Using Jigsaw Strategy for Improving Preparatory Stage Pupils Reading Comprehension and Vocabulary Learning

By
Faten A. Zahran
Associate professor of ELT
Head of English Language Department,
Horus University in Egypt

Volume (88) October 2022

Abstract

The main purpose of this study is to determine the impact of jigsaw strategy on preparatory stage pupils reading comprehension skills and vocabulary learning. For achieving this purpose, three instruments -designed by the researcher- were used that included: (reading comprehension skills checklist, reading comprehension test, vocabulary achievement test). The results confirmed that jigsaw strategy developed reading comprehension skills and vocabulary learning. Pupils of experimental group outclassed their counterparts of the control group in the reading comprehension skills test and vocabulary achievement test

Keywords: Reading Comprehension Skills, Vocabulary Learning, Jigsaw Strategy, Preparatory Pupils.

Introduction

People gain knowledge, skills and experience that are interpreted afterwards in their behaviors through communication. In the field of language learning, working together is the key for comprehending the meaning, forming a clear idea about the topic and gaining new knowledge (Keshta, 2016). Reading comprehension is not only the base for language learning but also for the academic success in all sciences as well. Cooperative teaching strategies in which pupils are responsible for their learning proved to positively impact EFL skills. Reading is the root of the academic success. It enables learners to deal with assignments, gain new knowledge, comprehend explanation and improve critical and evaluation skills. Moreover, it positively impacts language skills since it increases vocabulary knowledge, speaking and writing skills as well (Hung & Ngan, 2015). As a result, reading incapability leads to poor academic performance. Therefore, mastering reading comprehension is indispensable for improving the quality of the learning process. Effective reading is the base for effective learning. Good reader is the one who can (1) make predictions (2) put objectives for the reading text (3) guess the meaning of vocabulary (4) make use of previous knowledge (5) comprehend the main ideas and related details. Those traits enable students to practice skillful reading and consequently learn efficiently. Applying suitable reading comprehension strategies enable EFL students to face comprehension problems and become good readers. Above and beyond, concerning EFL learning process, vocabulary is the main language component that is the base for comprehension. Additionally, vocabulary knowledge enables students to practice and develop reading, speaking, listening and writing (Gilakjani & Sabouri, 2016).

Yet, EFL pupils face difficulty comprehending reading material as a result of many challenges such as grammar, social, cultural and structure features of English language that are different from reading in first language (Samad, Jannah & Fitriani, 2017). Moreover, according to Sofyan et al., (2019) lack of grammatical knowledge, pronunciation problems, lack of vocabulary knowledge and the discouraging learning environment are the causes of losing interest for practicing reading comprehension. Saputro (2018) added that focusing on pronouncing words correctly during reading rather than comprehending the reading text besides the length of the text are among the challenges that students face within reading comprehension. Consequently, instead of interacting with the text, pupils take much time to read correctly the whole text. Moreover, lack of vocabulary knowledge, lack of using suitable reading comprehension strategies, depending on words translation and the difficulty of some reading texts are challenges that hinder improving EFL reading comprehension skills. A number of researchers (e.g., Nergis, 2013; Nozen et al., 2017; Nor & Rashid, 2018) assured the correlation between vocabulary knowledge and mastering reading comprehension skills. It was confirmed that inability of EFL students to comprehend the reading texts is a natural outcome of the lack of vocabulary knowledge which in turn negatively impact their academic performance (Mundhe, 2015). Moreover, the amount of vocabulary can determine students' abilities. Furthermore, Tan & Goh, (2017) proved that reading comprehension requires having ample level of vocabulary acquisition. EFL learning necessitates sufficient amount of vocabulary. Vocabulary teaching -that can happen during the reading class- aids the improvement of reading comprehension skills (Zahran, 2018). However, Egyptian pupils lack the proper teaching strategies of vocabulary. They are taught the

definition of new words away from using them in different contexts. Moreover, the tasks that are used such as matching, filling in the blanks and definitions are not ample for enhancing vocabulary learning (Ali, 2017; Zahran, 2018).

A number of studies (e.g., Keshta, 2016; Saputro, 2018; Sofyan et al., 2019) advocated using jigsaw strategy as a cooperative technique that positively helps in EFL teaching and learning. It is a strategy that provide pupils with opportunities to help each other in comprehending EFL texts. Implementing jigsaw as a cooperative technique for developing EFL proved to increase positive attitude towards learning, enhance reading and speaking skills, improve communication and decrease absenteeism since cooperative learning develop students' motivation and performance (Barbosa et al., 2020).

The Context of the Problem

A pilot study was conducted by the researcher to investigate pupils' level in reading comprehension and vocabulary learning to provide an evidence for the current study problem, see Appendix (A). A reading comprehension test based on pupils English text book was prepared and administered to a random sample of first year preparatory pupils from Mansoura College Schools at Mansoura City. The following table shows the outcomes of the test.

Table 1: *Outcomes of reading comprehension test of 1st year preparatory pupils.*

N	Test score	Mean	Standard deviation	percentage
42	20	13	2.1	69 %

Outcomes of table (1) shows that the percentage of the sample's score is (69%) on the reading comprehension skills test which is below the average.

