

Using a Computer-based Scaffolding Strategy to Enhance EFL Preparatory Stage Students' Reading Skills and Self-Regulation

Heba Mostafa Elmansi Mostafa

Demonstrator in Curriculum & Instruction Department (EFL)

Prof. Dr. El-Sayed Mohamad Dadour

Professor of Curriculum & Instruction (EFL)

Faculty of Education

President of Damietta University

Prof. Dr. Aly AbdelSamea Qoura

Professor of Curriculum & Instruction (EFL)

Faculty of Education

Mansoura University

Abstract:

The study aimed at investigating the effect of using a computer-based scaffolding strategy to enhance EFL Preparatory Stage Students' Reading Skills and Self-Regulation. The participants of the study were Sixty (60) first year preparatory School Students from Al-Zayaat preparatory school, New Damietta, Egypt. The study adopted the quasi-experimental research design. So, there were two groups: an experimental group ($n= 30$) and a control one ($n= 30$). To collect data, the researcher used multiple instruments: a reading comprehension skills checklist, a computer and Internet Skills Survey to choose the sample of the study, pre posttest of reading comprehension and Pintrich et al's (1991 & 1993) Self-Regulation Questionnaire (SRQ). The researcher taught both groups: the experimental group was taught through using a computer-based scaffolding strategy while the control group was taught through the traditional way of teaching. The results of the study revealed that there were statistically significant differences between the mean scores of the experimental group and the control group in the reading comprehension skills in addition to self-regulation in favor of the experimental group. The effect size of using a computer-based scaffolding strategy was found to be high. The study recommends using a computer-based scaffolding strategy as a technique in teaching EFL skills and as a training approach in professional development programs of EFL teachers.

Key Words: *Computer, Scaffolding, Reading Comprehension, Self-Regulation.*

Introduction and background

Language is a means of communication. Any language learner should master language skills listening, speaking, reading, and writing.. Listening and speaking are the skills required for oral communication, meanwhile reading and writing are the skills required for literacy development (Christison & Murray, 2014). Language skills are regarded as fundamental skills to acquire the English language proficiency. Reading is the main way to get knowledge and communicate with other cultures to improve learners' way of thinking and satisfy their curiosity.

Reading is one of the most important skills that students must master to be successful educationally, occupationally, and socially. It enables students not only for learning, careers, and pleasure, but also for language acquisition. Students' educational success depends on their abilities to read, comprehend and critically analyze information presented in textbooks and other classroom materials (Berman, 2009 & Klein, 1999). The movement from passive to active reading includes the development of reading comprehension skills. Reading comprehension refers to understanding what we read where words have context and texts have meaning. Reading comprehension skills allow us to read proficiently and learn effectively. These skills are based on earlier stages of reading development including oral reading and reading fluency. Without developing these earlier reading skills students must continually focus on decoding letters and words rather than progressing to meaning and understanding (Grabe & Stoller, 2002).

Although the field of education is experiencing major changes, there are EFL teachers who are still using traditional materials and methods in teaching. One of the greatest challenges for students is the traditional tasks and activities especially the tasks which are related to reading skills. They find the process of reading boring and purposeless. Teo and Wong

(2000) stated that traditional materials and methods do not encourage students to question what they have learnt or to associate with previously acquired knowledge. Modern technology can help education be more effective where educators can create better instruments to manage and promote learning. Prensky (2000) states that teaching without computers, digital media or the internet is meaningless. Therefore, educators try to use modern technology to design and support independent learning environments. Therefore, Teachers cannot avoid the use of instructional technology to teach reading skills.

Computers become more appealing to teachers because of their huge capabilities and extensive effectiveness as “computer technology can provide the student with the means to control his or her own learning, to construct meaning and to evaluate and monitor their own performance” Smith (2004, 1). Vacca (2008) suggests that when guided, supported and provided with the necessary attributes, students become more responsible for their learning, more motivated, and more successful.

The term scaffolding was first introduced in education by (Wood, Bruner, and Ross, 1976) and has been revived in recent research (El komy,2016; Al Aila2015, Belland et.al, 2015, Cumming-Potvin, Renshaw, and Kraayenoord 2003, and Chung2006. Wood, Bruner, and Ross (1976) further describe scaffolding as a support system that helps children achieve success on tasks that would be too difficult for them to achieve by themselves. Scaffolding in an educational context is teaching techniques or tools that provide support. Scaffolding is a temporary support that teachers create to help extend current skills and knowledge to a higher level of competence (Dorn, French, and Jones, 1998).

The goal of scaffolding is to develop an independent, self-regulated learner. This is accomplished by fading the support, or relinquishing the control and assistance provided by the more knowledgeable person as the learner begins to achieve more independence and knowledge (Berk and Winsler, 1995; Clay, 1998; Dorn, French, and Jones, 1998; Lyons, 2003).

