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The implementation of jigsaw as a cooperative learning strategy to improve Birzeit University EFL students' reading comprehension

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Abstract

The current study explored the effect of implementing the jigsaw strategy on developing students' reading comprehension. The study was implemented in *Remedial English Communication* course at Birzeit University (Palestine). The quasi-experimental approach was employed on one experimental group (EG) involving twenty male and female students and another control group (CG) comprised twenty- five students. A reading comprehension pre-test was administered to determine the participants' level before the program. The experimental group received a five-week intervention program using the jigsaw strategy, while the traditional method was utilized to teach the control group. Both groups were taught by the researcher to control the variables of the study. A post-test was administered after the intervention to find whether there was any improvement in the groups' performance. The SPSS and t-test results revealed that there was statistically significant difference between the two groups in favor of the experimental group.

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Il presente studio ha esplorato l'effetto dell'attuazione della strategia del jigsaw sullo sviluppo della comprensione della lettura degli studenti. Lo studio è stato implementato nel corso di *Remedial English Communication* presso la Birzeit University (Palestina). L'approccio quasi sperimentale è stato impiegato su un gruppo sperimentale (EG) che coinvolge venti studenti maschi e femmine e un altro gruppo di controllo (CG) composto da venticinque studenti. È stato somministrato un pre-test di comprensione della lettura per determinare il livello dei partecipanti prima del programma. Il gruppo sperimentale ha ricevuto un programma di intervento di cinque settimane utilizzando la strategia del jigsaw, mentre il metodo tradizionale è stato utilizzato per insegnare al gruppo di controllo. Entrambi i gruppi sono stati istruiti dal ricercatore per controllare le variabili dello studio. Un post-test è stato somministrato dopo l'intervento per scoprire se ci fosse qualche miglioramento nelle prestazioni dei gruppi. I risultati SPSS e t-test hanno rivelato che c'è stata una differenza statisticamente significativa tra i due gruppi a favore del gruppo sperimentale.

Parole chiave: Cooperative learning; comprensione della lettura; strategia del jigsaw

Keywords: Cooperative learning, reading comprehension, jigsaw strategy

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1. Introduction

Educators now place great emphasis on the instrumental strategies and function to achieve effective teaching which might in turn increase students' achievement. The newer research emphasizes teaching for understanding and developing students' learning which implies more than just memorizing information in order to recognize or retrieve it on a test. According to Bada (2015), teachers cannot simply transmit knowledge to students, but students need to actively construct knowledge in their own to "discover and transform information, check new information against old, and revise rules when they do not longer apply" (p. 66).

Awgichew, Wakjira & Ahmed (2015) defined learning as cognitive change, which indicates some addition to a learner's knowledge structures or reorganization and reconstruction of that learner's existing knowledge. These researchers argued that the change occurs as connections are made between new material and prior knowledge and then integrated into the learner's existing knowledge base, and "the more complex the learning, the more complex those cognitive changes are" (p.23). According to Vygotsky (1978), cognitive changes are strongly influenced by interaction with others. By using cooperative learning strategies, students share actively in the learning process and work in collaboration with other students to achieve a common goal (Alhabeedi, 2015).

Cooperative learning (CL) is a group-centered approach to classroom teaching and learning. Cooperative learning method "is the use of small groups to enable students work together to maximize their own and each other's learning" (Chukwuyenum, Nwankwo & Toochi, 2014, p. 72). CL has strong theoretical foundation rooted in Constructivist perspectives of learning; students learn best when they are effectively engaged in learning process and working in a joint effort with different students to achieve a common goal. In CL students should take active role, be engaged in the learning process and take the responsibility of their learning, in contrast with the traditional methods of teaching which have failed to ensure the quality learner (Najmonnisa, Amin ul Haq & Saad, n.d).

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Cooperative Language Learning replaces the idea that students have to work competitively against one another and states that second and foreign language learning can be done best in heterogeneous groups, when all students work collaboratively and cooperatively for one common goal (Dabaghmanesh, Zamanian & Bagheri , 2013). CL requires "students working in teams on an assignment or project under conditions in which certain criteria are satisfied, including that the team members be held individually accountable for the complete content of the assignment or project" (Awgichew, Wakjiraw & Ahmed, 2015, p. 24).

In traditional whole-class teaching/learning, on the other hand, the traditional lecture method is commonly followed at schools. Teaching begins with the instruction of the teacher, then practice of students, who passively receive information from the teacher and internalize it through memorization. Teachers usually give instructions and ask questions, and students are expected to follow instructions and answer questions. "Cooperative learning strategies have demonstrated the ability to outperform teacher-centered strategies in the classroom" (Adams, 2013, p. 8). Table (1) clarifies the differences between cooperative learning and traditional learning.

Table (1) Cooperative learning Vs Traditional learning

Cooperative Learning Groups	**Traditional Learning Groups**
Positive interdependence	No positive interdependence
Individual accountability	No individual accountability
Cooperative skill instruction	No cooperative skill instruction
Concern for peer learning	Little concern for peer learning
Heterogeneous groups	Homogeneous groups
Teacher selected groups	Student selected groups
Student reflection and goal setting	Student selected groups
Teacher observation and feedback	No teacher observation and feedback
Equal opportunity for success	Uniform standard for success

(Taken from Putnam, Joyce (1997) cooperative, cited in Seng, 2006, p.38)

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The above differences indicate that if cooperative learning were applied in the English language classrooms, it would increase students' achievement. Employing various activities and facilitating the roles of students would inevitably be of much importance. Although traditional learning has been the dominant teaching method, many educators argue that students require more than a mere transfer of knowledge **(**Soltanzadeh, Hashemi & Shahi , 2013).

