

## Effect of Cooperative Learning on Achievement in English Grammar in Relation to Intelligence of Secondary School Students

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### ABSTRACT

The objective of the present paper was to study the effectiveness of Cooperative Learning (Jigsaw strategy) on achievement in English grammar in relation to Intelligence of secondary school students. Total 115 students of class 9th studying in a school affiliated to CBSE were taken as sample. The dependent variable of achievement in English grammar was measured through self-constructed achievement test used as a pretest as well as a posttest. The experiment group was taught through cooperative learning while control group was taught through traditional teaching. Lesson plans, worksheets and quizzes, designed to implement cooperative learning methodology was used. Cooperative Learning modules developed by the researcher for teaching of English grammar included in the 9th class syllabus of CBSE board, and Standard Progressive Matrices (SPM) developed by J. Raven, J. C. Raven and J. H. Court (revised, 2000) were used as tools. By employing (Two Way) 2x3 factorial design ANCOVA results showed that students taught through cooperative learning strategy (Jigsaw) (Mean=10.10, N=58) achieved significantly higher in English grammar as compared to traditional method of teaching (Mean=7.47, N=57). Cooperative learning was found to be more effective teaching strategy to improve achievement in English grammar of students in comparison to conventional teaching method when pre-achievement in English grammar was considered as covariate while testing interaction between treatment and intelligence.

**Keywords:** Cooperative learning, General Intelligence, Jigsaw

Teaching is an intricate process. It is not mechanical, but an exciting and challenging job. Teaching is an art and truly fine teacher is an artist. Teaching requires a high degree of flexibility, adaptability and nimbleness of mind that goes far beyond the mechanical application of step-by-step procedure (Shamim, 1999). An educator must consider ways and method to empower learning in the students. He ought to incite their interest and persuade them to learn. He should create conditions in which they want to learn. Numerous educators use conventional techniques for instruction. The students of a large class need to cover the syllabus in a constrained time frame. The outcome is that wide gap

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amongst weak and capable students' increases. Cooperative learning claims to help the students in such a situation. Cooperative learning in an arrangement in which students work in mixed ability groups and are awarded on the basis of the success of the group (Woolfolk, 2004). In cooperative learning classrooms students work in small group and rewards are based on the entire group performance. Cooperative learning activities are carefully structured learning activities in which students are held accountable for their contribution, participation and learning, they are also provided incentives to work as team in teaching others and learning from others (Slavin, 2000).

There are a number of Cooperative learning methods which are being applied in classroom teaching, but Jigsaw is known to be a highly accepted method. Jigsaw method was developed by Elliot Aronson. In jigsaw strategy, normal-sized class is divided into home groups of four to six students, where each student is given a list of subtopics to study. Individual members of each group then work with the "experts" from other groups, researching a part of the material being given by the teacher, after which they return to their home group in the role of instructor for their subtopic. Jigsaw strategy is a cooperative learning technique appropriate for students from 3rd to 12th grade.

Intelligence is considered as a general capacity to appreciate and meet acceptably with any condition that life may posture. Different psychologists have taken intelligence in their own particular way. Some examined it at biological or mental level while other thought at psychological level. Some describe intelligence solely as subjective or academic operation, the ability to think in element terms, to deal with pictures or images or symbols, to see relationship to reason out and to accomplish redress generalizations.

### **LITERATURE REVIEW**

Review of literature shows that large amount of researches has been conducted on Cooperative learning. Many studies on specific cooperative learning methods like STAD, TGT, learning etc. were found. The studies on cooperative learning have been conducted across all the levels of education viz primary, middle, and secondary and higher education (Dasan, 2007). Slavin and others (1991) carried out research on STAD by using an experimental design on 139 students of social science in their school. The results of the study were positive and significant. Arbab (2003) investigated the effects of cooperative learning on achievement of 6th class students in the subject of English. The sample comprised 36 students of 6th class equally placed in experimental group and control group. The results showed that Cooperative learning resulted in higher achievement as compared to routine method of teaching in English. Parveen and others (2010) investigated the effect of cooperative learning on academic achievement of 8th grade students in the subject of social studies. The result of the study did not confirm research hypothesis. Cooperative learning was not found to be a better instructional strategy than routine method of instruction.

Various studies on Intelligence in general and Multiple and emotional intelligence in particular reported that cooperative learning significantly affected multiple intelligence and academic achievement. It also helps in building emotional intelligence skills (Shia et al., 2000; Viola, 2002; Chen, 2005; Masao, 2011; Goreyshi et al., 2013; Pandya, 2017).

## **METHODS AND PROCEDURES**

### ***Objective of the Study***

To study the effect of Cooperative learning, intelligence and their interaction on achievement in English grammar by considering pre-test achievement in English grammar score as covariate.

### ***Hypothesis of the Study***

There is no significant effect of Cooperative learning, intelligence and their interaction on achievement in English grammar by considering pre-test achievement in English grammar score as covariate.