Additionally, the researcher conducted a vocabulary achievement test to be more convinced about the existence of the problem. Table 2 shows the results of the test.

Table 2: *Outcomes of vocabulary achievement test of 1ˢᵗ year preparatory pupils*.

N	Scale score	Mean	Standard deviation	percentage
42	20	10	1.2	67%

Table 2 indicates that the percentage of pupils scores 67%, which is below the average.

Based on results of the pilot study as well as reviewing the EFL studies related to reading comprehension and vocabulary learning that indicated: (1) the relation between vocabulary knowledge and reading comprehension skills, (2) the challenges that pupils face during improving vocabulary and reading comprehension, (3) the possibility of developing vocabulary knowledge during reading texts and (4) the possibility of using jigsaw strategy for enhancing reading comprehension skills, it can be concluded that using suitable reading comprehension strategy might enhance preparatory pupils reading comprehension skills and vocabulary learning.

Statement of the Problem

Preparatory pupils have difficulties in comprehending what they read. Moreover, they lack the adequate knowledge of vocabulary that needed for enhancing their achievement. For these reasons, the researcher recommends using jigsaw strategy as a technique that

may possibly develop pupils' reading comprehension skills and vocabulary learning as well.

Questions

1- What are the features of jigsaw strategy based treatment that develop reading comprehension and vocabulary learning?

2- What is the impact of using jigsaw strategy in developing preparatory pupils' reading comprehension skills?

3- What is the impact of using jigsaw strategy in developing vocabulary learning?

Significance

1. Helping preparatory pupils develop their literal, inferential and critical skills.

2. Helping preparatory pupils increase their vocabulary learning.

3. Giving EFL program designers a documented evidence for the impact of using jigsaw strategy.

Delimitations

1. A sample of the first year preparatory pupils from Mansoura College Schools at Mansoura City.

2. Three reading comprehension skills (literal, inferential, critical).

3. The five selected reading stories for teaching reading comprehension skills and vocabulary.

4. The second semester of the academic year 2021/2022.

Review of Literature

Reading Comprehension Skills

Comparing first language, EFL reading is more challenging. It is not a process of responding to questions or summarizing. It is a complex process of interactions between the reader and the text depending on reader's background information, vocabulary knowledge and the strategy applied. Consequently, in order for EFL readers to comprehend the meaning, they should use their previous knowledge, proper strategy, and have positive attitude towards

reading (Al-Mahrooqi, 2012). Additionally, Reading make it possible for all learners -who do not have opportunities to speak with native speakers- to interact with native speakers through their journals, novels and books to gain knowledge and know their culture. According to El-Qader (2012) reading comprehension defined as the process of interacting with the reading text in order to reach a meaning and comprehend the ideas that are transmitted. It is operationally defined as using jigsaw cooperative technique in order for pupils to interact with the text then help each other in making a meaning for the reading materials.

Reading comprehension is believed to be an active thinking process in which reader interacts with the text using background knowledge, vocabulary knowledge and appropriate reading strategy (Fitriani, 2014; Samad, Jannah & Fitriani, 2017). Reading enable EFL learners to access information about structure of sentences, the process of organizing ideas and significant information as well. Besides the accomplishment of the academic tasks requires good reading comprehension skills. In contrast, reading deficiency hinder improving the academic performance (Mundhe, 2015). Along with the negative impact on academic performance, the negative attitude towards reading besides inability to develop vocabulary learning (Nezami, 2012; Nozen et al., 2017). Therefore, using suitable reading strategy is very significant for increasing fluency and comprehension (Cain & Oakhill, 2011). According to Gilakjani & Sabouri (2016), choosing the proper reading strategy depends on the type of reading text and learners age.

Reading Comprehension Teaching Principles and Challenges

The six principles for teaching reading include: (1) encouraging pupils to practice and develop reading comprehension away from exam purposes, (2) engaging pupils with the topic through different activates accomplished by them, (3) giving pupils opportunities to

express their attitude and feelings towards the topic which in turn provoke their involvement with the topic and ensure comprehending the main idea of the text, (4) since prediction is a main element in comprehension, providing pupils with clues and hints in a form of photos or headlines that help them anticipate the topic is very significant, (5) choosing proper activities and tasks before, during and after reading is significant as choosing the reading topics. Suitable tasks can nurture ordinary topics and vice versa, (6) brining text to life through a diverse of tasks and dialogues between teacher and pupils using new words (Harmer, 2007). As for the reading comprehension challenges, Medjahdi (2015) investigated comprehension problems that face EFL students. The researcher found that lack of vocabulary knowledge interferes with pupils' ability to comprehend. Following the same line, Al-Jahwari & Al_Humaidi (2015) found that lack of vocabulary and prior knowledge, anxiety and difficulty of the texts that are included in the academic book are obstacles that hinder comprehension. Moreover, lack of grammar knowledge and motivation were found to be among the causes of comprehension problems. Besides homework and exams that were found to resemble a pressure on students and in turn prevent pleasure during reading. Reading texts that contain complex sentences and structure are also among the factors that cause reading deficiency (Dennis, 2008).

