The Effects of Cooperative learning on Achievement

DR. KALPESH K. PATEL
I/c Principal,
Sardar Patel B.Ed. College, Vadnagar
Gujarat (India)

Abstract:
Cooperative learning, as an instructional methodology provides opportunities for diverse students to develop skills in group interactions and in working with others that are needed in today's world (Johnson & Johnson, 1990). The purpose of this study was to determine the effects of the cooperative learning approach of Cooperative learning on the achievement of content knowledge and retention toward the teaching method. Cooperative learning was compared to traditional lecturer teaching learning classroom structure using a t-test. A retention test was administered three weeks following the achievement test. Achievement test scores and first semester grades in elementary Mathematics' classes were used as covariates to adjust for possible preexisting differences between the groups. Analysis showed significant difference among the dependent variables (achievement and retention) between the teaching methods used.

Keywords: *Achievement, Cooperative learning, Effect, Retention, teaching*

1. Introduction

In recent years, India has experienced an important paradigm shift in education: a teacher-centered approach has been replaced by a learner-centered approach. Put differently, the emphasis is now on an Outcomes-Based Education approach as the key underlying principle of the National Curriculum Framework

Within the NCF curriculum, but specifically in Mathematics, it is of critical importance that learners learn how to gather relevant information and to transform such information into marketable knowledge; in other words, the learner has to be enabled to identify problems and find solutions to these challenges by means of creative and innovative thinking in real-life situations.

To ensure that the outcomes of Mathematics teaching are achieved, Mathematics teachers are compelled to consider different teaching strategies and methods. By pursuing these new strategies and methods, Mathematics teachers will be enabled to initiate teaching and learning effectively so that knowledge, skills and positive attitudes may be optimized among learners in their response to the Mathematics' environment Excellent and effective teaching demands a host of devices, techniques and strategies not only to achieve cross critical outcomes, but because variety, itself, is a desideratum.

3. Statement of the Problem

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4. Hypotheses

The following hypothesis is developed:

Ho_1: There will be no significant difference between post tests means scores of Traditional group and Experimental group on achievement test.

Ho_2: There will be no significant difference between post-test mean scores of Traditional group and Experimental group on retention.

5. Methodology

5.1 Research design

A quasi-experimental research, with partially matched cooperative learning-experimental and traditional lecture method groups, was constructed because of its resistance to common threats to internal validity (Mouton, 2001 & Gray, 2004).

5.2 Sampling mathematics

Students of standard 11^{th} were identified for the investigation. Only 112 students who were registered for module. In the present study the random sampling method has been adapted from the Nutan vidhyalaya, Visnagar. The experimental group consisted of 56 students and the control group of 56 students. Both groups were taught by the researcher over a 6 week period of two contact sessions of 40 minutes per week for the first semester.

5.3 Research instrument

The Mathematics' achievement test, which is a created by researcher. The researcher used Mathematics Test for the post test for both groups. The Mathematics Test composed of fifty multiple-choice items which was structured and aligned on the content of Mathematics. Achievement and Retention instruments were also used in this study to obtain data. All students concerned were informed that results of information will only use for research purposes. This gave the researcher an indication on which angle to present the cooperative learning during the contact sessions.

6. Procedure

The experimental group received training and demonstrations in using cooperative learning during their contact sessions. After 6 weeks, all participants (N=112) were retested with the Achievement and Retention instruments. The researcher calculated the standardized mean difference of percentiles to determine impact on students' Mathematics levels. First Internal exam's marks in Mathematics were used as covariate measures. In order to control for the "teacher quality" variable, both groups were taught by the regular Mathematics' teacher. Both groups were taught the module on Mathematics using the same content outline, but students in the cooperative learning group completed learning activities in small heterogeneous groups, while the students in the control group completed activities individually. The two chapter module was taught to both groups over a six-week period. The test was administered to both groups at the end of the instructional unit. Three weeks later, the test was administered again to the students to determine retention of information.

7. Results and Discussion

Test scores and average marks in Mathematics showed that students who were exposed to the cooperative learning strategy compared to those in the lecture method were significantly different (see Table 1). Student achievement was measured by the number of correct responses on the 70-item achievement test developed by the researchers. The test of retention was administered three weeks following the achievement test (see Table 2).

Table 1: Difference between post test mean scores of Traditional group and Experimental group on achievement test

	Group	N	Mean	SD	t-value	Remarks
Post -Test	Control	56	40.25	8.005	2.191	Significant at 0.05 level
	Experimental	56	38.43	8.577		

Table 2: Difference between post test mean scores of Traditional group and Experimental group on retention

	Group	N	Mean	SD	t-value	Remarks
Post -Test	Control	56	40.43	8.577	2.34	Significant at 0.05 level
	Experimental	56	41.09	7.922		

Based upon the findings of this study, the following conclusions were drawn:

1. The Cooperative Learning technique is more effective than the lecture method with regard to Mathematics student achievement or student retention of information.
2. The Cooperative Learning technique is more effective than the lecture method with regard to Mathematics students' attitudes toward the method of instruction.

8. Conclusion

The results of this study are encouraging and add to the work of other research studies. Cooperative learning was found to be more effective than lecture method with respect to Mathematics students' achievement and retention in this study, the literature suggests there may be additional reasons to use cooperative learning. Certainly, the ability to work with others within a group and to develop interpersonal skills may be justification for using cooperative learning strategies. This study has shown that cooperative learning methods were more effective than lecture method with regard to achievement and retention, so concerns about the effectiveness of cooperative learning methods in these areas have been addressed. Students taught by cooperative methods should perform equally as well as students taught by lecture method.

References

1. Allen, W.H. & Van Sickle, R.L. (1984). Learning teams and low achievers. Social Education, 48, 60-64.
2. Hays, W.L.(1973). Statistics for the social sciences. New York: Holt Rinehart, and Winston.http://listserve.uga.edu/cgi-bin/wa?A2=ind0605&L=spssx-1&P=29372 Retrieved: 30 August 2008
3. Johnson, D.W. & Ahlgren, A. (1976). Relationship between student attitudes about cooperation and competition and attitudes toward schooling. Journal of Educational Psychology, 68(1), 92-102.
4. Johnson, D.W., & Johnson, R.T. (1989). Leading the cooperative school. Edina, MN: Interaction.
5. Johnson, D.W., & Johnson, R.T. (1990). Social skills for successful group work. Educational Leadership, 47(4), 29-33.
6. Johnson, DW; Johnson, RT & Stanne, MB. 2000. Cooperative learning methods: A meta-analysis [Online].www.cooperation.org/pages/cl-methods.html. Retrieved: 6 May 2008
7. Slavin, R.E. (1990). Cooperative learning: Theory, research, and practice. New Jersey: Prentice Hall.
8. Wodarski, L.A., Adelson, C.L., Todd, M.T., & Wodarski, J.S. (1980). Teaching nutrition by teams-games tournaments. Journal of Nutrition Education, 12(2), 61-65.