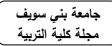# Effectiveness of a Program Based on Connectivism Theory in Developing EFL Reading Comprehension Skills of Preparatory Stage Pupils

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Abstract

The researcher aimed at investigating effectiveness of a program based on connectivism theory in developing EFL reading comprehension skills of preparatory stage pupils. To address this issue, a diagnostic test, a checklist of some reading comprehension sub – skills and a questionnaire were used to pave the way for the researcher to determine the most needed sub – skills. The researcher prepared the proposed program, a pre-post test, reflection logs and a satisfaction questionnaire. (n=62) prep-stage pupils were randomly selected to represent the participants of the study. Findings showed that there are statistically significant differences at the level of (0.01) between the mean scores of the experimental group and the control group in pre - post test in favour of the experimental group. Findings also showed that the program positively influenced the experimental group' performance. In the light of the findings, the researcher provided some pedagogical implications and suggestions for further studies.

Key Words

Reading comprehension , Connectivism, Prep stage.

ملخص البحث:

هدفت الباحثة إلى التحقق من فعالية برنامج قائم على النظرية الترابطية في تنمية مهارات الفهم القرائي لدى تلاميذ المرحلة الإعدادية. لتحقيق هذه الغاية؛ تم استخدام اختبار تشخيصي وقائمة لبعض المهارات الفرعية للفهم القرائى واستطلاع للرأى لتحديد المهارات الفرعية المطلوبة. كما أعدت الباحثة البرنامج المقترح ، والاختبار القبل بعدى ، وسجلات الانعكاس ، واستطلاع الرأى. تكونت عينة البحث من٦٢ تلميذا من تلاميذ المرحلة الإعدادية تم اختيارهم عشوائياً. أظهرت النتائج وجود فروق ذات دلالة إحصائية عند مستوى (٠٠١) بين متوسطي درجات المجموعة التجريبية والمجموعة الضابطة في الاختبار القبل بعدى لصالح المجموعة التجريبية. كما أظهرت النتائج أن البرنامج أثر بشكل إيجابي على أداء المجموعة التجريبية. وفي ضوء النتائج قدمت الباحثة بعض المقترحات التربوية لمزيد من الدراسات.

الكلمات المفتاحية: الفهم القرائي ، الترابطية ، المرحلة الإعدادية.

Introduction

Reading comprehension skills enable students to understand not only academic courses but also many life matters. Teaching reading expands students' knowledge, skills, attitudes, and values which the reading text contains. It helps students understand information obviously. It is a core element while getting information as it makes it easier for readers to be integrated within their society. It helps readers realize economic, social and political events .Thus, it should be taught to primary school pupils as it influences their academic courses and their daily life (Papatga & Ersoy, 2016:125; Ningsih,2017:1; Aguilera,2014:22; Abera,2014:1,8).

Duin & Moses (2015:33) suggested that with the emergence of technology, there has been an increasing argument about what learning goals, methods, instruments and frameworks to be used. In such era, there is a gap about people's consideration about the nature of knowledge. Siemens and Downes sought for bridging the gap by connected and re-assigned shared nodes that occur among people and information. Modern technology facilitates accessing information as learning is not limited to formal educational institutions. By this it is meant that the structure of the connections controls the variety of experience. The nature of learning that is formulated by connections between the teacher and the students differs from that which occurs among students and learning resources Kop (2011:19).

Siemens (2005:4) set the principles of connectivism as follows;

1. Learning occurs in an environment that encourages different opinions.
2. Learning is a process of connecting knowledge sources.
3. Learning may occur in non-human devices.
4. Knowing more information is more important than information itself.
5. Decision-making is considered a learning process.

Problem of the Research

Context of the Problem

The researcher made sure of the pupils' poor performance in reading comprehension through;

The Pilot study

To investigate the problem, the researcher administered a reading comprehension checklist and a diagnostic test. The researcher also applied a questionnaire.

Statement of the Problem

The problem of the research can be stated in the weak performance of preparatory stage pupils in reading comprehension.

Questions of the Research

The research sought to answer the following questions:

Main Question

What is effectiveness of a program based on connectivism theory in developing reading comprehension skills of preparatory stage pupils?

Sub-Questions

To answer the main questions, the researcher stated these sub-questions:

1. What are the reading comprehension sub-skills needed to developing the reading comprehension skills of preparatory stage pupils?

