

Utilizing a Program Based on Scaffolding and Metacognition to develop Al-Azhar Secondary EFL Students' Reading Comprehension.

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Abstract

This study aimed at investigating utilizing a program based on scaffolding and metacognition to develop Al-Azhar secondary EFL students' reading comprehension. The study sample consisted of sixty female students equally divided into an experimental group and a control one randomly selected from 1st year Fatayat Bilbeis Al-Azhar Secondary Institute for Girls. The study followed the pre- post quasi experimental group design. The experimental group followed program based on scaffolding and metacognition while the control group was taught by the regular method. The experiment was accomplished in two months during the first term of the (2020-2021) academic year. The instruments of the study included the reading comprehension skills checklist, test, and rubric. By the end of the experiment, both reading comprehension skills test was administrated to both groups to identify the effectiveness of the program in developing students' reading comprehension. Finding were statistically dealt with via the statistical package for social science (SPSS Ver.19) program and revealed that the program based on scaffolding and metacognition was effective in developing reading comprehension skills.

Keywords: reading comprehension, and Al-Azhar Secondary Students.

I. INTRODUCTION :

Reading is the window of the world in the walk of knowledge. It is the bridge that permits students to master and develop other language skills including speaking, listening and writing. Haupt (2015) emphasized that the students should be encouraged to develop their reading skills for developing other skills. Reading is a complex activity that goes on between the text and the reader, resulting in comprehension. Thus, the primary purpose of reading is comprehension. Moreover, the way from passive to active reading includes the development of reading comprehension. Reading comprehension is achieved when the reader identifies which skills and strategies are appropriate for the type of text (NCLR , 2004).

Moreover, teachers now seek to re-think the traditional methods of teaching reading comprehension and replace it with more supportive methods. Hence, it was significant to carry out this research as a step towards improving students' reading comprehension skills through implementing "Scaffolding" strategy as a supportive strategy.

One of the most common scaffolding strategies is Semantic Mapping. Semantic Mapping was developed by Johnson and Pearson (1978) who defined it as a graphic (map) representation of one's ideas toward a concept. It includes drawing a diagram of the relationships between words for using them in a certain context (Oxford, 1990).

Based on some studies conducted in Egypt of secondary students, semantic mapping is considered an important and an effective strategy for developing reading comprehension for example: Ahmed(2016)

proved that semantic mapping was effective in developing the EFL reading comprehension skills. Also, Kazandjian(2017) found that there was an advantage of semantic mapping over lexical glossing.

To overcome the problems especially students' reading comprehension, the teacher has to adopt another strategy included metacognition because many researchers have exposed that students who use methods based on metacognition are more successful in their academic field.

There are different methods that based on metacognition. Reciprocal Teaching (RT) Method comes to the view. It is a method for increasing understanding and puts great emphasis on the process of reading rather than the reading final product (Komariah, et.al, 2015).

Reciprocal teaching (RT) as an instructional procedure can be used to improve students' text comprehension skills through scaffolded instruction of four comprehension-fostering and comprehension-monitoring strategies (Palincsar & Brown, 1984; Rosenshine & Meister, 1994), that is, **(a)** predicting what might come next in the text, **(b)** generating one's own questions, **(c)**clarifying word meanings and confusing text passages, and **(d)**summarizing parts of the text, (cited in Sporer, Brunstein, and Kieschke,2009).

Based on few studies conducted in Egypt of secondary students, RT is an effective method for developing reading comprehension such as Abu El-Magd (2019) aimed to enhance secondary students' reading comprehension and he revealed that reciprocal teaching had a positive effect on the 1st year secondary school students' reading skills. In addition to Fadel (2019) who showed a great impact of RT on the students' reading comprehension and motivation.

For these assumptions, the present research is an attempt to investigate the effect of the program based on scaffolding (semantic mapping strategy) and metacognition (reciprocal teaching) to develop students' reading comprehension.

Context of the problem

The researcher as an English teacher at a secondary institute noticed that the students were not interested in reading. Most of them usually express their frustration in a general way, with statements like "I do not like reading!" and " It is boring". Furthermore, reading becomes a boring and tiring activity.

To make sure of the study problem, a pilot study was conducted by the researcher with 40 first-year secondary stage students in Fatayat Bilbeis Institute for Girls during the second semester of the academic year 2019/2020. The results of this pilot study showed that the percentage first-year secondary stage students' responses to each skill was less than 50%. Table (1) shows the percentage of students' responses to each comprehension level.

Table (1) Results of the pilot reading comprehension skills test

Level	The percentage of students' response to these skills
Literal	36 %
Inferential	33 %
Critical	21 %
Creative	15 %

II. LITERATURE REVIEW

2.1. Part (1): Reading Comprehension

The Nature of Reading Comprehension

Reading is one of English skills considered prominent for readers. They are asked to extract some implied information from the text by analyzing or interpreting the sentences to really elicit the questions answers. Understanding text covers extracting some information from it. Reading comprehension requires readers to comprehend a text shown by answering the questions related to it. This process will be challenge for readers considering their low frequency of reading habit. Referring to activities in the classroom, reading comprehension involves some questions in different forms such as answering detail questions, finding main ideas, vocabulary knowledge related to antonyms and synonyms (Nurjanah,2018).

The Importance of Reading Comprehension

Reading comprehension is important as it is not only used to obtain information but also to enable students to learn language. It contributes to language learning success. Harmer (2007) supports this by stating that reading comprehension is beneficial not only for careers, pleasure, and study but also for language acquisition. Moreover, Mikulecky and Jeffries (1996) showed the importance of reading comprehension in foreign language acquisition by stating that reading comprehension can improve the students' general language skills and help them think in English, enrich vocabulary and improve writing skills. At the same time, it enhances the students' abilities in groping their way for new ideas, facts, and experiences (Milkulecky & Jeffries, 1996,p. 1).