Vocabulary Learning and its Teaching Principals

The size of vocabulary knowledge is used for anticipating reading comprehension capability. Vocabulary is the base for handling reading comprehension. Students ability to use word forms, synonyms, opposites and the articulation of words in meaningful sentences increases their knowledge of vocabulary and in turn impacts their reading comprehension as well as the rest of language skills (Alfaki, 2015 and Qin, 2015). The six principles established

for vocabulary learning are based the communicative texts that enable pupils to cooperate and interact with the text for improving their vocab. These principles include: (1) simple explanation about word meanings, (2) improving structure and explaining the use of word forms in different sentences structure since grammatical knowledge positively impacts vocabulary learning, (3) providing pupils with interesting texts that motivate pupils to learn new words, (4) the texts used should be simple and meaningful, (5) providing pupils with common vocabulary that they need to know, (6) the chosen texts should offer opportunities for pupils to interact with each other as well as the text (Harris, Golinkoff, and Hirsh-Pasek, 2011).

Relation between Vocabulary Learning and Reading Comprehension

Learning EFL necessitates learning reading, listening, speaking and writing skills. Addressing the four language skills prerequisite adequate level of vocabulary learning. Research has revealed that learning EFL and specifically improving reading comprehension rely on vocabulary learning (Erfiani & Neno, 2018; Tan & Goh, 2017). Vocabulary decoding, relation between words and organizing ideas constitute the base for comprehending the reading text. It was assured that vocabulary knowledge is very significant in comprehension. The process of making meaning for the reading text rely on dynamic thinking that is based on the size of vocabulary knowledge besides readers' prior knowledge (Badr El Deen, 2011). It was found that the problems that EFL readers face include: the lack of vocabulary knowledge and the lack of using proper reading strategies. Moreover, it was assured that vocabulary knowledge can be the core for facing these problems in comprehension in addition to using appropriate strategy (Iwai, 2010; Al-Mahrooqi, 2012). Dennis (2008) added that difficulty of the academic texts and lack of

motivation are challenges for EFL readers. Gilakjani & Sabouri (2016) assured that readers who have adequate vocabulary knowledge are good readers since they do not have problems in decoding words. Nor & Rashid (2018) confirmed that students without adequate level of vocabulary knowledge face difficulties in reading comprehension. Besides, Nergis (2013) indicated that vocabulary, grammar and previous knowledge are indicators of having the features of good reader that is able to comprehend the text and differentiate between the main ideas and the writers point of view. Furthermore, it was assured that students who lack these indicators face difficulties that in turn might make them avoid reading.

A great number of scholars (e.g., Cain and Oakhill, 2011; Anjomshoa & Zamanian, 2014; Mohammadi & Afshar, 2016) emphasized that reading positively impacts vocabulary knowledge development. Practicing regular reading helps students to deepen their knowledge of vocabulary and acquire new words. It was assured that reading increase vocabulary improvement and vice versa. Reading is used for expanding knowledge and consequently reaching acceptable academic level. Comprehension is not isolated skill. It depends on a good level of vocabulary learning and prior knowledge (Liu, 2015). Therefore, improving vocabulary learning which fundamentally lead to increasing vocabulary knowledge and acquiring new words is essential for improving reading comprehension skills.

Jigsaw Strategy

Jigsaw strategy as a teaching technique is based on cooperation and sharing learning. In jigsaw strategy the class is divided into small groups. Each group –that called a jigsaw group- consists of four or five pupils. The reading text is divided into four or five parts according to the number of pupils in the group. Each member in the

jigsaw group choses a part of the reading text to learn and to be responsible for teaching it to the group. Afterwards, pupils out of all jigsaw groups who had chosen the same reading part gather and form a new group that is called an expert group. Then each expert group discuss and agree on the most important ideas in the reading part and find out a method by which each one is going to explain to his∕her original jigsaw group. Finally, all members in the expert groups back to their jigsaw groups in order to teach each other the part they had learnt. Lastly, teacher explains the main ideas of the reading text and makes a quiz to the whole class in order to evaluate their comprehension and achievement level (Aronson, 2008; Doymus, 2022). Erfian & Neno (2018) examined the effect of using jigsaw in improving vocabulary knowledge. The researchers found that jigsaw strategy is effective technique for developing students' vocabulary knowledge. While Doymus (2022) proved the efficacy of using jigsaw as a cooperative technique in academic achievement of students. Isjoni (2004) defined jigsaw as supportive strategy that enable students to be involved in learning process. Jigsaw strategy is operationally defined as a cooperative technique for helping pupils increase their reading comprehension and vocabulary learning.

As a cooperative strategy, jigsaw is considered as a significant platform for developing communication, understanding, language skills and knowledge (Aronson, 2008). Yen (2017) stated that jigsaw as a teaching strategy has profound gains and at same time has some drawbacks. On one hand, jigsaw is an effective technique for enhancing cooperation, comprehension and communication skills. Discussing material and explaining it to each other sharpens pupils understanding. Accordingly, teaching that is based jigsaw strategy results in advantageous productive learning process. On the other hand, dividing pupils into small equal groups and training them how to practice jigsaw procedures consumes time. Having opportunities

to teach themselves, pupils reach deeper level of comprehension. Jigsaw strategy provides pupils with a significant chance for peer teaching through being involved in small groups. Therefore, each pupil has an opportunity to take part in an effective teaching process. Unlike the whole class discussion, in jigsaw technique each pupil is an expert in a part of the educational material. Consequently, each pupil has knowledge to share.