English reading has always been considered as the main target in English teaching in colleges and universities, since it can reflect the students' abilities to learn the language. Unfortunately, a serious surprising observation is that in spite of the fact that most learners have mastered a great number of vocabulary items and grammatical rules, they can hardly produce a complete sentence or write down a correct one (Meng, 2010). So, employing cooperative strategies can develop this skill.

One of the cooperative learning techniques is Jigsaw. It was invented and named in 1971 in Austin, Texas by a graduate Professor and social Psychologist named Elliot Aronson (Adams, 2013). Students are divided into competency groups of four to six students to do an academic activity. Individual students of each group then join students from other groups to study a part of the material, "after which they return to their starting group in the role of instructor for their sub-category" (Adams, 2013, p. 65). Group members must work together as a team and each person depends on all the others to succeed.

Over the last several decades, educators have implemented CL strategies in an attempt to raise student achievement and increase student literacy. It has been proved that employing CL strategies has a significant effect on increasing student achievement in all subjects and levels (Johnson & Johnson, 1989). CL strategies have been connected positively to student performance "in an attempt to cure many of society's ills ranging from racism to bullying to violence" (Adams, 2013, p. 13).

John Dewey, one of the most influential philosophers and educators of the early twentieth century, believed that education was a process of living and that schools had a responsibility to capture children's interests, to expand and develop their horizons, and assist them in responding appropriately to new ideas and influences. He also believed

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that learning should be an active and dynamic process based on children's expanding curiosity in their world., and therefore it should be child-centered and responsive to the child's own developing social interests and activities. Moreover, he argued that schools had a responsibility to build on students' natural interest in their social environment by fostering interpersonal communication and group involvement (Awgichew, Wakjiraw & Ahmed, 2015).

Related to this is Lev Vygotsky's theory of cognitive development which he developed through doing most of the original work in the context of language learning in children. He also developed his theory of social constructivism, focusing on the connections between people and the socio-cultural context in which they act and interact in shared experiences. Vygotsky believed that social interaction was an important way to motivate students to participate in the learning process and exchange ideas with colleagues in the classroom (Alhabeedi, 2015). Alhabeedi stated, "Vygotsky's theory supports the strategy of cooperative learning. For Vygotsky, formal education was an important instrument of enculturation" (p. 7).

It is only under certain conditions that cooperative efforts may be expected to be more productive than competitive and individualistic efforts. Those conditions are (Roger & Johnson, 2002):

1. Clearly perceived positive interdependence
2. Considerable promotive (face-to-face) interaction
3. Clearly perceived individual accountability and personal responsibility to achieve the group's goals
4. Frequent use of the relevant interpersonal and small-group skills
5. Frequent and regular group processing of current functioning to improve the group's future effectiveness (p.2).

One of the basic elements of CL is individual accountability. This means that students learn together so that they can subsequently perform higher as individuals. Johnson, Johnson & Smith (2013) stated that to ensure that each member is strengthened,

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students are held individually accountable to complete assignments, learn what is being taught, and help other group members do the same. They claimed that "Individual accountability may be structured by (a) giving an individual test to each student, (b) having each student explain what they have learned to a classmate, or (b) observing each group and documenting the contributions of each member (p.6).

Cooperative learning is frequently examined in the field of education (Adams, 2013). Wendy Joliffe (2007) stated that CL has extensively been researched and it "results in process gain (that is, more higher-level reasoning), greater transfer of what was learned within one situation to another and more time on task" (cited in Awgichew, Wakjiraw & Ahmed, 2015, p. 27)**.**

Various studies investigated the effect of CL strategies on academic achievement. Liao (2006) examined the effects of cooperative learning on motivation, learning strategy utilization, and grammar achievement of English language learners in Taiwan. Exploratory questions and a 12-week quasi-experimental pretest-posttest were employed on two college classes (42 students each), one receiving grammar instruction through cooperative learning and the other through whole-class teaching. Data were analyzed with MANCOVAs, one- and two-way ANCOVAs, simple effects, and Pearson correlations. Results revealed that cooperative learning had large positive effects on motivation and strategy use, and medium-to-large positive effects on grammar achievement. Findings also indicated a consistent pattern in favor of cooperative learning over whole-class instruction in teaching the Taiwanese learners English grammar.

Dabaghmanesh, Zamanian & Bagheri (2013) investigated the effect of cooperative learning on English language achievement of undergraduate students in higher education classrooms. The quasi-experimental design was used on fifty- four Iranian undergraduate students in different majors divided into an experimental and control groups. An independent t-test was run to compare the achievement scores and results indicated significant difference between cooperative learning and teacher-fronted method of instructions in language learning in General English.

Soltanzadeh, Hashemi & Shahi (2013) examined the effect of active learning through

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cooperative and collaborative learning on academic achievement motivation. Active learning techniques focus on the direct involvement of the student with the learning material. The study was conducted on a sample of 1013 high school students whose ages ranged from 15-18 years-old and employed the Achievement Motive Scale Test and a demographic questionnaire. An independent t test was used at the $P<0.05$ significant level. Results showed that the active learning group obtained higher scores than traditional group in achievement motivation. Researchers concluded that using active learning method in classroom is vital to have a positive impact on the quality of the students learning process and achievement motivation.

