

The effect of cooperative learning techniques on reading comprehension ability of Iranian EFL learners

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Abstract

The present study was an attempt to examine the effect of the cooperative learning techniques on improving the intermediate-level students' reading comprehension. More precisely, it set out to investigate the impact of Numbered Heads Together (NHT) and Jigsaw- as two techniques of Cooperative Learning, on EFL students' reading comprehension achievement. Sixty three participants were homogenized a proficiency test and they were randomly assigned to two experimental groups (A) taught through Jigsaw technique and (B) taught through Numbered Heads Together technique and one control group (C) taught through conventional instruction (CI). Then, each group was given a reading comprehension test as a pre-test. Following ten sessions of treatment the post-test was administered. The results of one-way ANOVA demonstrated that both techniques of cooperative learning could improve EFL learners' reading comprehension with Jigsaw instruction being more influential on reading comprehension compared to Numbered Heads Together could increase the students reading comprehension more than Numbered Heads Together technique. But the conventional instruction (CI) had a little impact on the learners' reading comprehension achievement.

Keywords: Cooperative Learning, Reading Comprehension, Jigsaw, Numbered Heads Together, Technique

1. Introduction

Reading as well as other language skills is important in foreign language learning and plays a major role in getting information and knowledge from original resources. While fluent decoding is an essential component of skilled reading, it should be considered as a prerequisite to strong comprehension rather than an end in itself (Block & Pressley, 2002). Comprehension involves constructing meaning that is reasonable and accurate by connecting what has been read to what the reader already knows and thinks about all of this information until it is understood. According to Block and Pressley (2002), comprehension is the final goal of reading instruction. One of the most important components of English performance, particularly in academic setting is English reading ability (Huckin, Haynes, & Coady, 1993). Therefore, reading comprehension is the process of understanding and constructing meaning from a piece of text (Brown, 2007). So, students need good reading skill for acquiring knowledge and learning new information. However, we can see that most students are not good enough to do so. Because most of the teaching in EFL classrooms still emphasizes teacher-centered, teacher directed instruction in order to get good grades in English, and to this end, teachers might bring the competition into the classroom. Such a traditional instructional approach causes competitive learning and individual performance in the classroom teaching (Robert & Slavin, 2005). And too much competition might bring negative interdependence and lower teaching effects and failures to be successful in learning. So, teachers regarding significance of reading in foreign language learning ought to progress the teaching of reading comprehension. Since teacher-centered approaches taking place in traditional classrooms do not produce active recipients and result in fossilized language learning, many researchers have been interested in doing research to investigate appropriate new reading strategies to help students have better

understanding when they read. One of these strategies is cooperative learning technique investigated by researchers during the past decades. Cooperative learning is one of the teaching methods to improve learning, academic achievement and social skills by students' interaction (Kessler, 1992; Wei, 1997). Cooperative learning compared to traditional approach is more student-centered and communication-oriented. Therefore, traditional reading instruction can be replaced by cooperative learning which emphasizes interaction and communication and promotes the socio-linguistic competence of students (Brown, 2007).

The application of cooperative learning to classroom teaching finds its root in the 1970s when United States began to design and study cooperative learning models for classroom context (Kessler, 1992). According to Johnson & Johnson (1989) 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 students of different levels of ability and use a variety of learning activities to improve their understanding of a subject. Johnson and Johnson (1994) define cooperative learning as an instruction that involves teams of students working together toward a common goal. Through CL students have more opportunities to practice English and to learn more effectively from classmates as well as teachers. It also helps exercise student's social skills and interpersonal relationships through interactions with group members (Johnson, Johnson, 1994; Lai, 2002; Wei & Chen, 1993). Most studies on the effectiveness of CL have consistently indicated that this methodology promotes higher achievement, more positive interpersonal relationships, and self-esteem than do competitive and individualistic efforts (Gomleksiz, 2007; Johnson & Johnson, 1994). In order to have small groups work together successfully, a teacher has to compose five essential elements in each lesson (Johnson, Johnson, & Holubec, 1990; 1993): a) Positive interdependence: each member of the group is responsible for the success of the group as a whole and is assigned a fair share of work b) face-to-face interaction: students work in close physical proximity, which enables them communicate easily and provides opportunities for oral practice c) individual accountability: every student is accountable for carrying out his or her assigned tasks; all members are aware that every individual has a role to play in completing the activity d) social skills: group learning activities provide an opportunity for communication and interaction. Leadership, decision-making, and conflict management are an integral part of group work, and teachers should encourage students to use these skills in the classroom e) group processing: throughout the course of an activity, group members are aware of their learning on a metacognitive level. Group processing provides students a chance to give and receive feedback and enhances the skills of each group member.

It is better to apply all CL techniques in research in order to assure the degree of effectiveness or non-effectiveness of them over successful learning as well as reading. And since the differential effect of Jigsaw and Numbered-head-together simultaneously has not been investigated over reading comprehension of intermediate students, this study aims to make clear the differential effect of jigsaw, Numbered-Head-Together and conventional instruction on reading comprehension ability of EFL learners.