The Challenges of Using Jigsaw Strategy

The challenges that teachers face in applying cooperative learning include: course design, time management, groups division and choosing the proper evaluation method (Ghaith, 2018). That is why the traditional technique of teaching that depends on the whole class participation is preferable. Among challenges that might face teachers and impede applying jigsaw strategy include: the dominant pupil who has tendency to lead the group, poor performance pupils who are unable to work with the group, lack of motivation and competitive pupils who are unwilling to cooperate with the group (Aronson, 2008). Adams (2013) summarized all difficulties accompanied to using jigsaw strategy in eight points as follows: (1) inconsistency of students' academic level, (2) anxiety students who are unwilling to participate, (3) the huge number of students in the class that negatively impact groups division and participation, (4) time constrains, (5) restricted learning sources, (6) dominant students that tend to control the group, (7) the lack of cooperation and communication skills and (8) being knowledge contributor is not suitable for some students. Some students feel uncomfortable with the teacher being an organizer that observe the group's efforts. Moreover, low academic level students face difficulties in learning by applying jigsaw technique while superior students experience boredom during implementing jigsaw strategy (Alamri, 2018).

Advantages of Using Jigsaw Strategy

Based on the social constructive perspective, children internalize their communication and interactions with others. Therefore, they learn new skills and develop comprehension through interaction with others. In the same vein, by applying jigsaw strategy pupils can direct, help and learn from each other through interaction inside the original groups and communication with the expert group. Interaction inside groups improve pupils' educational material as well as their thinking, problem solving skills, understanding, motivation, cooperation and communication skills (Grenier & Yeaton 2019; Geels, 2020). Cooperation between students enable them to practice the role of teacher and student at the same time in a way that add to their skills and knowledge. Besides, cooperative learning helps both good and poor performance students to improve their achievement and understanding (Veldman et.al., 2020). Jigsaw technique can be used with other teaching strategies (Adams, 2013 and Aronson, 2008). It was assured that jigsaw method decrease students' anxiety (Marhamah & Mulyadi, 2013). Allowing a number of students to learn various themes simultaneously within short time is among the advantages of using jigsaw strategy. Suprijono (2009) stated that the simplicity of using the strategy and the enjoyment of learning that students experience during using jigsaw add to its gains.

Understanding how and when to implement cooperative learning helps teachers design proper tasks that motivate students to participate (Doymus, 2022). Fortunately, challenges that might occur during using jigsaw strategy can be overcome by teachers and pupils. Teachers can follow some procedures during applying jigsaw as: allowing each group to choose a leader in order to limit the dominance of some dominant pupils, asking poor performance

pupils to make use of gathering with the expert group so they can have the opportunity to improve their comprehension. As for pupils, being responsible for a segment of educational material motivate pupils to participate. Furthermore, cooperation is the base of jigsaw strategy which implies that pupils are going to cooperate inside expert group in order to be able to explain their educational part to their original group. This type of cooperation would increase collaboration and decrease competition. (Adams, 2013). Moreover, being responsible for their own learning enable pupils to have authority over their academic progress. Likewise, sharing learning makes pupils knowledge providers which in turn makes teacher a guide. Besides interaction among pupils makes them active contributors in the learning process rather than being passive receiver of knowledge.

Method

Participants

A sample of pupils from preparatory school in Mansoura College Schools at Mansoura City was selected. Pupils were distributed irregularly to an experimental group (N =33), and a control one. Pupils' age was between thirteen and fourteen years. The researcher has chosen that school to implement her experiment for some justifications:

1. The school is located in the researcher's hometown; accordingly, it is easily accessible.

2. Horus university where the researcher work and Mansoura College Schools are owned by the same Board of Trustees. Consequently, the researcher offered some facilities by the school administration.

Design

Applying the quasi-experimental design, the control and experimental group were pre-examined on their reading

comprehension skills and vocabulary knowledge. The experimental group was taught using jigsaw strategy. Whereas the control group was taught the regular sequence. Both groups were post-examined in reading comprehension skills and vocabulary knowledge to measure their performance.

Instruments

For achieving the study aims, the researcher organized the subsequent instruments:

1)- Reading comprehension skills checklist, see Appendix (B).

2)- Reading comprehension skills test, see Appendix (C).

3)- Vocabulary achievement test, see Appendix (D).

Validity of the instruments were proven through jury validation. Alpha Cronbach was used to measure the internal consistency for the reading comprehension skills test and vocabulary achievement test. The value of alpha coefficient for the reading comprehension test was 0.709, which means that the test is reliable. The value of alpha coefficient of the vocabulary achievement test was 0.752, which indicates a high value of the test reliability.

The Treatment: Jigsaw strategy for improving preparatory pupils reading comprehension skills and vocabulary learning
Objectives

An educational training treatment was designed for improving reading comprehension skills and vocabulary learning. The treatment was based on reading comprehension skills checklist and related literature.

