



## **EFFECT OF COOPERATIVE LEARNING ORIENTED TEACHING ON THE ACADEMIC ACHIEVEMENT OF SECONDARY LEVEL STUDENTS**

**Dr. S. K. Joshi**, *Asst. Professor,*

*B.Ed. Dept., Vardhaman College, Bijnor (U P)*

**Mr. Shubham Bhatnagar**, *Principal,*

*Basic School, Haldaur, Bijnor (U P)*

### ***Abstract***

*In the present study the researchers have tried to explore the effect of cooperative learning-STAD on academic achievement in Chemistry of secondary school students. This is a quasi- experimental study based on simple random design for preparing two groups such as experimental and control group. Total 140 students of class VIII of St. Mary's school, Bijnor (U.P.) were selected as a sample for the present study. Out of which 70 students were considered in experimental group and were exposed to cooperative learning method while another 70 students were named control group and taught through traditional method (Lecture+Demonstration+Discussion). The students of both the groups were taught one period of 40 minutes per day for 30 days. After that a self made achievement test for chemistry is administered on both the groups. After experimentation Academic achievement test scores were obtained. The data, thus collected, were analyzed through t-test. The results related to this study show that Cooperative learning oriented teaching is significantly effective for increasing the level of Academic achievement in Chemistry.*

**Keywords:** Cooperative Learning, Achievement, Traditional method, Chemistry teaching

### **Introduction:**

Society is ever-changing, so are the needs of society. The agency responsible to fulfil the needs of society is education. Since Vedic period to British period, needs and objectives of the society have always been changing on. So, in order to cope with these social changes, educational system had to keep on changing accordingly. Though our present school system

is same as was given by British government but many researches have been done and implicated for making this school system beneficial for the society and the nation. In order to fulfil the objectives based on the needs of the present society many methods are available to teachers for providing instruction. Since teacher is the deciding factor for determining the environment of classroom he has to consider carefully about the task structure of the instruction in the class-room. Task structure is the way of organizing social interaction in the class-room so as to result in student learning. There are various task structure, among them the important task structure are traditional task structure & cooperative task structure. In traditional task structure students sit passively while teacher talks. In this case the classroom environment encourages competition and students compete with each other for obtaining rewards. In a competitive social situation, the goals of separate participants are so linked that there is a negative correlation among their goal attainments. A person seeks an outcome that is personally beneficial but that is detrimental to the others with whom she/he is competitively linked. An alternative to traditional task structure is cooperative task structure, in which students spend much of their class-time working in group and encourage one another. Here students cooperative each other for obtaining reward. In a cooperative classroom, the goals of separate individuals are so linked together that there is a positive correlation among their goal attainment. A person seeks an outcome that is beneficial to all those with whom she/he is cooperatively linked is the feeling of team work, which is very much required in every field of life.

The need of the study arises because of the drawback of traditional method (based on competitive task structure) applied in the classrooms. The noticeable drawbacks of traditional methods such as excessive competition, misbehaviour or disruptive behaviour, lack of freedom to explore their thoughts and ideas, biasness and prejudices against different castes and religions and requirements of the present society, to sort out the problems of large classrooms and individual differences of learners motivated researcher to compare it with such teaching methods which can make the learning devoid of above mentioned drawbacks. One of such teaching methods is Cooperative Learning method. Cooperative learning is an approach to instruction in which students work in small groups to help one another learn (Johnson and Johnson, 1987; Slavin, 1983).

There are large numbers of studies which compare the effects of competitive structure with cooperative structure. Studies conducted by Ahuja (1995), Bianchini *et. al.* others (1995), Lumpe and Staver (1995), Towns and Grant (1997), Okebukola (1986), Miller (1992), Lonning (1993), Pisani (1994), Slavin, (1983) Kishore, (2003) Singh, (2005) and Joshi (2012) have found positive effect of cooperative learning on science achievement.

However, studies conducted by Scott, (1982), Lazarowitz *et al.* (1988) Sherman, (1988) Wolf (1995) and Boxtel *et al.* (2000) did not find any significant difference in the science achievement of students taught through cooperative learning and lecture, discussion or other methods.

Although many studies have been conducted abroad to see the effect of cooperative learning method on science achievement but there is dearth of studies in Indian conditions. So, in the present study Researchers want to see the effects of cooperative learning method and traditional method on Academic achievement in the subject of Chemistry.

#### **Hypotheses of the Study:-**

On the basis of above-mentioned objective following hypotheses were formulated in null form-

1. There is no significant difference of Academic achievement between the students of cooperative learning method group and traditional method group.
2. There is no significant difference of Academic achievement between the male students of cooperative learning method group and traditional method group.
3. There is no significant difference of Academic achievement between the female students of cooperative learning method group and traditional method group.

