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RESEARCH PAPER

Effectiveness of Cooperative Learning Technique for the Subject of Science at Elementary Level

Zafar Iqbal [1] Fazeelat Noreen [2] Dr. Muhammad Arshad [3]

1. Ph. D Scholar, Department of Education, The University of Lahore, Lahore, Pakistan.
2. Ph. D Scholar, Department of Education, Bahudin Zakaryia University Multan, Pakistan.
3. SST Science, School Education Department, Government Fazilka Islamia Model High School Pakpattan, Punjab, Pakistan

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Corresponding Author:

marshadzakki@gmail.com

ABSTRACT

The study is experimental in nature based on pre-test post-test control group design, with the intent to check the effectiveness of cooperative learning technique for the subject of science at elementary level. Students of grade 8 of Govt. high school Musa Kalan formed the population; out of the lot 35 students were selected on the basis of procuring more than 60% marks in the pre-test which was teachers' designed. Those who performed the traditional group were the volunteers but with the same marks as that of the experimental group students were selected for exposure to intervention of cooperative learning for a period of one month. On the culmination of a month students were exposed to post-test. The major findings were that those students who were exposed for cooperative learning technique got better results than traditional teaching method. The findings show superiority of cooperative learning technique on traditional teaching method. These tests should be used for exploring the students' level of achievement though the students are taught by any method

Introduction

It is a solid fact that education is a major factor for the development of a country or a nation. Education has great effects on ethical factors, cultural factors, communal factors, political factors and economic factors of a nation for the elevation of societal abilities and interaction between people of the society. Those

nations or countries which have given a vital importance towards education have their own image overall the world and have developed themselves among overall the world. Those nations which have showed keen interest towards education have leaded modern innovations and those nations are performing a vital role in the field of mission and vision for modern education. Those nations which are poor or have less interest in the field of education they cannot compete themselves among the world and they would be poor in the field of ethic, culture, politic and economic.

CL is a tutorial technique, which gives suggestion for erudition in lesser but diverse gatherings to attain a collective learning objective. It provides help for learning requirements of diverse learners (Rajab, & Ibrahim, 2017). CL goal approves dissimilar combination to achieve a mutual objective by functioning collectively by the learners (Reza, Abozar, Ali & Akbar, 2013). Cooperative learning links with instructions or combination of instructional approaches/models. In Cooperative learning students participate together and work in the shape of groups to increase their shared learning. Woolfolk (2017) states that CL is a process of learning that provides a chance to students to effort in mix capability collections. The students which participate in cooperative tasks they are provided help and encouraged them to exertion collectively to resolve their difficulties and accomplishment their jobs linked to educational course contents (Seigal, 2005).

Cooperative learning is a successive method of teaching. There are three very important and common kinds of classroom organization which are competitive, individualistic, and cooperative. Cooperative classroom organization is very successive method for teaching in which the students works together to complete their tasks (Jhonson & Jhonson, 2000). Between these three collaboration patterns, competitive class organization is the utmost very common. In competitive classroom organization the students work for marks, societal appreciation and grant of incentives (Akinbobola, 2006). During the individualistic classrooms organization every student is responsible for his work. In this organization principles for victory are clearly described. Those students which work on their task individually without giving attention to the other pupils announced for success. But those students which could not achieve their goals individually announced as failure. CL is a method of seeking in which pupils linking to diverse capability stages participate collaboratively and work in minor collections to obtain a shared task. CL is the usage of diverse learning strategies for the enhancement of pupils' knowledge, capability and acknowledgement of the subject matter (Slavin, 2009). In cooperative learning students interrelate in a specific group with each other, exchange their thoughts and knowledge with each other, find out additional knowledge from each other thoughts and ideas and after all this they become able to make conclusions about their findings to performed in the class (Jhonson & Jhonson, 2008). When pupils participate with each other and effort in groups, they recognize the unity of the aim of the groups and want to sustenance each other's' work and effort (Gillies, 2011) and when students work in the groups teachers understand the difficulty level of work in the groups and they

provide immediate help and explanation about the work. During the group working students have no hesitation for questioning to other students or teachers (Sharan & Shalov, 2004).