Description, Duration and Content

The treatment was designed based on the principles of jigsaw strategy and the reading comprehension checklist for the experimental group. Whereas the control group received the regular training. The treatment consists of five reading stories that were distributed over 10 sessions besides one session for clarifying jigsaw

strategy steps. The treatment continued for one semester. Teaching to the experimental group continued for 12 weeks (February, March and April) during the academic year 2021/2022 from 23/2/2022 till 27/4/2022.

Evaluation

Two types of evaluation are applied in the treatment: formative and summative. In the formative evaluation, the researcher examines the whole class comprehension and achievement level through a reading comprehension quiz and vocabulary achievement quiz at the end of every session. The researcher collected the quizzes to extend the necessary cooperative learning at the end of each session. The summative evaluation was conducted at the end of the treatment. It included the administration of the post reading comprehension test and vocabulary achievement test to measure the effectiveness of jigsaw strategy in developing the reading comprehension skills and vocabulary learning of the experimental group.

Results and Discussion

Results of the study are reported according to the study hypotheses. As presented in table 3, t-test was used to verify the first hypothesis that states there is statistically significant difference at the ≤ 0.05 level between the mean score of experimental group and the control group on the post- administration of reading comprehension skills test favoring the experimental one.

Table 3: Comparing the reading comprehension skills of the control and experimental groups on the post test.

	Reading comprehension Skills	Groups	Test	Mean	SD	t value	Sig.
Literal comprehension skills	**Skim the text for gist**	Experimental	Post-test	13.78	1.13	9.8	
		Control	Post-test	11.23	1.71		
	Scan the text for specific information	Experimental	Post-test	13.42	1.16	9.4	
		Control	Post-test	11.87	1.74		
	Deduce the meaning of unknown words	Experimental	Post-test	14.87	1.12	15.8	
		Control	Post-test	8.81	1.78		
Inferential comprehension skills	**Predict upcoming events**	Experimental	Post-test	14.90	1.17	13.6	
		Control	Post-test	10.73	1.75		
	Identify cause and effect relationship	Experimental	Post-test	12.07	1.19	11.8	0.05
		Control	Post-test	8.05	1.80		
	Identify explanations for the ideas that are presented in the reading text	Experimental	Post-test	14.81	1.21	14.1	
		Control	Post-test	9.11	1.70		
Critical comprehension skills	**Differentiate between the main and secondary ideas**	Experimental	Post-test	12.17	1.15	13.1	
		Control	Post-test	9.51	1.69		
	Draw logical conclusion from the information in the reading text	Experimental	Post-test	14.91	1.10	14.3	
		Control	Post-test	8.35	1.68		
	Total	Experimental	Post-test	65.30	10.11	25.8	
		Control	Post-test	41.90	15.90		

Findings in table 3 indicates that the developed mean score is for the experimental group post-test. The improvement in pupils reading comprehension skills might be a consequence of using jigsaw strategy in teaching the reading texts. Taking into account the results of previous studies that explored the challenges pupils face during reading comprehension such as lack of vocabulary, prior knowledge, motivation in addition to pupils' anxiety as confirmed by Medjahdi (2015) and Al-Jahwari & Al_Humaidi (2015), the researcher of the

current study provided pupils with a set of reading comprehension texts that are proper to their background knowledge. Most of reading texts were simple stories that motivated pupils to share telling and explaining the events. Moreover, new vocabulary was explained for pupils before dividing them into small groups. Using jigsaw strategy enabled pupils to communicate and share comprehending of the stories. Jigsaw strategy was a suitable and preferable technique for preparatory pupils. This result goes in line with Doymus (2022) who proved the efficacy of using jigsaw strategy as a cooperative technique for improving reading comprehension. As for pupils in the control group received the regular teaching. They did not have opportunities to use jigsaw strategy as the experimental group. That is why their scores were lower than their counterparts in the experimental group.

The second hypothesis states that there is statistically significant difference at the ≤ 0.05 level between the mean score of the experimental group on the pre- and post- administration of reading comprehension test favoring the post administration scores. For verify the second hypothesis, t-test was used as showed in table 4.

Table 4: Comparing pre and post-test scores of experimental group on the reading comprehension skills.

	Speaking Skills	Groups	Test	Mean	SD	t value	Sig.
Literal comprehension skills	Skim the text for gist	Experimental	Post-test	13.78	1.13	11.4	
			Pre-test	10.21	1.78		
	Scan the text for specific information	Experimental	Post-test	13.42	1.16	10.9	
			Pre-test	11.34	1.70		
	Deduce the meaning of unknown words	Experimental	Post-test	14.87	1.12	15.3	0.05
			Pre-test	9.21	1.81		
Inferential comprehension skills	Predict upcoming events	Experimental	Post-test	14.90	1.17	14.6	
			Pre-test	9.88	1.72		
	Identify cause and effect relationship	Experimental	Post-test	12.07	1.19	10.9	
			Pre-test	9.11	1.81		

	Identify explanations for the ideas that are presented in the reading text	Experimental	Post-test	14.81	1.21	
			Pre -test	10.02	1.64	13.3
Critical comprehension skills	Differentiate between the main and secondary ideas	Experimental	Post-test	12.17	1.15	12.5
			Pre -test	9.61	1.71	
	Draw logical conclusion from the information in the reading text	Experimental	Post-test	14.91	1.10	15.1
			Pre -test	9.31	1.64	
	Total	Experimental	Post-test	65.30	11.13	26.9
			Pre -test	40.85	16.02	

