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## Research Article

# The Effect of Jigsaw Task on Reading Ability of Iranian Intermediate High School EFL Learners

Masoumeh Adhami<sup>1</sup>, Amir Marzban<sup>2</sup>

<sup>1</sup>*Department of English Language Teaching, Garmsar Branch, Islamic Azad University, Garmsar, Iran*

<sup>2</sup>*Department of English Language Teaching, Qaemshahr Branch, Islamic Azad University, Qaemshahr, Iran*

### Abstract

Reading comprehension is a major component of language learning and finding an appropriate and effective way for teaching it, was considered by many researchers. However, one effective way for achieving this goal can be using different activities. The purpose of the researcher is to show the effectiveness of cooperative learning, more specifically jigsaw task on reading ability of Iranian intermediate high school EFL learners. In order to check general language proficiency of the students, 120 female students were randomly selected and Nelson Proficiency Test was given to these students. Sixty students were selected from among 120 female students and they were assigned in two different classes. After selecting 60 students, they were divided in two groups, one of them as the experimental group ( G1 ), and the other as the control group ( G2). Each group consisted of 30 students. Their ages ranged from fifteen to nineteen. First session both groups received pretest. After that the experimental group received treatment in jigsaw task during six sessions and control group received traditional method. Last session both groups received posttest in order to check reading ability. Statistical results revealed that the experimental group did much better than control group and consequently jigsaw task was effective on reading ability of Iranian intermediate high school EFL learners.

**Key words:** Cooperative learning, Jigsaw task, Reading ability, EFL.

## 1. Introduction

According to Johnson (2005), cooperation is not assigning a job to a group of students where one student does all the work and the others put their names on the paper. It is not having students sit side by side at the same table to talk with each other as they do not their

individual assignments as well as. It is not having students do a task individually with instructions that the ones who finish first are to help the slower students. On the contrary, cooperative learning is a 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 team is responsible not only for learning what is being taught but also for helping teammates learning, thus creating an atmosphere of achievement. Students work through the assignment until all group members successfully understand and complete it.

According to Olsen & Kagan (1992), Cooperative learning is defined as “group learning activities organized so that learning is dependent on the socially structured exchange of information between learners in groups and in which each learner is held accountable for his or her own learning and is motivated to increase the learning of others”. Paul J. Vermette (1998) defined cooperative learning in this way: “A cooperative classroom team is relatively permanent, heterogeneously mixed, small group of students who have been assembled to complete an activity, produce a series of projects or products and who have been asked to individually master a body of knowledge. The spirit within the team has to be one of positive interdependence, that is, a feeling that success for any one is tied directly to the success of others”.

### **1.1. Jigsaw Task**

Jigsaw task is a cooperative learning technique with a three-decade track record of successfully increasing positive educational outcomes. In a jigsaw task, students work in pairs or small groups. They each have different information and they have to exchange their information so that they each have all the information. Often they then have to answer questions or do other tasks based on the complete information. A task where the input material is divided between two or more participants such that they are required to exchange information to complete the task. (Pica, Kanagy, and Falodum, 1993)

According to Aronson (2008) there are ten steps that are considered important with regard to the implementation of the jigsaw classroom technique: 1. Students are divided into a 5 or 6 person jigsaw group. The group should be diverse in terms of ethnicity, gender, ability, and race. 2. One student should be appointed as the group leader. This person should initially be the most mature student in the group. 3. The day’s lesson is divided into 5–6 segments (one for each member) 4. Each student is assigned one segment to learn. Each student should only have direct access to their own segment. 5. Students should be given time to read over their segment at least twice to become familiar with it. Students do not need to memorize it. 6. Temporary experts groups should be formed in which one student from each

jigsaw group joins other students assigned to the same segment. Students in this expert group should be given time to discuss the main points of their segment and rehearse the presentation they are going to make to their jigsaw group. 7. Students come back to their jigsaw group. 8. Students present their segment to the group. Other members are encouraged to ask question for clarification. 9. The teacher needs to float from group to group in order to observe the process. Intervene if any group is having trouble such as a member being dominating or disruptive. There will come a point that the group leader should handle this task. Teachers can whisper to the group leader as to how to intervene until the group leader can effectively do it themselves. 10. A quiz on the material should be given at the end so students realize that the sessions are not just for fun and games, but that they really count.

