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THE EFFECT OF TEAM TEACHING ON ACADEMIC ACHIEVEMENT OF 9TH GRADERS IN SCIENCE

Madhuri Hooda, Ph.D. & Meghna Sharma

Assistant professor, Dept. of Education, M.D University, Rohtak.

M.Ed Student Dept. of Education, M.D University, Rohtak.

Abstract

This study was carried out to find the effectiveness of Team-teaching on academic achievement of 9th graders in Science. The data was collected from students of class IX in Rewari District of Haryana. Out of 50 students, 12 were selected in purposive manner in the experimental group and 12 were in the control group. These groups were classified on the basis of intelligence and socio-economic status. The research method used to conduct the study was pre-test post-test Quasi experimental design in which two groups were selected as experimental and control group. In the beginning both groups were administrated the pre-test by self-constructed achievement test in Science. The experimental group was taught by a team of two Science teachers and control group by traditional method. The same post-test was administrated on both the groups and t-value was equated. Results of the study revealed that there was a significant positive effect of team-teaching on academic achievement of students in Science.

Keywords: *Team-teaching, Achievement, 9th grade.*

INTRODUCTION

Teaching Science is quite different from teaching other subjects. The Science classroom is different from other classrooms in humanities such as English, History, politics etc. the quality of teaching Science is mainly depend on the competency of Science teacher as well as the teaching method use by the teacher to teach the students. Team teaching strategy helps the teacher to activate students' curiosity, about a topic. It also helps in developing critical thinking skills among students. The goal of team teaching method is to facilitate learning.

Quinn and Kanter (1984) define team teaching as "simply team work between two qualified instructors who, together, make presentations to an audience." A recent article in *Mathematics Teacher* (Rumsey, 1999) describes *cooperative teaching* in which instructors share

teaching ideas and resources but otherwise teach independently. Before implementation of team teaching, the team members should have sufficient knowledge in the area of team teaching. They should understand the philosophy behind team teaching and the rationale of how it will fit with the rest of the departmental program. When the concept of the team teaching method or co-teaching had evolved, it is basically used for the mentally retarded children but now a days it is equally applicable to the normal children in general classroom situation.

TEAM TEACHING

The present system of education demands too much from a teacher in the teaching learning process. A teacher has to teach same subject matter every year. It is very boring for him. Moreover present day classroom are appropriate only for the average students in the classroom. Therefore we feel a need to use 'team-teaching'.

Team-teaching is a new innovation in the field of teaching learning. The concept of team-teaching is quite popular in the western world but it is relatively a new concept in our country. Team-teaching method includes teachers, resource persons, clerical staff and other employees. The exact origin of team-teaching is difficult to pinpoint in terms of time, country and invention.

However, the concept of team-teaching emerged around 1950. As a matter of historical interest, the Harvard University was first to put forth a plan known as internship plan in 1955 in which five teacher trainers were required to work simultaneously under the supervision of an experience teacher. From U.S.A it got transferred to the England in 1965. In this way, the concept of team-teaching reached its peak in the seventies in most parts of the western world.

Team teaching is based on the assumptions that teachers working together in a coordinated manner can produce an overall improvement in performance of students, and that the utilization of experts working in their specialist areas will result in a more effective way of teaching. Joint responsibility for the teaching of groups, appropriate team structure and student groupings are among the most important features of team teaching. No matter how well-organized the team or how abundant the resources and teaching aids, the chances of the team's success will depend directly on the real cooperation of its members.

Team teaching in an embryonic sense is evident where, say, two members of staff decide to pool their efforts in pursuit of one specific teaching objective. Team-teaching is a processes where two or more teachers cooperatively to a specific group of students. Boudah and Deshler (1997) studied the effects of co teaching on the secondary classes. In this study a four part

experimental design was used to determine the effects of co-teaching on the secondary classes. The result of the study showed that there was mixed results on students measures and there were little changes in academic achievement for the students.

Marshall Welch (2000) studied team-teaching in two classrooms with the help of descriptive analysis of the team-teaching. This study was a new approach to field based research, to conduct formative and summative evaluation procedures. The result of qualitative and quantitative analysis assessed students' outcomes and procedures of teaching. Performance of typical students and students with learning disabilities on curriculum-based assessment measures given pre and post-team teaching suggest academic gains in reading and spelling for all students. J. Gerber and A. Popp (2000) studied the effect of collaborative or team teaching on academically able students with disabilities including a large number of students with learning disabilities. The focus of this research was a series of recommended to improve collaborative teaching. The recommendation were generated as a result of an intensive study of collaborative teaching in elementary, middle and high school programs through interviews with the teachers, parents, students and administrations and concluded that for making team teaching effective involved personnel; parents and university pre-service and in-service teacher programme are necessary and give general recommendations addressing service delivery, and communication and administrative issues. Colette Murphy et.al (2004) studied Impact of co teaching between science student-teachers and primary classroom teachers on children's' enjoyment and learning of science. In this study the under-graduate science specialist student- teachers were placed in primary schools where they co-taught with primary teachers. After six month investigator found that children enjoyed science lessons more and showed fewer age differences in their attitude to science than other children. Also it enhance the teacher education as well as improves children's' experience of science. Syh-Jong Jang (2006) studied the effect of incorporating web-assisted learning with Team Teaching in seventh-grade science classes. Two certified science teachers and four classes of the seventh graders participated in this study. The findings showed that the average final examination sores of students experiencing the experimental teaching method were higher than that of those receiving traditional teaching.