As presented in table 4 the mean score of the post-test is higher than the pre-test. The improvement in pupils reading comprehension skills may be due to the use of jigsaw strategy. Using jigsaw strategy enabled pupils to share comprehension that in turn led to better understanding of the reading texts. Being a member of jigsaw group then joining the expert group in order to deliver ideas and understanding to the original group made all pupils responsible for their own learning and teaching their original group. Practicing jigsaw strategy helped pupils to develop their reading comprehension skills. Jigsaw strategy turned learning in to a process of sharing and communication which made the reading class a favorable activity for all pupils. Besides, asking pupils to write their parts of the reading stories helped them develop their comprehension. This result goes in line with Suprijono (2009) who assured that jigsaw strategy provides class with encouraging and stimulating learning environment. This result also goes in line with Grenier & Yeaton (2019) who confirmed the impact of jigsaw strategy on comprehension. The effect size of the treatment on the experimental group was calculated as presented in table 5.

Table 5: Effect size of Jigsaw Strategy on improving reading comprehension skills of the experimental group students.

Reading Comprehension Skills	t value	η2	Effect size
Skim the text for gist	11.4	0.90	
Scan the text for specific information	10.9	0.88	
Deduce the meaning of unknown words	15.3	0.95	
Predict upcoming events	14.6	0.92	
Identify cause and effect relationship	10.9	0.88	high
Identify explanations for the ideas that are presented in the reading text	13.3	0.91	
Differentiate between the main and secondary ideas	12.5	0.90	
Draw logical conclusion from the information in the reading text	15.1	0.95	
Total	16.9	0.96	

Table 5 shows the effect size of jigsaw strategy on experimental group students reading comprehension skills. All values exceeded 0.50 that indicates a high effect size for all reading comprehension skills. This result goes in line with Veldman et.al., (2020) and Geels (2020) that confirmed the positive impact of using jigsaw strategy on improving reading comprehension skills.

For testing the third hypothesis that states there is statistically significant difference at the ≤ 0.05 level between the mean score of the experimental group and the control group on the post-administration of vocabulary test favoring the experimental one, t test was used as shown in table 6.

Table 6: Comparing the vocabulary test scores of the control and experimental group on the post test.

	Groups	test	Mean	SD	t value	Sig.
Vocabulary Test	Experimental	Post-test	72	8.78	31.21	0.05
	Control	Post-test	47	10.82		

As indicated in table 6 the mean score of the experimental group in the post-test is higher than that of the control one. The improvement in the experimental group vocabulary learning could be interpreted that pupils practiced jigsaw strategy that encouraged them to share learning. Pupils in the experimental group made use of the new vocabulary taught by the teacher before reading and the new vocabulary used by all members in the expert group in order to understand and tell their part of the reading story to their jigsaw group. Using jigsaw strategy helped pupils in the experimental group to develop their vocabulary reading whereas the control group did not practice jigsaw strategy. Therefore, the control group mean score in the post-test was not high as the experimental group. This result goes in line with Erfian & Neno (2018) who confirmed the efficacy of using jigsaw strategy on improving vocabulary learning.

Finally, to verify the fourth hypothesis that states there is statistically significant difference at the ≤ 0.05 level between the mean score of the experimental group on the pre- and post-administration of vocabulary test favoring the post administration scores, t test was used as shown in table 7.

Table 7: *Comparing the vocabulary learning achievement of experimental group on the pre and post-test.*

	Groups	Test	Mean	SD	t value	Sig.
Vocabulary Test	Experimental	Pre-test	46	10.25	35. 41	0.05
		Post-test	72	7.68		

Results in table 7 indicates that the mean score of the experimental group in the post test is higher than the pre-test. This result could be interpreted that jigsaw strategy positively impacted the development of pupils' vocabulary learning. Sharing learning the new vocabulary inside the expert group helped pupils to learn and use new words during telling their part of reading stories. Moreover, practicing reading comprehension through jigsaw strategy helped pupils to use both the vocabulary they already know and the new vocabulary. This result goes in line with Anjomshoa & Zamanian, (2014), Mohammadi & Afshar (2016) and Nor & Rashid (2018) who assured the positive relation between reading comprehension and improving vocabulary learning. In addition to Doymus (2022) who indicated the benefits of using jigsaw strategy for improving the pupils' academic performance.

Table 8: Effect size of jigsaw strategy on improving vocabulary learning of the experimental group.

Vocabulary learning	t value	η2	Effect size
Total	35.41	0.95	High

Table 8 assures that the effect size of jigsaw strategy on experimental group pupils vocabulary learning was high. This result goes in line with Erfian & Neno (2018) who assured the effectiveness of using jigsaw strategy for improving vocabulary learning.

