect within the group. Cooperative learning fulfills all the above requirements of the individual, so it increases the academic self concept of the learners at the initial school level.

The self-concepts of the students promote through self-evaluation in different occasion. Children generally ask questions about themselves like how did I look like, how did I prove myself. They always seek aspect of their teacher, parents and friends and give valuable remarks about them. They compare their performance with their classmates and other people. Both individual and social comparisons are very important (Santrock, 2007).

Self-concept develops with the passages of time, experiences and age. Self-concepts develop in stages (Harter, 2012). In the second year of life an infant develops a concept of self. He can discriminate himself from other people. The first step in the development of self-concept is self-recognition in which young people like themselves in front of the mirror, they acknowledge and admired their features (Eggen, 2007).

Education is a systematic process and mainly focuses on teaching as well as learning. The way of delivery plays very key role in the overall education set up. While giving the guideline, a child should not be treated like an empty vessel into which any type of information can be passed down. A teacher must think of techniques and ways of motivating and encouraging students. He should initiate their interest and motivate them to learn. He should create conditions in which they feel the need to learn. Majority teachers use normally traditional method of teaching in Pakistan. Some time it becomes challenging to motivate the large number of students in a class to learn mathematics and others difficult subjects particularly with old-style learning methods.

The search for “How to teach?” means teaching methodology. Education cannot be made more effective without teaching methodology. There are so many ways and techniques for effective teaching. An effective teaching method is a source of effective learning. Many educators suggest different teaching and learning techniques. Cooperative learning technique is one of them, which is beneficial for different subjects (Iqbal, 2004). In the present outdated methodologies it is difficult to pay individual attention to all students. The crack between weak and talented students rises due to these outdated teaching methods. Cooperative learning method emphasizes to assist the students in that situation (Khan, 2012).

Yadav (2001) suggested that teachers face problems such as selection of suitable methods of teaching, planing and management, overcrowded classes, boring syllabus, teacher centered approach, examination system and the problem of motivation in mathematics teaching. Kiani, Kiani, Malik & Ahmad (2012) suggested that there are three goals of teaching mathematics at the elementary level. The first goal is to learn fundamental concepts that provide the basis for understanding mathematics. They could use these concepts in words and symbols. The second goal of mathematics is to utilize the newly gained information and concepts in the new setting. The third goal of mathematics at the elementary level is to develop the ability among the students to solve problems.

The students’ achievement at the elementary level is very low in mathematics. There are different reasons for the low achievement. One of the main reasons suggested by the experts of the subject is the method of teaching. There are different traditional teaching methods of mathematics like lecture method,

discussion method, inductive deductive methods, and problem solving methods which are used in daily classroom teaching in Pakistani schools. These methods cover the minimum requirements of students in the classroom environment. So there is a need to adopt some new and innovative methods which fulfill the maximum requirements of students and improve academic achievement. So researchers felt the need for some innovative methods which are equally useful for intelligent as well as below average students. Therefore the experiment was conducted to test the effects of cooperative learning method on the academic achievement and self-concept of the elementary school students.

#### **STATEMENT OF THE PROBLEM**

Currently we face the problem of low achievers among elementary school students particularly in the subject of mathematics. Underachievement is a greater problem from the economic and social point of view because it involves wastage of human and economic resources. It is also a problem from the learner's point of view as it causes emotional unrest and psychological tension. Underachievement causes problem not only to the underachieving students, but also to their parents and teachers (Vamadevappa, 2006). The problem of underachievement is linked to some other serious problems in the education system such as the academic self-concept lack of students in the learning process. Due to these problems students at school level feel boredom, alienation, and disconnection with schooling (Larson & Richards, 1991) which results in increased drop-out rate from the school.

When science is addressed it is usually not taught in a way that enhances student achievement (Denny, 1978 as cited in Riggs & Enochs, 2006). There are many reasons for the low achievement in

mathematics but experts suggest that the main reason is that the mathematics is taught with the autocratic strategies (traditional lecture method) and new methods of teaching are totally rejected. Achievement can only be enhanced by adopting the best method of teaching (Roig, 2008)

As we are passing through modern era the scientists are making dramatic changes in curriculum and instructions. Therefore this present study was a continuation of this practice in which researcher examine the effects of cooperative learning on the academic achievement and Self-concept of the students at the elementary school level.