Levels of Reading Comprehension Skills

According to Brassell and Rasinski (2008,p.135), reading comprehension can be classified into four levels, i.e. literal, inferential, critical, and creative. Literal comprehension needs the student to recall facts that are overtly stated in the text (i.e., to recall names and things). Inferential comprehension lets the student to suggest additional information based on the text and personal experience (i.e., drawing inferences and predicting outcomes). Critical comprehension involves recognizing the difference between fact and opinion, making judgments, and recognizing the logic of arguments. Creative comprehension involves going beyond the text presented by the author, i.e. problem solving and providing new ideas, new insights, and original constructs. These levels are shown in the following figure.

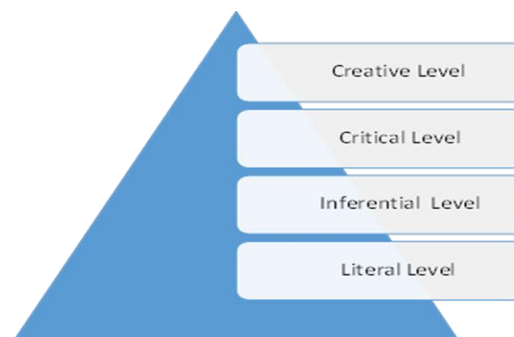


Figure 1: Level of Comprehension(adopted from Fuadi ,2015)

Reading Comprehension Sub skills for EFL Secondary Students:

In general, after reviewing several sources, Rosenshine (1980) observed that reading comprehension skills are commonly agreed to be “recognizing sequence, recognizing words in context, identifying the main idea, decoding detail, drawing inferences, recognizing cause and effect, and comparing and contrasting” (p. 540).

In addition, Mikulecky (1990) stated a large list of reading skills which covered wide range of reading comprehension skills such as:

1. Identifying purpose. Knowing why a text is being read.
2. Specifying genre. Recognizing the nature of the text for predicting the form and content.
3. Scanning. Looking through a text very rapidly for specific information.
4. Questioning. Asking questions in an inner dialog with the author.
5. Recognizing topics. Discovering what the text is about.
6. Categorizing words and ideas on the basis of their relationships.
7. Knowing what the author’s point is about the topic..
8. Stating the main idea (or thesis) of a passage, sentence or paragraph.
10. Identifying patterns of relationships.
11. Inferring the main idea, using patterns and other clues.
12. Guessing the meaning of unknown words from the context.
13. Skimming. Quickly getting the gist or overview of a passage or book.
14. Paraphrasing. Re-stating texts in the reader’s own words.
15. Summarizing.
16. Drawing conclusions.
17. Drawing inferences and using evidence.
18. Reading critically.
19. distinguishing fact from opinion.
20. Reading faster.
21. Adjusting reading rate according to materials and purpose. (Mikulecky, 1990)

Teaching Reading Comprehension for EFL Secondary Students:

Secondary education provides an important connect between the primary and tertiary education. Though reading should be presented in the primary level, the teaching of reading should be consolidated within the secondary level (Okoye & Ene, 2011). Moreover, Felicia(2019) stated that “secondary schools students need to be well grounded in reading skills to be able to meet up with the challenges of secondary education, external examinations, higher education and successful living outside school and in the work places” (p.369).

2.1. Part (2): Scaffolding:

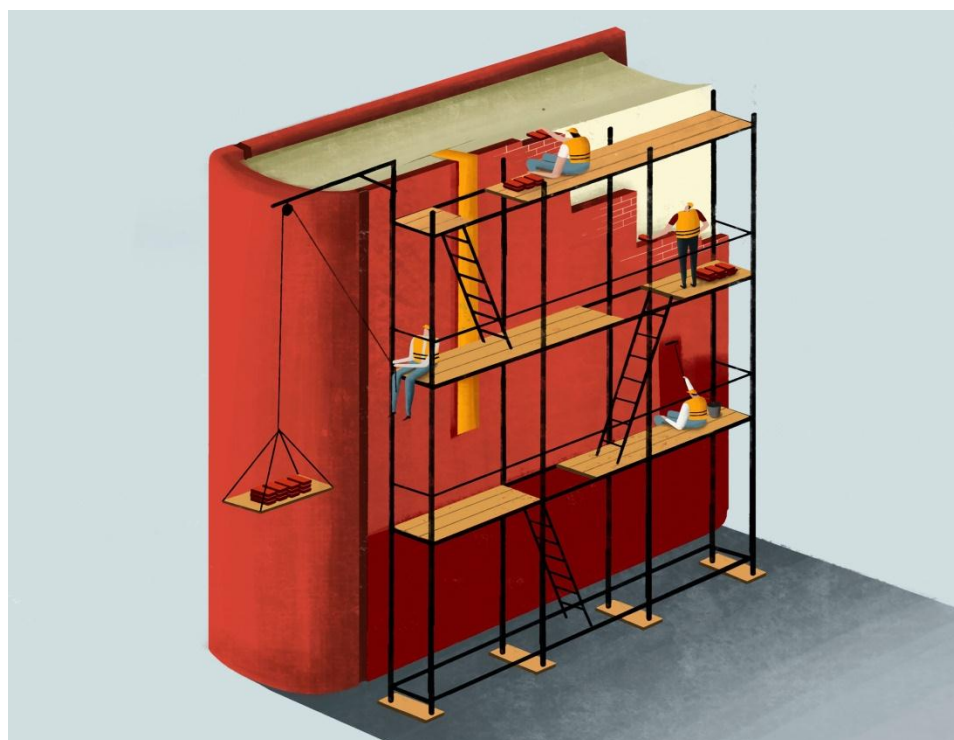
Theoretical Basis of Scaffolding

The notion of scaffolding has been related to the work of the Soviet psychologist Lev Vygotsky, a Russian psychologist, educator, philosopher and art critic, who lived from 1896 to 1934. Although Vygotsky did not use the term scaffolding, he thought that knowledge is not individually constructed, but co-constructed

between two people under guidance or in collaboration with more capable peers. Learners move from one lower level to a higher level. This guidance or collaboration is named later “scaffolding” (Al Aila,2015,p.11).

