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To cite this article: Ehsan Namaziandost, Abbas Pourhosein Gilakjani & Hidayatullah | (2020) Enhancing pre-intermediate EFL learners' reading comprehension through the use of Jigsaw technique, Cogent Arts & Humanities, 7:1, 1738833, DOI: [10.1080/23311983.2020.1738833](https://doi.org/10.1080/23311983.2020.1738833)

To link to this article: <https://doi.org/10.1080/23311983.2020.1738833>



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Published online: 12 Mar 2020.



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Received: 16 January 2020
Accepted: 28 February 2020

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Reviewing editor:
Jeroen van de Weijer, Shenzhen University, China

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LITERATURE, LINGUISTICS & CRITICISM | RESEARCH ARTICLE

Enhancing pre-intermediate EFL learners' reading comprehension through the use of Jigsaw technique

Ehsan Namazianost^{1*}, Abbas Pourhosein Gilakjani² and Hidayatullah³

Abstract: This study aimed to check the effect of Jigsaw technique on Iranian English as a foreign language (EFL) learners' reading comprehension. In this project, 50 Iranian pre-intermediate EFL learners (16 to 18 years) participated in 20 sessions (2 sessions held in each week). Half the students were taught through jigsaw technique (experimental group). The others were taught traditionally (control group). Using a before and after design, students were retested after 10 weeks. On a posttest of L2 reading comprehension, means testing revealed that the experimental group outperformed the control group. The findings have fundamental implications for EFL teachers who aim to provide a cooperative learning context for the learners. We propose that, under cooperative conditions, there can be clear advantages for EFL learners to spend time mastering L2 materials.

Subjects: Teaching & Learning - Education; Bilingualism/ESL; Language & Linguistics; Language & Education; Language Teaching & Learning

Keywords: Reading comprehension; cooperative learning; Jigsaw technique; pre-intermediate EFL learners

1. Introduction

English is the first foreign language that is formally taught in Iranian educational system from elementary school up to university level. In order to learn English, learners need to be able to learn



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Ehsan Namazianost was born in Shiraz Province of Iran in 1985. He holds an MA degree in TEFL from Islamic Azad University of Ahvaz. Now, he is Ph.D. candidate of TEFL at Islamic Azad University, Shahrekord, Iran. His main interests of research are second language acquisition, EFL teaching and testing, teaching language skills, language and technology, and language learning strategies. His research papers and articles have been published by different international journals.

PUBLIC INTEREST STATEMENT

All researchers believed that cooperative learning can result in higher achievement than other learning styles. They consider CL as a teaching strategy where 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 the team is not only responsible for learning what is taught but also for helping teammates learn. Since students work through the assignment until all group members successfully understand and complete it, this teaching strategy creates an atmosphere of achievement. Therefore, in this study jigsaw technique as one of CL's techniques has been considered to see its effects on reading comprehension. After analyzing the data, it was found that the CL in general and jigsaw technique, in particular, has a significant positive effect on improving reading comprehension.

four language skills such as reading, writing, listening, and speaking. Speaking and writing are said to be active or productive competencies, while listening and reading are said to be passive or receptive competences. Reading, however, is regarded to be the most important skill. To most Iranian students, as well as many other students who learn English as a foreign language, reading activity remains a big challenge. According to Jalilifar (2009), “despite the increasing enthusiasm in learning English as a foreign language in Iran, college students appear to be scarcely capable of reading and comprehending English texts” (p. 11). Iranian educational system is recommended to follow the traditional approach of teaching English Language Skills. Similarly, the teacher is the authority from the outset to the end in the traditional reading lessons. He presents the course book and procedure. Thereafter, the students are confronted with the new words, comments, grammatical structures, and other important points. At the end, the students are asked to respond to the teacher’s questions. In a case like this, students actively compete with each other to get ahead of other classmates. In addition, those students who are not able to answer the questions are gradually disappointed. Understanding the negative aspects of an aggressive and individualistic way of teaching, a change in the way language skills are taught will arise. According to Nunan (2001), “Our biggest challenge now is not to throw out well-established practice, as so often occur in the past, but to integrating new ways of doing things into current practice. In this sense, change will be evolutionary rather than revolutionary” (p. 69).

