

**EFFECTIVENESS OF COOPERATIVE LEARNING USING JIGSAW TECHNIQUE ON
READING COMPREHENSION ABILITY OF 8TH GRADE STUDENTS OF BIHAR**

DR. KUSUMLATA KUMARI, ASSISTANT PROFESSOR

Mahabodhi Mahavidyalaya B.Ed, Nalanda, Bihar, India

Abstract

Cooperative learning refers to small groups of learners working together as a team to solve a problem, complete a task, or accomplish a common goal. It refers to a method of teaching in which students are organized in groups of 2 to 6 in that they can work together to obtain a common goal. In a cooperative environment one's success is directly related to the success of other members of the classroom because the focus on the individual shifts towards the group. To test the effectiveness of the method, using Jigsaw technique, a study was conducted to find out how it can improve reading comprehension ability of eight grade students of Bihar. Administering a English Language Proficiency test, two homogenous groups of students were selected. Selecting a quasi-experimental design, two groups of 30 students based on the result of the standard proficiency test were assigned as Experimental and Control groups. After that, as a pretest, a reading comprehension test was administered to ensure students' reading comprehension ability prior to the study. The first group received instruction using Jigsaw technique and the second one was taught using traditional teacher-fronted method toward teaching Reading Comprehension. Finally, a Reading comprehension test was administered as the posttest and the results were analyzed by means of Spss software. Conducting two independent and paired t-tests between the pre and posttest scores of both groups, it can be concluded that the experimental group has performed significantly different from the control group on the posttest. Moreover, in this study, it was intended to investigate the degree of interaction of subjects in their groups toward Cooperative learning situation. As a conclusion, it was found that Cooperative Learning using Jigsaw technique was more effective on reading comprehension ability of 8th grade students of Bihar as compared to traditional method.

KEY WORDS: *Cooperative learning, Jigsaw technique, Reading Comprehension*

Introduction

Cooperative learning is an educational approach which aims to organize classroom activities into academic and social learning experiences. There is much more too cooperative learning than merely arranging students into groups, and it has been described as "structuring positive interdependence. The Student's must work in groups to complete tasks collectively toward academic goals. Unlike individual learning, which can be competitive in nature, students learning cooperatively can capitalize on one another's resources and skills.

“Cooperative learning is a successful teaching strategy in which small teams, each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject. Each member of a team is responsible not only for learning what is taught but also for helping teammates learn, thus creating an atmosphere of achievement.”

Cooperative learning is one of the most popular methods of improving reading comprehension. It has been shown to positively affect various outcomes (Johnson & Johnson, 2002). Cooperative learning is a teaching method by which learners study by helping one another in small groups during the learning process in order to achieve a common objective (Stevens, 2003). Cooperative learning as a concept consists of several instructional methods in which learners study a language in small groups of four to six persons and group performance in several different ways (Slavin, 2004).

In the nut shell Cooperative learning is defined as a teaching-learning strategy in which the students of a class engage themselves in a variety of useful learning activities in a cooperative and non-competitive environment by forming number of teams each consisting of a small number of students of different levels of abilities for their understanding of a subject.

The jigsaw technique is a method of organizing classroom activity that makes students dependent on each other to succeed. It breaks classes into groups and breaks assignments into pieces that the group assembles to complete the (jigsaw) puzzle. It was designed by social psychologist Elliot Aronson to help weaken racial cliques in forcibly integrated schools. Students in jigsaw classrooms ("jigsaws") showed a decrease in prejudice and stereotyping, liked in-group and out-group members more, showed higher levels of self-esteem, performed better on standardized exams, liked school more, reduced absenteeism, and mixed with students of other races in areas other than the classroom compared to students in traditional classrooms ("traditional").