#### **Delimitations of the Study:-**

The delimitations of the present research study are following-

1. The present study is restricted to students of class VIII from only one school i.e. St. Mary's school, Bijnor.

2. The treatment period for all the two groups is 40 minutes per day for complete one month.
3. The subject chosen for the study is chemistry.
4. Among various types of cooperative learning techniques, students team achievement division (STAD) has been chosen.

### **Design of the Study:-**

The present study is quasi experimental in nature and the researcher used Simple Non random design for preparing two groups such as experimental and control group. Students of class VIII of St. Mary's school, Bijnor were selected as a sample for the present study. The Tool used for the study was an Achievement test constructed by researcher.

### **Collection of Data :-**

The study started with the formation of equally matched groups. The basis of the equal division of these groups was the marks obtained in annual examination of class VII. The topic chosen for teaching was Metals and Non-metals as this chapter of the syllabus was not taught to them till then. 70 students of class VIII were considered in the control group and taught through traditional method (Lecture + demonstration + discussion). Another 70 students of class VIII were named experimental group and was exposed to cooperative learning method. Among many types of cooperative learning methods, Student Teams Achievement Divisions (STAD) was used to teach experimental group. Researcher taught one period of 40 minutes per day to each and every group, for 30 days. After 30 days the students were given a gap of two days for preparation.

On the announced day the achievement test for chemistry was administered on control group and experimental group. The scores thus collected were considered as Academic achievement test scores. These scores were thus analysed for finding out the effectiveness of two methods of teaching on dependent variables, i.e., Academic achievement and Gender.

**Statistical technique used in the Study:-**

*t*-test was used to analyze the data. In view of the objectives of the study, the mean, standard deviation and were calculated from these raw scores. After this 't' value were calculated and compared with standard values given in *t*-table. In this manner, the hypotheses were tested at 0.05 and 0.01 level of significance.

**Data Analysis and interpretation:-**

**For Hypothesis-1:** Significance of mean difference in the achievement between the students of experimental group (Group taught by cooperative learning method) and control group (Group taught by traditional method) is as shown in Table 1.

**Table 1: Significance of Mean difference in the Achievement Score of Experimental and Control Group**

Group	N	Mean	S.D.	df	t-value
Experimental group	70	34.43	7.006	138	2.92*
Control group	70	30.78	7.811		

\* $P < 0.01$

After the testing of hypothesis-1, t-value has been found significant at 0.01 level for 138 degree of freedom. Hence, we can say that there is a significant difference of Academic achievement between the students of cooperative learning method group and traditional method group. It also indicates that the students taught by cooperative learning method have scored high marks on the achievement test.

**For Hypothesis-2:** Significance of mean difference in the achievement between the male students of experimental group (Group taught by cooperative learning method) and control group (Group taught by traditional method) is as shown in Table 2.

**Table 2: Significance of Mean difference in the Achievement Score of Male Students of Experimental and Control Group**

Group	N	Mean	S.D.	df	t-value
Experimental group	36	34.92	7.212	70	3.087*
Control group	36	29.64	7.314		

\*P<0.01

The result of the testing of hypothesis-2 indicates that t-value is significant at 0.01 level for 70 df, so, there is a significant difference of Academic achievement between the boys students of cooperative learning method group and traditional method group. It also indicates that the male students taught by cooperative learning method have scored high marks on the achievement test.

**For Hypothesis-3:** Significance of mean difference in the achievement between the female students of experimental group ( taught by cooperative learning method) and control group ( taught by traditional method) is as shown in Table 3.

**Table 3: Significance of Mean difference in the Achievement Score of Female Students of Experimental and Control Group**

Group	N	Mean	S.D.	df	t-value
Experimental group	34	33.91	6.759	66	2.81*
Control	34	31.87	8.134		

group					
-------	--	--	--	--	--

\*P<0.01

The result of the testing of hypothesis-3 indicates that at df 66 and probability 0.01, t-value is significant, hence, there is a significant difference of Academic achievement between the girls students of cooperative learning method group and traditional method group. It also indicates that the girls students taught by cooperative learning method have scored high marks on the achievement test.

From the above description, it can be concluded that all the three hypotheses are rejected at 0.05 and 0.01 level of significance. So, the findings of the present study show that cooperative learning oriented teaching is more effective than traditional teaching for gain in academic achievement.

#### **Conclusions:-**

The results related to this study show that cooperative learning oriented teaching is significantly effective for increasing the level of academic achievement of the students. So, the investigator summarizes results of this research study in favour of producing and maintaining cooperative learning environment in classrooms.