2. What is the effectiveness of a program based on connectivism theory in developing the reading comprehension skills on each of the six sub-skills of preparatory stage pupils?

3. What is the effectiveness of a program based on connectivism theory in developing reading comprehension skills as a whole of preparatory stage pupils?

Hypotheses of the Research

In order to answer the previous questions, the following hypotheses were formulated:

1. There is a statistically significant difference at the level of (0.01) between the mean scores of the experimental group and the control group in pre and post measurement of the reading comprehension skills on each of the six sub-skills in favor of the experimental group.

2. There is a statistically significant difference at the level of (0.01) between the mean scores of the experimental group and the control group in pre and post measurement of the reading

comprehension skills as a whole in favor of the experimental group.

Objectives of the Research

Based on the problem statement above, the research aims mainly at investigating the effectiveness of the suggested program in developing reading comprehension among prep stage pupils.

Significance of the Research

The research may be important for the following classes.

1. Preparatory stage pupils; The research may train them on understanding much more reading texts than the texts they study.
2. Curricula developing specialists; The research may benefit them by presenting additional content, evaluation, teaching methods and activities for EFL students.
3. Researchers; The research can open new horizons towards other researchers who are concerned with the same problem.

Delimitations of the Reasearch

The research had the following delimitations:

1. Two groups of 2nd year prep year pupils.
2. A whole semester.
3. The following reading subs-kills.
   a. Pronoun reference.   b. Summarizing   c. Scanning.
   d. Skimming.   e. Background knowledge.   f. Word meaning.

Variables of the Research

Independent Variable

Connectivism theory.

Dependent Variables

Reading comprehension skills.

Review of Literature

Using Technology in Teaching Reading Comprehension

Zhang (2016:136) argued that using technology in teaching reading comprehension became more remarkable. Thus, having sufficient language skills and strategies is the basic upon which the reader can deal with the different texts. This literacy efficiency may take different forms as viewing a text on DVD, iPad, iPhone and other

devices and applications. Today, reading is not limited to reading printed texts and writing also is not merely using a pen and paper to write on. The Internet changed these skills greatly because in digital texts the word or the sentence can be connected to another meaning which is found on other website.

De La Cruz & Lopez (2016:1,3) stressed using technological tools and resources in education provides students with an interactive process with more opportunities to take part in, analyze and comprehend reading comprehension texts. Such resources include hardware in addition to software that provides multimedia resources and activities available to smart phone devices which leads to enhance reading comprehension.

The Entity of the Connectivism Theory

Downes (2017:600) implied that connectivism looks at the nature of knowledge from a different perspective. It not limited to research on networks however, it is based on research on artificial intelligence and neuroscience. As long the sentence does include the actual information, then learning will be just remembering pieces of information. If a learner wants to comprehend a sentence, he or she has to understand a language and this in return will make it a must for him/her to know information about related words as who speaks them. Knowledge is a group of connections. Acquiring connectivist manner is not that easy it is created by interactions which are continuously repeated. Thus, an active, network-based and interactive learning becomes a must more than ever (ibid:646).

Anderson & Dron (2012:8,9) defined connectivism as a network centric pedagogy and saw it as the first original distance learning theory. Accessing to a network is vital during managing connectivist models that determine education. Connectivisim stresses on formulating, distributing and publishing learners' works online. Collaboration between learners goes beyond time and place limits. Now distance learning environments are more secured. When the course ends, its content created by a student is deleted and becomes unreachable even to the student who created it.

Causes of the Emergence of Connectivisim Theory

Siemens (2005:1) asserted that great changes occurred recently that changed basic concept about the nature of knowledge and schooling. People are not limited to a definite age to learn and knowledge is improving tremendously and very fast. More attention is being paid to informal learning through various ways as personal networks and communities. Learning and learning activities are associated and sometimes are the same. Both learners and organizations are learning existences so a new theory is needed to present interpretation for the relation between them. Know-where completes know-how and know-what concepts.

