The Effects of Advance Graphic Organizers Strategy Intervention on Improving Reading Comprehension of Struggling Readers in Primary Five

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Abstract
This study investigated the effect of using Advance Graphic Organizers Strategy on improving reading comprehension of learning disabled students in primary five . A total of 60 students identified with LD participated. The sample was divided into two groups; experimental (n= 30 boys) and control (n= 30 boys). ANCOVA and T .test were employed for data analysis. Findings from this study indicated the effectiveness of Advance Graphic Organizers Strategy on improving reading comprehension in the target students. On the basis of the findings, the study advocated for the effectiveness of Advance Graphic Organizers Strategy on improving reading comprehension in learning disabled students.

Keywords : Advance Graphic Organizers Strategy, reading comprehension disabilities.

Introduction

Reading comprehension is the process of constructing meaning from a text and involves the complex coordination of several processes, including "decoding, word reading, and fluency along with the integration of background knowledge and previous experiences" (Klinger & Geisler, 2008, p. 65). Reading comprehension can be influenced by students' vocabulary knowledge, word recognition skills, understanding of text structure proficiency, and cultural background differences (Klinger & Geisler, 2008; Francis et al., 2006; Mohammed , M. Fatah Allah,2014). Vocabulary knowledge has been shown to be highly related to students' reading comprehension ability (Klinger, et al., 2006). Students who struggle with reading tend to place more focus on the "surface aspects of reading, use fewer comprehension strategies, tap less into background knowledge, and have more limited vocabularies" (Orosco, de Schonewise, de Onis, Klinger, & Hoover, 2008, p. 16).

Struggling readers often "fail to link new information with prior knowledge or monitor their comprehension of what they are reading" (Narkon & Wells, 2010, p. 2). An instructional strategy is "a purposeful activity to engage learners in acquiring new behaviors or knowledge" (Shyyan et al., 2008, p. 148). Many students with learning disabilities are not efficient in learning because they are not aware of their own cognitive processes and do not know how to determine the specific demands of learning tasks. Their lack of knowledge of how and when to use comprehension strategies appropriately, keeps these students from taking full advantage of their own abilities (Klinger & Vaughn, 1996).

Graphic Organizer and reading comprehension research

A graphic organizer can be defined as a visual and graphic display that depicts the relationships between facts, terms, and ideas within a learning task. Graphic organizers are also referred to as knowledge maps, concept maps, story maps, cognitive organizers, advance organizers, or concept diagrams (Strangman, Hall, & Meyer, 2003;Mourad Ali ,2012). Graphic organizers have multiple benefits. These benefits include helping learners grasp the material by assisting in seeing the relationships between ideas, concepts, or authors. Graphic organizers also assist in memory recall. Finally, graphic organizers encourage the use of developing higher-level thinking skills by assisting students to synthesize and integrate information, ideas, and concepts.

Ellis and Howard (2007) stated that graphic organizers are effective across subject areas because they provide visual cues designed to assist students in their understanding of information by organizing information. According to Yin, Vanides, Ruiz-Primo Ayala, and Shavelson (2005), graphic organizers allow students a means of creating connections by visually showing relationships among concepts.

By implementing graphic organizers for pre-reading, reading, and post reading tasks, teachers can enable students to know what information to look for when reading a new text. Studying the graphic organizer before first approaching the text enables students to know what information they should be looking for. According to brain based research, "To comprehend new data, the brain searches through these previously established neural networks to see whether it can find a place to fit the new information" (Westwater & Wolfe, 2000, p 49, 50). "The process of connecting known information to new information takes place through a series of networkable connections known as schema. In schema theory, individuals organize their world knowledge into categories and systems that make retrieval easier" (Pardo, 2004, p. 273). Using graphic organizers as a pre-reading tool enables the reader to link pre-reading information with a reader's existing schema (Kim, Vaughn, Wanzek, & Wei, 2004).

Further research is necessary to build on the vast amount of research into graphic organizers with learning disabled students. This will allow researchers to determine how graphic organizers can be best used as an intervention with learning disabled students as there is a dearth of research with this population. In order to address this issue with the lack of research on graphic organizers with learning disabled students . Thus the present study seeks to give answers to the following questions.

1- Are there differences in post-test scores mean between control and experimental groups on Reading Comprehension Test

2- If the programme is effective in improving reading comprehension of experimental group, is this effect still evident a month later?

Method

Participants

60 students participated in the present study. Each student participant met the following established criteria to be included in the study: (a) a diagnosis of LD by teacher's referral. Neurological scanning results indicated that those individuals were neurologically deficient (b) an IQ score on the Mental Abilities Test (Mosa, 1989) between 90 and 118 (c) reading performance scores at least 2 years below grade level (d) absence of any other disabling condition. Students were randomly classified into two groups: experimental (n= 30 boys) and control (n= 30 boys), Ashmon Primary school , Menofya.

The two groups were matched on age, IQ, and reading comprehension. Table 1. shows means, standard deviations, t- value, and significance level for experimental and control groups on age (by month) ,IQ and reading comprehension (pre-test).

Table 1. *means, standard deviations, t- value , and significance level for experimental and control groups on age (by month),IQ, and reading comprehension (pre-test).*

Variable	Group	N	M	SD	t	Sig.
Age	Experimental	30	132.24	1.96	-.121	Not sig.
	Control	30	132.41	2.01		
IQ	Experimental	30	111.34	4.45	-.221	Not sig.
	Control	30	111.89	4.24		

Reading	Experimental	30	6.82	2.65	-.539	Not sig.
comprehension	Control	30	6.54	2.32		

Table 1 shows that all t- values did not reach significance level. This indicated that the two groups did not differ in age , IQ , and reading comprehension (pre-test) .