According to Chai (2005), a teacher has the opportunity to “teach less, learn more”

Reading is necessary when students further their study, especially at the secondary level. They need good reading skills for acquiring knowledge and learning new information. However, the researcher can see that many students’ reading abilities in India are having difficulties in understanding the text. Reading difficulties become a problem when reader cannot absorb the

meaning from a text. Children with reading problems often experience confusion in understanding. To solve the difficulty in reading comprehension, learning using Jigsaw technique has examined in the United State that it will give chance to students to share and talking to peers instead of teachers, moreover students will receive bilingual support from other friends in that group while they are talking (Edmonds et al, 2006). Fuch et al (2001) stated that in elementary and high school, most of the students have low willingness to read in reading any text, reading for pleasure, moreover reading ability is one of the goals of learning to read. But for some students, they were not care and not really giving attention. Additionally, students with low reading ability were the students who have low motivation themselves. That is why all activities in the classroom involving reading have a contrary attitude toward students' reading comprehension. Guthrie (2008), stated that in teaching students that have low motivation, teacher may be spend their time to teach those students. To handle this problem, teacher who work in that problem, teachers should use strategies to encourage motivation to read. Teacher may use Jigsaw method. This may help them and make student success, as well as they will have good relationships with their peer. By having good relationships, in Jigsaw technique they can express their idea or opinion. Bolukbas et al. (2011) stated that the teachers of English Language try to solve the problem by using jigsaw technique. This is a way for the researcher to improve the students reading comprehension. Jigsaw technique is one of several cooperatives learning techniques. It is a way to teach students to be smart in learning material. In this research, the Jigsaw technique was used to teach English reading comprehension. Even though there are many techniques used in teaching English reading, the researcher chose Jigsaw technique to improve the students' reading comprehension because the Jigsaw technique helps students communicate with one another if they have problems in reading the text. Usually students face many problems in reading text. For example: difficult words, comprehension of sentences, how to read the word or sentence correctly, and etc. In reading class, most of the reading activities are focused on reading for comprehension. As argued by Richard and Renandya (2002), reading for comprehension is the primary purpose for reading. Therefore, students are usually expected by their teachers to comprehend reading texts. Students are expected to be smart readers who are able to effectively comprehend the text.

Jigsaw is the appropriate method which demands the students on 4-6 groups, the name of home teams. Jigsaw technique is one of the appropriate methods that can be used in teaching reading

because jigsaw technique is cooperative learning method to promote better learning, improve students' motivation, and increase enjoyment of the learning process. Every student in the group share knowledge in every part of the course. Also, students in each group should feel responsible for the success of the other members.

There are many teaching strategies in teaching English. One of them is cooperative learning strategy. As Johnson, Johnson, and Holobec (2008); Slavin (2005) state that; Cooperative learning makes the students more active, the students will work together and by promoting an equal opportunity for every student to participate in the activity, improving self-esteem enjoyment of school and interethnic methods are keys in this approach. Based on the statement above, the cooperative learning strategy is appropriate to be applied in big classes with many students. The cooperative learning has several teaching techniques. According to Aronson et al (1978), one of the techniques is Jigsaw. Jigsaw is developed by Elliot Aronson and first used in 1971 in Austin, Texas. Aronson et al (1978) states that; Jigsaw is a cooperative learning strategy that enables each student if a 'home group' to specialize in one aspect of a learning unit. Student meet each other members for other groups who are assigned the same aspect called 'expert group' and after mastering of material, return to the 'home group' and teach or explain the material to their group members. Just as in a jigsaw puzzle, each piece-each student's parts essential for the completion and full understanding of the final product. If each student's part is essential, then each student is essential. That is what makes the jigsaw strategy is so effective. In a public school, it is common that one class consists of 35-40 students. Furthermore, the students may have different levels of understanding. Therefore, jigsaw technique is expected to facilitate students who have low capabilities to be assisted by those who have high capabilities.

Theoretical Foundation

Reading is one of four language skills, and is an active process of seeking information in which readers relate information in the text to what they already know. In addition, reading is the process of looking at a series of written symbols and getting meaning from them. Reading is an exercise dominated by the eyes and the brain. When reading, readers use their eyes to receive written symbols (letters, punctuation marks and spaces), and they use their brain to encode or convert them into words, sentences and paragraphs.

According to Byrne (2004), reading is an interactive process that goes on between reader, the text and resulting in comprehension. Reading is a receptive skill - through it readers receive information. According to Grabe and Stoller (2002), reading comprehension is an ability to understand the information in a text. A process of engaging brain and eyes in making connection is text comprehension. It means the brain processes the information from what the eyes see. Mickulecky and Jeffries (1996) states that it will be easier to be connected when the information the readers get is interesting. People have their own needs and purposes in reading a text so that the appropriate texts are also important things to comprehend or understand.