#### **Objectives of the Study**

The main objectives of the study were:

1. To see the difference between cooperative learning and lecture demonstration method on the academic achievement of students at the elementary school level.
2. To see the difference between cooperative learning and lecture demonstration method on the self-concepts of students at the elementary school level.
2. To examine the gender difference on academic achievement and self-concept

#### **Significance of the Study**

The study will be helpful in bringing change in the behavior of the students. They may cooperate with each other, not only in the classroom, but in daily life as well. Curriculum planners and developers may use the results of this study as guideline for improving the mathematics course. The findings of the study may also be helpful for teacher trainers.

### **Limitation**

Self- concept was calculated through the modified Herb-Marsh questionnaire. The study was also limited to self-developed and made valid and reliable post-test to find academic achievement of the students

### **Hypotheses of the Study**

The following null hypotheses were tested:  
 H0<sub>1</sub>: There is no significant difference between control and experimental groups on academic achievement score

H0<sub>2</sub>: There is no significant difference in gender on post academic achievement score of the students

H0<sub>3</sub>: There is no significant difference between control and experimental groups on post academic self-concept score

H0<sub>4</sub>: There is no significant difference in gender on post academic self-concept score of the students

## **RESEARCH METHODOLOGY**

### **Population**

The aim of this research was to evaluate the effect of Cooperative learning about the self -concept of students at primary level of the school. Therefore, those students were taken who are enrolled at the primary school level. Elementary education refers to classes 1-8. The elementary education produces the majority of the skilled and literate workers, and a modern technical society can be changed and preserved. This stage is very important, especially in Pakistan where approximately 50 percent children fail in an examination. Instructor supervision is weak. Teaching methods are not appropriate for learning. All the 5<sup>th</sup> class students comprised the population of the study. Their ages ranged from 11 to 13 years.

### **Sample**

The sample was selected through purposive sampling. Nayab English Medium School (private) was taken as sample for that

particular study. A sample of 40-students of class 5<sup>th</sup> was randomly selected from this school. Sample students were divided into two equated groups controlled and experimental each having 20 students. The student's ages were from 11 to 13 years. The students come into the school from below poverty line to middle class social, economic and educational backgrounds. The experimental group consisted of 20-students in five teams of four members each according to the cooperative learning method, while 20-students of the control group were taught the same contents through traditional lecture demonstration method.

### **Research Instrument**

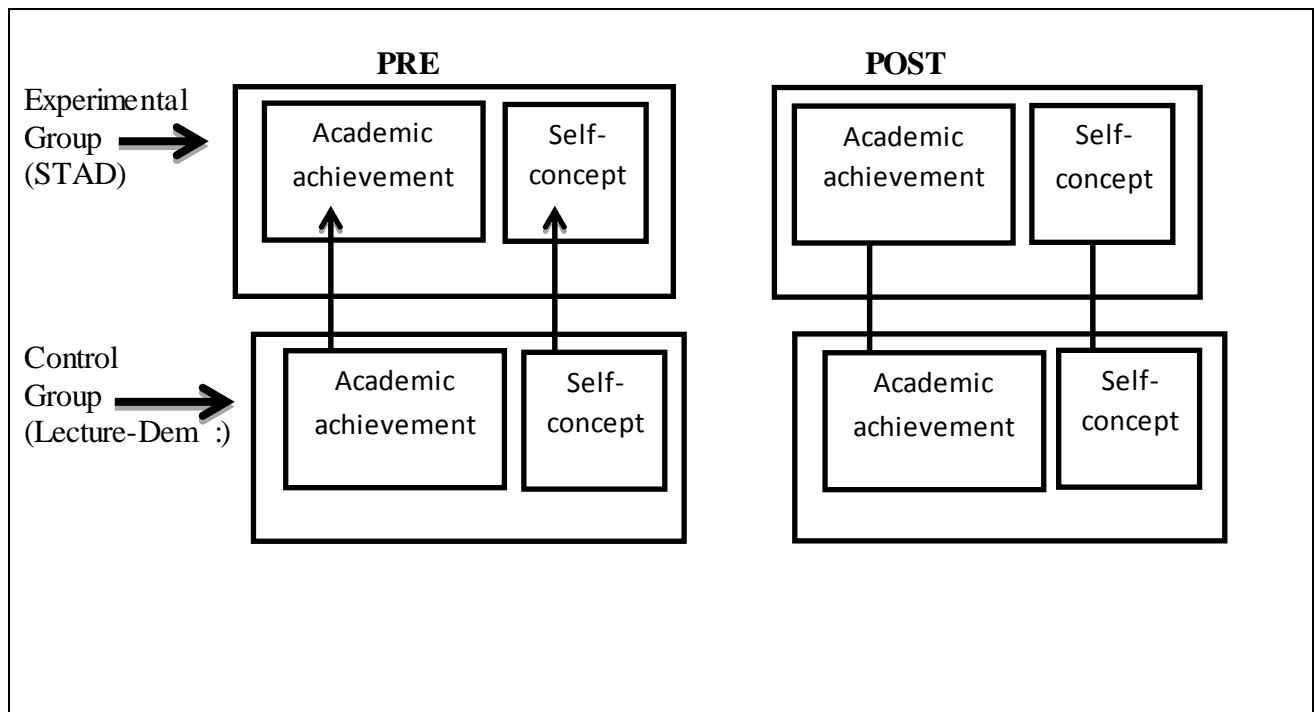
The first instrument was a modified version of the Self- Description Questionnaire-I prepared by Herb Marsh (1992) to measure academic self-concepts of control and experimental groups. Academic self-concept scale contains 25-items, eighteen were positive and seven represent the negative behavior of the respondent. The original questionnaire was 8-point rating scale consisting of a total 86-item. A modification was made in SDQ-I to use in Pakistan. It was translated into Urdu language for students' understanding. Responses were delimited in 5-point Likert scale. The reliability of the modified versions of the SDQ-I's was checked through test retest method. The reliability coefficient was 0.85. The second instrument was a post-test to find the academic achievement at the end of experiment. Validity of the post-test was assured through 40 subject experts of mathematics. The 16% items were deleted as a result of this judgment. Reliability of the post-test was assured through research experts of the Gomal University and it was found to be 0.92.