Scaffolding in Education

The term “scaffolding” is derived from construction terms in which a scaffold is a supporting framework or temporary platform to stand or sit on when working at a height above the floor or ground (Meriam Webster Dict., 2014). Literally, scaffolding is something put around buildings, thus enabling the builders to complete the structure. As soon as the building can support itself, the scaffolding is removed (Gibbons as cited in Khasanah, 2012,p.12).



Source:<https://www.edutopia.org/blog/scaffolding-lessons-six-strategies-rebecca-alber>

However, In an educational context, scaffolding means “support given by a teacher to a student when performing a task that the student might otherwise not be able to accomplish” (van de Pol, Volman & Beishuizen, 2010,P. 274). One of the most common scaffolding strategies is semantic mapping.

Advantages of Applying Semantic Mapping

Semantic mapping is a technique developed by Johnson and Pearson (1978) and has its roots in cognitive psychology. Hanf(1971,p.225) defines a semantic map as "a verbal picture of ideas which are organized and symbolized by the reader".

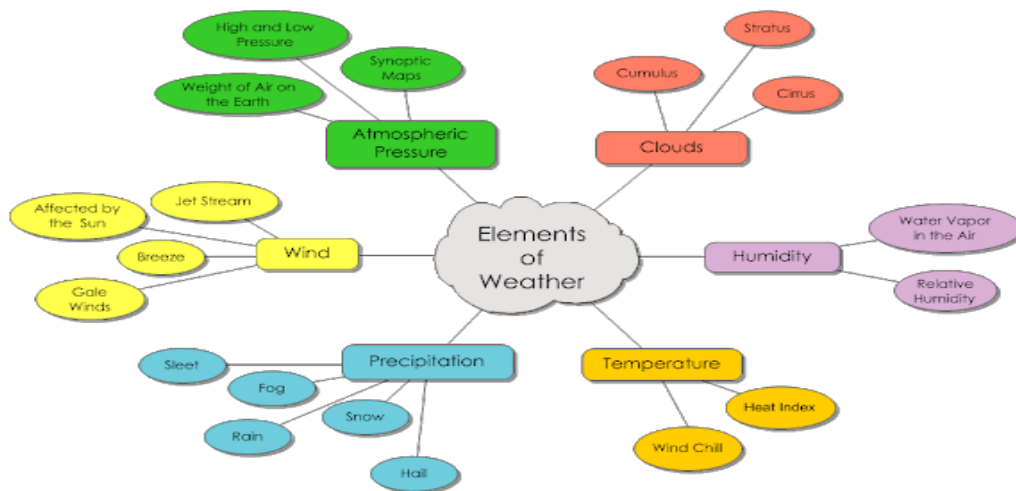
In teaching reading, semantic mapping helps teachers to get students to focus not just on individual details but also on the structure of a text and helps in the conceptualization of paragraph and short essay structure. It displays the interrelationships among ideas, and the components of the story. Sinatra & Pizzo

(1992) stated that mapping is an active reading process that stimulates lazy readers to think more deeply about the ideas in the text because they must figure out relationships between ideas and the hierarchy of their organization.

Best Semantic Mapping Examples

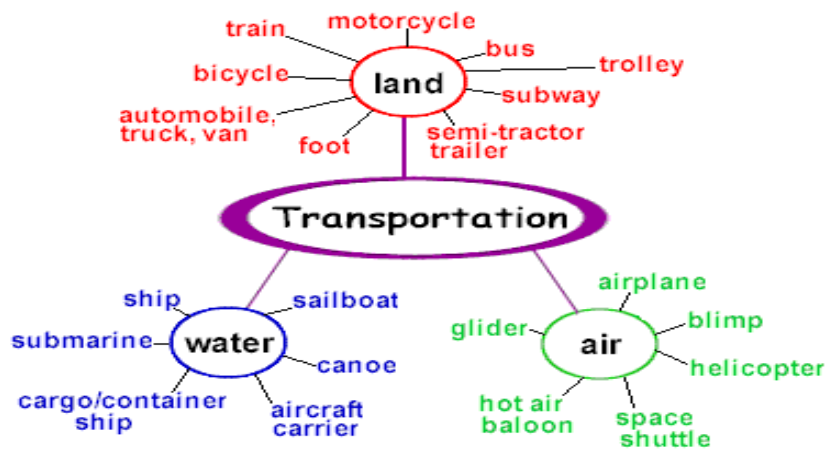
According to Edraw (2020), here are some of the semantic map examples that the teacher can use in your classroom to enhance students' comprehension and improve his/her teaching strategy.

- Weather Semantic Map Example - It is a beginner semantic map from which students can learn about the various weather elements. They can connect and organize their thoughts and ideas related to the topic (Edraw, 2020).