In terms of classification, Brown (2004) and Harmer (2007) classify reading into two classifications, academic reading and personal reading. The explanation is as follows:

1. Academic Reading refers to reading in which students do in the classroom such as articles, reports, journals, reference materials, textbooks, essays, papers, test directions, theses, and opinion writings.
2. Personal Reading refers to reading in which students do away from the classroom such as magazine, newspapers, letters, emails, greeting card, invitation, massages, notes, lists, schedules, recipes, menus, maps, calendars, advertisements, novels, short stories, jokes, drama, poetry, financial documents, forms, questionnaires, medical reports and cartoons.

Regarding to the explanation, this study focused on academic reading. There are some genres of the text which are used in this study namely: recount text, narrative text, and descriptive text.

According to Harmer (1997), there are four reasons how important reading is; that importance of reading can be concluded as follows:

1. Reading for Language Learning. Reading is an exercise dominated by the eyes and the brain. The eyes receive message and the brain then has to work out the significance of these message. The reading to confirm expectation technique is highly motivation and successful since it interest students, creates expected, and gives them a purpose for reading.
2. Reading for Information In most cases, reading for information is relevant to current study of the readers. They read to find out information, to reduce their uncertainties, and the get some knowledge. Reading for information is what people mostly do in their daily activities.

3. Reading for Pleasure. Reading for pleasure is done without other people's order but according to an individual reader's wish, and taste. It aims to entertain the readers rather than to get knowledge. The reading sources for this activity are comics, short stories, novels, etc.

Based on the importances of reading above, we can find out that there several things why reading is important for our lives; reading can be used for any occasion. In real life people generally read something because they want to and they have a purpose, which is more fundamental than involved in some language learning tasks seem only to be asking about details at language. People read to language because they have a desire to do so and a purpose to achieve.

According to Brown (2001), there is a variety of reading performance in the language classroom derived from the variety of texts to which can expose students than from the variety of overt types of performance. Those performances are listed in the following explanation.

1. Oral and Silent Reading

Oral reading serves as an evaluation check on bottom up processing skills. Oral reading also provides a purpose to minimize the disadvantage, which is; oral reading is not a very authentic language activity, while student is reading, it is possible the other can easily lose attention.

2. Intensive and Extensive Reading

As Nation (2009) states that intensive reading is the grammatical translation approach where the teacher works with the learners using the first language to explain the meaning of a text. Nation (2009) also states that extensive reading fits into meaning focused input and fluency development stranding of a course depending on the level of the books that the learners read. Sometimes the extensive reading helps the learners to get away from their tendency to look up words they do not know.

The Scope of the Research

This research focused on finding out the effectiveness of jigsaw technique to improve students' reading comprehension. There were two investigated groups: a control group and an experimental group. The participants were the eighth graders in one of public high school in Bihar.

Objectives

To measure the effectiveness of cooperative learning using jigsaw technique on reading comprehension ability of 8th grade students of Bihar.

Hypothesis

There is no significant effect of cooperative learning using jigsaw technique on reading comprehension ability of 8th grade students of Bihar.

Method

The purposes of this study were to find out the effectiveness and student's responses of Jigsaw technique on the reading comprehension. Therefore, this study used a quasi-experimental design. According to Hatch and Farhady (1982), a quasi-experimental design is a practical that compromises between true experimentation and the nature of human language behavior which one wish to investigate.

The study involved two groups; an experimental group and a control group. The experimental group received small group discussion method treatments while the control received conventional method. According to Jackson (2008) the quasi experimental was used for this method did not require random sampling. This research method provided the students with pre-test, treatments, and post-test in order to find out the effects of Jigsaw technique on the student's reading comprehension.

In this research, two classes were taken as the sample classes; those were labeled as the experimental group and control group. The first group (e1), the experimental group, was given a pre-test (X1), treated by using Jigsaw technique (T), and then given a post-test (X2). The second group (c1), the control group, was given a pre-test (X1), treated by using conventional teaching (O), and given a post-test (X2) (Hatch and Farhady, 1982).

The table shows the different treatment given to each investigated class. In the experimental group, Jigsaw technique was given to the students in the learning process. On the other hand, a conventional teaching was implemented in the control group as the treatment in learning reading comprehension. Furthermore, the post-test was administered in order to investigate the result of the treatment. The independent variable of the study was the use of jigsaw technique.

Meanwhile, the dependent variable was students' reading comprehension scores observed and measured in order to determine the effects of the independent variable (jigsaw technique). The design was adopted from Cresswell (2009).