Renandya & Jacobes (2016:4,5) showed that how English is taught and learnt had been affected by the growing utilization of technology in education. Instead of depending on the teacher and the learning materials in textbooks, students can reach and get massive learning resources with the help of the Internet. The Internet made the resources of the target language constantly accessible. Students also can practise what have been learnt in authentic way by communicating with native speakers all over the world. Mattar (2018:202) outlined that the raise of modern technology applications and tools as Web 2.0, blogs, wikis and social media led to continuous rejection to the regular methods. Dynamic methods for teaching are needed as student-centered learning, co-creation of knowledge and peer assessment. **Research Participants**

(n=62) second-year-prep school pupils participated in the study. They were from 3 prep schools at Wasta and Nasser Educational Administrations.

Research Methodology

The quasi-experimental approach, pre – post treatment two groups, was used. It took 8 weeks to complete the experiment.

Instruments and Materials of the Research

The researcher prepared a checklist of reading comprehension sub-skills, a questionnaire in addition to a diagnostic test. The researcher also prepared a pre-posttest, the suggested program, weekly reflection logs and a questionnaire.

The On-line Pre- post Test
Validity of the On-line Pre post Test
The Content Validity

The researcher submitted the test to the jury members. The jury's opinion was helpful in standardizing and validating the test. The pilot group which had the same characteristics of the experimental group was randomly selected to ensure test validity.

Internal Consistency of the On-line Pre post Test

Consistency of the pre posttest can be found between every single skill and the total score of the test. In addition, it appears in each item of a skill and the total score of each skill.

Reliability of the On-line Pre post Test

The pilot group contained (n= 30) second year prep stage pupils. To make sure of the test reliability, the same test was tested and retested.

Answer of the First Question

The first question was formulated as follows:

What are the reading comprehension sub-skills needed to developing the reading comprehension skills of preparatory stage pupils?

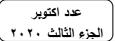The following steps were followed in order to answer this question:

1. The researcher prepared a reading comprehension checklist. The jury specified 12 sub-skills.
2. In the light of the checklist, the researcher administered a diagnostic test.Results showed that the pupils had difficulty in the following reading sub – skills:

1. Pronoun reference. 2. Summarizing. 3. Scanning.
4. Skimming. 5. Background knowledge. 6. Word meaning.

Answer of the First Hypothesis

The first hypothesis was stated as follows:

There is a statistically significant difference at the level of (0.01) between the mean scores of the experimental group and the control group in pre and post measurement of the reading comprehension skills on each of the six sub-skills in favor of the experimental group.

Table (1)
The mean score of the experimental group and the control group of reading comprehension skills separately in the on-line post test.

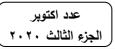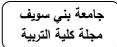| Sub-skill	Group	N	Mean	Std. Deviation	T	Effect size	Sig.
Pronoun reference	Exper	31	2.35	.915	4.424		0.01
	Contr	31	1.45	.675		0.245964	
Summarizing	Exper	31	4.71	2.101	8.487		0.01
	Contr	31	1.16	1.003		0.545555	
Scanning	Exper	31	16.35	4.827	5.928		0.01
	Contr	31	9.68	4.003		0.369358	
Skimming	Exper	31	8.06	3.558	3.791		0.01
	Contr	31	5.03	2.677		0.193241	
Background	Exper	31	7.06	2.943	4.679		0.01
	Contr	31	3.90	2.343		0.267337	
word meaning	Exper	31	5.48	2.308	4.242		0.01
	Contr	31	3.10	2.119		0.230716	

(df) = 2(31)-2=60

Table (2)
The mean score of the experimental group in the pre and post of reading comprehension skills separately in the on-line post test.

	Sub-skill	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pronoun reference	1.26	31	.773	.139
	Pronoun reference	2.35	31	.915	.164
Pair 2	Summarizing	1.35	31	1.582	.284
	Summarizing	4.71	31	2.101	.377
Pair 3	Scanning	10.74	31	4.297	.772
	Scanning	16.35	31	4.827	.867
Pair 4	Skimming	4.71	31	2.854	.513
	Skimming	8.06	31	3.558	.639
Pair 5	Background	4.58	31	2.500	.449
	Background	7.06	31	2.943	.529
Pair 6	word meaning	3.03	31	2.415	.434
	word meaning	5.48	31	2.308	.414

(df) = 2(31)-2=60

Table (3)
Paired Samples Test of the reading comprehension skills in the on-line pre-post test