Conclusion

As revealed by related literature, comprehension and vocabulary learning proved to be developed through reading texts. Moreover, jigsaw strategy proved to be beneficial for developing comprehension and vocabulary learning. Therefore, the relation between using jigsaw strategy and developing reading comprehension and vocabulary learning was confirmed in the current study. It was found that dividing pupils into small groups - jigsaw groups- then distributing them to expert groups in order for each pupil to be responsible for specific part of the reading story stimulated pupils to take authority of learning and develop comprehension. Using jigsaw strategy motivated all pupils to participate in telling their part of the reading story to their original group-jigsaw group- which in turn encouraged pupils to enhance comprehension and use new vocabulary. Besides, asking pupils to write their part of the reading story before telling to their jigsaw group helped them organize and order their ideas, use new vocabulary, develop comprehension, cooperate and improve communication skills. Jigsaw strategy developed pupils' comprehension skills and vocabulary learning. Consequently, with

regard to the current study result, the future academic activities should be designed based on jigsaw strategy as it is proved to be a cooperative technique which develops reading and vocabulary learning. Besides, future studies are needed for examining the impact of using jigsaw strategy on communication skills, autonomy and writing skills. Future studies are also needed for investigating the impact of using jigsaw strategy on developing the academic performance of primary stage pupils.

References

- Adams, H. (2013). Using Jigsaw Technique as an Effective Way of Promoting Cooperative Learning among Primary Six Pupils in Fijai. *International Journal of Education and Practice*, 2013, 1(6) Pp 64-74.
- Alamri, H. (2018). Examining the perceptions and preferences of Saudi EFL student teachers concerning teachers' feedback practice. *Research on Humanities and Social Sciences*, 8(18), 48-68.
- Alfaki, M. (2015). Vocabulary input in language teaching: assessing the vocabulary load in spine five. *International Journal of English Language and Linguistics Research,* 3(1):1-14.
- Ali, E. (2017). The Effectiveness of a Proposed (CALL) Program in Developing the Preparatory Students' EFL Vocabulary and Grammar Learning and Motivation. Master thesis, Faculty of Education, Mansoura University.
- Al-Jahwari, Y. & Al-Humaidi, S. (2015). Prior Knowledge in EFL Reading Comprehension: Omani Teachers' Perspectives & Classroom Strategies. *International Journal of Applied Linguistics & English Literature*, 4(1):169-181.

- Al-Mahrooqi, R. (2012). English communication skills: How are they taught at schools and universities in Oman? *English Language Teaching, 5*(4), Pp.124-130.
- Anjomshoa, L., & Zamanian, M. (2014). The effect of vocabulary knowledge on reading comprehension of Iranian EFL learners in Kerman Azad University. *International Journal on Studies in English Language and Literature (IJSELL), 2*(5), 90-95.
- Aronson, E. (2008). Jigsaw classroom. Texas: Austin.
- Badr El-Deen, Z. (2009). *The Effectiveness of Assisted Extensive on Developing Reading Comprehension Strategies for Ninth Graders in Gaza Governorate* (published Master's Thesis). Islamic University-Gaza- Palestine.
- Barbosa, B. San Jose, E., Robles Concepcion, G. (2020) Improving Reading Comprehension Through Jigsaw Technique. *International Journal of New Economics and Social Sciences,*1 (11) Pp. 347 – 360
- Cain, K. & Oakhill, J. (2011). Matthew Effects in Young Readers: Reading Comprehension and Reading Experience Aid Vocabulary Development. *Journal of Learning Disabilities,* 44(5): Pp. 431-443.
- Dennis, D. V. (2008). Are Assessment Data Really Driving Middle School Reading Instruction? What we can learn from one student's experience. *Journal of Adolescent and Adult Literacy,* Vol. 51, 578-587.
- Doymus, K. (2022). Application of Subject Jigsaw Technique in Educational Research. International Social Mentality Social Mentality and Researcher Thinkers Journal. Vol: 8 Issue: 56 Pp: 411-416.
- ElQader,W. (2012). *The Effect of Adapting Computerized Packages on Developing Reading Skills for Sixth Graders at UNRWA Schools in Gaza Governorates* (published Master's Thesis). Al-Azhar University-Gaza- Palestine.

- Erfiani,Y and Neno, H. (2018). The Effect of Jigsaw Method to Improve EFL Students' Vocabulary Ability. *Journal of English Language Literature and Teaching.* Vol. 2, No. 2, PP 171 – 183. DOI: 10.31002 Curriculum, Instruction and Educational Technology (JRCIET). Vol.4, No 4.
- Fitriani, S. (2014). An Investigation into Reading Comprehension Strategies in Academic Texts in Aceh Province of Indonesia. *The Third International Conference on Language Education (ICOLE 3)*, 95-126.
- Geels, F. W. (2020). Micro-foundations of the multi-level perspective on socio-technical transitions: Developing a multi-dimensional model of agency through crossovers between social constructivism, evolutionary economics and neo-institutional theory. *Technological Forecasting and Social Change,(152)*.
- Ghaith, G. M. (2018). Teacher perceptions of the challenges of implementing concrete and conceptual cooperative learning. *Issues in Educational Research, 28*(2), 385–404.
- Gilakjani, A. P & Sabouri, N. B. (2016), A Study of Factors Affecting EFL Learners' Reading Comprehension Skill and the Strategies for Improvement, *International Journal of English Linguistics, 6*(5): 180-187.
- Grenier, M., & Yeaton, P. (2019). Social thinking skills and cooperative learning for students with autism, journal of physical education. *Recreation & Dance, 90*(3), 18-21.
- Harmer, J. (2007). How to teach English. Pearson Education Limited.
- Harris, J., Golinkoff, R. & Hirsh-Pasek, K. (2011). Lessons from the crib: How children really learn vocabulary. In S. Neuman, & D. Dickinson (Eds.), *Handbook of early literacy research* (Vol. 3, pp. 49-65). New York: Guilford Press.