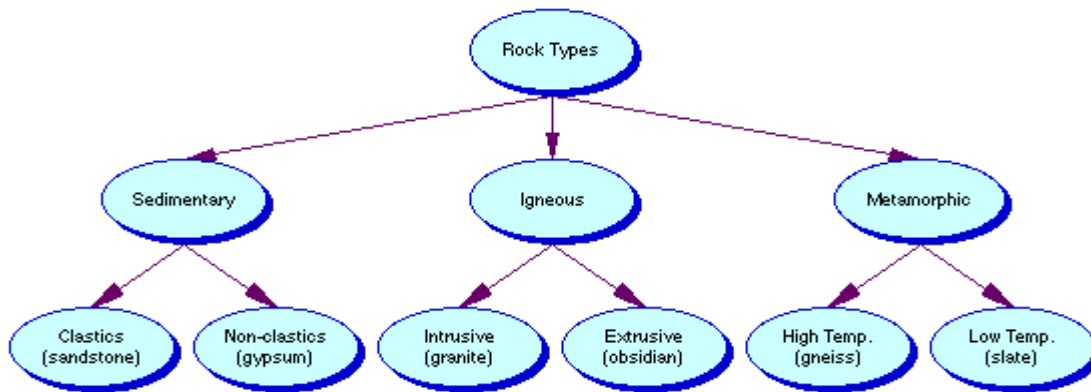
Source: sites.google.com

- Transportation Semantic Map Example - This map has broken down three possible transportation types, i.e., air, land, and water.(Edraw, 2020).



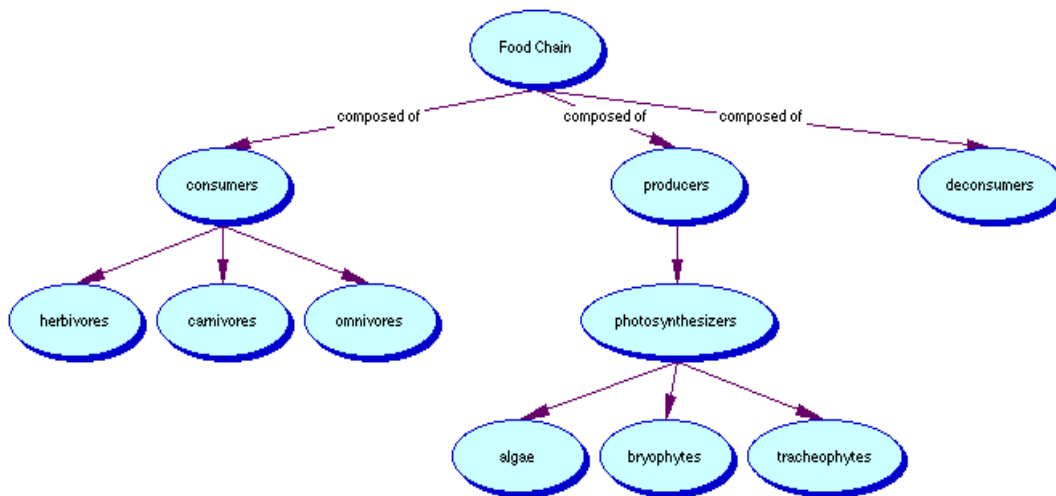
Source: mavoigt.weebly.com

- Types of Rocks Semantic Map Example , it would be easy to break it down to let the students understand the different types of rocks. Moreover, rock is easy to understand. Therefore, this map will help students to expand their new vocabulary (Edraw, 2020).



Source: jackhassard.org

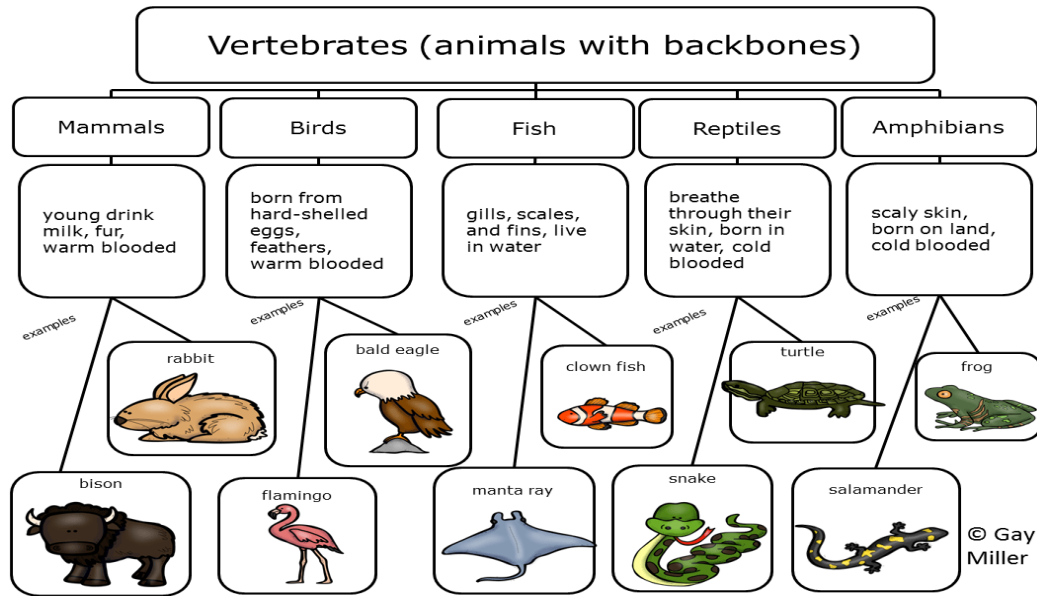
- Food Chain Semantic Map Example - From this map, students can learn about the cycle of life. (Edraw, 2020).



Source:

jackhassard.org

- Vertebrates Semantic Map Example - The information in this simple map is divided into three levels to make it easy for the learners to understand the different vertebrates. The first level consists of five vertebrates levels, the second level provides some information that makes these vertebrates unique, and the third level suggests examples (Edraw,2020).