## **1.2. Research Finding on Jigsaw**

Bridgerman (1981) demonstrated that children in the jigsaw classroom were better able to put themselves in other's shoe as compared to children in a traditional classroom. To do this, she conducted an experiment with 10-year old children. Prior to the research, half of the children had spent two classrooms. The children were shown a series of cartoons with the aim of testing their ability to empathize.

When compared to students in the traditional classroom, students in jigsaw classrooms showed a decrease in prejudice and stereotyping, an increase in liking of their group mates both in-group and out-group members, higher levels of self-esteem, performed better on standardized exams, greater liking of school, lower levels of absenteeism, and showed true integration in areas other than the classroom (Aronson,1990).

Geffner (1978) investigated the attitudes 5<sup>th</sup> grades had about themselves, school district which had a ratio of 50% Caucasian students and 50% Hispanic students. He looked at classes that were taught in the traditional manner, those that used the jigsaw task, and those that used a cooperative technique that did not rely on interdependence. He used a modified version of the questionnaire used by Blaney, et al., 1977, and a modified version of the Pictorial Concept Scale for children. This modified self-concept scale uses cartoon-like pictures (stick figure) in various situations, including five dimensions of self-esteem (athletic abilities, scholastic abilities, physical appearance, family interactions, and social interactions). These measures were used as pre-intervention and post-intervention measures.

Interventions lasted eight weeks. Students in the cooperative jigsaw classes improved or maintained their positive attitudes about themselves, school, peer, and academic abilities. Students in the traditional classroom demonstrated a decline in their attitudes about peers, themselves, and academic abilities. Those in the interdependent or jigsaw task improved or

maintained levels in levels of self-esteem. While in the traditional classroom, declines were seen in self-esteem. In the jigsaw classroom, students improved their self-image in social interactions, scholastic abilities which generalized to increased confidence in their family interactions and athletic abilities.

The first experiment done with the jigsaw classroom was done by Blaney, Stephen, Rosenfeild, Aronson, and Silkes (1977). This was done after the superintendent of schools in Austin, Texas called for help due to the problems desegregation caused. After some systematic observations, it was decided a large part of the problem was the competitive nature of the classroom. From that, they decided a more cooperative approach needed to be taken.

Hanze and Berger (2007) compared using the jigsaw classroom task with traditional direct instruction in a 12th grade physics class. They just eight 12th grade classes and randomly assigned them to either the jigsaw task or direct instruction. Students were given a test of academic performance (pretest) and a questionnaire looking at personality variables (goal orientation, self-concept, and uncertainly orientation).The topics (motion of electrons and electromagnetic oscillation and waves) were introduced through direct instruction in both conditions. Students were then given the learning experience questionnaire as a pretest measures. In the second part of the lesson, the experimental group worked in the jigsaw classroom and those in the control continued to work in traditional direct instruction. Individuals in the jigsaw class were given the learning experience questionnaire after working in the experience questionnaire after working in the expert group and then the finished working in the jigsaw group. In the traditional classroom group, they were given the learning experience questionnaire at the end of the lesson.

Perkins and Saris (2001) demonstrated the use of the jigsaw classroom task in an undergraduate statistics course. They noted that a part of class instruction was doing worksheets as part of an instruction. Worksheets an effective because they give immediate feedback on applying statistical ideas to sample, allow for repeated practice, make students active over passive learners and they can ask help from the instructor as needed. The problem with worksheets though, one is uneven ability or readiness to complete the worksheet. One student may not have any problems while another becomes frustrated by the process. Another issue is that in statistics the worksheets require a lot of time to complete because of the many separate steps. In order to overcome these problems and still benefit students, the authors adapted Aronson's jigsaw classroom to lift undergraduate students. Students worked in groups on two separate occasions. In the first, there were four sheets given out. Pairs of students were given the same worksheet and worked together to compute sample size, sum of the raw scores, sum of the squared raw scores, and sum of squares for one of four groups.

Each of handouts included a blank ANOVA table and instructions with formulas as how to complete it collaboratively with three other students. The other set of worksheets was on a two-way, chi-square test of independence for three different studies. For the first study, there was an example of the computation and interpretation of chi-square. After a discussion of the first example, students received one of two worksheets that directed them through the steps for completing the chi-square procedures for one of the remaining designs with partial solution for each step.

Walker and Crogan (1998) looked at the effects of a cooperative learning environment and a jigsaw classroom on academic performance, self-esteem, liking of school, liking of peers and radical prejudice. They look at 103 students in grades 4-6 at two separate schools. Cooperative learning was used as a baseline measured for the effects of cooperation. It was compared to the effects of the jigsaw task that involved cooperation and interdependence.