Review of literature

Related Studies

Studies Related to Scaffolding and Reading Comprehension Skills

Many studies Elkomy (2016); Al Aila (2015); Salem (2016); McKenzie (2011) reflect the effectiveness of scaffolding instruction on developing students' reading comprehension skills (e.g., using graphic organizers, mapping, working on-line in pairs and groups, questioning, thinking-aloud, planning, monitoring, evaluation, inference). Studies have shown that scaffolding student's reading comprehension skills can be a powerful instructional technique in classrooms, small groups, and one-to-one tutoring (Cooke, 2002).

Many researchers introduced scaffolding reading experience (Graves & Fitzgerald, 2004; Graves & Graves, 2003). It is considered as a comprehensive reading program that helps learners understand what they read, learn from what they read and enjoy the experience of reading. The scaffolding reading experience framework has two phases. The first phase is the planning phase which includes planning and creating the entire experience. Planning takes into account the students, the reading selection and the reading purpose. The second phase is the implementation phase which includes pre-reading activities, during reading activities and post-reading activities.

Studies Related to Self-regulated Learning and Reading Comprehension

Reading comprehension is defined as the process of constructing a meaning in mind through the reading text. Baker (2002) mentioned that independent reading is not sufficient. She confirmed that students need metacognitive strategies specifically in knowing how to regulate their cognition. Self-regulated learning is viewed as an important aspect of learning and achievement in academic contexts (Puzziferro, 2008; Whipp & Chiarelli, 2004). It is very important to develop reading

comprehension because poor readers face many difficulties in using and choosing strategies. Hence, these strategies need to be taught to the students (Brown, 2002).

There are many studies that declared the connection between SRL and reading achievement such as (Zarei, Esfandiari & Akbari 2016; Oruç & Arslan 2016; Maftoon & Tasnimi 2014; Abbasian & Hartoonian 2014; McMahan & Dunbar, 2010; Nash-Ditzel, 2010; Swalander & Taube, 2007). These studies declared the importance of self-regulated learning strategies in enhancing students' reading comprehension skills because poor readers face many difficulties in using and choosing strategies that help them to read and understand the text. Therefore, the present study focused on developing students' self-regulated learning.

Statement of the problem

In light of the literature review and the pilot study results, the problem of the study is that EFL preparatory stage students suffer from low performance in reading comprehension skills. As a result, they are not good at reading comprehension skills. This problem may be due to the absence of innovation and the traditional methods of teaching reading in EFL classroom where students have a passive learning role. Therefore, the present study is an attempt to solve this problem through using a computer-based scaffolding strategy and testing its effectiveness in enhancing EFL preparatory stage students' reading comprehension skills and self-regulated learning.

Research questions

The present study attempts to answer the following main question:

"How can a computer-based scaffolding strategy contribute to enhance first year prep stage students' reading comprehension skills and self-regulation?"

The main question leads to the following sub questions:

1. What are the reading comprehension skills required for EFL first year prep stage students?
2. What are self-regulated learning skills required for EFL first year prep stage students?

3. What is the current level of first year prep stage students' in reading comprehension skills?
4. To what extent can a computer-based scaffolding strategy enhance first year prep stage students' reading comprehension skills?
5. To what extent can a computer-based scaffolding strategy enhance the first year prep stage students' self –regulated learning skills?

Purpose

The present study aimed at:

1. Identifying the current level of first year prep stage students in reading comprehension skills.
2. Interpreting reasons of students' low performance in reading comprehension skills.
3. Identifying the reading comprehension skills needed for preparatory first students to comprehend the reading text in their prescribed textbook.
4. Identifying self-regulated learning skills and strategies used by first year preparatory stage students in learning EFL.
5. Using a computer-based scaffolding strategy to construct a program to develop first year preparatory stage students' reading comprehension skills and self-regulation.
6. Improving the identified reading comprehension skills through using a computer-based scaffolding strategy.
7. Measuring the effectiveness of the proposed strategy in developing the reading comprehension skills and self-regulation of first year preparatory stage students.

Significance of the Study

The significance of the present study appeared in its attempt to:

Students

1. Provide computer-based scaffolding training program to enhance students' reading comprehension skills and self-regulated learning.
2. Help students to be independent learners.
3. Help students overcome their shyness and hesitation through giving them a chance to use modern technology in learning to express their thoughts freely.

Teachers

1. Provide EFL teachers with a teachers' guide on how to teach through using a computer-based scaffolding strategy.
2. Provide EFL teachers with several ideas about how a computer-based scaffolding strategy can be applied in their classrooms to improve students' reading comprehension skills and self-regulated learning.