Source: bookunitsteacher.com

Procedures of Using Semantic Mapping

Similarly, The use of semantic mapping in the classroom may be divided into five phases in general. These are "introducing the topic, brainstorming, categorization, personalizing the map, post-assessment synthesis" (Zaid,1995,p.5). They are as follows:

1. Introducing the topic

In this phase, Zaid (1995) explains that the teacher announces the topic of the reading by drawing a large oval on the board and writing the topic inside it. He may display a picture relating to the topic to stimulate thinking by the students and to refresh their knowledge about the given topic. Through this, the students can guess the purpose of the reading passage.

2. Brainstorming:

This phase enables students to use their prior knowledge or experiences. The teacher requests the students to think about ideas which are related to the topic. Thus, in the phase, all responses are accepted as they relate to the topic (Zaid,1995).

3. Categorization:

According to Zaid (1995), the students here grow experience in practicing some valuable skills, particularly categorizing cause and effect relationships and making inference. Wh- questions, (who, what, when, where, why?) can be used to encourage them to be involved in this process. This part also termed as pre- assignment.

4. Personalizing the map:

Zaid (1995) further adds that after each student has made a copy of the pre-assignment map, a reading passage which is about the key concepts of the map, is given. This reading passage consists of many related concepts than the students had listed during the pre-reading stage. As they read, students are allowed to decide what to add or eliminate from the map they have created. Thereby, new information is integrated with prior knowledge.

5. Post- assignment synthesis:

Zaid (1995) describes this part as to integrate the personalized semantic map produced by the students after reading the text and discussed with the one that was brainstormed pre-assignment. After they read the passage and add or eliminate some items, the students decide the final shape of the map.

2.1. Part (3): Metacognition

Classroom instruction using metacognition

Metacognition is the “knowledge about and control of one's own learning” (Brown, 1992, p.164). Paris and Winograd (1990) maintained that metacognition can promote academic learning and motivation. Among many methods that included metacognition, Reciprocal Teaching (RT) comes to the view.

According to Bradford (1991,p.17), stated that "the reciprocal teaching method has received attention from researchers looking at metacognitive strategy training for poor readers" Reciprocal Teaching is considered among the most successful instructional methods in teaching reading for the past decades (Tarchi & Pinto,2016). Oczkus (2003) articulates, “Metacognition is an integral component in reciprocal teaching because students learn to consciously think about and reflect on their strategy use” (p. 23).

It is a method for enhancing and monitoring understanding that puts great emphasis on the process of reading rather than the reading final product (Komariah, et.al, 2015). This method incorporates four strategies (i.e., predicting, questioning, clarifying and summarizing) which purposely selected among the wide variety of techniques because they function on two folds: fostering understanding and monitoring understanding. Students better understand the text via negotiating the meaning. Additionally, they can monitor their understanding after a while of a systematic practice (Palincsar & Brown,1984).

The Nature of Reciprocal Teaching (RT) Method

Reciprocal teaching is a version of Social Constructivism, a theory created by Lev Vygotsky. At the premise of Vygotsky's work is the belief that learners learn as a result of their social interactions with others (Tracey & Morrow, 2012). Based on Vygotsky's theory, "reciprocal teaching is a process in which students are interacting with others, therefore maximum learning will result"(O'Malley,2017,p.21).

It is based on the dialogues and discussions between students and the teacher. It also includes exchanging roles between the teacher and the learners which makes students responsible for their roles in the teaching learning process and allows students to support each other continuously (Omari and Weshah, 2010,p.26-27).

In this case, Doolittle et al. (2006, pp. 106-107), specifically, Reciprocal Teaching consists of three main components, (a) the teaching and learning of specific reading strategies, (b) the dialogue between an instructor and students where the instructor models why, when, and where to use these reading strategies, and (c) the appropriating of the role of the instructor by the students, that is, students begin to model the reading strategies for other students. They added that the goals of Reciprocal Teaching are for students to learn the reading comprehension strategies, learn how and when to use the strategies, and become self-regulated in the use of these strategies.

Benefits of Reciprocal Teaching Method

Reciprocal Teaching, based on the explanation above, has many benefits. According to Palincsar and Brown (1984), there are two important purposes for reciprocal teaching. Firstly, reciprocal teaching facilitates the collaboration between the teacher and students in achieving better reading skills. Secondly, reciprocal teaching is a flexible method and independent from other strategies in implementing sub-categories of strategies related to cooperative learning and metacognitive skills.

Moreover, Reciprocal teaching is a supportive teaching practice, according to Ramu, and Kumar (2020,P.36), because the following reasons: supports students to develop comprehension strategies in a

supportive context, makes explicit what readers do predict, clarify, question and summarize, develops students' content knowledge and topic vocabulary, and helps students to develop skills in locating, recording, and organizing information in preparation for writing (Ramu, and Kumar,2020,P.36).

Procedures Followed in Using the Reciprocal Teaching Method

Procedures are first modeled by the teacher. Then they are practiced with peer and teacher feedback. Finally, the leadership of the group work strategy is handed over to the students (Allen, 2003). Groups of students should include no less than four and no more than six so that all students have equal opportunity to practice strategies. Continual teacher and student modeling for each of the four strategies - predicting, clarifying, questioning, summarizing - is an integral part of the process. "The teacher monitors and evaluates to determine where scaffolding is needed to help students to be successful in using strategies. Students become aware of their own learning processes and think critically about them" (Bakheet, Omar, and Altayib, 2013,p.51).