Instrument

Reading Comprehension Test. The test was developed to assess reading disabled children 's skills in reading comprehension . It was based on the features of comprehension skills recognized by Mourad Ali (2005). The test consists of (22) items assessing word recognition , with score ranging from 0-1 on each item and a total score of 22. The test has demonstrated high internal consistency with Cronbach's α ranging from 0.86 to 0.89.

Procedure

Screening: Primary five students who participated met the following established criteria to be included in the study: (a) a diagnosis of LD by teacher's referral. Neurological scanning results indicated that those individuals were neurologically deficient (b) an IQ score on the Mental Abilities Test (Mosa, 1989) between 90 and 118 (c) reading performance scores at least 2 years below grade level (d) absence of any other disabling condition.

Pre-intervention testing : All the sixty students in grade five completed the reading comprehension test which was developed to assess reading disabled children 's skills in reading comprehension.

General Instructional Procedures: Instruction was delivered to after school , in the multipurpose room . Permissions were obtained from students' fathers , and the school principal . Students received 3 training sessions a week , lasting between 40 and 45 min .

Design and Analysis

The effects of implementing Advance Graphic Organizers Strategy Intervention on students' reading comprehension skills were assessed using a repeated-measures design, pre-post- and follow-up testing.

Results

Table 2. shows data on ANCOVA analysis for the differences in post- test mean scores between experimental and control groups in reading comprehension test. The table shows that the (F) value was (128.009) and it was significant value at the level (0.01).

Table 2. ANCOVA analysis for the differences in post-test mean scores between experimental and control groups in comprehension test

Source	**Type 111 sum of squares**	**df**	**Mean square**	**F**	**Sig.**
Pre	1.725	1	1.725		
Group	217.276	1	217.276	128.009	0.01
Error	317.340	57	5.567		
Total	1067.933	59			

Table 3. shows t-test results for the differences in post- test mean scores between experimental and control groups in reading comprehension test. The table shows that (t) vale

was (11.67). This value is significant at the level (0.01) in the favor of experimental group . The table also shows that there are differences in post- test mean scores between experimental and control groups in comprehension test in the favor of experimental group .

Table 3. T- test results for the differences in post- test mean scores between experimental and control groups in comprehension test

Group	N	Mean	Std. deviation	T	Sig.
Experimental	30	13.50	1.10	11.67	0.01
Control	30	6.43	3.12		

Table 4. shows data on repeated measures analysis for reading comprehension test. The table shows that there are statistical differences between measures (pre- post- follow –up) at the level (0.01).

Table 4 . Repeated measures analysis for comprehension test.

Source	Type 111 sum of squares	df	Mean square	F	Sig.
Between groups	661.250	1	661.250		0.01
Error 1	105.611	58	1.821	363.148	
Between Measures	794.978	2	794.978	193.121	0.01
Measures x Groups	596.933	2	298.467	145.011	0.01
Error 2	238.756	116	2.058		

Table 5. shows data on Scheffe test for multi-comparisons in reading comprehension test.The table shows that there are statistical differences between pre and post measures in favor of post test, and between pre and sequential measures in favor of follow -up test, but no statistical differences between post and follow -up test.

Table 5. Scheffe test for multi- comparisons in comprehension test

Measure	Pre M= 6.76	Post M= 13.20	Sequential M= 12.86
Pre	--	--	--
Post	8.43*	--	--
Sequential	8.10*	.33	--

Discussion

The main objective of the present study was to explore the effect of effects of implementing Advance Graphic Organizers Strategy Intervention on students' reading comprehension skills.

The results of this study as revealed in tables 3, 5, show that implementing Advance Graphic Organizers Strategy Intervention was effective in improving reading comprehension of students in experimental group, compared to the control group whose individuals were left to be taught in a traditional way.

Participants of this study fall into the minimum IQ of 90, nevertheless, they have learning disability. Thus IQ score cannot account for learning disabilities. The results of the present study support that conclusion with evidence that students who participated in the study do not fall into the low IQ range, however they have learning disabilities. When

designing a program based on Advance Graphic Organizers Strategy, they had statistical increase in reading comprehension.

This goes in line with what Mourad Ali et al (2006) notes that there is one problem " students who are identified as learning disabled often cover any special abilities and talents, so their weakness becomes the focus of their teachers and peers, ignoring their abilities. Mourad Ali (2007), however , notes that "learning disabled, as well as gifted students can master the same contents and school subjects", but they need to do that in a way that is different from that used in our schools.

Experimental group gained better scores in reading comprehension than did control groups in post-tests though there were no statistical differences between the two groups in pre- test. This is due to the program which met the experimental group's needs and interests. On the contrary, the control group was left to be taught in a traditional way.

This goes in line with our adopted perspective which indicates that traditional methods used in our schools do not direct students as individual toward tasks and materials , and do not challenge their abilities. This may lead students to hate all subjects and the school in general. On the contrary, when teachers adopt Advance Graphic Organizers Strategy that suits students interests and challenge their abilities with its various modalities .

Implications

The results of this study have several important implications. This study adds to the literature on the effectiveness of graphic organizers with learning disabled students. Results appear to indicate that graphic organizers are an effective instructional strategy for improving reading comprehension test scores of students with learning disabilities. Graphic organizers provide students with a visual representation of the content in a text and this may facilitate the learning of content knowledge.

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