### ***Methodology***

The present study was experimental in nature. It was based on the lines of Non-Equivalent Control group Pretest-Posttest design. The sample was confined to single school only. The present study was conducted on the 9th class students of a private school affiliated to C.B.S.E. Board. The school administration did not allow rearrangement of the groups; therefore, quasi experimental design was applied. Two intact sections of 9th class were taken; randomly one was selected as experimental group and another as control group. The size of sample for experimentation was 115 students of 9th class. Of these, 58 students were in Experimental Group and 57 were in Control Group.

### ***Description of Tools***

In order to measure the language achievement of the sample students before and after the study, an achievement test in English language was designed by the investigator. For teaching experimental group cooperative learning modules were made and to evaluate individual and group performance worksheets, quizzes based on grammar portion (determiners, modals, prepositions) included in the 9th class syllabus of CBSE board were made by the investigator and to assess intelligence Standard Progressive Matrices (SPM) developed by J. Raven, J. C. Raven and J. H. Court (revised, 2000) was used.

### ***Procedure***

Before starting the experiment all the details of different stages of the experiment were discussed. The experimental procedure was executed through three stages. In the first stage pre testing of all the students of both groups were assessed through achievement test in English language and standard progressive matrices. In the second stage experimental group was given treatment for 52 days through cooperative learning by researcher and in control group, lesson was taught by lecture based/textbook based teaching method. Before delivering the first lesson, the experimental group was divided in to six cooperative groups. During the third stage the posttest (same achievement test) was administered to both experimental group and control group.

## **ANALYSIS AND INTERPRETATION**

For studying the effect of treatment, intelligence and their interaction on achievement in English grammar by considering pre-test achievement in English grammar score as covariate, the data were analyzed with the help of (Two Way) 2x3 factorial design ANCOVA. There were two levels of treatment namely cooperative learning and conventional learning. And there were three levels of intelligence (high, average, and low).

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**Adjusted Mean Scores and SDs of achievement in English grammar of Ninth Grade Secondary School Students of Experimental Group and Control Group at Different Levels of Intelligence**

In order to find out the interaction between the treatment (cooperative learning and conventional approach) and different levels of intelligence, the students of experimental and control group were divided into three different levels viz. high intelligence, average intelligence and low intelligence levels. Adjusted mean score in achievement in English grammar of ninth grade secondary school students of experimental group and control group at high, low and average intelligence levels is shown in table 1.

*Table 1 Adjusted Means and standard deviations of Achievement in English Grammar of Ninth Grade Secondary School Students of Experimental Group and Control Group at different Levels of Intelligence*

Levels of Intelligence	Experiment Group			Control Group			Total		
	N	Mean	SD	N	Mean	SD	N	Mean	SD
High	15	11.86	2.19	15	8.86	1.80	30	10.36	2.49
Average	26	9.61	2.29	25	6.92	2.62	51	8.29	2.79
Low	17	9.29	2.20	17	7.05	2.46	34	8.17	2.56
Total	58	10.10	2.44	57	7.47	2.49	11	8.80	2.79

Table 1 shows that the mean scores of achievements in English grammar of students of Experimental Group with high intelligence is 11.86 with 2.19 standard deviation and mean score in achievement in English grammar of students of Control group with high intelligence is 8.86 with 1.80 standard deviation. The mean scores of achievements in English grammar of students of Experimental Group with average intelligence is 9.61 with 2.29 standard deviation and mean score in achievement in English grammar of students of Control group with average intelligence is 6.92 with 2.62 standard deviation. The mean scores of achievements in English grammar of students of Experimental Group with low intelligence is 9.29 with 2.20 standard deviation and mean score in achievement in English grammar of students of Control group with low intelligence is 7.05 with 2.46 standard deviation.

The mean scores of achievements in English grammar of total students of Experimental Group is 10.10 with 2.44 standard deviation and mean score in achievement in English grammar of total students of Control group is 7.47 with 2.49 standard deviation.

The mean scores of achievements in English grammar of total students with high intelligence is 10.36 with 2.49 standard deviation. The mean scores of achievements in English grammar of total students with average intelligence is 8.29 with 2.79 standard deviation. The mean scores of achievements in English grammar of total students with low intelligence is 8.17 with 2.56 standard deviation.

*Table 2 Summary of Two Way (2x3) factorial design of ANCOVA for interactional effect of Treatment and intelligence on achievement in English Grammar*

Source of Variation	Sum of Squares	df	Mean Square	F
Treatment	225.00	1	225.00	73.95**
Intelligence	28.26	2	14.13	4.64**
Treatment X Intelligence	11.03	2	5.51	1.81 <sup>NS</sup>
Error	328.55	108	3.04	
Total	9794.00	115		

\*\* $p \leq 0.01$ , NS= Not Significant at 0.05 level.

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### *Effect of Treatment on Achievement in English Grammar*

From Table 2 it is evident that the adjusted F value for the main effect of treatment on achievement in English grammar is 73.95, which is statistically significant at 0.01 level with  $df_{1/108}$ . It indicates that the adjusted mean scores of achievement in English grammar between the experimental group and the control group differ significantly when pre-achievement in English grammar is considered as covariate. In this context, null hypothesis that there will be no significant effect of treatment on achievement in English grammar by taking pre-achievement in English grammar as covariate, is rejected. Further, the adjusted mean score of achievement in English grammar of the experimental group (10.10) is higher than that of the control group (7.47) (see table 1). It may, therefore, be concluded that Cooperative learning was found to be more effective teaching strategy to improve achievement in English grammar of students in comparison to conventional teaching method when pre-achievement in English grammar was considered as covariate while testing interaction between treatment and intelligence.