### **1.3. Historical Background**

The jigsaw teaching task was invented and named in 1971 in Austin, Texas by a graduate professor named Elliot Aronson. After studying the problem at the request of the school superintendent, Aronson decided that inter-school competition was leading students to study too much on their own, and was competition was leading students to study too much on their own, and was interfering with the idea of a cooperative classroom (Aronson ,2007) .

By arranging the students in culturally and racially diverse groups, Aronson and his team of graduate students were able to reduce the divisions between students. In fact, when one Hispanic boy named Carlos was tormented by his peers for his difficulty with the language, the bullying students were not admonished for their behavior. Instead, they were reminded that the exam was in fifteen minutes, and their sole source of information on the subject was Carlos, the boy they had been harassing. Behavior improved notably and immediately.

Aronson and his graduate students invented the technique in order to defuse explosive situation created by the desegregation of the city schools. Due to desegregation, African-American, Caucasian, and Hispanic students were placed in the same classroom for the first time. In just a short time, there was an atmosphere of turmoil and hostility brought on by long – standing suspicion, distract, and fear between groups (Aronson, 2008).

Aronson agreed only if he was allowed to look at the entire problem and give language-range solutions and not just temporary solutions that acted as a band-aid. Time was of the essence so it was difficult to follow standard research protocol that relied on extensive

literature reviews. Systematic observations were done (Aronson, 1990). It was speculated that competition for teacher was important because for students in elementary school the teacher is one of the most important people in their life .Because of this, it was important for students to be called on so the teacher could see they knew the right answer. Students may harbor hope that their classmates would fail so they could have an opportunity to show that they were smarter than their classmate. If the classmate was successful, the student would feel disappointed. For students that they were deemed “ looser“ they would grow feelings of envy and jealousy towards students. Successful students may then in term deem the “looser ” students as unintelligent and uninteresting (Aronson, 1990). It was decided a shift needed to take place from classrooms that fostered competition to classrooms that fostered cooperation (Aronson, 2008) The first step was to change the structure of the classroom. A shift to be made from a competitive situation to a cooperative situation that fostered trust, empathy, and understanding (Aronson, 1990).

## **2. Methodology**

The subjects were Iranian learners studying in Sari Sama high school. In order to carry out this research 60 female students participated in this study. Their ages ranged from fifteen to nineteen. In order to check their general language proficiency of the students, 120 students were randomly selected and Nelson Proficiency Test was given to these students. The research question of the present study is:

- Does jigsaw task have any effect on reading ability of Iranian intermediate high school EFL learners?

To find answers to the above-mentioned question, the following null hypothesis is emerged:

- The jigsaw task has no effect on reading ability of Iranian intermediate high school EFL learners.

Nelson test was used to make sure of the homogeneity of language proficiency of two groups. All questions were in the form of multiple- choice questions. Another test which was used by the researcher was a teacher- made test based on two readings which consisted of 21 true- false and 9 yes- no questions. This test had 30 items based on two reading texts. The same test which was used as pretest was used as a posttest after six sessions.

## **3. Data Collection**

To accomplish the purpose of the study, the following procedures were carried out:

- **The Nelson Test:** The Nelson Test was administered on the first session of the study to assess the homogeneity of the participants.
- **Pretest:** Before the treatment, 21 true- false and 9 yes- no questions was developed by the researcher. The test was administered to a pilot group. The reliability of the test was calculated using by KR-21 formula as 0.82.
- **Treatment:** The materials assigned for the control and the experimental groups were chosen from reading sections of English high school books. The researcher divided the subjects in to two groups: one control group and one experimental group and the treatment lasted 6 sessions: each session lasted one and a half hour. The two groups read the same passage and at the same length of time.
- **The Experimental Group:** The members of the experimental group were divided in to six jigsaw groups and each groups contained five learners. The researcher introduced the topic to them. The researcher divided the topic in to different parts. Each member of the groups got a different part for one topic. The researcher gave time to read over their segment. 7. Each member of the groups found the others who got the same part with her and form the expert groups. The teacher gave key questions to the expert groups. Learners came back to their jigsaw groups, and then learners exchanged their information and completed their ideas about a topic. The researcher observed the work and assisted their students in their processes. At the end of the class, the researcher gave an exam in order to evaluate learners' progress.
- **The Control Group:** The researcher used traditional method. Intensive reading was performed in this class under supervision of the researcher who followed a careful lesson plan. 1. The researcher introduced the topic to the learners. 2. The researcher gave some detailed information or background information to the students in relation to the topic. 3. The teacher familiarized the students with key words and structures.4. Learners read the passages individually. 5. At the end of the class, the researcher gave an exam in order to evaluate learners progress.
- **Posttest:** After a treatment, the same test which was used as pretest was used as a posttest.