Curriculum designers

1. Guide curriculum designers when designing courses for developing traditional methods of teaching based on the results of the present study.
2. Provide curriculum designers with non-traditional ideas for creating curricula and experiences that are more engaging and more focused on students' needs and interests.

Researchers

1. Help researchers to conduct further similar studies in this field to find the effective teaching methods and theories for developing the learning and teaching processes.
2. Enrich the field of literature related to computer-based scaffolding strategy, reading comprehension and self-regulated learning.

Parents

1. Reduce excessive tension between parents and their children due to their poor performance and lack of interest in homework assignments because using

technology in teaching and learning encourage students to do their homework independently.

Participants of the Study

A group of 60 first year preparatory school students were purposively selected from Al-Zayaat Preparatory School in New-Damietta in the academic year 2017/2018. The study targeted a selected sample that has computer and internet skills. Students' age ranged from 12 to 13 years old. The participants of this study constituted a homogeneous group in terms of their schooling and English language proficiency. This number of participants was divided equally into two groups. The first group of 30 students comprised the experimental group and received the computer-based scaffolding strategy. The other group of 30 students served as the control group and received only the regular teaching methods.

Method

This study adopted the quasi- experimental design using two groups to investigate the effectiveness of using the computer-based scaffolding strategy on first year prep stage students' reading comprehension skills and self -regulation. Both groups were taught by the researcher, but the experimental group was taught using the computer-based scaffolding strategy and the control group was only taught with the regular way of teaching mentioned in the teachers' book. The control group didn't receive any type of treatment except that they had the pre/post-test of reading comprehension skills and the pre/post self-regulation questionnaire (SRQ) for the aim of comparison with the experimental group.

Hypotheses

The study aimed at testing the following hypotheses:

1. There is a statistically significant difference at $\leq (0.05)$ level between the mean score of the experimental group and that of the control group on the post administration of the reading comprehension test in favor of the experimental group.

2. There is a statistically significant difference at $\leq (0.05)$ level between the mean score of students of the experimental group on the pre and post reading comprehension skills test in favor of the post test.
3. There are statistically significant difference at $\leq (0.05)$ level between the mean score of experimental group and that of control group on the SRQ in favor of the experimental group.

Instruments

The researcher made use of the following instruments:

1. The proposed ***Computer-based Scaffolding Strategy*** (Designed by the researcher).
2. ***A Reading Comprehension Skills Checklist*** submitted to a panel of jury to determine its validity and the appropriateness of the skills needed for Egyptian first year preparatory students (Designed by the researcher).
3. ***A Reading Comprehension Achievement pre-posttest*** to assess students' reading comprehension skills (Designed by the researcher).
4. ***Computer and Internet Skills Questionnaire (CISQ)*** to measure the students' knowledge about computers and their ability to use the Internet to select the participants of the study to select the participants of the study (Designed by the researcher).
5. ***The Motivated Strategies for Learning Questionnaire (Pintrich et al, 1991)***: to measure self-regulation skills of the participants. It was adapted and translated with some modification to suit the Egyptian EFL context by the researcher (Adopted by the researcher).

Delimitations

The current study is delimited to:

1. EFL First Year Preparatory Stage students in Al-Zayaat Preparatory School. The participants were chosen by a Computer and Internet Skills Questionnaire. These

students were randomly assigned to be the control and the experimental groups of the study.

2. A limited duration for implementing the proposed Computer-based Scaffolding Strategy (A school semester, i.e., nearly 3 months).
3. Nine lessons of the syllabus of the course entitled, "*Hello! English for Preparatory Schools: Year One*," designed by the researcher according to a computer-based scaffolding strategy.
4. Some reading comprehension skills required for preparatory first students to comprehend the reading passages.

Results

Results of the study are presented in terms of the study hypotheses.

Results of hypothesis 1:

The first hypothesis stated that there is no statistically significant difference between the mean score of the experimental group and that of the control group in the pre administration of the reading comprehension test.

Before conducting the program the researcher administrated the RCS pretest to both groups to make sure that the two groups (experimental- control) are at the same level.

The results shown in table (1) reveal that the mean score of the experimental group on the pre administration of the reading test ranged from 7.70 to 2.52 whereas the mean score of the control group ranged from 7.40 to 2.39. This indicates that there was no significant difference between the experimental group and the control group in the all skills of the pre RCST and the total score of the test.