In compare to traditional group effort, in cooperative learning, collaboration among pupils contains constructive, because cooperative learning work base on goal oriented. The students get help from other students and trust on each other but every student is responsible for own or those students which are working in his group. Positive goal interdependence is known that pupils have shared goal and they struggle hard to complete the given task (Abrami, Poulsen, & Chambers, 2004) success of which needs help of other students(Mercer & Mercer, 2005). This "Drop or dip together" this vow is called the depth of CL. Individual responsibility reflects each and every member, so struggle within the group to be apprehended responsible for his/her part of effort for the completion of a shared task takes place. For the positive and successive cooperative learning there are more three essential components which are helpful for CL(Jhonson&Jhonson 2008In front to front original collaboration; group followers part assets, deliver feedback, communicate and inspire each other to attain a shared goal. Pupils do apply their personal and group abilities to obtain the results of cooperative learning effectively. Through group working group members keep a evaluating and reflecting periodically; to know that which work was suitable and which requires alternation.

Researchers have admitted that CL is a superior and proficient instructional strategy than competitive and individualist learning and researchers have accepted the supremacy and value of CL overall teaching methods. Profits of CL may be summarized into four important kinds: psychosomatic benefits, societal benefits, valuation benefits and theoretical benefits dimensions. Psychological benefits of cooperative learning enhance leadership and decision making abilities in students. Students get profits psychologically from CL which produces positive interest to seek knowledge and progressive attitude towards knowledge (Jhonson&Jhonson 2013) in psychological point of view CL enhances self-esteem. Academically, it endorses students' attainment (Kolawole, 2008) and improves theoretical acknowledgment in science(Lonning, 1993). Heterogeneity connected to mutual consultation is the ability which is associated to efficiency of this process (Slavin, 1995). CL gives more and more benefits and makes more active when diverse capability groups work collectively, small and moderate capability pupils achieve benefits from high achievers and they complete their task easily. In short, work in groups and this rehearsal with high achievers is fruitful for low and medium achievers. When the low capability students notice the techniques which are used by high ability students they also follow those techniques to complete their work and following those techniques the complete their part of work.(Vennam, Kenter& Post, 2000).This provision of explanation indicates to increase in attainment. As of the assessment viewpoint, CL provides quick opinion to the pupils and teachers and efficacy of the session may be straightforwardly assessed.

In currently academic situation, it is immediately desirable to increase societal interaction between learners. Investigators have observed a tendency to integrate CL throughout tutorial room team effort to endorse affectionate associations between diverse community gatherings. National syllabus for General science for class 8 established through the Government of Pakistan purposes at distribution accountabilities about the accomplishment of the group objectives and to display compassion for the contribution of every team partner for attaining the tasks of their team. (Government of Pakistan, 2006).). Even though so differentiated optimistic conclusions, CL is not deprived of foolishness. Instructor's damage of command, trouble throughout group effort, period necessities and unwillingness of the instructors to personal this revolution as a replacement for of traditional instruction model are corporate incidences.

In maximum Pakistani institutes, knowledge is considered through concentrated and harmful effectiveness between learners (Retalliek& Farah, 2005). During a competition condition the chief purpose of the learners is to gain the completion of task. It broadens the by now prevailing variances between students consequently indorsing destructive observation of furthers(Stahl, 1992). This condition does not remain favorable to erudition for learners. CL provides an auspicious substitute. A main task which the modern tutors deal is; how to increase learning in the huge programs where communication among learners is the lowest. In the knowledge procedure collaboration and contribution of the pupils is the pre-mandatory. Seeking is become effective when pupils seek aggressively, deliberate and interchange thoughts with class fellows intensely(Driver & Bell, 1996). One method for instructors to integrate dynamic education is to familiarize CL approaches/process.

CL is a victorious coaching method in which small groups improve their perspective of their subject through a diversity of learning activities with students of diverse capability level. Every follower of a group is to study what is communicated; s/he is not only accountable for assisting to produce winning learning environment (Deutsch's, 2005). Cooperative learning keeps learners in little groups and gives them fresh material through teaching method to facilitate their learning development, information and work mutually oriented towards a common goal and cooperative learning provides group member's new dimension. Researchers define the cooperative learning as a compassionate education which provides the students with practice to do work together for a better learning using it in small groups. This can be discriminated with education effort and personality.