The findings of the study collaborate of the fact that cooperative learning oriented teaching can increase academic achievement of the students by creating feeling of stimulation and enjoyment. In the present study, the cooperative learning environment in the classroom provided students with opportunities to analyze, synthesize and evaluate ideas cooperatively. The informal setting facilitated discussion and interaction. This group interaction helped students to learn from each other's scholarship, skills and experiences.

The joint success experienced in working together to get the job done enhances social competencies, self-esteem, creativity and general psychological health, thereby motivating the students to achieve more academically. Learning experiences provided through such strategy based teaching gives children an opportunity for critical thinking and self-expression. This leads to mental development. The present study found that cooperative learning oriented

teaching accelerated the learning gains of participants and they outperformed to a significant degree.

### References:-

- Ahuja, Alka (1995). The effect of a Cooperative learning instructional strategy on the academic achievement, attitude towards science class & process skills. *Dissertation Abstract International*, 55 (10), 3149.
- Bianchini, Julie (1995 April 17-21). Cooperative learning in the untracked Middle school science classroom: A study of student achievement. *Paper presented at the annual meeting of the American Educational Research Association*, San Francisco, CA.
- Boxtel, Carla Van, Linden, Jes Van Der and Kanselaar Gellof (2000). Collaborative learning tasks and the elaboration of conceptual knowledge. *Learning and Instruction*, 10, 311-330
- Dean, F.K. (1993). Teaching apart various aspects of Cooperative learning : A theory generating meta analysis. *Dissertation Abstract International*, 53(12), 4252.
- Dheeraj, D. and Kumari, R. (2013). Effect of co-operative learning on Achievement in Environmental science of school student. *International Journal of Scientific and Research Publications*, 3(2).
- Johnson, D.W. and Johnson, R.T. (1987). *Learning together and alone : Co-operation, competition, and individualization*. Englewood Cliffs, New Jersey : Prentice Hall..
- Joshi, S.K. and Pandey, N.N. (2012). A Study of Biology Achievement in Cooperative Setting. *Teacher Education*, 46(1-2), 107-112.
- Kishore, K. (2003) *A study of effectiveness of cooperative learning on achievement in science*, unpublished Dissertation, Edu.; M.J.P. Rohilkhand University
- Lazarowitz, R., Hertz, R.L, Barod, J.H. and Bowelden, V. (1988). Academic achievement and on task behaviour of high school biology students instructed in cooperative small groups. *Science Education*, 72 (4) 475-487
- Lonning, R.A. (1993). Effect of cooperative learning strategies on student verbal interactions and achievement during conceptual change instruction in 10<sup>th</sup> grade general science. *Journal of Research in Science Teaching*, 30 (9), 1087-1101
- Lumpe, A.T. and Staver, J.R. (1995). Peer collaboration and concept development; learning about photosynthesis. *Journal of Research in Science Teaching*, 32 (1), 71-98.
- Miller, R.H.(1992). A lesson in action research: cooperative learning and achievement. *Schools in the Middle*, 2(1), 11-13.



- Pandey, N.N. and Kishore, K. (2004). Effect of cooperative Learning on cognitive achievement in science. *Journal of science and mathematics Education in S. E. asia*, 26(2), 52-60.
- Pissani, A.M. (1994). Involvement through cooperative learning: An attempt to increase persistence in the biological science. *Dissertation Abstracts International*, 56 (1), 112-A
- Scott, L.E.O. (1982). The effects of mixed sex and single sex cooperative grouping and individualization on science achievement and attitudes of early adolescent females. *Dissertation Abstracts International*, 43 (8), 2549-A
- Sherman, L.W. (1988). A comparative study of cooperative and competitive achievement in two secondary biology classrooms; the group investigation model versus individually competitive goal structure. *Journal of Research in science teaching*, 26(1), 55-64.
- Singh, Yashpal (2005). The Effects of Cooperative learning strategy on Achievement, Cognitive Development, Process skills, and Attitude towards, Science. Ph. D. Education, M.J.P. Rohilkhand University, Bareilly.
- Slavin, R.E. (1983). *Cooperative learning*. New York: Longman.
- Wolf, B.A. (1995). Effects of cooperative learning and learner control in computer based instruction. *Dissertation Abstracts International*, 56 (1), 169-A
- Sherman, L.W. (1988). A comparative study of cooperative and competitive achievement in two secondary biology classrooms; the group investigation model versus individually competitive goal structure. *Journal of Research in science teaching*, 26(1), 55-64.