Table (1): Establishing Groups Homogeneity in each skill of pre RCST

Reading skills		Study groups	Mean	SD	T-test		
					T-value	DF	P-value
Literal comprehension	Guess the meaning of unfamiliar words from context	Experimental	0.83	0.75	0.18	58	0.856
		Control	0.80	0.66			
	Identify specific details	Experimental	1.90	0.84	0.86	58	0.393
		Control	1.70	0.95			
	Recognize cause and effect relationships	Experimental	1.87	0.86	0.29	58	0.776
		Control	1.93	0.94			
Inferential comprehension	Infer main idea	Experimental	0.63	0.56	0.22	58	0.825
		Control	0.67	0.61			
	Relate text to personal experience, opinion or evaluation	Experimental	1.33	0.84	0.50	58	0.618
		Control	1.20	1.19			
	Extract important points to summarize the text	Experimental	1.13	0.94	0.14	58	0.885
		Control	1.10	0.84			
Total Score		Experimental	7.70	2.52	0.47	58	0.638
		Control	7.40	2.39			

Results of hypothesis 2:

The second hypothesis stated that there is no statistically significant difference between the mean score of the experimental group and that of the control group in the pre administration of the self-regulation questionnaire.

As for the SRQ, it was administrated to the control and experimental group before administration the program. The researcher used Independent samples T-test to verify this hypothesis. The results are shown in table (2):

Table (2): Establishing homogeneity of the two groups on the SRQ

Scales of SRQ	Study groups	Mean	SD	T-test		
				T-value	DF	P-value
Motivation	Experimental	2.41	0.10	1.78	58	0.080
	Control	2.36	0.12			
Learning strategies	Experimental	2.37	0.08	1.36	58	0.179
	Control	2.40	0.08			
Self-Regulation	Experimental	2.39	0.06	0.47	58	0.642
	Control	2.38	0.07			

Table (2) reveals that mean score of the experimental group members were 2.41 and the control group members were 2.36 on the motivation scale. Meanwhile, the experimental group members were 2.37 and the control group members were 2.40 on the learning strategies scale. It reveals that the mean score of the members of the control group and experimental group were noticeably low in the pre administration of the SRQ.

Results of hypothesis 3:

The third hypothesis stated that there is a statistically significant difference at $\leq (0.05)$ level between the mean score of the experimental group and that of the control group on the post administration of the reading comprehension test in favor of the experimental group.

The researcher used the "t" values of the differences between the mean score of the experimental and control groups in each skill of the reading comprehension separately and in the total score of the RCST. Table (3) shows the results:

Table (3): Comparing the two groups in each skill of post RCST

Reading skills		Study groups	Mean	SD	T-test		
					T-value	DF	P-value
Literal Comprehension	Guess the meaning of unfamiliar words from context	Experimental	3.60	0.50	8.09	58	0.001
		Control	2.10	0.88			
	Identify specific details	Experimental	3.73	0.45	7.78	58	0.001
		Control	2.37	0.85			
	Recognize cause and effect relationships	Experimental	3.57	0.50	7.09	58	0.001
		Control	2.27	0.87			
Inferential Comprehension	Infer main idea	Experimental	3.40	0.56	10.47	58	0.001
		Control	1.67	0.71			
	Relate text to personal experience, opinion or evaluation	Experimental	11.03	0.93	34.92	58	0.001
		Control	2.27	1.01			
	Extract important points to summarize the text	Experimental	3.23	0.82	6.33	58	0.001
		Control	1.77	0.97			
Total score of the RCST		Experimental	28.57	1.65	26.49	58	0.001
		Control	12.43	2.90			

The results in table (3) indicate that the mean score of the experimental group was greater than that of the control group in all skills of the reading comprehension test and in the total score of the test. The results also reveal that the mean score of the different reading comprehension skills have been enhanced.

These results mean that using the computer-based scaffolding strategy was effective in enhancing reading comprehension skills as a whole.

Results of hypothesis 4:

The fourth hypothesis stated that there are statistically significant difference at $\leq (0.05)$ level between the mean score of experimental group and that of control group on the SRQ in favor of the experimental group.

To investigate this hypothesis after applying the experimental treatment the researcher applied the SRQ for the second time. The researcher used Independent samples T-test to determine any differences in the mean score between the two groups on the post administration of the SRQ. The results are shown in the following table (4):

Table (4): differences between the groups on the post application of the SRQ

SRQ Scales	Study groups	Mean	SD	T-test		
				T-value	DF	P-value
Motivation	Experimental	4.21	0.13	13.04	58	0.001
	Control	3.17	0.42			
Learning strategies	Experimental	4.23	0.14	7.07	58	0.001
	Control	3.72	0.37			
Self-Regulation	Experimental	4.22	0.09	13.73	58	0.001
	Control	3.47	0.29			

Table (4) reveals that the mean score of the experimental group members on the post administration of the SRQ were noticeably high and statistically significant when compared with their own mean scores on the pre administration of the same questionnaire. The group's mean score were 4.21 on the motivation scale and 4.23 on the scale of learning strategies. This indicates that the computer-based scaffolding strategy was very effective in enhancing or boosting the participants' self-regulated learning.