Chukwuyenum, Nwankwo & Toochi (2014) explored the impact of cooperative learning on English Language Achievement among Senior Secondary School Students in Delta state, Nigeria. Quasi-experimental design was applied on a sample of 150 students divided into one experimental group and another control group. English Achievement Test was used and two hypotheses were formulated and tested at 0.05 level of significance using Analysis of covariance. The study revealed that the participants exposed to cooperative learning strategies performed significantly higher in English Language than their control group counterparts, showing no significant interaction effect between gender and the experimental groups. The study recommended that cooperative learning strategies should be given emphasis in the curriculum of teacher education so as to improve students' achievement in English language.

Chen & Liu (2017) reviewed 39 available literature published from 2007 up to 2016 on the impact of cooperative learning on students' learning achievements in classrooms of Confucian Heritage Culture (CHC) contexts. The review showed that the past decade has seen major improvements in terms of the impact of cooperative mode on CHC learners' academic achievements. The percentage of academic achievement (84.6%) was higher than that of ten years ago (37.5%), and it was also higher than the percentile in Western studies. The review revealed that with the cooperative learning being advocated in research as well as in policy for over a decade, and due to its positive effects on achievement, teachers and students in the CHC contexts begin to take on this kind of

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pedagogy.

In addition, numerous studies have shown the effectiveness of Jigsaw in developing school and university students' reading skill.

Meng (2010) conducted a contrastive study by comparing the different reading levels between the experimental class and the control class. She combined the jigsaw cooperative learning with the teaching of English reading to the experimental group at college. The post test results showed significant progress in the experimental group, while no rapid progress was made in the control class, which confirmed the effectiveness of the jigsaw strategy.

Morales & Campino (2012) investigated the effect of jigsaw as part of cooperative approach on improving 11th graders' reading comprehension. Two groups were involved and given pre and posttests. After applying the jigsaw treatment, the experimental group showed higher results than the control group, which proved the effectiveness of the jigsaw as a cooperative learning strategy.

Kazemi (2012) attempted to prove the effects off the jigsaw teaching method on the success of Iranian EFL learners in terms of their reading comprehension achievement. One intact group (n.38) from Guilan university participated in this study. The jigsaw intervention was used with the experimental group participants with an emphasis on the cooperative learning. Paired-samples T-test was employed and showed significant differences at (P= 0.000) between the students' pre/ post-test reading scores.

Kishta (2016) employed the experimental approach on a sample of two groups (N.76) of EFL female learners at Al- Quds secondary school in Rafah to investigate the effect of jigsaw strategy on improving students' language skills. A questionnaire, an observation card and an achievement pre/ post-test were used. The collected data were statistically analyzed and revealed significant differences in English reading comprehension and communication skills between both group in favor of the experimental group.

Ifreanti (Sep.2017) conducted an action research to explore the effect of jigsaw technique on increasing students' reading comprehension of English Education Program and Teacher Training Faculty in the State Institute for Islamic Studies. The research took place in two cycles with three meetings for each cycle in the academic year

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2013/2014. Test results after the two cycles showed significant improvements by using jigsaw, and so there was no need to continue the third cycle. Thus, the conclusion of the research confirmed the usefulness of Jigsaw technique in developing students' reading comprehension.

Nurbianta (2018) employed the pre-experimental design by pretest-posttest one group research on 30 students taken by random sampling technique to find out the effect of jigsaw on reading instruction. The t-test revealed that the posttest results were higher than pretest which confirmed the effectiveness of the jigsaw.

2. Statement of the problem

Teachers notice that the level of students' English proficiency is low at schools and universities in Palestine. Abed (2015) revealed that students lack interest in learning English and have negative and mistaken beliefs about language learning; therefore, they do not perform well in examinations.

In contrast with students taught traditionally in teacher-centered classrooms characterized by doing individual assignments and competitive grading, current research confirms the effectiveness of cooperative learning in higher education. "Strong students faced with the task of explaining and clarifying material to weaker students often find gaps in their own understanding and fill them in. Students working alone may tend to delay completing assignments or skip" (Awgichew, Wakjiraw & Ahmed, 2015, p.24). Therefore, it is hoped that employing the Jigsaw cooperative learning strategy can enhance students' reading comprehension skill.

2.1 Research questions

The present research was intended to explore the following questions:

1. What is the effect of employing the cooperative learning strategy on improving BZU students' reading comprehension?
2. Is there a significant difference in the mean scores of students who use

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cooperative learning and those taught traditionally? In other words, do students who use the jigsaw as cooperative learning strategy outperform those who follow traditional learning strategies?

Based on the previous questions, the following Null hypothesis was formed: There is no significant difference at ($a \leq 0.05$) in the mean scores of the English reading comprehension test between students in the experimental group and those of the control group as a result of employing the jigsaw strategy.

2.2 Significance of the study

Cooperative learning strategies could have psychological and social benefits. Working in a non-threatening and tense- reduced atmosphere might develop students' self-esteem and enhance motivation and cooperation. Adams (2013) believed CL strategies help to develop a social support system for learners, build understanding among diverse students and staff ; students "who do not get the opportunity to learn in groups tend to become antisocial and would always like to do things in isolation" (p. 66).