2. Research questions and hypotheses

H₀: Type of instruction does not have any effect on EFL learners' reading comprehension ability.

H₁: It is expected that Jigsaw will have more effect on reading comprehension of the learners compared to Numbered Heads Together technique and conventional instruction.

3. Methodology

Participant

The participants were 90 female students studying English language in Moghan-Honar and KhajeNasiraddinToosi institutions in Parsabad, Iran.

Instruments

Oxford Placement Test (OPT) was administered to make sure the participants were homogenous in terms of their language proficiency. A teacher-made reading comprehension test was given to the three groups to measure their reading comprehension ability before treatment and make sure they were homogeneous in terms of reading ability. Since the study lasted about two months, the same test used in the pre-test was also safe to be used as a post-test to measure the participants' reading comprehension ability after treatment.

Data collection procedure

This study comprised a pilot and a main phase of study. The participants were from two institutes of Parsabad, Iran. Totally, the study lasted 13 sessions during the spring of 2014. In the first session of the study, OPT was administered to determine proficiency level of 90 volunteer subjects. After administering the proficiency test, 73 of them were known as intermediate students from among whom 63 learners were selected to participate in the main phase of the study and 10 ones took part in the pilot study. In the second session the students were randomly assigned to three groups: group A (n=21) to take Jigsaw (J) instruction, group B (n=21) to take Numbered Heads together (NHT) instruction, and group C (n=21) to take conventional instruction (CI), and in order to make the participants clear with the aim and significance of the study, the researcher familiarized all of the students with CL, its elements, and its advantages in EFL learning to convince the learners to participate in the study. She introduced the book *Select Reading* written by Lee and Gundersen in 2001 to be worked on in all three groups. In the same session each group was also given a teacher-made reading comprehension test (pre-test) to measure the participants' reading proficiency. Treatments of the groups started from the third session went on to ten sessions, two 90-minute sessions a week. In the cooperative groups 7 students who scored highest on the pre-test were identified as high-achievers, the 7 students, who scored near the mean, were identified as average-achievers and the remaining 7 ones were considered as low-achievers.

It is important for cooperative groups to be as heterogeneous as possible and the class to be homogenous. The more heterogeneous the members regarding experience and background, the more controversy among group members there will be (Acar&Tarhan, 2008). Therefore, each class (A and B) was divided into 7 learning groups (heterogeneous teams) with three students (high, low, and average) in each group. Ten texts were selected from *select reading* book and were worked on in all of the three groups.

The instruction for group A was according to Jigsaw technique. The teacher, first gave an explanation regarding the text, then asked some questions in relation to the text and assigned each question to different subjects in each group. The subjects with similar question from different groups met each other as an expert of their group to find the answer of the question they had. Together, the experts researched the question (similar question), discussed, and cleared up with each other. As they found the answer, each subject turned back to their group, and acted as a tutor to the group on his special question. And finally, the teacher randomly called subjects to answer the questions.

The instruction for group B was according to Numbered heads together technique in which the members of the groups was assigned a number from 1 to 3, the teacher first gave an explanation regarding the text. Then, the teacher or one of the students asked a question based on the text the class was reading and the students in each group researched the answer and put their heads together to come up with an answer or answers. The teacher called a number from 1 to 3. The person with that number gave and explained their group's answer.

In contrast to participants in the experimental groups, the control group students received traditional teacher-fronted instruction throughout the classroom time. In this class the teacher began each new reading passage by reading it aloud and then translating each sentence into the students' native language, Persian. After transmitting the required knowledge, the teacher asked some of the students to answer the exercises individually. She taught the new vocabulary items via using native language translations and

also taught the grammar points of each chapter deductively in the native language. The students were allowed to ask questions about the unclear points. Classroom interaction was largely teacher-initiated, with the teacher starting the conversation and the learner-learner interaction was limited.

As a final point, after completion of the treatment sessions (in the thirteen session), a teacher-made reading comprehension test (post-test) was given to the three groups to measure their reading comprehension ability after treatment.

Data Analysis

One-way ANOVA and Scheffe post hoc test were run to analyze the scores on the pre-test and post-test.

4. Results

Table 1 demonstrates the descriptive statistics for the pre-test scores of three participating groups. According to this table since mean scores of three participating groups are very close to each other, the groups can be considered homogeneous in terms of reading comprehension achievement. In order to examine the homogeneity of the learners in terms of reading comprehension proficiency, one-way ANOVA was used. As it is shown in Table 2, the means of the pre-test scores of the three groups (Jigsaw, Numbered Heads Together (NHT), and CI) were not significantly different ($F=0.078$, $p= 0.234$, $p > 0.05$).