Strategies of Reciprocal Teaching Method (RTM)

According to Oczkus (2013,p.35), stated that during reciprocal teaching discussions, students run through the strategies with partners or group members and each of the four strategies helps students to meet common core expectations. These strategies are the following:

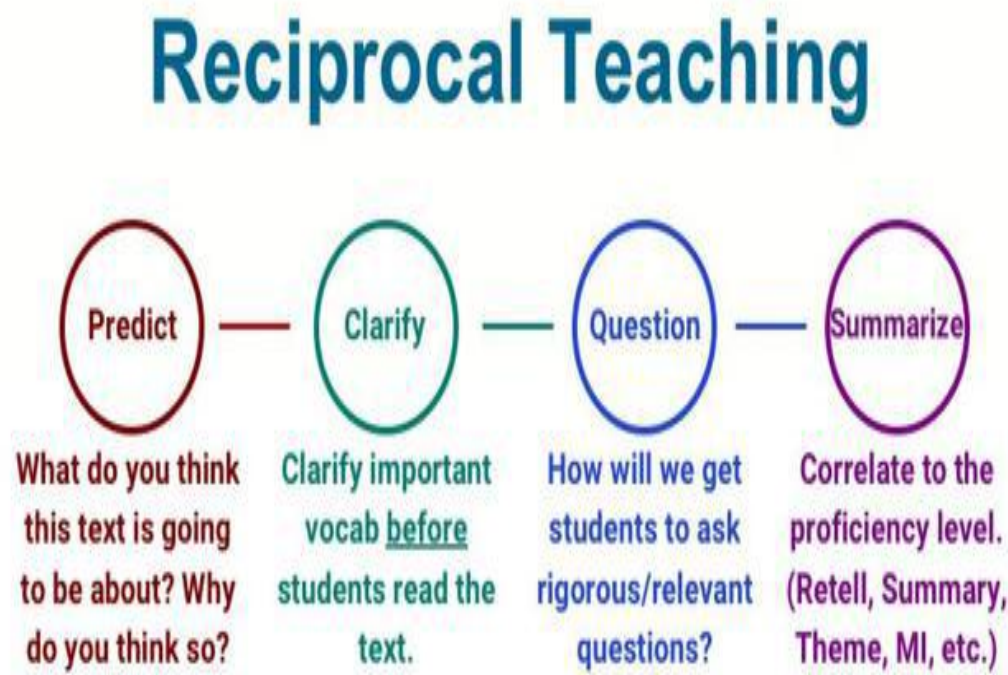


Figure 3: Reciprocal Teaching. (Ramu, and Kumar ,2020,P.32).

From the explanation above, it can be concluded that Reciprocal teaching strategies are based on incorporating four fundamental building blocks into the classroom so every student has an important role.

The reciprocal teaching roles explained on the cards include: the predictor, the questioner, the clarifier, and the summarizer as following:

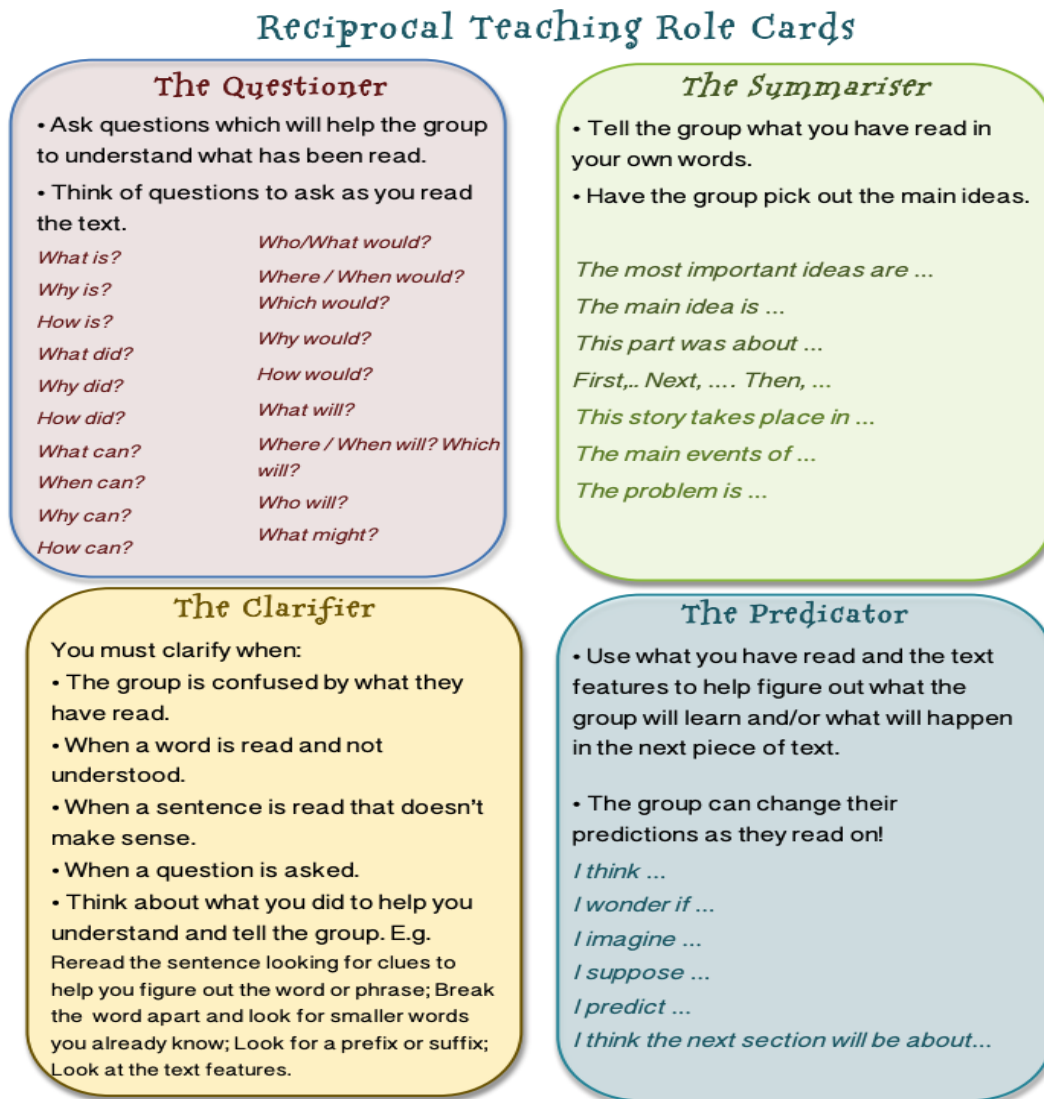


Figure 4: Reciprocal Teaching Role Cards (Ramu, and Kumar ,2020,P.35).