Alhabeedi (2015) stated that cooperative learning incorporates academic benefits especially critical thinking skills. It involves students actively in the learning process, which "improves students' academic achievement, helps students clarify ideas through discussion and debate, enhances self-management skills, and sets high expectations for students and teachers" (p. 2).

Therefore, this study is significant in the sense that it helps curriculum designers incorporate group work activities when designing textbooks to help students work in groups and not as individuals. It is also hoped that this study could provide teachers with beneficial reading comprehension instruction and teaching strategies to improve student comprehension. Besides, using cooperative learning strategies in remedial English (ENGC) 1002 is expected to improve students' reading skill.

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2.3 Limitations of the study

The study was limited to the following factors:

- Implementing one cooperative learning strategy: The Jigsaw.
- Applying the cooperative learning strategy during the second semester of the academic year (2017 /2018).
- Being committed to teaching the book material, since a unified test should be administered to the target population at the end of the course.

2.4 Definition of terms

Cooperative Learning (CL) is defined as a teaching arrangement in which small, heterogeneous groups of students work together to achieve a common goal. Students encourage and support each other, hold responsibility for their own learning in the group, employ group related social skills, and evaluate the group's progress. Elements of cooperative learning are positive interdependence, equal opportunities, and individual accountability (Johnson & Johnson, 1989; Dotson, 2001; Adams, 2013).

Reading comprehension is a complex, multiple task ability necessary "to understand a text, to analyze the information, and to interpret correctly what the writer is stating" (Mckee, 2012, p. 46). It is a "term referring to reading skill th[r]ough the important thing is not on the pronouncing or load reading, but it is the understanding taken into consideration" (Ulla, 2017, p. 10). To process information and achieve comprehension, direct and indirect connections are made between existing and prior knowledge, vocabulary, contextual clues and discourse structure.

Jigsaw is the technique used by the teacher to improve the students' reading comprehension through recalling prior knowledge, clarifying information, questioning and summarizing (Winten, 2013). Ameiratrini (2017) said that jigsaw trains students to be responsible for understanding the information they need to expertise about and that communication plays a big role in delivering or presenting the comprehension they have got. Features of Jigsaw method make it suitable for enhancing two essential and related

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teaching goals that contribute to reading comprehension: Developing students' metacognitive awareness, and learning the content while teaching it to peers in the small group" (Meng, 2010, p. 502).

3. Methodology

3.1 Research design

This quasi- experimental study was carried out in two English Remedial (ENGC 1002) sections in the Department of Languages and Translation at Birzeit University (BZU). Practicing jigsaw strategy lasted for five weeks, two fifty-minute class a week, during the second semester, 2018. Random selection was not feasible since students were placed by the Registrar Office based on their grades in the Placement Test. ENGC (1002) is a non-credit beginners' course offered to students who are placed in A0 or A1 on entry assessment test. It is the lowest level of generative language use which provides students with basic command of English in the four skills: Listening, speaking, reading and writing. It also helps students understand and use familiar everyday expressions and basic phrases, make simple introductions, ask and answer simple questions, and interact in a simple way using simple grammatical structures.

3.2 Context

BZU is a distinguished Palestinian university that offers the bachelor and Master's degrees in a variety of specializations, in addition to the PhD degree in social studies. Since English is a major tool for learning and teaching at BZU, and since textbooks and reference materials for most of the academic subjects are in English, the Department of Languages and Translation provides English communication courses to all university students. It teaches Cambridge Unlock English courses (1001, 1002; 1201, 1202; 2201, 2202; 2203, 2204), aiming at developing the students' four language skills. However, the number of courses each student takes depends on his cut score mark on the placement test taken before entering the university. Besides English, the Department offers other

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language courses such as Spanish, Greek, German, Italian, Chinese, and Hebrew.

3.3 Participants of the study

Two Remedial ENGC (1002) sections were assigned for the researcher and randomly named the experimental group (EG), which consisted of 20 students, and the control group comprised 25 students. Their ages ranged from 18-19 years, and the total population was 783 students. The study adopted the single blind method. i.e. "Students were not informed about their status of control group and experimental group during the experiment" (Najmonnisa, Amin ul Haq & Saad, n.d, p. 97).

3.4 Instruments of the study

Pre/Posttest

In order to ascertain the homogeneity level of the participants before the study, a pre/posttest was designed (see Appendix A for more information on the Pre/Post Test). The test was aligned to the objectives of the study and adapted from Cambridge LMS with some changes made by instructors in the Department of Languages and Translation. It comprised a reading comprehension, 30 items that included multiple-choice comprehension questions of different levels of difficulty, fill in the blank spaces with vocabulary and grammar question. The responses of each participant were marked using a grading rubric **(**Appendix B).

The intervention using Jigsaw (Appendix C)

A program prepared in the light of literature available on cooperative learning was applied to the units assigned for study. During the application of the intervention on the experimental group, the students' played the following roles as recommended by (Adams, 2013, p. 69):

- Working together
- Listening to one another
- Questioning one another

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- Keeping records of their work and progress
- Producing the assessment task (product)
- Assuming personal responsibility by being involved.