### Procedure of the study

First of all the whole sample was given a pre-test to divide it into two equated groups. One group was called controlled and the other as experimental. Both the groups were similar except for the method of teaching. The Control group was taught with the lecture demonstration method while the experimental group was taught with the cooperative learning method.

Both the groups were taught with the same teacher to control the teaching. The

treatment of both the groups was continued for a period of 52-days. At the end of treatment both the instruments were distributed among the participants of both the groups. Post-test was to check the academic achievement and SDQ-I was to check the academic self-concept of the students after the treatment.



### Analysis of Data

After collecting the data the scores were presented in the data matrix form on SPSS (version 17.0). The data was analyzed in order to test the hypothesis. Descriptive

statistics Mean, Standard deviation and inferential statistics t-test was used to check the significant mean differences between the two groups at  $\alpha = 0.05$  (level of significance).

**Table 1:** t-test on academic achievement (post-test) score of control and experimental groups

	Group	N	Mean	Std. Deviation	Std. Error Mean	t-value	p-value
post-test score	CONTROL	20	20.35	4.75	1.062	-.5080	0.017
	EXPRIMENTAL	20	23.50	3.000	.671		

Table 1 indicates the post academic achievement scores of Control and Experimental groups at  $\alpha = 0.05$ . The result shows that  $p=0.017 < 0.05$ . Therefore it was concluded that there is a significant

difference between the two groups. The Mean score shows that the experimental group performed significantly better than the control group.

**Table 2:** t-test on the academic achievement (post-test) score across the gender

	Gender	N	Mean	Std. Deviation	Std. Error Mean	t-value	p-value
post-test score	MALE	26	21.31	4.479	.878	-1.267	0.213
	FEMALE	14	23.07	3.605	.963		

Table 2 indicates the post academic achievement scores of Male and Female at  $\alpha = 0.05$ . The result shows that  $p= 0.213 >$

0.05. Therefore it was concluded that there is a no significant difference between the two groups

**Table 3:** t-test on self-concept score of control and experimental groups

	Group	N	Mean	Std. Deviation	Std. Error Mean	t-value	p-value
Post-test Scores	CONTROL	20	3.4180	.32560	.07281	3.233	0.003
	EXPRIMENTAL	20	3.7280	.27913	.06241		

Table 3 indicates the post academic self-Concept test scores of Control and Experimental groups at  $\alpha = 0.05$ . The result shows that  $p= 0.003 < 0.05$ . Therefore it was concluded that there is a significant

difference between the two groups. The Mean score shows that the experimental group performed significantly better than the control group.