Results of hypothesis 5:

The fifth hypothesis stated that there is a statistically significant difference at $\leq (0.05)$ level between the mean score of students of the experimental group on the pre and post reading comprehension skills test in favor of the post test.

To verify this hypothesis, Paired samples T-test was used to calculate the difference between the experimental group performance on the pre and that on the post application of the reading comprehension test. The results are presented here in table (5)

Table (5): "t" test for the pre-posttest score of the experimental group in each reading comprehension skill.

Reading skills		Test type	Mean	SD	T-test		
					T-value	DF	P-value
Literal Comprehension	Guess the meaning of unfamiliar words from context	Pre-test	0.83	0.75	15.06	29	0.001
		Post-test	3.60	0.50			
	Identify specific details	Pre-test	1.90	0.84	13.45	29	0.001
		Post-test	3.73	0.45			
	Recognize cause and effect relationships	Pre-test	1.87	0.86	9.78	29	0.001
		Post-test	3.57	0.50			
Inferential comprehension	Infer main idea	Pre-test	0.63	0.56	18.54	29	0.001
		Post-test	3.40	0.56			
	Relate text to personal experience, opinion or evaluation	Pre-test	1.33	0.84	50.34	29	0.001
		Post-test	11.03	0.93			
	Extract important points to summarize the text	Pre-test	1.13	0.94	9.96	29	0.001
		Post-test	3.23	0.82			
Total score of the post RCST		Pre-test	7.70	2.52	47.28	29	0.001
		Post-test	28.57	1.65			

Table (5) reveals that the mean score of the each reading comprehension skills were remarkably high. This indicates that the computer-based scaffolding strategy was effective in enhancing the reading comprehension skills of the students' in the experimental group.

To determine the size of the effectiveness of computer-based scaffolding strategy in enhancing the reading comprehension skills, the researcher used the effect size equation. It was calculated in terms of the "t" value of the differences between the mean scores of experimental and control group students on the post RCST and SRQ.

To calculate the effect size of the independent variable (teaching by using a computer-based scaffolding strategy) on the dependent variable (reading comprehension skills), the (η^2) value was calculated as presented in table (6):

Table (6): illustrates the effect size of using the computer-based scaffolding strategy on the experimental group reading comprehension skills.

	Reading skills	DF	T-value	Eta square	Effect size
Literal comprehension	Guess the meaning of unfamiliar words from context	29	15.06	0.88	Large
	Identify specific details	29	13.45	0.86	Large
	Recognize cause and effect relationships	29	9.78	0.76	Large
Inferential comprehension	Infer main idea	29	18.54	0.92	Large
	Relate text to personal experience ,opinion or evaluation	29	50.34	0.98	Large
	Extract important points to summarize the text	29	9.96	0.77	Large
Total effect size of CBSS on RCS		29	47.28	0.98	Large

Results in table (6) indicate that the effect size (η^2) of the computer-based scaffolding strategy on the reading comprehension skills ranged from 0.76 to 0.98 and the total effect size (η^2) of the computer-based scaffolding strategy on the reading comprehension skills test is (0.98). This illustrates the effectiveness of using the computer-based scaffolding strategy in improving the experimental group students' reading

comprehension skills. Figure (1) shows size effect of using the computer-based scaffolding strategy on students' reading comprehension skills improvement.

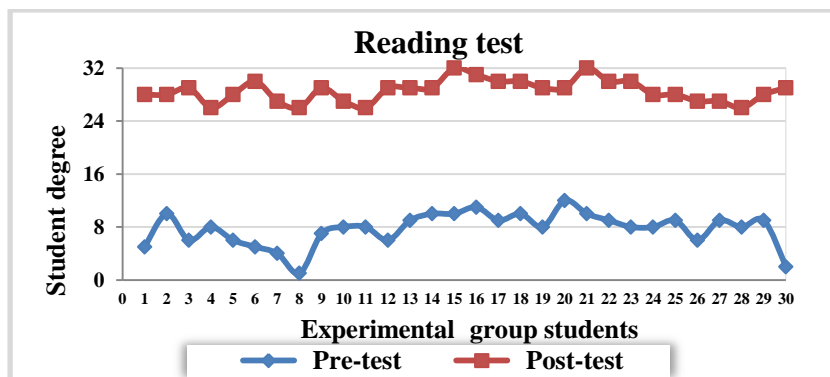


Figure (1): shows size effect of using the computer-based scaffolding strategy on students' reading comprehension skills improvement.

Results of hypothesis 6:

The sixth hypothesis stated that there are statistically significant differences at $\leq (0.05)$ level between the mean score of students of experimental group on the pre and post administration of the SRQ in favor of the post administration.

To test this hypothesis, the researcher used Paired samples T-test. The results are shown in the following table:

Table (7): illustrate differences between the mean score of the experimental group on the pre and post application of the SRQ.