### *Effect of Intelligence on Achievement in English Grammar*

The adjusted F value for intelligence is 4.64, which is significant at 0.05 level of significance with  $df_{1/108}$ . It indicates that the adjusted mean scores of achievement in English grammar of low, average and high intelligent students differ significantly when pre-achievement in English grammar is considered as covariate. In this context, null hypothesis that there will be no significant effect of intelligence on achievement in English grammar by taking pre-achievement in English grammar as covariate, is rejected. Further, (see table 1) the adjusted mean score of achievement in English grammar of students with high intelligent 10.36 is higher than students with average 8.29 intelligent and the adjusted mean score of achievement in English grammar of students with average intelligent is higher than students with low 8.17 intelligent. It may, therefore, be concluded that achievement in English grammar was not found to be independent of intelligence when pre-achievement in English grammar were considered as covariate. There was significant effect of intelligence on achievement in English grammar when pre-achievement in English grammar was taken as covariate.

### *Effect of Interaction Between Treatment and Intelligence on Achievement in English Grammar*

The adjusted F value for interaction between treatment and intelligence is 1.81, which is not significant. It indicates that the adjusted mean scores of achievement in English grammar of low, average and high intelligent students between the experimental group and the control group do not differ significantly when pre-achievement in English grammar is considered as covariate. In this context, null hypothesis that there will be no significant effect of interaction between treatment and intelligence on achievement in English grammar by taking pre-achievement in English grammar as covariate, is not rejected. It may, therefore, be concluded that achievement in English grammar was found to be independent of interaction between Cooperative learning and intelligence when pre-achievement in English grammar was considered as covariate.

## **CONCLUSION**

1. Cooperative learning was found to be more effective teaching strategy to improve achievement in English grammar of students in comparison to conventional teaching method when pre-achievement in English grammar was considered as covariate while testing interaction between treatment and intelligence.

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2. There was significant effect of intelligence on achievement in English grammar when pre-achievement in English grammar was taken as covariate.
3. Achievement in English grammar was found to be independent of interaction between Cooperative learning and intelligence when pre-achievement in English grammar was considered as covariate

### DISCUSSION

The results of post-test confirm the superiority of CL method over traditional lecture method, the post test scores of the experimental group reached comparatively higher level than the level of control group. The findings of the study were consistent with the findings of Johnson (1998); McMaster & Fuchs (2002); Chiang (2012) Hosseini (2017)) that proved significant difference in cooperative learning strategy and traditional method Cooperative learning techniques helped teacher to involve students in learning activity and made them to interact with each other.

### Recommendations

On the basis of above conclusions, the following recommendations are drawn for further research:

Previous research indicates that cooperative learning results in cognitive and affective growth of students. Therefore, in addition to investigate the effect of cooperative learning on academic performance, effectiveness of cooperative learning on students' self-esteem, social skills and academic motivation may also be studied. In the present study the model of cooperative learning was used on one school subject, namely English language. This model may also be tried out on other school subjects at elementary and secondary level and also on different type of students like slow learners and special students.

### REFERENCES

- Arbab, S. (2003). *Effects of Cooperative learning on the achievement of 6th class students in the subject of English*. Unpublished Master dissertation. Rawalpind. PAF College of Education for Women
- Best, J.W., & Kahn, J.V. (2006). *Research in Education*. New Jersey: Pearson Education.
- Bolukbas,F.(2011). The Effectiveness of Cooperative Learning on the Reading Comprehension skills in Turkish as a Foreign Language. *The Turkish Online Journal of Educational Technolog*,10(4).
- Chamundeswari, S., &Vaidharani, S. (2006). General mental alertness and intelligence in relation to academic achievement of students at the secondary level. *Journal of Educational Research and Extension* 43(2), 32-46.
- Chandra,.R., & Azimmudin, S. (2013). Influence of Intelligence and gender on academic achievement of secondary school students of Lucknow city. *Journal of Humanities and Social Science*, 17(5), 09-14
- Chen, S. (2006). *Cooperative learning, multiple intelligences and proficiency application in college English language teaching and learning*. Doctoral thesis in Education, Australian Catholic University, Australia.
- Garrett, H.E. (2005). *Statistics in Psychology and Education*. New Delhi: Paragon International Publishers.
- Koul, L. (2009). *Methodology of Educational Research*. New Delhi: Vikas Publishing House.

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Parveen, S. (2010). Effect of Cooperative Learning on Academic Achievement of 8th Grade Students in the Subject of Social Studies. *International Journal of Academic Research*, 3(1), 950-955.

Singh, Pargat. (2015). *Effect of cooperative learning on critical thinking social competence and achievement in Social Science of secondary school students*. Doctoral thesis in Education, Punjab University, Chandigarh.

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### **Conflict of Interest**

The author(s) declared no conflict of interest.

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