This means that reciprocal teaching strategy "helps student to overcome the difficulties in reading comprehension through predicting, questioning, clarifying, and summarizing steps" (Afrizatama, 2016.p.91).

III. METHODOLOGY

3.1.Study design

The current study adopted a quasi-experimental design .the researcher divided the participants into two groups; the experimental group and the control one. Both groups were taught by the researcher. She implemented the program based on scaffolding and metacognition with the experimental group and followed regular instruction with the control one .

3.2. Study questions:

The problem of this study is stated in the following questions:

1. What are the reading comprehension skills (literal, inferential, critical, and creative) required for first-year secondary institute students?
2. What are the levels of the students' mastery of the reading comprehension skills?
3. What is the effectiveness of a program based on scaffolding and metacognition in improving students' reading comprehension skills?

3.3. Study instruments:

1. The reading comprehension skills checklist.
2. The reading comprehension skills test.
3. The reading comprehension skills rubric.

3.4. Study Participants

The participants in this study were the first year secondary students who registered in Fatayat Bilbeis Institute for Girls, in Bilbeis in the academic year 2020-2021. The students randomly divided into two groups: thirty students for the control group and thirty students for the experimental group.

3.4. Limitations of the study:

The current study was delimited to the following points:

1. First term units in the textbook of the first year secondary stage (New Hello!). This is because it is easy to teach them using a program based on scaffolding and metacognition.
2. Fatayat Bilbeis (Fatma El-Zahraa) Institute for Girls in Bilbeis because of the facility of applying as it is the place where the researcher works.
3. This study was delimited to the development of some skills related to literal, inferential, critical, and creative levels of reading comprehension which students were inefficient in.

IV. RESULTS

Findings of the current study were reached in the light of examining the hypotheses of the study .

4.1.a. Hypothesis 1:

It has been hypothesized that " There would be a statistically significant difference between the mean scores of the experimental group students and those of the control group students in favor of the experimental group in the post administration of the reading comprehension test."

The Independent Samples t-test was used as shown in table(2)

Level	Group	N	Mean	Std. Deviation	Mean Difference	Std. Error Difference	t	Sig.
Literal level	Control post	30	3.46	1.41	3.23	.406	7.95	.01
	Experimental post	30	6.70	1.72				
Inferential level	Control post	30	3.10	1.82	3.63	.440	8.25	.01
	Experimental post	30	6.73	1.57				

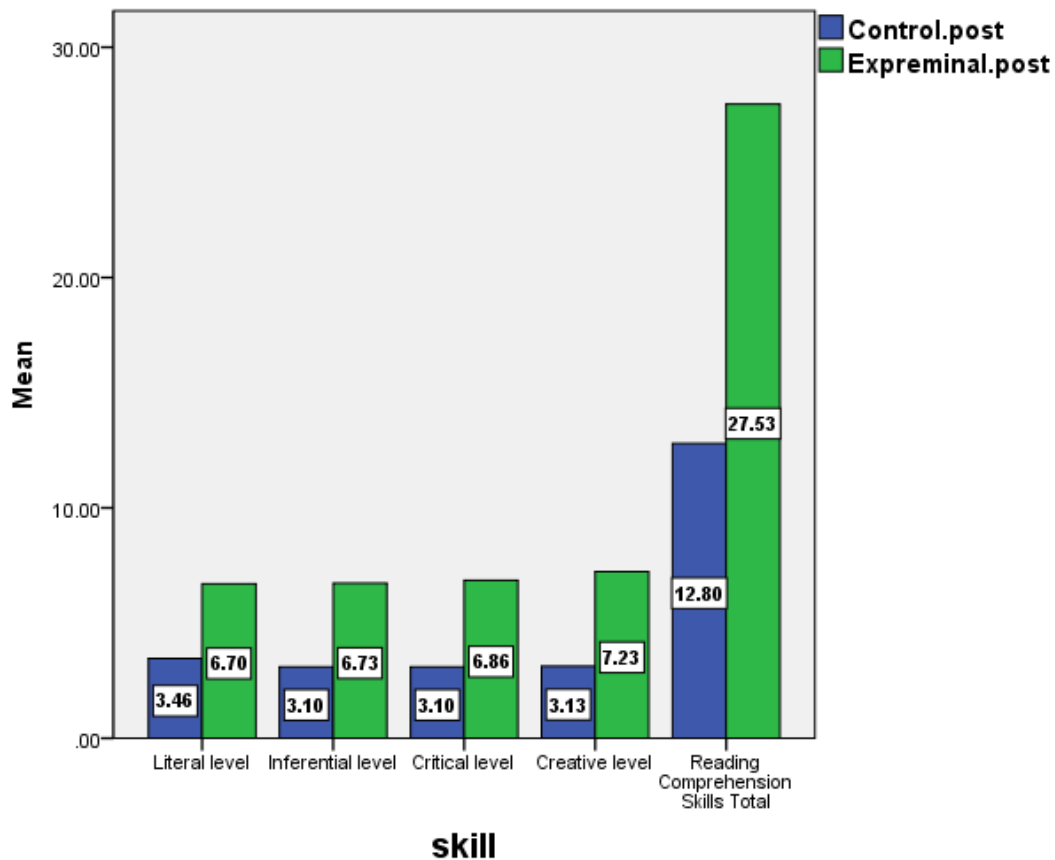
Critical level	Control post	30	3.10	1.76	3.76	.377	9.97	.01
	Experimental post	30	6.86	1.07				
Creative level	Control post	30	3.13	1.99	4.10	.440	9.31	.01
	Experimental post	30	7.23	1.35				
Reading Comprehension Skills Total	Control post	30	12.80	6.18	14.73	1.43	10.30	.01
	Experimental post	30	27.53	4.82				