Self-regulation Scales	Test type	Mean	SD	T-test		
				T-value	DF	P-value
Motivation	Pre-test	2.41	0.10	52.93	29	0.001
	Post-test	4.21	0.13			
Learning strategies	Pre-test	2.37	0.08	64.39	29	0.001
	Post-test	4.23	0.14			
Total score of post SRQ	Pre-test	2.39	0.06	91.67	29	0.001
	Post-test	4.22	0.09			

Table (7) reveals that the mean score of the experimental group members on the pre and post administration of the SRQ were noticeably high and statistically significant when compared with their own mean scores on the pre administration of the same questionnaire.

To calculate the effect size of the independent variable (teaching by using a computer-based scaffolding strategy) on the dependent variable (self-regulation), the (η^2) value was calculated as presented in table (8):

Table (8): illustrates the effect size of using the computer-based scaffolding strategy on the experimental group self-regulation skills.

Self-Regulation Scales	DF	T-value	Eta square	Effect size
Motivation	29	52.93	0.99	Large
Learning strategies	29	64.39	0.99	Large
Total effect size of CBSS on SRS	29	91.67	0.99	Large

Results in table (8) indicate that the total effect size (η^2) of the computer-based scaffolding strategy on the self-regulation skills is (0.99) which means a large effect size. This might be due to what the students did during working on the computer-based scaffolding strategy tasks: *they need to listen, collect, organize, and integrate information based on the time constraint set by the teacher. Students discuss, listen to videos, give feedback, cooperate together, negotiate meaning and take notes. These actions are all self-regulated strategies.* Figure (17) shows size effect of using a computer-based scaffolding strategy on students' self-regulation skills improvement.

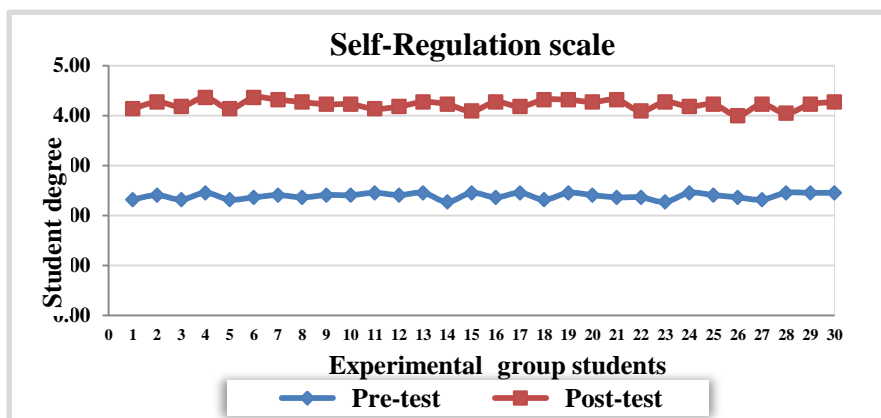


Figure (17): shows size effect of using a computer-based scaffolding strategy on students' self-regulation skills improvement.

The results of the current study indicated the verification of the previous hypothesis and the high value of the experimental treatment's effect size upon the overall reading comprehension skills and self-regulation skills. The researcher's own observations and notes that proved the effectiveness of the computer-based scaffolding strategy. For example, some students of the experimental group expressed their positive attitudes towards using a computer-based scaffolding strategy. Students' positive opinions can be summarized in the following points:

1. The strategy helped them use modern multimedia such as videos and pictures and provided them the chance to work cooperatively in groups and individually as well.
2. Students' also felt the difference in their reading comprehension performance and self-regulation skills before and after the experiment.

The previous results are in line with those of Salem, (2016); Elkomy, (2016); Al Aila, (2015); Abdul-Majeed & Muhammad (2015); Bassiri (2012); Safadi & Rababah (2012) and Sukyadi & Hasanah (2010) which reported the effectiveness of using scaffolding strategies in enhancing students' reading comprehension skills meanwhile, Goda, (2017); Elhenawy, (2010); Azevedo, Cromley, Fielding, Winters, Moos & Greene, (2005) and Ammar, (2004) asserted the effectiveness of using scaffolding strategies in enhancing students' self-regulation skills.

Conclusion:

Absence of innovation and the traditional methods of teaching reading in EFL classroom where students have a passive learning role provided the researcher an opportunity to investigate the effectiveness of computer-based scaffolding strategy on students' learning and find out whether it has a positive effect on students' self-regulation. Hence, the current study proved that using the computer-based scaffolding strategy program was effective in enhancing students' reading

comprehension skills and boosting students' self-regulated learning.