In contrast, the control group was taught traditionally. Students were asked to prepare the lessons before class. The researcher explained the text through interacting with students, asking and discussing questions and ideas.

3.5 Procedures

Before the start of the study, the pre/posttest was implemented on a large sample of students, and therefore, it was certified in terms of reliability, content, judgmental and face validity. Then it was administered to both groups on the same day to check if they were equivalent in their performance. The total mark allocated to the test was 30 and time duration was 60 minutes. The pretest papers were scored and results were announced to the participants before starting the experiment. In order to assess the effectiveness of the strategy, the researcher clarified its purpose and benefits in language classrooms.

Students were set up into five cooperative groups with each group consisting of 4 members. The grouping was based on the entries of the attendance register and done by assigning the first four students as the first group, the next four for the second group, etc. The same material was taught for the two study groups, but the experimental group practiced the same in-class material cooperatively using jigsaw, while the control group was taught traditionally without further concentration on cooperative strategies.

In each class students were encouraged to work cooperatively to complete the tasks. It was made clear that students should be accountable for their own learning. "Cooperative Learning does not mean that your friends do your work for you. Students must understand that they will still be tested and graded on their own individual performance at the end of the lesson, the month, or year" (World Education, 2009, p. 9).

Objectives were identified, tasks were clarified and inter- group cooperation was encouraged and supervised by the researcher every session. At the end of each task, the

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researcher adopted the four components of Individual Accountability recommended by World Education (2009):

- Each student individually takes a quiz, completes a task, or writes an essay when the material is studied.
- Group members are called on at random to answer a question
- Each group member has a designated role to perform. These roles can rotate.
- Each member has different responsibilities for completing different parts of a group project (p.30).

On the last day, the posttest was administered to both groups to find out the effect of the intervention on the experimental group.

4. Research Findings and Discussion

The findings of identifying the effects of cooperative learning on students' reading are reported below based on the study objectives: Whether Jigsaw is effective in developing reading comprehension, and if the difference between the two study groups is significant or not.

At first, descriptive statistics of the pretest of both groups were calculated and the independent samples t-test was employed to measure the degree of equivalence as presented in Table (2) below.

Table (2) Descriptive statistics of participants' pre-test scores in both groups

GROUP	N.	Mean	SD	P-value	Confidence interval	SEM Standard Error Mean	t. statistic	df	df-t	Difference
Pretest CG	25	20.4	4.23	0.45	[-1.1027, 3.2027]	1.07	0.984	43	39.6	1.050
Pretest EG	20	21.45	2.46							

Table (2) illustrates that the pretest mean score of the experimental group is 21.45 with

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SD (2.46), whereas that of the control group is 20.40 and SD (4.23). Analysis shows that the t-value is 0.984 and the p-value is .45, which proved that both groups were found to be almost equal with no significant difference at $p < .05$.

To investigate the effect of the jigsaw on developing students' reading comprehension, the post test was administered to both groups after the intervention. Descriptive statistics of the experimental group posttest results were calculated, the pre/posttest results were compared, and a matched - paired t test was employed to determine whether the difference was significant or not as presented in Table (3) below.

Table (3) Comparison between participants' pre/post test scores in the Experimental Group

Group Score	No.	Mean	SD	df	t	p-value
EG Pretest	20	21.45	2.45	19	-2.94	.0027
EG Posttest		24.25	3.29			

Table (3) demonstrates that the posttest mean (24.25) was higher than its pretest mean (21.45). T-test results - t-value (-2.94), p-value (.0027) - revealed that there was statistically significant improvement at $p < 0.05$ level after the implementation of the jigsaw strategy.

For examining the change between the control group pre / post test results, descriptive statistics were also calculated and t-test used as displayed in Table (4).

Table (4) Comparison between participants' pre/post test scores in the Control Group

Group Score	No.	Mean	SD	df	t	P-value
CG Pretest	25	20.4	4.23	24	0.64	.528
CG Posttest		21.8	3.28			

Table (4) explains that the mean of the CG post-test (21.8) was a bit higher than the pre-test result (20.4). This means that students' reading comprehension also developed as a result of the traditional teaching method but with no significant difference (p-value: .528). Students admitted that their main aim was just to pass without much effort

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to get high grades since it is only a pass or fail course. Therefore, more emphasis was placed on other subjects.

To examine the effect of cooperative learning strategies, and to verify whether the hypothesis "There is no significant difference in the test mean scores of students who used cooperative learning and those taught traditionally" was true or not, an Independent-sample t-test analysis for the data collected by means of posttest was done (Table 5).

Table (5) Descriptive statistics of participants' post-test scores in both groups

GROUP	N.	Mean	SD	P-value	Confidence interval	SEM	t-value	df	df-t	Difference
Posttest CG	25	21.8	3.28	.0017	2.45 [0.4656 to 4.4344]	0.985	3.09	43	40.80	2.450
Posttest EG	20	24.25	3.29							

Results illustrated that the posttest mean of the experimental group 24.25 (SD=3.29) was greater than that of the control group 21.8 (SD= 3.29). Analysis revealed statistically significant difference at level (0.05) with a p-value of .0017 between the two groups for the sake of the experimental group which employed Jigsaw. Therefore, the study concluded the following results:

- The achievement of the experimental group in the posttest was better than that of the control group, which indicates the effectiveness of jigsaw as a cooperative strategy.
- The null hypothesis was rejected and the main question of this study was answered positively: There is a significant effect for utilizing Jigsaw on students' reading.