Roger and olsen described the cooperative learning as a position of learners action. It animated to increase to change the composition of social information among learners in learning groups designed in a method that every learner is accountable for the achievement of all other students. Learning and the learning of others is mutual and reciprocated (Husseini, 2012). Learners seek the allowed text and verify that all other groups learn the same with a minimal effort. Throughout

the past thirty years research on cooperative learning has recognized academic achievement and students got benefits in social areas as they worked in a group (Gillies, 2011).When small group of students act together to complete shared goals and aims, we can call it, cooperative learning. All the past research has exposed the information about cooperative method in comparison to individual methods; where the students learn through cooperative learning method students achieve better (Johnson & Johnson, 2008). Cooperative learning confirms successful teaching where small groups of students attain diverse stages of capability, such as multiple learning activities to increase their knowledge.

Each group partner of cooperative team is accountable for personal knowledge but is desired to assist each other in a group. It constructs an environment of victory among students. All students work right from the beginning to end on their assignment; all group partners accomplish their work with a grasp and understanding (Johnson & Johnson, 2000). Cooperative learning method is not only a group work but the genuine variance among cooperative method and traditional method is the working in classical grouping (Johnson & Johnson, 1994a). CL method has transformed total theory of traditional method of teaching, which necessitates corporation to cooperative learning in traditional method which may make these students to follow, centered approach. This gesture will change the teaching learning environment for the improvement of learners and their academic accomplishment. In cooperative learning, the group members are located in a group of two or six individuals and they work on specific assignment. Cooperative learning tasks very broadly range from understanding, explaining and creating a new idea to solve new problem, analyzing a new condition, or conforming a dilemma. In such a situation, students might share individual and personal knowledge with their group members as the whole group would be mutually accountable to reach at an agreed resolution of the problem.

Education of science demands an extraordinary consideration and keen interest in this modern period which is the age of technology. Institutes in Pakistan assume the government plans according to the syllabus and also its application. Science instruction at the first stage concentrates especially on wildlife and vegetation research. After accomplishment grade 7 investigation administered by school system, students are promoted to 8th class. General science is a compulsory subject for the grade 8 which is put in place from grade 6 to grade 7. Inclusive of General science students are also taught Mathematics, English, Computer science, and Urdu(Government of Pakistan, 2006).

Material and Methods

Population of the Study

Population of the study was comprised of all the students (153) enrolled for the session 2018-19 in the subject of General Science of class 8at Govt. Boys High School Musa Kalan District Mandi Bahauddin.

Sample of the Study

Study was experimental in nature so two groups comprising each of 35 students, was spelled out named as experimental and control group. Those students who have selected as sample were exposed to a test so as to equate the students in terms of their intellect and for the ease of isolation as those scoring more than 60% in general science.

Procedure of Research

Researcher first of all managed to get the permission from the authorities for the conduct of experimental at Govt. Boys High School Mosa Kalan in Mandi Bahauddin. A test out of the 7th class General science text book was prepared by the teacher so as to use it as the baseline data to start with the research. The sample selected was exposed to a test devised out of class 7 book to collect the basic data to start with the research. Those scoring more than 60% marks were isolated from other to from the experimental and control group. The experimental and control groups were comprised of 35 students each. An informed cons cent was also obtained from the willing participants of research. A calendar of activities to which the participants of research was to be exposed was prepared in agreement with the agreement and participants in terms of dates, time, venues and contents etc. Those students who could score more than 60% marks were asked to be the subjects of study provided they agreed to do so. A fresh calendar of activities was prepared in agreement with the school authorities by the teacher and the same was shared with the students. The medium of instruction remained Urdu. Chapter1 & 2 were selected to be covered with in a time period of 1 month. Within one month two chapters were to be covered by teaching through Cooperative learning.

The lot of students researcher could get was randomly distributed among experimental group to be taught through Cooperative teaching method and control group to be taught through traditional method. The activities in the class included the oral question answers and conduct of quizzes so as to prepare the students for their class 8 test. The tests prepared out of 2 chapters were made valid after determining their validity and reliability. The tests prepared out of chapter 1-2 were administered to the class at the end of the month as per announced schedule for a month.