References

- Abbasian, G., & Hartoonian, A. (2014). Using Self-Regulated Learning Strategies in Enhancing Language Proficiency with a Focus on Reading Comprehension. *English Language Teaching*, 7 (6), 160-167. (Eric Document Reproduction Service No EJ1075776).
- Abdul-Majeed, M. & Muhammad, N. (2015). The effect of using scaffolding strategies on EFL students achievement in reading comprehension. *Arts Journal*, 111, 91-118.
- Ahmed, S. (2018). A proposed program based on literature circles strategy for developing secondary stage students' reading comprehension skills and attitudes towards studying English. Unpublished Doctoral Dissertation, Faculty of Education. Damietta University.
- Al Aila, M. (2015).The effectiveness of scaffolding strategy on the seventh graders' English reading comprehension. Master's Thesis. The Islamic University. Gaza.
- Al- Yami, S. (2008). The effectiveness of Scaffolding Interactive Activities in Developing the English Listening Comprehension Skills of the Sixth Grade Elementary School girls in Jeddah. Masters' Thesis. King Abdul Aziz University. *Eric Document Reproduction Service*, ED. No. 520563.
- Ammar, A. (2004). The Effects of Self-Regulated Reading Strategy Development on the Prospective EFL Teachers' Critical Reading Skills and Reading Motivation. *Journal of Aswan Faculty of Education*, 18, 264-238
- Awad, A. (2009). The Effectiveness of a Strategy Based on the Language Experience Approach in Developing the Reading Comprehension Skills and Vocabulary of Preparatory Pupils. Unpublished Master's Thesis. Women's College. Ain Shams University.
- Azevedo, R., Cromley, J., Fielding, I., winters, F., Moos, D. & Greene, J. (2005). Adaptive human scaffolding facilitates

- adolescents' self-regulated learning with hypermedia. *Instructional Science*, 33(5-6), 381-412.
- Baker, L. 2002. Metacognition in Comprehension Instruction. In *Comprehension Instruction Research Based Best Practices*, edited by C.C .Block and M. Pressley. New York: The Guilford Press.
- Bassiri, M. (2012). The impact of scaffolding as a strategy for teaching reading on the motivation of Iranian L2 learners. *British journal of Social Science*, 1(1), 32-46.
- Belland, B., Walker, A., Olsen, M., & Leary, H. (2015). A Pilot Meta-Analysis of Computer-Based Scaffolding in STEM Education. *Educational Technology & Society*, 18 (1), 183-197.
- Berk, L., & Winsler, A. (1995). *Scaffolding children's learning: Vygotsky and early childhood education*. Washington, DC: National Association for the Education of Young Children (NAEYC).
- Berman, I. (2009). Supporting adolescent literacy achievement. *Issue Brief*, 11(3), 1-15.
- Brown R (2002). Straddling two worlds: self-directed comprehension instruction for middle schoolers. In *Comprehension instruction research based best practices* (C.C. Block & M. Pressley Eds.). New York: The Guilford Press.
- Christison, M., & Murray, D. (2014). *What English Language Teachers Need to Know Volume III: Designing Curriculum*. New York: Routledge.
- Chung, W. (2006). Think-aloud with teacher intervention on the reading Comprehension of EFL technological university students. Master's Thesis, Chia-yi, Taiwan: National Chung Cheng University.
- Clay, M. (1998). *Becoming literate: The construction of inner control*. Portsmouth, NH: Heinemann.
- Cooke, C. (2002). The effects of scaffolding multicultural short stories on students' comprehension, response, and

- attitudes. Doctoral dissertation, University of Minnesota, Minneapolis.
- Cumming-Potvin, W., Renshaw, P., & Kraayenoord, C. (2003) Scaffolding and bilingual shared reading experiences: Prompting primary school students' learning and development. *Australian Journal of Language and Literacy*, 26(2), 54-68.
- Dorn, L., French, C., & Jones, T. (1998). *Apprenticeship in literacy: Transitions a cross reading and writing*. York, ME: Stenhouse.
- El-Henawy, W. (2010). Self-Regulated Learning in English Language Instruction. Quality and Accreditation Standards in Open Education in Egypt and the Arab World. The First International Conference, College of Education, Port Said University (27-28), March, 2010.
- El-komy, G. (2016). Using some scaffolding strategies to develop EFL primary stage pupils' reading comprehension skills. Un published Master's Thesis. Faculty of Education. Mansoura University.
- El-Shirbiny, I. (2007).The effectiveness of SQ3r strategy in developing the reading comprehension skills of EFL secondary students at Al-Azhar institutes. Unpublished Master's Thesis . Faculty of Education, Mansoura University.
- Ermayanti, N. (2013). Improving students' achievement in reading comprehension through advance organizer strategy. Retrieved April 25, 2018 from: download.portalgaruda.org/article.php?article=126801&val=3893
- Erten, I., & Karakas, M.(2007). Understanding the divergent influences of reading activities on the comprehension of short stories. *The Reading Matrix*, 7(3), 113-133.
- Fitzgerald, J., & Graves, M. (2004). *Scaffolding reading experiencesfor English-language learners*. Norwood, MA: Christopher-Gordon