Table 1 Quasi Experiment Design

Group	Pre test	Treatment	Posttest
Experimental	Xe 1	T	Xe 2
Control	Xc 1	O	Xc 2

Xe 1 : students' reading scores of experimental group on pre-test

Xc 1 : students' reading scores of control group on pre-test

T : Jigsaw treatment

O : No treatment

Xe 2 : students' reading scores of experimental group on post-test

Xc 2 : students' reading scores of control group on post-test

The participants of the study were eight class students of one of high schools of Bihar. The students were at the Eight grade (12-15 years old). This study involved two classes in which each class consisted of 30 students. A questionnaire was prepared by the researcher for checking the performance of students on reading comprehension. Pretest and Posttest were measured by using paired sample t-test. It was analyzed to find out the difference between pretest and posttest mean score whether it was significant or not by comparing their mean (mean of pretest and mean of posttest). It was calculated by using SPSS 20 for Windows. Questionnaire was conducted in order to get the information directly from the students about the learning process and their responses to the learning activity by using jigsaw technique. It was analyzed by interpreting the students' answer of the questions.

FINDINGS AND DISCUSSIONS

The Pre-Test and Post-test Scores

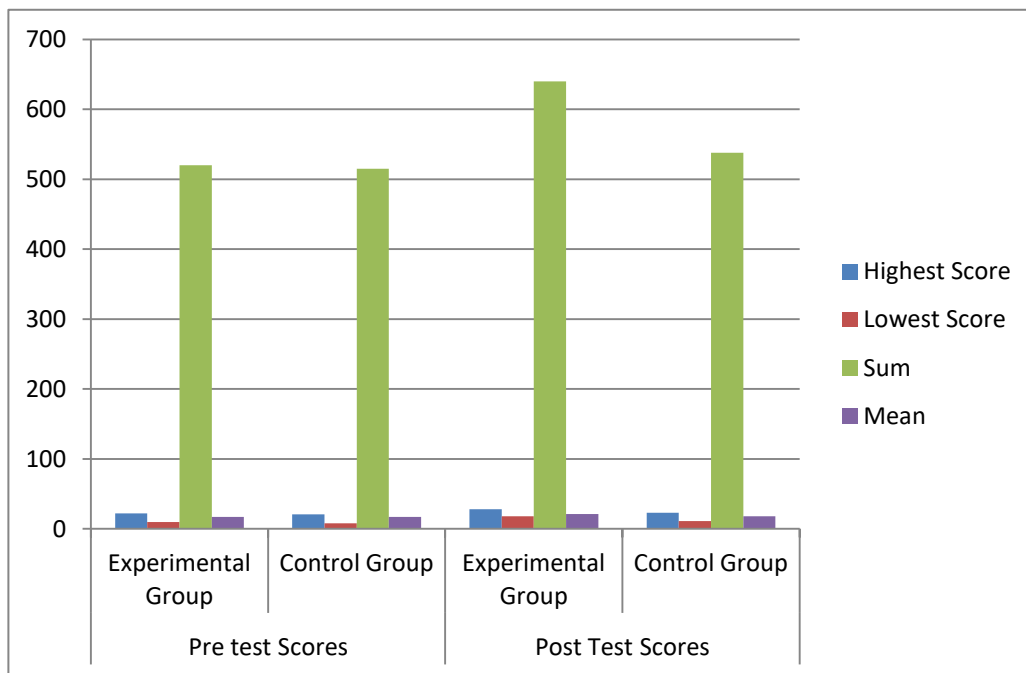
Pre-Test was conducted in the beginning of the research to identify students' prior knowledge and to measure the students' readiness on the subject they were about to learn. The data was analyzed by Microsoft Excel to get descriptive statistical result of pre-test and Post-test scores of control group and experimental group.

Table 2 : Descriptive statistics of experimental and control group (Pretest and Posttest)

Subjects (30 students)	Pre test Scores		Post Test Scores	
	Experimental Group	Control Group	Experimental Group	Control Group
Highest Score	22	21	28	23
Lowest Score	10	8	18	11
Sum	520	515	640	538
Mean	17.33	17.17	21.33	17.93

From Table 2 the mean of pre-test score of experimental group with 30 students is 17.33, maximum score is 22 and minimum score is 10 and the mean of posttest of experimental class with 30 students is 21.33, maximum score is 28 and minimum score is 18 and the mean of pre-test score of control group with 30 students is 17.17, maximum score is 21 and minimum score is 8 and the mean of posttest of control group with 30 students is 17.93, maximum score is 23 and minimum score is 11. Based on the table, the mean score of the experimental group is higher than the control one. The pre-test scores must be tested for normality of distribution and homogeneity of variance before comparing the data between the experimental group and the control one by using SPSS 20 and found to be normally distributed.