Table 1: Descriptive Statistics for Three Participating Groups'performance on pre-test

Groups	N	Maximum	Minimum	M	SD
J	21	17	9	10.92	8.332
NHT	21	18	10	10.78	8.991
CI	21	16	8	10.89	7.565

Note: J=Jigsaw, NHT = Numbered Heads Together, CI = Conventional Instruction

Table 2: Results of One-way ANOVA for Groups'Performance on thePre-test

Sources of variations	Sum of Squares	df	Mean Squares	F	Sig
Between Groups	60.31	2	1094/80	0.078	0.234
Within Groups	80.32	87	52.66		
Total	76.54	89			

Note. $P>0.05$

As mentioned previously in order to test participants' reading comprehension after the treatment a post-test was administered. Table 3 shows descriptive statistics for groups' performance on the post-test. As it can be seen, the means of the three groups' scores on the post-test are not equal. According to Table 3, the groups' performance on the post-test was different and the results showed better performance of the subjects who received instruction through Jigsaw. Students who were instructed through Numbered heads together technique placed somewhere in the middle, whereas the students instructed through conventional instruction had the lowest mean on the post test.

In order to investigate whether or not the observed differences among the mean scores on the post-test were statistically significant, one-way ANOVA was run. The difference was statistically significant

($F=3.51$, $P=0.037$, $p<0.05$). This confirmed that the three groups performed differently on the post-test as shown in Table 4.

Table 3: Descriptive Statistics for Groups' Performance on the Post-test

Groups	N	Maximum	Minimum	M	SD
J	21	18	9	13.30	3.30
NHT	21	16	10	12.10	4.62
CI	21	17	8	11	5.80

Note. J= Jigsaw, NHT= Numbered Heads Together, CI= Conventional instruction

Table 4: Results of One-way ANOVA for the Groups' Performance on the Post-test

Sources of variations	Sum of square	df	Mean square	F	sig
Between groups	66.3	2	33.6	3.51	0.037
Within groups	91	87	9.6		
Total	97	89	9.12		

Note. $P<0.05$

A post hoc Scheffe test was used to determine where precisely the differences lay. The test revealed a significant mean difference between the experimental group (A) receiving instruction through Jigsaw technique and the control group (C) instructed through conventional instruction (CI) ($MD=3.071$, $p=0.039$, $p<0.05$). There was however a little but significant mean difference between the experimental group (B) receiving instruction through Numbered Heads Together and conventional instruction ($MD=0.770$, $p=0.007$, $p<0.05$). The difference between the achievement means of the experimental group (A) receiving instruction through the Jigsaw technique and the experimental group (B) instructed using the Numbered Heads Together technique.

Table 5: Post-hoc Scheffe Test for the Groups' Performances on the Post-test

Group	Groups	Mean difference	Standard error	Sig
J	NHT	1.320	78.000	0.046
	CI	3.071	78.000	0.039
NHT	J	1.320	78.000	0.046
	CI	0.770	78.000	0.007
CI	J	3.071	78.000	0.039
	NHT	0.770	78.000	0.007

($MD=1.320$, $P=0.046$, $p<0.05$) was also significant (Table 5).

5. Discussion and Conclusion

Discussion

A number of researches have made transparent that nearly all of the learners have difficulty in comprehending text individually. The findings of this study also showed that CI, a conventional or a teacher-centered method, is not effective in improving learners' reading comprehension achievement. In CI students are more reliant on the teacher and do not have opportunity for thinking on the material and working with their classmates. This might be because teachers spend a great deal of time for teaching grammatical and vocabulary structures, and translating text into first language (Roberte & Slavin, 2005).

On the basis of the above results, the null hypothesis of the study that suggested cooperative learning techniques compared to conventional instruction do not have any significant effect on EFL students' reading comprehension was rejected. There was a significant difference between the mean values of Jigsaw technique and conventional instruction ($MD=3.071$) and also between Numbered Heads Together technique and CI ($MD=0.770$) on the post-test and this is in agreement with Kessler's (1992) suggestions who states that students can understand better the text and take valuable feedback from each other working in pairs or groups. As the results of the study showed, CL as a teaching method develops language learning, academic achievement and social skills by means of students' interaction.

The directional hypothesis of the current study which proposes that jigsaw will have more effect on reading comprehension of the learners compared to Number Heads Together technique was supported. According to Aronson (2002), in Jigsaw classroom students learn the material faster and perform significantly better on objective exams than a control condition of students learning the same material in classes conducted with traditional instruction. The results of the study are in line with Kagan (1994) that group interaction assists learners in negotiating for more comprehensible input and in converting their output to make it more comprehensible to others.

Conclusion

The present study was an attempt to examine if cooperative learning techniques compared to conventional instruction had any significant effect on EFL students' reading comprehension and whether Jigsaw have more effect on reading comprehension of the learners compared to Number Heads Together (NHT) technique. The results revealed that both of the cooperative learning techniques, Jigsaw and Numbered Heads Together, are more effective in improving reading comprehension ability of EFL learners compared to conventional instruction (CI), and can be used as method of teaching in EFL departments. However, some of cooperative learning techniques are better than others and it is necessary to investigate to choose the best and more effective ones.

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