- Goda, A. (2017). The impact of training in web-based self-regulated learning strategies on improving secondary school students' reading comprehension. Master's Thesis. Faculty of Education. Mansoura University.
- Grabe, W., & Stoller, F. (2002). *Teaching and Researching Reading*. Harlow: Pearson.
- Graves, M., & Graves, B. (2003). *Scaffolding reading experiences: Designs for student success (2nd Ed.)*. Norwood, MA: Christopher-Gordon.
- Khalaf, H. (2010). Using computer to train preparatory school pupils on some learning strategies for developing their English language reading comprehension. Unpublished Doctoral Thesis, Faculty of Education. Mansoura University.
- Klein, P. (1999). Reopening inquiry in to cognitive processes in writing to learn. *Educational Psychology Review*, 11(3), 203-270.
- Lyons, C. (2003). *Teaching struggling readers: How touse brain-based research to maximize learning*. Portsmouth, NH: Heinemann.
- Maftoon, P., & Tasnimi, M. (2014). Using self-regulation to enhance EFL learners' reading comprehension. *Journal of Language Teaching and Research*, 5 (4), 844-855.
- Manning, C. (2003). Improving reading comprehension through visual tools. Division of Graduate Studies. Division of Teacher Education. Master's Thesis. Eastern Nazarene College.
- McKenzie, (2011). The Impact of a Scaffolding Strategy on Elementary English Language Learner's' Reading Performance. Doctoral dissertation. Minnesota, Walden University.
- McMahon, M., & Dunbar, A. (2010). Mark-up: Facilitating reading comprehension through on- line collaborative annotation. Retrieved October 27, 2017 from <http://citeseerx.ist.psu.edu/viewdoc/download>

- Nash-Ditzel, S. (2010). Metacognitive Reading Strategies Can Improve Self-Regulation. *Journal of College Reading and Learning*, 40, 45-63.
- Oruç,A., & Arslan, A. (2016). The impact of self-regulated learning on reading comprehension and attitude towards Turkish course and metacognitive thinking. *Educational Research and Reviews*, 11(8), 523-529.
- Prensky, M. (2000).*Digital game-based learning*. New York: McGraw-Hill.
- Riazi, M. & Rezaii, M. (2011). Teacher- and peer-scaffolding behaviors: Effects on EFL students' writing improvement. In A. Feryok (Ed.), 55-63.
- Safa, M., & Rozati, F. (2016). The impact of scaffolding and nonscaffolding strategies on the EFL learners' listening comprehension development. *The Journal of Educational Research*, 110, 447-457.
- Safadi,E., & Rababah, G. (2012). The effect of scaffolding instruction on reading comprehension skills. *International Journal of Language Studies*, 6(2), 1-38.
- Salem, A. (2016). Scaffolding Reading Comprehension Skills. *English Language Teaching*, 10, 1, 97-111.
- Smith, B. (2004). Computer-mediated negotiated interaction and lexical acquisition. *Studies inSecond Language Acquisition*, 26(3), 365-398.
- Sukyadi, D., & Hasanah.E., (2010). Scaffolding students' reading comprehension with think-aloud strategy. *The New English Teacher*, 4(1), 125-139.
- Swalander, L., & Taube, K. (2007). Influences of family based prerequisites, reading attitude, and self-regulation on reading ability. *Contemporary Educational Psychology*, 32, 206-230.
- Teo, R., & Wong, A. (2000). Does Problem Based Learning Create A Better Student: A Refelection? Paper presented at the 2nd Asia Pacific Conference on Problem,Education Across Disciplines, December 4-7, 2000, Singapore.

- Vacca, J. (2008). Using scaffolding techniques to teach a social studies lesson about Buddha to sixth graders. *Journal of Adolescent and Adult Literacy*, 51(8), 652–658.
- Wood, D., Bruner, J., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology and Psychiatry*, 17, 89-100.
- Zarandi, S., & Rahbar, B. (2014). The impact of interactive scaffolding on Iranian EFL learners' speaking ability. *International Journal of Language Learning and Applied Linguistics World*, 7(2), 344-353.
- Zarei, A., Esfandiari, R., & Akbari, A. (2016). Self-Regulated Learning Strategies as Predictors of Reading Comprehension. *English Language Teaching*, 3(2), 29-42.
- Zhou, L. (2008). Effects of reading tasks on Chinese EFL students' reading comprehension. Doctoral Thesis, Suranaree University of Technology, Thailand.