Graph 1: Showing Descriptive statistics of experimental and control group (Pretest and Posttest)



t-ratio of Pretest and Posttest scores

Table 3 Findings related to the Reading Comprehension of pre- and post-test scores of experimental and control groups.

Test	Groups	N	Mean	Standard deviation	t-ratio	Level of Significance
Pretest	Experimental group	30	17.33	3.05	0.20	P>.05
	Control group	30	17.17	3.13		
Posttest	Experimental group	30	21.33	3.59	3.45	P<..01
	Control group	30	17.93	3.90		

* $df=58$, $0.05= 2.00$, $0.01= 2.66$

From table 3, it is evident that the t-value of pre-test is 0.20 which is not significant at 0.05 level with $df = 58$. It shows that the mean scores pre-test of reading comprehension of experimental and control group didn't differ significantly.

And the t-value of post-test is 3.45 which is significant at 0.01 level with $df = 58$. It shows that the mean scores post-test of reading comprehension of experimental and control group differ significantly. Further, the mean score of reading comprehension of experimental group is 21.33 which is significantly higher than that of control group whose mean score of reading comprehension is 17.93. It may, therefore, be said that jigsaw technique was found to be more significant approach as compared to traditional approach.

Hence, this result shows that there is a significant difference between experimental and control group student's academic achievement before and after the treatment.

Table 4: Findings related to difference between the experimental group and the control group, in terms of their posttest-pretest scores of Reading Comprehension

Test	N	Mean	Standard deviation	t-ratio	Level of Significance
Experimental group posttest-Pretest	30	4.00	0.54	18.62	P<.01
Control group Posttest-pretest	30	0.76	0.77		

**df=58, 0.05= 2.00, 0.01= 2.66*

From, table 4 it is evident that, the t-value of posttest minus pretest scores of experimental and control group is 18.42 which is significant at 0.01 level with $df = 58$. It shows that the mean scores posttest minus pretest scores of reading comprehension of experimental and control group differ significantly. So it can be concluded that the reading comprehension of post-pretest scores of experimental group of cooperative learning were higher than that of posttest-pretest scores of control group. Hence the hypothesis shows that there is no effect of cooperative learning using jigsaw technique on reading comprehension ability of 8th grade students of Bihar stands rejected.

The results of the study were supported by Lie (2002) that teacher give more attention to the students' learning experience and asked them to be active in learning activity, so the activity will be more meaningful. The finding above is consistent with Blanton et al., 2007; Neufeld 2006;

Rapp et al., 2007 (cited in Westwood, 2008) and Anderson, Hiebert, Scott & Wilkinson, 1985; Jenkins, Larson & Boardman, 2007). As said by Blanton (cited in Westwood, 2008) reading comprehension is an active thinking process which the readers construct meaning to a deeper understanding of concepts and information presented in a text. Anderson (cited in Klingner, Vaughn & Boardman, 2007) added that reading comprehension is the process of constructing meaning by coordinating a number comprehend a text easier than before it applied (Brown, 2001). In other words, jigsaw technique became a tool that proficient the readers to solve their problem to comprehend a text.

Conclusions and Suggestions

According to the result of the research, teaching reading by using jigsaw technique could improve the students' reading comprehension. The research question number one about the effectiveness of jigsaw technique was shown from statistic computation. The quantitative data show that jigsaw technique brought an improvement to students' reading comprehension. The data was gained by comparing the mean score of pretest and posttest. By comparing the result, it revealed that the students' reading comprehension significantly improved. It means that there was a significant difference between the means in the reading comprehension of the target. The findings and conclusions of the study have some important practical implications. Teachers can use jigsaw technique for another learning activity in teaching reading. There are several suggestions proposed in the research addressed to the teachers. English teachers are suggested to find out an interesting technique in teaching reading to improve students' interest and ability in reading. Moreover, teachers must select the suitable text to the students based on their capability. The results of this study can help us to compare traditional method and cooperative learning method, so that the effectiveness of those methods can be compared.

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