OPERATIONAL DEINITIONS

Team Teaching: Team teaching may be said to operate where two or more teachers cooperate, deliberately and methodically, in the planning, presentation and evaluation of the

teaching process. In effect, individual teachers sacrifice some of their autonomy, pool their resources and–a vital feature of team teaching- accept joint responsibility for the teaching of groups of student.

Achievement: It refers to performance in school or college in a standardize series of education test. Academic achievement is the systematic procedure for determining the amount that has learnt through instructions. In the present study achievement of 9^{th} graders was seen in the area of Science. To see the achievement the investigator prepared an achievement test.

9^{th} Grade: According to Indian Education System, 9^{th} grade is considered as 9^{th} standard of school system which includes the age group 13-15 years.

OBJECTIVES OF THE STUDY

- To develop an achievement test in Science for 9^{th} class students.
- To study the effect of team teaching on achievement in Science.
- To compare the pre-test mean achievement score of experimental group and control group.
- To compare the post-test mean achievement scores of experimental group and control group.
- To compare the pre-test and post test achievement score of experimental group.

HYPOTHESIS OF THE STUDY

- **H_1:** There is no significant difference in the pre-test achievement score of experimental group and control group.
- **H_2:** The post-test achievement score of experimental group are significantly higher than pre-test scores.
- **H_3:** The post test achievement scores of experimental group are higher than the control group.

DELIMITATIONS OF THE STUDY:

- The study was delimited to the 9^{th} class students.
- The study was delimited to (12+12) = 24 students only.
- The study was delimited to the team of only two Science teachers.
- The study was delimited to the subject of Science only.
- The study was delimited to the school of VISHWAKARMA SEN. SEC. SCHOOL REWARI.

VARIABLES:

Independent variable: The two methods of teaching Team teaching and traditional method were used as Independent variables.

Dependent Variable: Academic achievement in Science was taken as dependent variable in the present study. Academic achievement of the 9^{th} grade students were equated two times first before the treatment by pre-test and second after treatment by post- test.

CONTROL ON INTERVENING VARIABLES:

- ***Nature of school:*** Sample was selected from a single government aided school, named Vishwakarma Senior Secondary School Rewari.
- ***Grade level:*** Only 9^{th} class students were selected for the research study.
- ***Teacher*****:** During whole treatment phase, students were taught by a team of same teachers.
- ***Subject:*** Only subject of Science was taught by the team during whole treatment.
- ***Duration:*** 40 minutes each day for 7 days.
- ***Intelligence:*** Intelligence of subjects was equated with the help of General mental ability test constructed by Jalota.
- ***Socio-Economic status:*** Socio-economic status was equated by socio-economic scale constructed by Rdhey Shyam and Rajbir Singh.
- ***Locality:*** Research study was conducted on the urban subjects only.
- ***Content:*** Only two chapters of Science were taught in the present study.

RESEARCH METHOD & DESIGN:

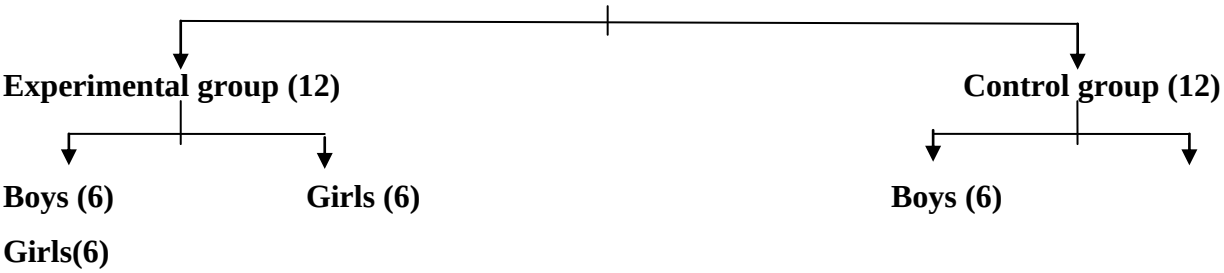
Research design is a master plan or the collection of the desired in formation. If objective and structure are clear then systematic investigation is possible. In present study pre-test post-test Quasi experimental design was used.

SAMPLE:

It involves two groups, one experimental group E and other control group C. The students of 9^{th} grade were equated on the intelligence and socio- economic scales. After equating the intelligence and socio-economic status students were divided in two groups each having 12 students.