To summarize, the current study employing jigsaw has revealed positive effects on students' reading comprehension. The findings of this study are in line with previous

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relevant literature, which indicates that cooperative learning techniques have a strong impact on enhancing language skills and other subjects, compared with traditional methods.

Seng (2006) revealed that the majority of the students would benefit socially and academically when implementing cooperative learning in language classroom. Cooperative learning activities could help maximize the performance of students in acquiring English and enhance achievement in English language acquisition as well as interpersonal skills needed for success in school and society.

Awgichew, Wakjiraw & Ahmed (2015) found out that cooperative learning improves the achievement of students when it is applied in more organized and well-planned way. That is, providing different responsibilities to all members of the group like a facilitator, timekeeper, observer, leader, note taker and reporter to reduce dependency.

The results of the current study are consistent with Liao, (2006) who maintained that through cooperative learning students would display higher grammar achievement, which could be attributed to enhanced motivation. Liao explained that through "verbal modeling of thought process and social persuasion, learners' thoughts can be shaped, directed, and modified; stimulation can be enhanced; and learning can be facilitated" (p. 189).

The findings are also congruent with the results of Chukwuyenum, Nwankwo & Toochi, (2014) who showed that there was a significant difference in posttest English Achievement scores between the Training and Control Group attributed to cooperative learning strategies.

Similar results were also documented by Adams (2013) who proved that effective cooperative learning techniques applied to a range of courses, including social studies, at the elementary, middle, high school, and college levels and in the workplace increased student achievement and motivation.

Soltanzadeh, Hashemi & Shahi (2013) obtained meaningful differences in their research and suggested that the active learning method had a significant role in achievement motivation rather than traditional learning method. Students work in heterogeneous groups to master the content; they are not only responsible for learning the material, but

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also for helping their group-mates.

The findings of this study are in line with the results achieved by Parveen & Batool (2012) who explored the effects of cooperative learning on General Science achievement among 9th class students. Pre/post Control group design was employed; lesson plans, worksheets and quizzes were designed to implement cooperative learning methodology on the experimental group. It was revealed that cooperative learning method was superior to traditional method in general science achievement of 9th grade students.

Similarly, the results supported the quasi-experimental study conducted by Hossain & Tarmizi (2013). The experimental group showed significant improvement in mathematics achievement and attitudes towards mathematics in comparison to the control group students due to the exposure to the cooperative learning.

The current outcomes also corroborate the findings of Najmonnisa, Amin ul Haq & Saad's (n.d) study which verified the usefulness of CL over the traditional lecture method in teaching science. Pre/Post-test Control Group design on 128 grade seven students was used in which the experimental group was given treatment of CL method for 13 weeks, whereas no treatment was given to control group. The study proved the effectiveness of CL on the academic achievement as the results of the experimental group in the posttest outperformed those of the control group.

Literature also verified the effectiveness of the jigsaw strategy in improving language skills.

Kazemi (2012) proved the significant effect of the jigsaw teaching method on the success of Iranian EFL learners' reading comprehension achievement. In the experimental class, 38 participants were exposed to the jigsaw instruction. After analyzing the gathered data, a paired-samples T-test showed that the students' post-test reading scores improved significantly (P= 0.000) when compared with their pre-test scores.

Winten (2013) conducted an action research of two cycles on the eighth graders to improve their reading comprehension. The pretest was administered and results were very low, which encouraged the researcher to solve the problem by employing the jigsaw. The posttest, questionnaire and reflection were the research instruments used

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after each cycle. The results showed significant improvement of reading comprehension and the questionnaire reflected students' positive attitude towards jigsaw.
The results of this study are consistent with other studies based on cooperative and jigsaw programs to improve students' language skills. Such studies are Meng (2010); Ali (2011), Zuo (2011). Morales & Campino (2012); Adams (2013); Keshta (2016); Wardhani, Marhaeni & Artini (2014). Ifreanti (Sep .2017); Ulla (2017); Ameiratrini (2017) and Nurbianta (2018) .

5. Conclusion

Analysis of the data collected and posttest results, the current study proved the effectiveness of jigsaw as a type of cooperative learning strategies in developing students' reading comprehension. It is revealed that the jigsaw technique has a positive effect on students' reading comprehension and classroom atmosphere as well. Students can develop strong relationships and share knowledge and experiences, for the success of one leads to the success of the group.
According to Parchment (2009), research proved that jigsaw helped promote individual accountability which was the principle of CL. Students worked to promote each other's learning since the experts are responsible for teaching the part of the lesson to the rest of the jigsaw group members. Cooperative skills are established and implemented directly throughout the jigsaw process and individual grades were the incentives behind this method.

5.1 Pedagogical implications and recommendations

This study illustrated that jigsaw is beneficial for enhancing ENGC 1002 students' performance in reading comprehension. It was also observed during classroom activities that students enjoyed working in groups, which not only benefited the group as a whole, but also developed the reading level of each individual student. So, it is demonstrated that jigsaw cooperative learning is an effective method of teaching English reading at higher education institutions, mainly at Birzeit University.