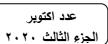|		Paired Samples Test							
		Paired Differences							
Sub-skill					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	T	Sig.	Effect size
Pair 1	Pronoun reference Pronoun reference	1.097	1.012	.182	1.468	.726	6.036	0.01	0.548419
Pair 2	Summarizing Summarizing	3.355	1.496	.269	3.903	2.806	12.490	0.01	0.83871
Pair 3	Scanning Scanning	5.613	3.853	.692	7.026	4.200	8.111	0.01	0.686809
Pair 4	Skimming Skimming	3.355	2.443	.439	4.251	2.459	7.645	0.01	0.66081
Pair 5	Background knowledge Background knowlwdge	2.484	2.308	.414	3.330	1.637	5.993	0.01	0.544876
Pair 6	Identifying wordmeaning Identifying wordmeaning	2.452	2.173	.390	3.249	1.654	6.281	0.01	0.568041

(df) = 2(31)-2=60

1. Pronoun References

Table (1) illustrates that that the Mean of the experimental group was2.35 and the Mean of the control group was 1.45.The standard deviation of the experimental group was.915 and the control was .675. t value was 4.424. The effect size was 0.245964. The Statistical Significance was 0.01.

Table (2) shows that that the Mean of the experimental group in the pretreatment was 1.26 and the Mean of the same group in the post treatment reached 2.35.The standard deviation of the experimental group in the pretreatment was.773 and in the post treatment was .915. The standard error mean was.139 then it became .164.

Table (3) indicates that that the Mean of the paired differences in the pronoun reference skill was1.097. The standard deviation was 1.012. The standard error mean was .182. 95% Confidence Interval of the Difference at the lower level was 1.468 while at the upper level it

was .726. t value was 6.036. sig .(2tailed) value was at 0.01. The effect size was 0.548419.

2. Summarizing

Table (1) illustrates that the Mean of the experimental group was 4.71 and the Mean of the control group was 1.16.The standard deviation of the experimental group was 2.101and the control was 1.003. t value was 8.487. The effect size was 0.545555. The Statistical Significance was 0.01.

In Table (2), the Mean of the experimental group in the pretreatment was 1.35 and the Mean of the same group in the post test reached 4.71.The standard deviation of the experimental group in the pretest was1.582 and in the post test was 2.101. The standard error mean was.284 then it became .377.

Table (3) shows that that the Mean of the paired differences in the summarizing skill was3.355. The standard error mean was .269. The standard deviation was 1.496. The 95% Confidence Interval of the Difference at the lower level was 3.903 while at the upper level it was 2.806. t value was 12.490. sig .(2tailed) value was at 0.01. The effect size was 0.83871.

3. Scanning

Table (1) illustrates that the Mean of the experimental group was16.35 and the Mean of the control group was 9.68.The standard deviation of the experimental group was 4.827and the control was 4.003. t value was 5.928. The effect size was 0.369358.

Table (2) shows that that the Mean of the experimental group in the pre-test was 4.58 while the Mean of the same group in the post test reached 16.35.The standard deviation of the experimental group in the pretest was4.297and in the post test was 4.827. The standard error mean increased from .772 to .867.

Table (3) shows that the Mean of the paired differences in the scanning skill was5.613. The standard deviation was 3.853. The standard error mean was .692. The 95% Confidence Interval of the Difference at the lower level was 7.026 while at the upper level it was 4.200. t value was 8.111. sig .(2tailed) value was at 0.01.

4. Skimming

Table (1) shows that the Mean of the experimental group was 8.06and the Mean of the control group was 5.03.The standard deviation of the experimental group was 3.558 and the control was 2.677. t value was 3.791 and the effect size was 0.193241.

Table (2) illustrated that the Mean of the experimental group in the pre-test was 4.71while the Mean of the posttest was 8.06. The standard deviation of the experimental group in the pretest was2.854 then in the post test was 3.558. The standard error mean increased from .513 to .639.

Concerning Table (3), the Mean of the paired differences in the skimming skill was3.355. The standard deviation was 2.443. The standard error mean was .439. The 95% Confidence Interval of the Difference at the lower level was 4.251 and at the upper level it was 2.459. t value was 7.645. sig .(2tailed) value was at 0.01. The effect size was 0.66081.

5. Background Knowledge

Based on table (1), the Mean of the experimental group was 7.06 and the Mean of the control group was 3.90 .The standard deviation of the experimental group was 2.943and the control was 2.343. t value was 4.679. The effect size was 0.267337. The Statistical Significance was 0.01.