Table 1.1 Sample of the study

Sr.No	Group	Total Number of students
1.	Experimental Group (E)	12
2.	Control Group (C)	12
	Total	24



TOOLS USED

In the present study Socio-economic status scale constructed and standardized by Rajbir Singh and Radhey Shayam was used. This test was developed in Hindi and English for both rural and urban people. A group general mental ability test constructed by Jalota was used to collect the data for the study. This test published in 1972. This test measures the intellectual capacity of an individual. An achievement test in Science for class 9^{th} constructed by the investigator was used.

PROCEDURE

- ***Pre testing phase***

In pre-testing phase, investigator equated both the group on the basis of intelligence and socio-economic status. Then achievement test was employed on both the groups i.e. .experimental and control group. After that, investigator measured their marks obtained in the achievement test.

- ***Treatment Phase***

In treatment phase, one group i-e experimental group was taught by a team of two teachers by team-teaching method. In the same time the control group was taught by the traditional method of teaching by a single teacher. The treatment was given to the students only or 7 days.

- ***Post-Testing phase:***

It is a phase after the treatment phase. This phase is generally called the phase of checking effectiveness of teaching. In this phase, academic achievement tested by the

investigator after the treatment of the teaching method. With the help of per-test scores and post that scores of experimental and control group, investigator easily calculated the difference between the scores of two of two groups.

STATISTICAL TECHNIQUE: For the analysis and interpretation, the following Statistical Techniques were used- Mean, Standard Deviation, Standard Error Difference Between Means, 't' test

ANALYSIS & INTERPRETATION

1. **H_0:- There is no significant difference in pre-test scores of control group and experimental group.**

Table: 1.2 Comparison of pre-test scores of experimental and control group.

Group	Mean	Pooled S. D.	N	SE_D	"t" value	d. f.	Level of significance
Control group (Y_1)	15.33	4.7938	12	1.9573	0.38	22	Not significance at the level of 0.01 Critical value at 0.01 is 2.82
Experimental group (X_1)	16.08		12				

From table 1.2 it is evident that there is no significant difference between the Pre-test mean scores of control group (15.33) and experimental group (16.08). Further significant difference between the mean of the pre-test scores of control groups and experimental group was tested the 't' value (0.38) was found not to be significant at 0.01 level of significant. Therefore, two groups did not differ in their pre-test performance before the application of the treatment.

2. **H_1: "The Post-test achievement scores of experimental group are significantly higher than the post-test scores."**

Table: 1.3 Comparison of pre-test scores and post-test score of experimental group.

Scores	Mean	Pooled S. D.	N	SE_D	"t" value	d. f.	Level of significance
Pre-test scores (Y_1)	16.08		12				Critical value at 0.02 is 2.51 So $p \leq t$
Post-test scores (Y_2)	32.33	4.9091	12	2.0039	8.1	22	

The result in table 1.3 shows that the mean of post-test scores obtained by the experimental group is much higher (32.33) than the pre-test scores (16.08). further when the significant difference between the mean pre-test and post-test scores of the experimental group was tested the 't' value (8.1) was found to be significant at 0.02 (one tailed test) level of significance indicating a significant difference between the mean pre-test and post-test scores of the experimental group related to their academic achievement. Thus, we reject null hypothesis and retain H_1: "The Post-test achievement scores of experimental group are significantly higher than the pre-test scores."

3. **H_1: "The post test achievement scores of experimental group are higher than those of control group."**

Table: 1.4 Comparison of post-test scores of experimental and control group.

Group	Mean	Pooled S. D.	N	SE_D	"t" value	d. f.	Level of significance
Control group (X_2)	27.58		12				Critical value of t at 0.02 level is 2.51. $p \leq t$
Experimental group (Y_2)	32.33	5.7215	12	2.33	2.0386	22	

Calculated value of 't' is 2.0386 which is less than the critical value of 't' at 0.02 level i.e. 2.51 but greater than the critical value of 't' at 0.10 i.e. 1.72. Therefore null hypothesis is rejected and directional hypothesis will be accepted at 0.10 level. Thus, there is a significance difference between the Post-test mean scores of experimental and control group.

MAJOR FINDINGS

The statistical analysis of the data reveals the following findings-

- The students who were taught by Team-teaching show significant improvement of their achievement in Science than the students who received instruction though the traditional method. It suggests that Team-teaching contributes towards raising the achievement of students in Science.
- A significant difference has been observed between the mean achievement of pre-test scores and post-test scores of experimental group in relation to their achievement.
- The group of students taught through Team-teaching show significantly higher mean scores in achievement than the group of students taught through traditional method.

EDUCATIONAL IMPLICATIONS:

- Team teaching can also be applied to slow learners and low achievers as per their need.
- Team-teaching strategy can be applied to other subjects like Mathematics, Hindi, and English etc.
- Burden of syllabus and difficulty of content can be easily solved by a team of teaches which improves the quality of learning.
- Team-teaching strategy is equally applicable to both elementary education as well as higher education.
- Team teachers can help the students in understanding their mistakes and can provide time for the practice as well as the drill work.
- Attention to each and every student can be given with the help of team teaching in a classroom containing large number of students.
- Team strategy in education is a best strategy for the education of mentally retarded children, it delimits the disability of the mentally challenge children and provide a better way of imparting education.

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