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In spite of achieving the objectives of the study, the following recommendations are drawn for further research:

- Implementing a variety of teacher-centered approaches that allow students to work cooperatively in groups rather than relying on traditional teaching methods. This would create a tense-reduced atmosphere where students cooperate to improve their language skills.
- Using jigsaw at school level and training students at an early age to work cooperatively rather than competitively.
- Studying the influence of jigsaw on modifying students' negative beliefs about traditional teaching methods. Many students refrain from learning a foreign language due to the traditional teaching methods. Using jigsaw as a cooperative technique could encourage foreign language learning due to its immense benefits.
- Training teachers to use jigsaw technique in order to motivate students, improve language skills and develop the teaching/ learning process.
- Conducting other studies to testify the effect of jigsaw on other language skills.
- Studying the effectiveness of cooperative learning strategies on higher-order thinking skills such as synthesis and problem solving; students' self-esteem, social skills and academic motivation.
- Incorporating a larger sample size to include other English Remedial courses at BZU.
- Studying the impact of cooperative learning strategies on variables such as gender and age
- Utilizing a mixed approach of quantitative/qualitative study, conducting interviews with a focus group of both teachers and students to express opinion and obstacles towards the application of cooperative learning.
- Selecting other cooperative techniques to testify their effect on reading comprehension.

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Appendix A

ENGC 1002 (A1.2) Pre/Post Test - Sem.1I (2017-2018)

Birzeit University
Department of Languages and Translation
Student's Name & University ID #:----------
Section #:----------
Teacher's Name:----------
Time Allowed: 60 mts

INSTRUCTIONS
Do not open the test paper until your teacher tells you to.
Make sure you have a pencil and an eraser.
Write your name and the date at the top of the paper.
Write your reading answers on this page.
Write the answers for the language development part on page 4.
Write your writing answers at the back of the test paper.

Reading passage 1	Reading passage 2
1	12
2	12
3	13
4	14
5	15

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6	16
7	17
8	18
9	19
10	20

Try to answer all the questions

I. READING (20 Marks)

READING PASSAGE 1

The World's Largest Libraries

People go to the library to get information for school, for work or for fun. Whatever the reason, here are two of the largest libraries in the world.

London's British Library (1753)

This library is the national library of the United Kingdom. There are over 14 million books here, and over 10,000 pages on the British Library website. It is the biggest library in the UK! The library also has a large number of maps. There are over 4 million maps.

Washington D.C.'s Library of Congress (1800)

The British Library is big, but the Library of Congress in the United States is bigger! In fact, this national library has the most books of any library in the world. It has over 37 million books. These books are in 470 different languages. The Library of Congress also has a lot of maps. It has over 5.5 million maps.

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READING FOR MAIN IDEAS Questions 1 – 5

Read the text. Write true (T) or false (F) next to the statements below.

1. The two libraries are in different countries._____ .
2. The British Library is older than the Library of Congress._____.
3. The British Library only contains books._____ .
4. The British Library is the largest library in the world._____
5. There are more maps at the Library of Congress than at the British Library._____ .

SCANNING TO FIND INFORMATION Questions 6 – 10

Read the text again. Match the facts, 6–10, with the correct answers, A-G. You do not need all the letters.

6. The number of pages on the British Library website .
7. The number of maps in the British Library .
8. The biggest number of books at a library in the world .
9. The number of languages available in books at the Library of Congress .
10. The year the Library of Congress opened

	E.4million F.	**C.1753**	**A.37million**
G.5.5million	**1800**	**D.470**	**B.10,000**

READING PASSAGE 2

Restaurant of the Week: Kimchi Kitchen

By Noor Syed, Author of Food, Food, Food

Kimchi Kitchen is a small Korean restaurant in the busy centre of New York City. Their menu is in English and Korean. The price of a dish is around $20 dollars.

Their delicious appetizers are served first. The most famous Korean dish is kimchi and they serve it! It is pickled vegetable. Any vegetable can be pickled, but the most

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traditional kimchi is made with hot spices and cabbage.
The most popular main dish at Kimchi Kitchen is the soup. Customers prepare it at their table over a fire. They cook vegetables, meat and spices together inside a large dish. They eat it with rice after it is cooked.
The restaurant is very busy because it serves delicious food. The friendly chef comes out every night to say hello to the guests. The servers are also very friendly. I think anyone who likes spicy food and rice should go to Kimchi Kitchen. You will enjoy it!

READING FOR MAIN IDEAS Questions 11 – 15
Read the text. Choose the correct letter, A, B or C.

14. The soup is served with **A** bread and butter.
B meat and noodles.
C rice.

15. The restaurant
A is not very big.
B is busy and popular with guests.
C has an American chef.

11. Noor Syed is
A a chef at Kimchi Kitchen.
B a server at Kimchi Kitchen.
C the writer of *Food, Food, Food*.

D 12. Kimchi Kitchen is in
E A New York City.
F B a small Korean city.
G C an English city

H 13. The kimchi appetizer is made with
A meat and spices.
B pickled vegetables.
C rice.

UNDERSTANDING KEY VOCABULARY Questions 16 – 2
Read the text. Complete the gaps with ONE word or name in each gap.
16. The name of the ---------- is Kimchi Kitchen.
17. Customers can read the menu in ---------- and English.
18. The pickled ---------- is the most popular Korean appetizer.

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19. Guests prepare the ---------- at their table.
20. The chef and servers are very ---------- .