It is worth mentioning that several factors affect the differential progress and success of second language learners and their comprehension of reading texts, including environment, teaching strategies and the task, learner’s views about language learning, interaction with other learners, and teaching style (Namaziandost, Rezvani et al., 2020; Oxford, 1989; Wharton, 2000). There is evidence to suggest that when students debate and express their viewpoints about a text in a cooperative and collaborative way, greater understanding is attained that leads to a greater overall development of understanding (Namaziandost, Shatalebi et al., 2019). In fact, the use of cooperative learning in teaching and learning dated back to the 1970s when the United States started to design and apply cooperative learning models for classroom situation (Kessler, 1992). As stated by D. W. Johnson and Johnson (1989), cooperative learning is a teaching technique in which small teams with members of different abilities use different learning activities to enhance their understanding of a topic. D. W. Johnson and Johnson (1994) define cooperative learning as an instruction which involves teams of students working and studying together to reach a specific purpose. By using cooperative learning, learners have more chances to practice English cooperatively in order to learn more effectively from their peers and teachers. Lai (2002) states that cooperative learning can assist pupils to improve their social abilities and interpersonal relationships by interactions with group mates. Most researches on CL’s efficacy have repeatedly shown that this approach fosters greater achievement, more productive interpersonal relationships, and self-esteem than aggressive and individualistic strategies (Gomleksiz, 2007; Namaziandost, Hosseini et al., 2020). For small groups to effectively work together, an instructor must formulate five essential elements in each lesson (Namaziandost, Neisi, Kheryadi et al., 2019): (a) Mutual interdependence: each group member is responsible for the group’s performance as a whole and a fair share of the work is allocated to him/her (b) Face-to-face interaction: students work in close physical proximity, helping them to connect quickly and providing oral communication opportunities (c) Student accountability: each pupil is responsible for the completion of his or her assigned tasks; all participants are mindful that each student has a role to play in fulfilling the assignment (d) social skills: community learning events provide an incentive for collaboration and engagement. Leadership, decision-making, and conflict management are an integral part of group work, and teachers should encourage students to use these skills in classroom (e) group processing: group members are aware of their metacognitive learning throughout the course of an operation. Team analysis offers students with an ability to provide and receive feedback, which strengthens each team member’s skills (Namaziandost, Neisi, Mahdavidar et al., 2019).

There are many types of cooperative learning approaches that are used to teach the reading skills. A widely used one is the jigsaw strategy. It consists of a regular instructional cycle of

activities that include reading, grouping, regrouping, expert group discussion, team reporting, testing, and finally team recognition (Kagan, 1994; Namaziandost, Nasri et al., 2019). R. Slavin (1991) emphasizes that the intervening period of learning tasks in a welcoming and stress-reduced atmosphere provides useful resources for communicative language practice. Adams (2013) argues, along similar lines, that it is important to change the perspective of students regarding their roles in learning from one of recording and memorizing information to one of creating awareness by linking concepts to their experiences and knowledge base. What Adams emphasizes is the fact that collaborative methodology specifies the importance of the learning features of both the text and the reader in the process of reading.

Indeed, jigsaw is a type of cooperative learning task that makes students to communicate with each other to fill in missing information and to integrate it with other information. Sahin (2010) asserts that “Jigsaw technique allows students to actively participate in learning process. By being constantly subjected to this method, students should feel more comfortable about their roles” (p. 778). Haryanto (2012) holds that in Jigsaw technique the learners carry out the learning activities through cooperating with their classmates in order to get their aims.

In addition, jigsaw bolsters important elements of cooperative learning, such as constructive interdependence and human responsibility. This is because learners in Jigsaw need to understand each other to get the “big picture” and have to know “all the material, not just their own part, as they are evaluated individually” (Millis & Cottell, 1998, p. 129). Every student in a team has a piece of information that all students need to learn and each student is responsible for teaching their section to the other students in the team. The students should have the entire picture after all the pieces are put together—hence the term, Jigsaw (Millis & Cottell, 1998; Tahmasbi et al., 2019). Another theory explaining the rationale behind the technique of jigsaw is constructivism. The idea that learning is an aggressive development process rather than a passive assimilation of knowledge or rotary memorization strengthens the benefits of a jigsaw strategy based on promoting active learning instead of processing information from an instructor or text. Further, the jigsaw technique can be used in the reading activity as well. The jigsaw technique is, according to Aronson (2010), a particular cooperative learning method in which the group is split into four-six individuals within a group. It makes learners focus on learning material and they need to cooperate with each other. In line with this, Kagan (1994) believes that the Jigsaw technique is geared towards applying to bilingual class. It can be extended to all course materials, especially specific to bilingual courses, which usually use English for content, worksheets, and quizzes. Suyanto (2012) further notes that incorporating jigsaw methodology in the teaching learning process will make students more accountable. Therefore, they engage personally and effectively in identifying a problem and solving it collaboratively.