t table value at df (58) and sig. level (0.01) = 2.37

t table value at df (58) and sig. level (0.05) = 1.66

The table (2) indicated that the mean scores of the experimental group in the post administration is (M=27.53) and that of the control group is (M=12.80).The total score of calculated t- value is (Cal.t = 10.30) which is higher than the tabulated t-value (Tab.t =2.37) at the level of (0.01). Thus, the first hypothesis was accepted

Figure(5) the mean scores of the experimental group and the control group in the post administration of the reading comprehension test.



b. Hypothesis 2:

It has been hypothesized that "There would be a statistically significant difference between the mean scores of experimental group, in the pre and the post administrations of the reading comprehension test favoring the post administration".

The paired samples t-test was used as shown in table(3)

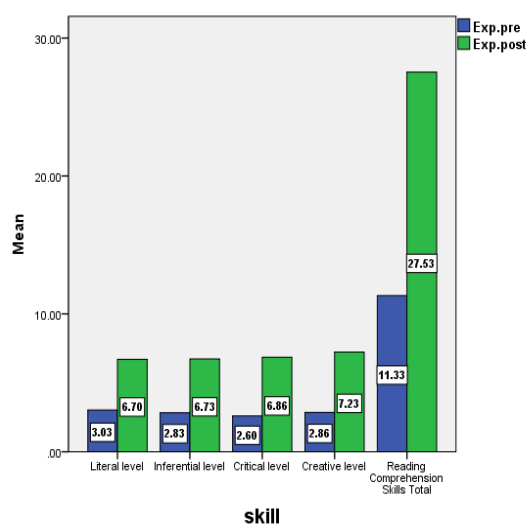
Level	Group	N	Mean	Std. Deviation	Mean Difference	Std. Error Difference	t	Sig.
Literal level	Experimental pre	30	3.03	1.93	3.66	.308	11.88	.01
	Experimental post	30	6.70	1.72				
Inferential level	Experimental pre	30	2.83	2.30	3.90	.375	10.40	.01
	Experimental post	30	6.73	1.57				
Critical level	Experimental pre	30	2.60	1.90	4.26	.324	13.14	.01
	Experimental post	30	6.86	1.07				
Creative level	Experimental pre	30	2.86	1.92	4.36	.308	14.15	.01
	Experimental post	30	7.23	1.35				
Reading Comprehension Skills Total	Experimental pre	30	11.33	7.21	16.20	1.00	16.20	.01
	Experimental post	30	27.53	4.82				

t table value at df (29) and sig. level (0.01) = 2.44

t table value at df (29) and sig. level (0.05) = 1.68

The table (3) indicated that the mean scores in the post administration is (M=27.53) and the mean scores in the pre-administration is (M=11.33) of the experimental group. The total score of calculated t- value is (Cal.t = 16.20) which is higher than the tabulated t-value (Tab.t = 2.44) at the level of (0.01). Thus, the second hypothesis was accepted.

Figure(6) the mean scores between the pre and post administrations of the experimental group in the reading comprehension test.



c. Hypothesis 3:

It has been hypothesized that " A program based on scaffolding and metacognition would be effective in improving students' reading comprehension skills"

Cohen's d and eta squared (η^2) was used to verify this hypothesis as shown in table(4).

Table (4)The effect size between the pre and post administrations of the experimental group in the reading comprehension test

Level	Group	N	Mean	Std. Deviation	t	η^2	Sig.
Literal level	Experimental pre	30	3.03	1.93	11.88	.91	.01
	Experimental post	30	6.70	1.72			
Inferential level	Experimental pre	30	2.83	2.30	10.40	.88	.01
	Experimental post	30	6.73	1.57			
Critical level	Experimental pre	30	2.60	1.90	13.14	.92	.01
	Experimental post	30	6.86	1.07			
Creative level	Experimental pre	30	2.86	1.92	14.15	.93	.01
	Experimental post	30	7.23	1.35			
Reading Comprehension Skills Total	Experimental pre	30	11.33	7.21	16.20	.95	.01
	Experimental post	30	27.53	4.82			

t table value at df (29) and sig. level (0.01) = 2.44

t table value at df (29) and sig. level (0.05) = 1.68

As indicated in table (4) eta squared (η^2) value for the total score was (.95), and the value of the eta squared ranged on the sub dimensions (.88, .93), and these values indicate that the majority of the effectiveness degrees are high and strong. Thus, the third hypothesis was confirmed.

In order to identify the degree of the effect size of each skill as (small, medium, or large) the referential framework for the effect size was used as follows:

Table (5). The effect size of the program based on scaffolding and metacognition on developing reading comprehension skills.

Effect size	Interrelation
From 0.0 till less than 0.09	Small
From 0.10 till less than 0.15	Medium
From 0.16 till less than 1	Large

Based on that, it has been concluded that the program based on scaffolding and metacognition was effective in developing reading comprehension skills.

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