

The Effect of Expository Text Structure Training and Using Graphic Organizers on Iranian Intermediate Students' Reading Comprehension Performance

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Abstract - This study was conducted to investigate the effect of expository text structure training and using graphic organizers on Intermediate Iranian students' reading comprehension performance. The participants of this study were 60 grade three female high school students of Malayer. They were from two intact classes which randomly assigned as an experimental and a control groups. Before starting the training program, the pre-test was administrated to both of groups. Throughout the training program the experimental group received a treatment including teaching expository text structures and using graphic organizers. The control group received traditional method of teaching reading. The first post-test was administrated to two groups at the middle of the program in order to investigate the effectiveness of training. At the end of the training program, the second post-test was administrated to the students. The scores of tests were analyzed through Repeated Measures One-Way ANOVA. The findings determined significant differences between the control and experimental groups. Finally, results revealed that expository text structure training and using graphic organizers have a crucial effect on students' reading comprehension performance.

Keywords: expository texts, graphic organizers, reading comprehension, text structures

I. INTRODUCTION

Reading is a multi-component ability, so it involves a combination of a variety of cognitive, linguistic and non-linguistic skills (Alderson, 2000). For last three decades, there has been a debate in the reading research literature to choose the best strategy to teach reading comprehension of expository passages among which establishing awareness of the knowledge of text structure through training students is considered the best method to be applied in reading classes (Grabe & Stoller, 2002). Reading comprehension involves actively constructing new understanding by building relationships among the parts of text and between the text and one's pre-existing knowledge.

Expository text is written to inform the reader about a specific subject. Expository text contains an explicit or implicit topic sentence with the main idea and the supporting ideas that communicates abstract information that are difficult to process by reader unless until the reader possesses the knowledge of text structure (Meyer & Poon, 2001). The hierarchy and subordination of ideas are organized into a specific scaffold called text structures. Text structures are author's arrangements or organizations of ideas in text (Gordon, 1990).

According to Meyer (1985), these text structures have been classified into five categories including: description, in which the author describes a topic; sequence, in which the author uses numerical or chronological order to list items or events; compare/contrast, in that the author compares and contrasts two or more similar events, topics, or objects; problem/solution, in which the author poses a problem or question and then gives the answer; and cause/effect, in which the author delineates one or more causes and then describes the ensuing effects.

Expository text is not only an important component in the classroom, but a constant companion in everyday life. Outsen and Yulga (2002) state "we come in contact with nonfiction everyday: maps, menus, guides, brochures, newspapers, magazines and the Internet. Therefore, studying it has real-life value for students." Hoyt (1999) affirms that expository text presents the greatest hardship for students today. Awareness of text structure has been associated with better text recall in terms of the number of ideas remembered and their organization (Meyer et al., 1980; Taylor & Samuels, 1983). Structural awareness improves comprehension because it facilitates the construction of a coherent mental representation of text.

Many factors affect success or failure during comprehension of expository texts. Reader's characteristics, background knowledge, text properties, awareness of text structure, and the instructional context in which reading takes place (Meyer, 1985; Alderson, 2000). Amongst the factors affecting reading comprehension of expository prose, teaching text structure is the most prominent one to be applied in reading classes (Meyer, 1985; Williams, 2005; Kintsch, & Yarbrough, 1982). Knowledge of text structure will help the reader build a coherent model of the text, which leads to better comprehension (Dymock, 2005).

II. BACKGROUND OF THE STUDY

There are numerous reasons to believe that text structure awareness is important in reading comprehension performance. As Vongpumivitch (2004) found a relationship between knowledge of text structure and academic reading ability (reading proficiency), and language ability as a whole, students are in advantage of taking such beneficial strategy to facilitate their reading comprehension of expository passages which offer non-fiction, abstract information. Meyer (2011) also claimed that there is evidence that structure strategy instruction can increase understanding and use of signal words, production of good main ideas and summaries, standardized reading comprehension tests scores, and answers to questions.

Also the results of the preliminary study conducted by Hall et al. (2005) suggest that it is beneficial to provide students with instruction on expository text structures. Williams, Hall, and Lauer (2004) and Hall, et al (2005), are among the first researchers to explore the possibility of expository text structure instruction at the early elementary level. According to Dickson, Simmons and Kameenui (2001), "students who are aware of or have had instruction in text structures demonstrate better global comprehension (an understanding of the main ideas) than those who lack awareness or have not had instruction".

Williams and Stafford (2005) in their study about text structure instruction concluded that "Interviews with teachers who participated in our program indicated that their students responded positively to the Text Structure program. Teachers observed heightened motivation to read expository text, with more students opting to check out books including expository texts rather than narratives from the library."

Akhondi et al. (2012), also argue that reading teachers may find teaching structure for expository texts an effective technique to improve reading achievement averages. Therefore, reading teachers also would find it advantageous as they apply such an organized strategy, teaching text structure and using graphic organizer, into their reading classes resulting in ease of teaching in these classes and paving the comprehension way for their students.