In addition, Gladstone (2013) argues that the Jigsaw technique is a cooperative learning activity in which learners become proficient in different topics, then teach other learners what they have learned. Klippel (1984) states that Jigsaw is one of the activities which is applied in teaching. In Jigsaw activity, each member is equally important since each is responsible to solve the problem. Based on the mentioned statements, Jigsaw can enhance cooperative and mutual learning in the group.

Using the Jigsaw technique can be useful for improving Iranian EFL learners’ reading comprehension. Reading is important in foreign language learning and plays a vital part in obtaining information and knowledge from original resources. While fluent decoding is a crucial ingredient of skilled reading, it should be regarded as a prerequisite to successful comprehension rather than an end in itself (Block & Pressley, 2002; Nasri et al., 2019). Comprehension includes constructing meaning that is sensible and accurate through connecting what has been read to what the reader already knows and thinks about all of this information until it is comprehended. According to Block and Pressley (2002), comprehension is the main aim of reading instruction.

Therefore, reading comprehension is the act of comprehending and constructing meaning from different passages (Brown, 2007; Neisi et al., 2019). So, students must be proficient in reading skill to be able to obtain knowledge and learn new information. However, Iranian EFL learners do not excel in reading comprehension. They read the texts for answering to the questions not for understanding the texts. In addition, they read the texts individually not in a group. This study aims to help Iranian EFL learners to improve their reading comprehension through cooperative learning.

Iranian EFL learners do not have the opportunity to express and to use language in the real context and consequently, this can lead to forgetting the materials soon. In addition, cooperative activities are overlooked in Iran's educational contexts. Although learning by doing helps learners improve their language proficiency, it has not received the attention it deserves. Therefore, the current research tried to cover these issues, hoping it would be a step to enhance Iranian EFL learners' reading comprehension by doing tasks. This study aimed to enhance male Iranian EFL learners' reading comprehension through cooperative learning. Therefore, in this study, the effect of the Jigsaw technique on Iranian EFL learners' reading comprehension was explored.

2. Review of the literature

Since human beings are social creatures they can learn better cooperatively in a group. According to constructivist theory, one of the most important principles of educational psychology, as R. E. Slavin (2006) argues, is that teachers cannot simply give students the information. S/he goes on to say that learners have to build knowledge in their own minds and teachers are just as facilitators. Based on this theory, learners are cooperative, and the class must be student-centered. Furthermore, the nature of co-operative learning as stated by Schmuck and Schmuck (1997) is based on the belief that co-operative learning extends to both academic excellence and people's affective growth. R. T. Johnson and Johnson (1990) maintain that there are generally three social principles in the learning environment of all classrooms worldwide; competitive, individualistic, and cooperative. As the name speaks, only a few smart students stand out in the class in the competitive classes. Thus, they are always finding a way to get ahead of one another. On the other hand, the performance of everyone in the individualistic classrooms relies solely on his/her own actions and there is no connection to the actions of other students. Therefore, at the top point of a classroom, there might be one to even more students. At last, one's success in a cooperative setting is directly related to the success of other participants as the focus shifts from the participant to the group. It should be remembered, based on what was discussed above, that in circumstances other than cooperative learning learners are more dependent on the teacher than peers. They regard the instructor to be complete, and the only learning outlet. Teachers in these schools are the best model for the students to learn from him. Nevertheless, the views of teachers have experienced a dramatic transition over the last decades. Some of the teachers have begun to encourage group work in their classrooms. They conclude that it seems more natural to students in a cooperative learning environment to communicate with each other to get out of a difficult learning situation or to do a job. So, they become involved and continue the learning process.

Through cooperative learning, students can share their information to learn more successfully (Sabbah, 2016). Cooperative learning was defined by D. W. Johnson et al. (1998) as an instructional method by which learners cooperate with each other in small groups to reach learning goals. They held that cooperative learning can reinforce the students' social development in a school situation. Through cooperation with each other, students can reach their individual and common objectives.

There are different strategies based on co-operative learning that can be used to aid pupils to learn language successfully and more quickly. One of these strategies is Jigsaw, which is one of the cooperative learning techniques through which the learners can work in small groups being responsible for each other's learning and express themselves. Jigsaw strategy was proposed by Elliot Aronson in 1971 from Texas University and California University. Jigsaw is a cooperative teaching method in which learners are provided the chance to assist each other create comprehension. In this

strategy, students are divided into small groups. Each group member is in charge of getting an expert on one topic of the assigned materials and then teaching it to the rest of the group.