## 4. Results and Analysis

### 4.1. Nelson test

An independent sample t-test was run to compare the mean scores of the experimental and the control groups on the NELSON test in order to check their general language proficiency.

The t- observed value is 0.0 (Table 1). This amount of t- value at 58 degree of freedom is lower than the critical t- value, i.e. 2.00.

Table 1. Independent sample T- test (Nelson test)

	Levene's Test for Equality of Variances		t- test for Equality of means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% confidence interval of the Difference	
								Lower	Upper
Equal variances assumed	.000	1.000	.000	58	1.000	.0000	1.39226	-2.78691	2.78691
Equal variances not assumed			.000	58.00	1.000	.0000	1.39226	-2.78691	2.78691

Based on these results, it can be concluded that there was not any significant difference between the mean scores of the experimental and the control groups on the Nelson test. That is to say, the experimental and the control groups enjoyed the same level of general language proficiency.

The descriptive statistics for the two groups are presented in Table 2. The mean scores for the experimental and the control groups are 21.40 and 21.40, respectively. It should be noted that the two groups are also homogenous in terms of their variances. The F= 0.0 has probability of 1.0 which is much higher than the significant level proposed by the researcher, i.e., 0 .05. That is why the results of the first row of Table 1, "Equal variance assumed" is reported.

Table 2. Descriptive statistic Nelson test

Group	N	Mean	Std. Deviation	Std. Error Mean
Experimental	30	21.4000	.98448	5.39220
Control	30	21.4000	.98448	5.39220

#### 4.2. Pretest

An independent sample t-test is run to compare the means scores of the experimental and the control groups on the pretest. The t- observed value is 0.05 (Table 3). This amount of t- value at 58 degree of freedom is lower than the critical t- value, i.e. 2.00.

Table 3. Independent sample T- test pretest

	Levene's Test for Equality of Variances		t- test for Equality of means						
	F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference	95% confidence interval of the Difference	
								Lower	Upper
Equal variances assumed	.900	.347	.052	58	.959	.03333	.64342	-1.25460	1.32127
Equal variances not assumed			.052	56.103	.959	.03333	.64342	-1.25553	1.32220

Based on these results, it can be concluded that there was not any significant difference between the mean scores of the experimental and the control groups on pretest. The descriptive statistics for the two groups are presented in Table 4. The mean scores for the experimental and the control groups are 8.60 and 8.63, respectively.

Table 4. Descriptive statistic pretest

Group	N	Mean	Std. Deviation	Std. Error Mean
Experimental	30	8.6000	.49503	2.71141
Control	30	8.6333	.41101	2.25118

#### 4.3. Posttest

The description statistics for the two groups are presented in table 5 shows the mean scores for experimental and control groups were 14.800 and 11.133, respectively. An independent sample t-test is run to compare the mean scores of the experimental and control groups on the

posttest. The t- observed value is -5.98. (Table 5). This amount of t- value at 58 degree of freedom is lower than the critical t- value, i.e. 2.00.

Table 5. Independent sample T- test post test

	Levene's Test for Equality of Variances		t- test for Equality of means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% confidence interval of the Difference	
								Lower	Upper
Equal variances assumed	2.246	.139	-5.987	58	.000	-3.66667	.61239	-4.89249	-2.44084
Equal variances not assumed			-5.987	54.122	.000	-3.66667	.61239	-4.89437	-2.43897

Based on these results, it can be concluded that there is a significant difference between the mean scores of the experimental and the control groups on posttest. Thus the null- hypothesis is rejected. The descriptive statistics for the two groups are presented in Table 6. The mean scores for the experimental and the control groups are 14.80 and 11.13, respectively.

Table 6. Descriptive statistic post test

Group	N	Mean	Std. Deviation	Std. Error Mean
Experimental	30	14.8000	.48755	2.67040
Control	30	11.1333	.37056	2.02967

## 5. Conclusion

In this research, the students in the experimental group benefited from the jigsaw task. It also fosters the interest of students' English study, arouses their motivation, and improves their reading ability. Jigsaw task embodies a learner- facilitated, positive interdependent communication. So, jigsaw task is the most effective and interesting way that can be used and applied to teach reading ability in high school.

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