Researcher taught chapter 1 and 2 for a time period of one month. Control group was taught through traditional teaching method and experimental group was taught by the teacher through Cooperative teaching method. At the completion of one month teaching a post-test was prepared out of chapter 1 and 2 of General science class 8 published by Punjab Textbook Board. Post-test was conducted to both experimental and control group and papers were marked for the result.

Data Collection

The data was collected on the basis of marking of the test in the shape of achievement scores for both control and experimental groups. The range of scores mean, standard deviation was obtained and t test was used to compare the two groups in terms of achievement scores in science.

Data Analysis and Presentation of data

In this study 70 subjects were randomly divided into two groups of 35 each. One was taught with conventional method and other with experimental method.

Table 1
Showing t test results for Experimental Group and Control Group of General Science test

Study Group	No	Mean	SD	Std. Error Mean	P value
Experimental Group	35	42.3429	4.41883	.74692	.000
Control Group	35	26.4571	7.59002	1.28295	

This table shows that t test was applied to compare Experimental Group and Control Group results. The data was presented in the form of Mean and SEM. P value is .000 which shows that there is a significant dissimilarity among Experimental Group and control group students' scores. The Mean score of Experimental Group was 42±.74 and Mean Score of Control Group was 26±1.28. These Mean values show that the results of Experimental group are greater than group exposed to without intervention. Group exposed to intervention was studied through Mutual consultation learning procedure and group exposed to without intervention was studied through Traditional instruction way. According to the results the Cooperative learning mode is greater than Traditional instruction process and has progressive effect on learners' improvement.

This was a posttest applied after the collapse of one month and coverage of two chapters of General Science Book out of Punjab Textbook board. The test made covered first two chapters (1&2) stretched over 63 items.

Table 2
Showing independent Samples Test among group exposed to intervention and normal group without intervention of General science test

Study Group	Mean Differenc	SED	Sig. (2-taile	t-value	df
Experimental Grouı	15.88571	1.48453	.000	10.701	68

This table shows Mean difference between two groups. This table displays that Experimental group's Mean is strong than Control group's mean. Difference value is 15.88 that is a proof to conclude that there is a significant difference among Experimental group and Control group. P value is .000 that is also significant. These results give a proof that Cooperative learning keeps a constructive influence on pupils' attainment.

Table 3
Showing Linear Regression Analysis for group exposed to intervention and normal group without intervention of General Science test

R	R Square	Adjusted R Square	F Change	df1	df2	Sig. F Change
.792	.627	.622	.627	1	68	.000

This table shows that linear regression analysis was used to conclude the worth of Mutual consultation learning method on the students learning achievement. To measure effect of one independent variable on dependent variable regression was used. The value of R square is 0.62 which shows 62% variation occurs in dependent variable by independent variable. The student' scores were strongly affected by cooperative learning method. 62% results of Experimental group are greater than Control group. So the Cooperative learning mode is greater than Traditional method, and P value is .000 that shows CL keeps encouraging influence on learners' improvement.

Finding

The results of Experimental group (Mean score=42.34, SD=4.41) are better than control group (Mean score= 26.45, SD=7.59). Mean difference is 15.88 and linear regression analysis shows that experimental group obtained 79% which is the better result than control group. P value is .000 which is significant. Experimental group was exposed to Cooperative learning technique. These results provide a proof to conclude that Cooperative learning technique is better than traditional teaching method.

Conclusion

A t test was applied to find out the difference between the control group taught general science at elementary level with the traditional method. The experimental group was exposed to cooperative learning technique. The mean score of experimental group is seen better, showing the superiority of cooperative learning over the traditional method of teaching for the teaching of general science. The same proved trace for the computation of linear regression, item difficulty and item discrimination for test conducted after the teaching of one month out of chapter 1 and 2.

Recommendations

Custody in observation the findings and conclusions of the study, researcher could make the recommendations which are discussed below:

1. The three tests developed and administered, proved moderately difficult and may safely be used for exploring the students' level of achievement though the students are taught by any method.
2. The test may safely be used for the acquisition of first three levels of bloom's taxonomy. These may safely be made for the higher levels of bloom taxonomy also.
3. Benefits of Cooperative Learning should be applied to increase superiority of education in general and science education in particular.

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