In the Jigsaw technique, each group member becomes an expert on a different topic or subject and teaches it to the group. Therefore, each student is needed for the comprehending of the whole subject been taught. According to Miaz (2015), the Jigsaw cooperative learning includes small group learning activities in which students learn and work together both individually and cooperatively. Jigsaw emphasizes cooperative learning by providing students an opportunity to actively help each other build comprehension. Use this technique to assign students to reading groups composed of varying skill levels. Each group member is responsible for becoming a “proficient expert” on one section of the assigned material and then “teaching” it to the other members of the team. Students are directed to read the selection of text assigned to them. When the reading has been completed, the students meet for approximately 20 minutes with others assigned to the same topic. They discuss the material, identify the most important learning points, and return to their “home groups” to instruct the others about information in which they have become an “expert”. Each student takes turns teaching what he or she has learned to the other “home group” members. During this process, teachers should (a) circulate to ensure that groups are on task and managing their work well; (b) ask groups to stop and think about how they are checking for everyone’s understanding and ensuring that everyone’s voice is heard; and (c) monitor the comprehension of the group members by asking questions and rephrasing information until it is clear that all group members understand the points.

The jigsaw cooperative learning technique can be used for improving reading comprehension. Puskorius (2011) mentioned that comprehension is the understanding that one acquires from passages. Suparman (2011) stated that reading comprehension refers to understanding what has been read. Reading comprehension is an active thinking process that relies on comprehension skill, students’ experience, and prior knowledge. According to Yunita (2016), reading comprehension is the capability to communicate a text resulting in an integrated process that includes decoding vocabulary items and sentences, applying prior knowledge related to the text and using cognitive and meta-cognitive strategies to make sense and to get the target message the writers aim to transfer.

As stated by Ahmadi and Pourhossein (2012), reading comprehension is not only comprehending words, sentences, or even texts, but includes a complex integration of the reader prior knowledge language proficiency and meta-cognitive strategies. Furthermore, reading comprehension refers to the thinking and constructing meaning before, during and after reading by integrating the information presented by the writer with the reader’s background knowledge (Etemadfar et al., 2019; Kirmizi, 2010).

Reading is “a complex combination of processes” (Grabe, 2004, p. 14) which involves the “activation of prior knowledge, the evaluation of the text, and monitoring of the reader’s own comprehension” (Alderson, 2000, p. 3). Moreover, Reading is one of the four important language skills that should be mastered by students. It is one of the ways for getting knowledge that cannot be separated from every learning process and it does not only happen in educational field but also in our daily life. For getting knowledge and information, people read books, magazines, newspapers, advertisement, etc. Nation (2009) stated that reading is a source of learning and enjoyment. It can help students learn a new vocabulary and grammar. It also makes them enjoy the reading. They can learn more and more by reading.

According to Schmidt and Richards (2002), “reading means perceiving a written text in order to understand its contents. This can be done silently (silent reading)” (p. 443). It is a particular way in which the readers understand texts, passages, paragraphs even books and an ability to understand and find out the information presented in the form of written text (Nasri & Namazianost, 2019).

According to Grabe (2009), there are several purposes of reading, namely, reading to search information, reading for quick understanding, reading to learn, reading to integrate information, reading to evaluate, critique and use information, and reading for general comprehension (in many cases, reading for interest or reading to entertain). So, reading has several purposes. One of the purposes of reading itself is to search information, to get knowledge, or comprehension. There are main ways in reading as follows (Suparman, 2012):

- (a) Skimming is reading quickly over a text to get the gist of idea.
- (b) Scanning is reading quickly through a text to find a particular piece.
- (c) Extensive Reading is a reading longer text, usually for one's own pleasure, mainly involves global understanding.
- (d) Intensive Reading is reading shorter texts to extract specific information. This is more an accuracy activity involving reading for detail.

Meanwhile, the important point should be known in teaching reading; understand about the text, build vocabulary, and identify meaning of the text. Yunita (2016) stated that "Teaching reading must teach as follows; identify pronominal references, main ideas, supporting details, what kind of text is involved, topic, and making inferences" (Yunita, 2016). Based on the definition above, it can be concluded that reading is certainly an important activity for expanding knowledge of a language. Reading has also a relation between the author's messages and the information that the reader will find. Reading has some purposes. One of the purposes of reading is to search information, to get knowledge, or comprehension.

Researchers have defined reading comprehension as "... a critical part of the multifarious interplay of mechanisms involved in L2 reading" (Brantmeier, 2005, p. 52). Reading comprehension among language learners may be different from each other. Related to this Brantmeier (2005) said that processing the texts similarly or differently, students may have a non-identical interpretation of the texts. It means that language learners may process the text in similar ways but comprehend differently, or process the texts in a different way but comprehend similarly.