In Table (2) ,the Mean of the experimental group in the pre-treatment was 4.71.The Mean of the post-treatment increased to7.06. The standard deviation of the experimental group in the pretest was2.500 then it rose in the post test and was 2.943. The standard error mean of the pretest was .529 and in the posttest .529.

Table (3) shows that the Mean of the paired differences in the background knowledge skill was 2.484. The standard deviation was 2.308. The standard error mean was .414. The 95% Confidence Interval of the Difference at the lower level was 3.330 while at the upper level it was 1.637. t value was 5.993. sig .(2tailed) value was at 0.01. The effect size was 0.544876.

6. Identifying Word Meaning

Table (1) shows that the Mean of the experimental group was 5.48and the Mean of the control group was 3.10.The standard deviation

of the experimental group was 2.308 and the control was 2.119. t value was. 4.242. The effect size was 0.230716. The Statistical Significance was 0.01.

Table (2) shows that the Mean of the experimental group in the pre-treatment was 3.03.The Mean of the post-treatment increased to 5.48. The standard deviation of the experimental group in the pretest was 2.415then it was 2.308 the post test. The standard error mean of the pretest was .434and in the posttest .414.

According to Table (3), the Mean of the paired differences in the identifying word meaning skill was 2.452. The standard deviation was 2.173. The standard error mean was .390. The 95% Confidence Interval of the Difference at the lower level was 3.249 while at the upper level it was 1.654. t value was 6.281. sig .(2tailed) value was at 0.01. The effect size was 0.568041.

Answer of the Second Hypnosis

The researcher hypothesized the following hypothesis:

There is a statistically significant difference at the level of (0.01) between the mean scores of the experimental group and the control group in pre and post measurement of the reading comprehension skills as a whole in favor of the experimental group.

Table (4)

The differences between mean scores of the experimental group and the control group in the reading comprehension skills as a whole in the on-line post test.
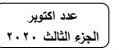
	Group	N	Mean	Std. Deviation	T	Sig.	Effect size
Reading	Exper	31	44.0323	14.05106	6.521	0.01	
	Contr	31	24.3226	9.26062			0.414768

Table (5)
The mean scores of the experimental group for reading comprehension skills as a whole in the on-line pre-post test.

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Reading_Pre	25.6774	31	10.32275	1.85402
	Reading_Post	44.0323	31	14.05106	2.52364

(df) = 2(31)-2=60

Table (6)
Paired Samples Test of the reading comprehension skills as a whole in the on-line pre-post test.

(df) = 2(31)-2=60

								Paired Samples Test	
					Paired Differences			Sig. (2tailed)	Effect size
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		T		
					Lower	Upper			
Pair 1	Reading _Pre Reading _Post	18.35484	8.34086	1.49806	21.41429	15.29539	12.252	0.01	0.833437

According to table (4), the Mean of the experimental group was 44.0323 while it was 24.3226 in the control group. The standard deviation of the experimental group was 14.05106 and the control was 9.26062. t value was 6.521.The effect size was0.414768.The level of significance was at 0.01.

In Table (5), the Mean of the experimental group in the pretreatment was 25.6774 and the Mean in the post treatment was 44.0323.The standard deviation of the experimental group in the pretreatment was 10.32275and in the post treatment was14.05106. The standard error mean was 1.85402, and then it became 2.52364.

Table (6) shows that the Mean of the paired differences was 18.35484. The standard deviation of the paired differences was 8.34086. The standard error mean of the paired differences was 1.49806 . 95% Confidence Interval of the Difference at the lower level was 21.41429, meanwhile at the upper level was 15.29539. t value was 12.252. The effect size was 0.833437. sig .(2tailed) value was at 0.01.

Recommendations
1. Giving more attention to create an interactive learning atmosphere that enables students to communicate with native speakers.
2. Providing more activities especially while the pre- reading phase.

3. Using various teaching aids and new strategies in teaching.

Pedagogical Implications

1. Pupils' levels of reading comprehension skills should be identified as this step can be beneficial while teaching English language.
2. Pupils' interests should be taken into account by selecting the topics with suitable and interesting content.
3. Connectivism theory has great influence on pupils' performance.

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