- Hung, D. M., & Ngan, V. P. T. (2015). Investigating Reading Strategies Used by EFL Students at Dong Thap University. *Asian Journal of Educational Research, 3*(4), 10-20.
- Isjoni. 2004. *Cooperative learning.* Bandung: Alfabeta.
- Keshta, A. (2016). The Impact of Using Jigsaw strategy on Improving Reading Comprehension and Communication Skills among Eleventh Graders in Rafah. Published M.A Thesis. Faculty of Education. The Islamic University–Gaza
- Liu, Y. (2015). The perception of cultural familiarity and background knowledge on Reading Comprehension for Intermediate EFL Students. *International Journal of Language and Literature,* 3(1):71-75.
- Marhamah, M., & Mulyadi, M. (2013). Jigsaw cooperative learning: A viable teaching-learning strategy? Journal of Educational and Social Research, 3(7), 710-718.
- Matsuoka, W & Hirsh, D. (2010). Vocabulary learning through reading: Does an ELT course book provide good opportunities. *Reading in a foreign language,* 22(1):56-70.
- Medjahdi, W. B. (2015). *Reading Comprehension Difficulties among EFL Learners: The Case of Third-Year Learners at Nehali Mohamed Secondary School*, Master Thesis. University of Tlemcen, Algeria.
- Mohammadi, S. M., & Afshar, N. B. (2016). Vocabulary knowledge learning and reading comprehension performance: which one is superior-breadth or depth. *International Journal for 21st Century Education*, *3*(2), Pp.5-14.
- Mourtaga, K. (2008). *Some Reading Problems of Arab EFL Students.* Unpublished Teaching Materials English Department, Palestine: The Islamic University of Gaza.
- Mundhe, G. B. (2015). Teaching Receptive and Productive Language Skills the Help of Techniques. *Pune Research an International Journal in English*, *1*(2), 1-6.

- Nergis, A. (2013). Exploring the factors that affect reading comprehension of EAP learners. *Journal of English for Academic Purposes, 12*(1), Pp.1-9.
- Nor, N. M., & Rashid, R. A. (2018). A review of theoretical perspectives on language learning and acquisition. *Journal of Social Sciences, 39*(1), 161-167. https://doi.org/10.1016/j.kjss.2017.12.012
- Nozen, S. Z., Kalajahi, S. A. R., Abdullah, A. N., & Jabbarzadeh, H. (2017). An investigation of the impacts of teaching writing skill through extensive short story reading. *Journal of Nusantara Studies, 2*(1), Pp. 53-70.
- Qin, C. (2015). *Didactic considerations of vocabulary breadth and depth in EFL/ESL contexts-* a literature review. Göteborgs University.
- Rashidi, N & Khosravi, N. (2010). Assessing the role of depth and breadth of vocabulary knowledge in reading comprehension of Iranian EFL learners. *Journal of Pan-Pacific Association of Applied Linguistics,* 14(1):81-108.
- Samad, A., Jannah, M., & Fitriani, S. (2017). EFL Students' Strategies Dealing with Common Difficulties in TOEFL Reading Comprehension Section. *International Journal of Language Education*, *1*(1), 29-36.
- Saputro, I. (2018). The Use of Jigsaw II to Enhance the Students Reading comprehension in the First Grade of Papua Senior High School. *International Journal of Management and Applied Science*, Volume-4, Issue-7, Pp 66-71
- Schmitt, N, Jiang, X & Grabe, W. (2011). The percentage of words known in a text and reading comprehension. *Modern Language Journal,* (95):26-43.
- Sofyan, F, Hasanah, K, & Haryudin, A. (2019). Improving Reading Skill Using Jigsaw. *Project. Volume 2, No. 5, Pp. 745-751*

- Suprijono, A. (2009). *Cooperative Learning*. Yogyakarta: Pustaka Pelajar.
- Tan, A & Goh, L. (2017). Relationship between Vocabulary Size and Reading Comprehension Levels of Malaysian Tertiary Students. *International Journal of English Language & Translation Studies,*5(4): Pp.149-155.
- Veldman, M. A., Doolaard, S., Bosker, R. J., & Snijders, T. A. B. (2020). Young children working together. Cooperative learning effects on group work of children in Grade 1 of primary education. *Learning and Instruction, 67*, 101308, Available at https://doi.org/10.1016/j.learninstruc.2020.101308.
- Yen, N. (2017). Implementing Jigsaw Technique and Kagan Structures in Teaching Reading Comprehension to Elementary Students: An Action Research Study. M.A Thesis. Hanoi National University of Education. Faculty of English.
- Zahran, F. (2018). Utilizing Vocabulary Self-Collection Strategy Plus in Developing EFL Primary Stage Pupils' Vocabulary Learning and Risk-Taking. *Journal of Research in Curriculum, Instruction and Educational Technology (JRCIET).* Vol.4, No 4.