Sahin (2010) defined reading comprehension as the ability to get meaning from what is read. Reading comprehension needs different reading skills such as word recognition, fluency, lexical knowledge, and pre-existing knowledge to be undertaken quickly so that the reader gets knowledge from text. Moreover, Tompkins (2011) defined reading comprehension as the level of comprehending a text. This comprehension arises from the interplay between the written words and how they elicit knowledge outside the message. Tompkins (2011) expressed that comprehension is a creative process that hinges on four skills called phonology, syntax, semantics, and pragmatics.

A professional teacher totally needs to use the correct technique. The researcher believes that an involved and efficient learning process needs to be applied in order to reach the students' awareness of the reading ability. The researcher assumes the students may need a good approach that gives a chance to become more involved in the class. Reading is not recognized as a passive ability, since the reader must be involved in seeking the text comprehension. The researcher concludes from the above clarification that teaching reading comprehension should provide an environment where students can be involved in the comprehension of the text. The researcher believes that learners' reading comprehension would be improved by using an effective method of teaching.

Comprehension is the ultimate goal of reading. It allows the reader to understand what the text is about. The instructor will instill important strategic strategies for enhancing comprehension in the students. Strategic reading approaches can help students achieve a good understanding of their learning needs. So, the teacher has to incorporate communication techniques to do that. Learning techniques are deliberate decisions themselves—sets of actions that are used by successful readers to make sense of the text. Instruction on comprehension strategies helps students become

purposeful, involved learners who are in charge of their own perception of reading. There are several ways to teach reading comprehension with a few techniques. The techniques are created to help the students achieve a good understanding. Jigsaw technique is one of these strategies. Jigsaw is a cooperative learning technique encouraging each student of a “home” group to specialize in one dimension of a subject. Students meet with other group members who are given the same thing, then return to the “home” group after completing the content, to introduce the material to their group members. With this technique, each student in the “home” group acts as a piece of puzzle about the subject and when working together as a whole, they complete the full puzzle.

To determine the effectiveness of the Jigsaw technique on language learning, some studies were conducted, for example, Al-Salkhi (2015) aimed at getting a perception of the effectiveness of the Jigsaw Strategy on the achievement of the 7th primary grade students and their learning motivation. To do this study 53 female students were selected and divided into Experimental Group and Control Group. To collect the needed data, the achievement test and the motivation learning scale of the Islamic Education were utilized. In addition, the teaching materials related to the Jigsaw strategy were prepared. The results indicated that the Experimental Group outperformed the control group. Also, the findings revealed a positive relationship between the achievement of the 7th primary grade students and their learning motivation.

In another study, Azmin (2016) investigated the impact of the jigsaw cooperative learning method on student performance in psychology and their views towards it. The needed data were collected through pre-and-post tests and an open-ended questionnaire from 16 conveniently selected students at one Sixth Form College in Brunei. The results indicated that the participants reported that they enjoyed using the Jigsaw method and performed significantly better after the treatment.

Regarding the mentioned points, the following research question was answered in the present study:

RQ. Does Jigsaw technique have any significant effect on Iranian EFL learners’ reading comprehension?

3. Method

3.1. Participants

To carry out this research, 80 Iranian EFL learners from a Private Language Institute took the Oxford Quick Placement Test (OQPT). Based upon their scores on this test, 50 pre-intermediate learners whose scores were one standard deviation above and below the mean were selected, and divided into two groups; control group (CG) and experimental group (EG). Non-random sampling was employed to select the participants. All the participants were male and their age ranged from 16 to 18. The participants’ ethical compliance was considered. In fact, the researcher provided them a consent form to fill out it. As the researcher was one of the language teachers of the institute, the male students were ideal regarding the factor of availability. Both groups, including the control group and the experimental group, were taught by the researcher. It should be noted that the researcher did not have any preplanned program for selecting the pre-intermediate students. Based on the OQPT, the majority of the students were pre-intermediate; hence, they were selected as the target participants of the study.

3.2. Instruments

The first instrument which was used in the present study to homogenize the participants was the OQPT. It was administered for determining English language proficiency level of the participants prior to the start of the treatment. According to this test, the learners whose scores were between 30 and 47 (out of 60) were considered as the pre-intermediate learners.