II. Language Development: (10 Marks)

A. Correct the mistakes in the following sentences:

1. Doctors must patient. (one mistake) ----------
2. Gold is expensive than silver. (one mistake) ----------
3. Metal is heavyer than wood. (one mistake) ----------
4. A famous dish in Saudi Arabia are kabsa. (one mistake) ----------
5. Some worker ask for an increase in their salaries. (one mistake) ----------

B. Complete the following sentences using words from the box below:

harmless gym computers healthy endangered delicious rice

1. A fitness instructor works in a_____.
2. Japanese people eat a lot of_____.
3. My favourite food is Japanese food, it's_____.
4. American food (for example, burgers) is not always_____.
5. Most sharks are_____- they don't eat people.

GOOD LUCK

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Appendix B

Answer Key

Reading passage 1	Reading passage 2
1. T	11. C
2. T	12. A
3. F	13. B
4. F	14. C
5. T	15. B
6. B	16. restaurant
7. E	17. Korean
8. A	18. vegetable
9. D	19. soup
10. F	20. friendly

II. Language Development: (1 mark each)

A) 1.be	2. More	3. Heavier	4. Is	5. Workers
B) 1. Gym	2.rice	3.delicious	4.healthy	5. Harmless

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Appendix C

Jigsaw Strategy

Summary:
The Jigsaw Strategy is an efficient way to learn the course material in a cooperative learning style. The jigsaw process encourages listening, engagement, and empathy by giving each member of the group an essential part to play in the academic activity. Group members must work together as a team to accomplish a common goal; each person depends on all the others. No student can succeed completely unless everyone works well together as a team. This "cooperation by design" facilitates interaction among all students in the class, leading them to value each other as contributors to their common task.

Appropriate Student Level: Any Level

Suggested Class Size: Any Size

Ease of Use Rating: Moderate

Activity Description:

The strategy, developed by Elliot Aronson, involves the formation of Home Groups to resolve the task. The Home Groups allocate one member to each Expert or Research Group to gather data to bring back to the Home Group.
For example, students are divided into small groups of five or six students each. Each member of the group is assigned a portion of an assignment or research project. Each member must research the material pertaining to their section of the project and be prepared to discuss it with their classmates.

The Jigsaw strategy places great emphasis on cooperation and shared

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responsibility within groups. The success of each group depends on the participation of each individual in completing their task. This means the Jigsaw strategy effectively increases the involvement of each student in the activity. (See "Some suggestions for forming groups" for more information on groups).
Dr. Aronson sponsors a website with important information about his methods at http://www.jigsaw.org/

To implement the Jigsaw:

1. Divide the material needed to cover a topic into four roughly equal parts.
   - In upper division or graduate classes, you might assign four different articles. In introductory level classes you might need to assign four different sections of a chapter or four abridged articles. Finding four equal parts is sometimes tougher than it seems.
2. Assign a different topic to each team member.
   - You make the assignment: for example, all #1's will read the article by Johnson & Johnson, all the #2's will read the article by Kagan, all the #3's will read the article by Millis, and all the #4's will read the article by Davidson.
3. Develop and assign homework questions or essays over the material. These can be turned in for points or a grade in undergraduate classes.
   - Jigsaw falls apart if students are not prepared. Assigning questions, reading logs, study guides or reaction papers helps to ensure preparation. You may write different questions for each article or you may simply ask for a summary. In small classes some faculty just check off students' work as they come in. Other faculty grade and/or respond to the assignment.
4. When class meets again, students consult with experts from other teams.
   - When students arrive in class, they turn in their homework and then meet in expert groups. If you have a large class, you will have to have more than one expert group for each article: you don't want eight people in one expert group. Give the expert groups instructions on their task.
   - If you simply asked your students to read a chapter and write a summary for

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homework, you might give them instructions like these:
- o Introduce yourselves to the other expert group members.
- o Discuss the reading with the group, coming to consensus on the main points you will teach your teammates. Make sure everyone participates.
- o Try to think of at least two examples from your personal experiences to illustrate the main point(s).
- o Plan how you will check your respective teammates for understanding without asking, "Do you understand?"
- o Thank your expert group members for their help.

• If you had them answer focus questions for homework, your instructions might look like this:
- o Introduce yourselves.
- o Take turns leading the discussion to compare your responses to the questions. Try to come to consensus on the most important points. If there are things you can't agree on, make note of them to share with your teammates. Also note any interesting or useful examples from any of your expert group members. Check for understanding before moving on to the next question.
- o Plan your strategy for teaching your teammates in the limited amount of time that you will have.
- o Thank your expert group members for their help.

Other ideas you could add to the instructions include:

• Reminders about social and cooperative skills: "The cooperative expectation for this assignment is that all group members will participate fairly equally in the discussion. It is each person's responsibility to ask for the opinions and ideas of quieter group members. The individual accountability expectation is that any group member, if randomly called upon, could summarize the group discussion."

• Instructions to promote critical thinking: "Try to come to any criticisms of

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the author's work – is it biased, unsubstantiated, overly narrow in applicability, etc." or "How might this article call in to question Smith's theory that we discussed last week?"

5. Experts return to their teams and teach.
    - When students return to their base teams, have each team teach in the same order. This way, if a team's #2 is absent, team members can disperse and sit with the teams next to them when it's time for the #2's to teach. If they all teach on their own schedule, you can't compensate for absences.
6. Team synthesis activity.

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