**Table 4:** t-test on the self-Concept score across the gender

	Gender	N	Mean	Std. Deviation	Std. Error Mean	t-value	p-value
Post-test Scores	MALE	26	3.4862	.35176	.06899	-2.338	0.025
	FEMALE	14	3.7343	.24837	.06638		

Table 4 indicates the post academic self-Concept scores of Male and Female at  $\alpha = 0.05$ . The result shows that  $p= 0.025 <$

0.05. Therefore it was concluded that there is a significant difference between the two groups. The Mean score shows that the

female group performed significantly better than the male group.

## FINDINGS

1. The analysis of Post academic achievement scores of Control and Experimental groups at  $\alpha = 0.05$  shows that  $p=0.017 < 0.05$ . Therefore it was concluded that there is a significant difference between the two groups. The Mean score shows that the experimental group performed significantly better than the control group (Table 1). Therefore the first null hypothesis stating the significant difference between the two groups is rejected.
2. The analysis of post academic achievement scores of Male and Female at  $\alpha = 0.05$  shows that  $p=0.213 > 0.05$  (Table 2). Therefore it was concluded that there is a no significant difference between the two groups. Therefore the second null hypothesis stating the significant difference between the two groups is accepted.
3. The analysis of Post academic self-Concept test scores of Control and Experimental groups at  $\alpha = 0.05$  shows that  $p=0.003 < 0.05$  (Table 3). Therefore it was concluded that there is a significant difference between the two groups. The Mean score shows that the experimental group performed significantly better than the control group. Hence the null hypothesis 3 was rejected.
4. The analysis of Post academic self-Concept scores of Male and Female at  $\alpha = 0.05$  shows that  $p=0.025 < 0.05$ . (Table 4). Therefore it was concluded that there is a significant difference between the two groups. The Mean score shows that the female group performed

significantly better than the male group. Hence the null hypothesis 4 was rejected

## DISCUSSION

The present study was undertaken to see the effect of cooperative learning on the academic achievement and academic self-concept of the students at the elementary school level. The study also investigated these effects across the gender. In this particular study a sample of 40-students of class 5<sup>th</sup> were selected randomly and equated on the basis of pre-test. These 40 students were divided into two equal groups on the basis of pre-test. One group was called the experimental which was taught with the cooperative method and the other was called the control which was taught with the traditional lecture method. Two instruments were used for data collection. One was academic achievement test to check the academic achievement and the other was a modified version of the Self-description Questionnaire-I prepared by Herb Marsh (1992) to check the self-concept at the end of the experiment.

The result of the study shows that for Post academic achievement scores of Control and Experimental groups  $p=0.017 < 0.05$ . Therefore it was concluded that cooperative learning method was better than the traditional lecture method in the enhancement of academic achievement. These results are supported by Iqbal (2004) who worked on the effect of cooperative learning on academic achievement of secondary school students in mathematics. He concludes that cooperative learning techniques are far-better teaching techniques for the subject of mathematics and other science subjects as compared to traditional teaching methods. The results are also supported by the studies of Zakaria & Iksan

(2007) , Brandt & Ellsworth (1996), Zisk, (1998), Sanchez & Roda (2007)

The results of Post academic self-Concept test scores of Control and Experimental groups shows that  $p= 0.003 < 0.05$  (Table 3). Therefore it was concluded that cooperative learning makes the self-concept better than the traditional lecture method. These results are supported by the studies of Adesoji & Ibraheem (2009), Adeyemi, (2008), Zisk, (1998), and Sanchez & Roda (2007)

### CONCLUSIONS

The following conclusions are made in the light of data analysis and findings of the study:

1. Both the control and experimental groups were same on academic achievement and self-concept before starting the experiments
2. The Cooperative learning method was better than the lecture method in the enhancement of academic achievement of the students. Across the gender there was no difference between the male and female
3. The Cooperative learning method was better than the lecture method in the development of academic self-concepts of the students. Across the gender the self-concept of female was significantly better than the male group.

### RECOMMENDATIONS

The following recommendations are made in the light of the findings and conclusions. This study shows that cooperative learning is better for Mathematics subject than traditional lecture demonstration method. Therefore, the mathematics teachers must apply cooperative learning as the new technique of teaching to enhance the academic achievement and academic self-concept of the students.

The mathematics teachers may be encouraged to apply the cooperative learning technique in their daily teaching in the classroom setting. Mathematics' teachers must receive training in cooperative learning technique for the improvement of their teaching. Training should be practical and includes the basic elements of cooperative learning.

The results of this study may be conveyed to the teachers teaching mathematics at the elementary school level so that they could implement the cooperative techniques of teaching to improve the academic achievement and self-concepts of their students.

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