The second instrument was a reading comprehension pre-test. The test was made of 40 multiple-choice items testing the participants’ reading comprehension. This test was designed based on

the students' course book. In fact, eight passages and their comprehension questions were extracted from *Active Skills for Reading, Book 1* by Anderson (2008), and *Family and Friends 1* by Simmons (2009) and used in this study. The eight passages were chosen based on the familiarity of the topic to the students. Then, 40 multiple-choice questions were prepared based on these 8 passages. Multiple-choice questions were applied to assess the students' reading comprehension; students could be assessed objectively for it was likely that they understood the text without being able to express it in L2. The allotted time was 70 minutes and the correct answer to each item received one point. There was no penalty for false responses.

The pretest received some reliability and validity measures. After construction, it was confirmed by ten experts who were familiar with second language acquisition and cooperative principles for its face and content validity. That is, to get sure about the Content Validity Index (CVI) of the test items, ten university professors who taught English for more than 15 years read through the tests and made some changes regarding the clarity, simplicity, and representativeness of items. Subsequently, the test was modified and then piloted on a similar group in another institute whose course book and level were the same. After applying validation and piloting, the necessary changes and modifications to achieve item characteristics (i.e., item facility, item discrimination, and choice distribution) were made to the test. Finally, 40 items were selected for the final version of the test. The reliability of the pre-test was computed through the application of Kuder and Richardson (KR-21) formula (Kuder & Richardson, 1937) and a value of 0.989 was obtained.

The third instrument of this study was a researcher-made post-test of reading comprehension. At the end of the treatment which lasted 20 sessions, to find about the possible effects of the jigsaw technique on the students' reading improvement, this pretest was used again. In fact, the same reading test was used twice in this study, once as a pre-test and once as a posttest instrument. All characteristics of the post-test were the same as those of the pre-test in terms of time and the number of items. The only difference of this test from the pre-test was that the order of questions and alternatives was changed to wipe out the probable recall of pre-test answers. This was important in order to find out whether the participants were able to choose the correct answer after the treatment was given to them. The posttest was also validated by those who validate the pretest and its reliability was calculated through Kuder and Richardson (KR-21) formula ($r = 0.859$).

3.3. Data collection procedure

At the outset of the study, the participants' proficiency level checked and then they were pretested on reading comprehension. After the pre-testing, the participants were assigned in two groups; one control and one experimental group. Then, cooperative learning activities were practiced with the participants of the experimental group during 20 sessions of the semester. Each class time was organized in the following way:

First, 10 minutes were spent on greeting and checking the presence of students in the class. Later, the teacher introduced the students to the topic of the reading passage and asked some pre-reading questions as a way of activating their background knowledge or providing them with sufficient knowledge. The experimental students were exposed to teaching process based on the principles of cooperative learning (Jigsaw) method whereas the students in the control group were taught the same materials using traditional teacher-centered instruction. The traditional method of teaching is when a teacher directs students to learn through memorization and recitation techniques thereby not developing their critical thinking problem solving and decision-making skills. In the traditional class, the researcher provided some background knowledge for the students before teaching each reading text, and then the researcher read the text line by line and translated it into Persian language and involved the students in translation.

The experimental students were assigned to five-member teams to work on reading texts. Each team member read an assigned section, and then members from different teams who had studied the same sections met in "expert groups" to discuss their sections. Then, students returned to their

own teams and took turns teaching their team-mates about their section. To be more precise, 10 steps were done in the experimental group to carry out the jigsaw technique: (1) Dividing the students into 5- or 6-person jigsaw groups. (2) Appointing one student from each group as the leader. In fact, this person was the cleverest in the group. (3) Dividing the day’s lesson into 5–6 segments. (4) Assigning each student to learn one segment. (5) Giving students time to read over their segment at least twice and become familiar with it. There was no need for them to memorize it. (6) Form temporary “expert groups” by having one student from each jigsaw group join other students assigned to the same segment. Give students in these expert groups time to discuss the main points of their segment and to rehearse the presentations they will make to their jigsaw group. (7) Bringing the students back into their jigsaw groups. (8) Asking each student to present his segment to the group. Others in the group were encouraged to ask questions for clarification. (9) Floating from group to group, observing the process. If any group had trouble (e.g., a member was dominating or disruptive), an appropriate intervention made. Eventually, the group leader handled this task. Leaders were trained by whispering an instruction on how to intervene until the leader got the hang of it. (10) At the end of the session, a quiz on the material was administered. Students quickly came to realize that these sessions were not just fun and games but really counted. After completion of the treatment sessions, a teacher-made reading comprehension test (post-test) was given to the groups to measure their reading comprehension ability after the treatment.

3.4. Data analysis

When the collection of data was completed, the data were processed and entered on the computer for data analysis. In order to answer the research question, data analysis was carried out by using SPSS software version 25. Firstly, in order to check the normality of the data, Kolmogorov–Smirnov (K-S) test was used. Then, statistical tools including paired samples t-test and an independent sample t-test were run. In fact, an independent sample t-test was used as a between-groups test to measure the impacts of the treatment on the participants’ reading comprehension. Moreover, paired samples t-test as a withing-group test was run to check if each group improved from pretest to posttest.

4. Results

In the above table, the One-Sample Kolmogorov–Smirnov Test was used to check the normality of scores. Based on this table, the data are normal; therefore, the parametric statistics (independent samples t-test and paired samples t-test) were used in the following Table 1.

In the above table, the mean scores of both control and experimental groups in the pre-test are presented. Based on this table, the mean score of the control group is 13.25 and the mean score of experimental group is 13.48.

Table 1. One-sample Kolmogorov–Smirnov test control and experimental control and experimental groups’ pre- and post-tests

		Pre-test control	Pre-test experimental	Post-test control	Post-test experimental
N		25	25	25	25
Normal parameters ^{a,b}	Mean	14.2400	14.0800	14.1200	16.7200
	Std. Deviation	2.58650	2.81247	2.71293	2.03142
Most extreme differences	Absolute	.204	.250	.220	.159
	Positive	.204	.250	.220	.158
	Negative	-.137	-.198	-.164	-.159
Kolmogorov-Smirnov Z		1.021	1.248	1.101	.793
Asymp. Sig. (2-tailed)		.248	.089	.177	.556

^aTest distribution is normal.

^bCalculated from data.

Table 2. Descriptive statistics of control and experimental groups in the pre-test

Groups	N	Mean	Std. deviation	Std. error mean
Control	25	13.25	2.31	.48
Experimental	25	13.48	2.69	.49

According to Table 3, the difference between the control and experimental groups is not significant at ($p < 0.05$) since Sig (.71) is greater than 0.05. This table shows there is not any significant difference between the pre-tests of the control and experimental groups.

In Table 4, the mean scores of both control and experimental groups in the post-test are indicated. Based on this table, the mean score of the control group is 13.69 and the mean score of the experimental group is 17.99.

According to Table 5, the difference between the control and experimental groups is significant at ($p < 0.05$) since sig ($p = .000$) is less than 0.05. This table shows there is a significant difference between the post-tests of control and experimental groups in favor of the experimental group.

Based on the descriptive statistics in the above Table 6, the mean score of the control group in the pre-test is 13.25 and their mean score in the post-test is 13.69. This table shows that the mean score of the experimental group in the pre-test is 13.48 and their mean score in the post-tests is 17.99.

Table 3. Independent samples t-test of control and experimental groups in the pre-test

Groups		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
EG and CG	Equal variances assumed	1.64	.19	-.56	48	.71	-.23	.38

Table 4. Descriptive statistics of control and experimental groups in the post-test

Groups	N	Mean	Std. deviation	Std. error mean
Control	25	13.69	2.167	.716
Experimental	25	17.99	.921	.213

Table 5. Independent samples t-test of control and experimental groups in the post-test

Groups		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
EG and CG	Equal variances assumed	19.89	.000	-6.136	48	.000	-4.30	1.246

Table 6. Paired samples statistics (pre- and post-tests of control and experimental groups)

	Mean	N	Std. deviation	Std. error mean
Control pretest	13.25	25	2.31	.48
Control posttest	13.69	25	2.16	.716
Experimental pretest	13.48	25	2.69	.49
Experimental posttest	17.99	25	.921	.213

Table 7 shows that the difference between the pre-test and post-test of the control group is not significant because sig ($p = .364$) is greater than 0.05, on the other hand, this table depicts that the difference between the pre-test and post-test of the experimental group is significant because Sig (.000) is less than 0.05. We can say that the treatment affected the experimental group positively.

5. Discussion and conclusion

In this part, the main research question of the study is answered based on the results obtained in the result section. After conducting the tests, the researcher analyzed the data in order to find out the effectiveness of the Jigsaw technique on the students' reading comprehension. The findings showed that the students who received instruction through the Jigsaw technique had better performance compared to those who were trained through traditional classrooms. The results statistically revealed that the experimental group significantly did better than the control group ($p < .05$).

In fact, the experimental group gained higher scores on their post-test. This may be due to some appealing features the Jigsaw technique has. The Jigsaw technique can be more interactive than the traditional instruction; it can encourage contacts between students and teachers; it can develop cooperation among students, and it can emphasize time on task. As the researcher observed, in the Jigsaw classroom, during class time, students engaged in discussions, activities, problem solving, and group work.

The results of this study are in line with Aronson et al. (1978) and Aronson and Bridgeman (1979) who stated in Jigsaw method students become active learners in the classroom and Jigsaw method promotes interdependent learning and has a collaborative structure. In addition, this study lends support to Al-Salkhi (2015) and Azmin (2016) who confirmed the effectiveness of using the Jigsaw cooperative learning method on improving students' language learning.

The results indicated that Iranian EFL learners can benefit from the Jigsaw technique. Based on the findings of the present study, it can be concluded that the implementation of the Jigsaw technique in teaching and learning can produce positive results because they could immerse students in learning English. The positive effects of using the Jigsaw technique became obvious after the treatment. Here, it can be claimed that receiving instruction through using the Jigsaw technique can facilitate English learning. The jigsaw technique can make the students independent and help them learn how to study in groups. Regarding the effectiveness and the importance of the Jigsaw technique, it is suggested to be implemented in educational environments.

Table 7. Paired samples test (pre and post-tests of control and experimental groups)

	Mean	Std. deviation	Std. error mean	t	df	Sig. (2-tailed)
Control pretest Control posttest	-.44	1.08	.23	-1.196	24	.364
Experimental pretest Experimental posttest	-4.51	1.12	.25	-11.746	24	.000

Generally speaking, cooperative learning gives the learners a chance to put the language to use. This study may attract the attention of the English language teachers to the importance of applying Jigsaw strategy to add methods in teaching English language. This study may improve students' performance in their reading skills and motivate them to learn English. Besides, this study can develop students' performance in communication skills. It can be beneficial for the supervisors to conduct training courses for teachers of English to raise their awareness of the importance of using Jigsaw strategy in teaching reading comprehension and communication skills. The findings of this study can give teachers a new way to connect between reading skills and communication skills. In addition, this study can give chances for researchers to apply the Jigsaw strategy to other language skills. Through using the Jigsaw technique, the classes become student-centered. Throughout the Jigsaw technique, students maintain an active role at the center of the learning. The practice is based on the assumptions that meaningful interaction among peers encourages knowledge building and that teachers can provide more timely and personalized guidance and feedback during in-class activity. Jigsaw technique encourages cooperative learning among the students and this cooperation can lead to successful and meaningful learning. The Jigsaw technique puts the responsibility of learning on the learners' shoulders and places the teacher in the role of the "facilitator" who works with the students to guide them through their individual learning experiences. From a pedagogical perspective, this study sheds light on the importance of a learning environment that encourages active and cohesive interaction in classrooms. It also contributes to considering how the environment for active learning can be better achieved by incorporating the Jigsaw technique in pedagogical practices. Despite the excessive benefits of the jigsaw technique, it has also some disadvantages. For example, in a study conducted by Nusrath et al. (2019), 71.3% of students gave an opinion on the disadvantages of the jigsaw technique. The most common disadvantage cited by the participants was it is a time-consuming process and in-depth coverage of the topic is not possible. "A lot of time is wasted. Instead, we could learn all the topics by ourselves and present it randomly" (Nusrath et al., 2019, p. 4). Similar disadvantages have been pointed out in some studies, even though these studies had a hybrid approach where students worked outside classroom atmosphere for expert group discussions (Kumar et al., 2017; Persky & Pollack, 2009). Another pitfall pointed in these studies is, all the members in the group did not do their part or because of the lower performance of these students, it affected the success of the group (Kumar et al., 2017; Persky & Pollack, 2009). To put it in a nutshell, the jigsaw technique has three main disadvantages: 1. In the classroom learning, jigsaw is a time-consuming activity. The students need to spend their time in two groups by only learning a text. 2. There are some students who feel confused during jigsaw activity. 3. There are some students who are unable to handle their reading material in jigsaw activity. Briefly, in the teaching-learning activities, every single method always has the advantages and the disadvantages. It is truly natural, but jigsaw has more advantages than disadvantages.

There are some limitations in the study. The first one refers to the small size of the participants which was limited to 50 students. The second limitation is that only male students have participated in this study. The third limitation is that the present research was carried out on Iranian pre-intermediate EFL learners, so its results should be generalized to all language learners very carefully. The fourth limitation is that the study included only participants that were 16 to 18 years old. So, the results cannot be generalized to the other age groups.

Funding

The authors received no direct funding for this research.

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Citation information

Cite this article as: Enhancing pre-intermediate EFL learners' reading comprehension through the use of Jigsaw technique, Ehsan Namaziandost, Abbas Pourhosein Gilakjani & Hidayatullah, *Cogent Arts & Humanities* (2020), 7: 1738833.

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