III. STATEMENT OF THE PROBLEM

It is believed that expository text structure training and using graphic organizers will better help the comprehension of the expository texts. Actually, students who understand the idea of text structure and how to analyze it are likely to learn more than students who lack this understanding (RAND Reading Study Group, 2002). The research literature in this field reveals that students' reading comprehension skills improve when they acquire knowledge of texts' structural development and use them properly. There are ample of previous studies indicating that the best way to teach the students expository text structure is explicit instruction (Dymock, 2005; Meyer & Poon, 2001; Guffey, 2007) and this explicit instruction significantly improves students' reading comprehension of expository prose (Carrell, 1984, 1985, 1992; Dymock, 2005; Dymock & Nicholson, 2007; Guffey, 2007).

Unlike the influx of research on the effectiveness of teaching text structure to improve students' comprehension of expository prose in second language context, few studies, if any, focused on this issue in the foreign language context. Building on the above discussion regarding the necessity of training students on text structure to enhance their comprehension of the expository passages, the present research was carried out to examine the effectiveness of the text structure training over grade three high school students in Malayer.

IV. RESEARCH QUESTIONS

This study attempted to investigate whether training of expository text structures and using graphic organizers affect the Iranian intermediate students' reading comprehension performance. Specifically, the study seeks to find answers to the following questions.

1. Does expository text structure training affect students' overall reading comprehension performance?
2. Do graphic organizers enhance students' ability to scaffold the reading passage in their mind, i.e., to identify main idea, major ideas, and supporting details of the passage?

V. RESEARCH HYPOTHESES

Building on the ample of previous research in the field all of which proving the effectiveness of teaching text structure especially through graphic organizers, the following hypotheses are formulated:

1. There is a significant effect of text structure training on improvement of students' comprehension of expository passages.

2. There is a significant effect of applying graphic organizers to reading classes to facilitate reading comprehension.

VI. METHODOLOGY

A. Instruments

The instruments used in this study included the English language proficiency test, a pre-test administered before the treatment, and two sets of post-tests which were administered to the groups after training. The English language proficiency test adopted from Oxford Placement Test. This test included two parts and the students were asked to answer only the questions of the first part. This part of the test consisted 40 multiple choice questions and students had 30 minutes time to answer them. The aim of this test was to evaluate the students' general knowledge of English language. This test was administered to the experimental and control groups to ensure their homogeneity.

The pre-test was an expository passage about IQ tests and "the Flynn effect" which adopted from ACTIVE Book 2 and followed by some questions and a graphic organizer appropriate to the type of the text to complete. It contained four paragraphs and followed by seven multiple choice questions. This test was administered to the students in order to make sure that subjects did not have enough knowledge regarding the reading comprehension of expository texts that they were going to learn during the training program.

The post-tests were also adopted from ACTIVE Book 2. The first post-test was an expository passage about integrative medicine which administered to the students in the middle of training program. It included five paragraphs and followed by some reading comprehension questions. Students had 30 minutes time to read and answer the questions and draw the related graphic organizer for the text. The second post-test was a four paragraph descriptive passage about the Aral Sea followed by seven multiple choice questions also adopted from ACTIVE Book 2. This test was administered after the intervention accomplished. Half an hour time was given to the students to read the text, answer the questions, and draw a related graphic organizer.

B. Design and Procedure

The present study used two intact classes so it was not possible to randomly assign subjects to the groups. In this case the research method that best matches the present study was the quasi-experimental, pretest-posttest control group design. The quasi-experimental design involves selecting groups, upon which a variable is tested, without any random pre-selection assignments (Ary et al., 2010). This kind of design permitted the researcher to reach reasonable conclusions even though full control over the extraneous variable was not possible. Although subjects could not be randomly assigned, flipping a coin was used to determine which of the two intact groups would be the experimental and which the control group.

The design used for this study is diagrammatically shown below:

EG _____ PT _____ X _____ PT1 _____ PT2
CG _____ PT _____ 0 _____ PT1 _____ PT2

EG: Stands for Experimental Group

PT: Stands for Pre-test

PT2: Stands for the second Post-test

X: Stands for Treatment

CG: Stands for Control Group

PT1: Stands for the first Post-test

O: Stands for Placebo

In the present study, the pretest was administered to two groups and their scores were recorded for later analysis. Of course the students were informed of the general nature of the test, that is, the researcher who was also the teacher of the class, informed the students that their scores would not affect their final scores and that they should rely on their own knowledge to complete the test. In addition the instructions to the participants were clear enough to understand what was expected of them.

They completed the test in class environment, and the researcher monitored the testing process. After the test was administered the results were analyzed and the researcher made sure that the students did not have much knowledge about the items. The results also showed that there was not a significant difference between the two groups regarding their reading comprehension of expository texts. The results were not announced to the students so that they did not know that it was an experiment.

At first in each session, the researcher introduced an organizational pattern, a related graphic organizer and signal words or phrases to the students in about 30 minutes. Then the opportunity was given to subjects to work on the text. As it has mostly suggested, the *descriptive* pattern was taught in the first two sessions. The related graphic organizer and cue words or phrases were presented to the students. The researcher provided four short descriptive passages and tried to highlight and emphasize the signal words for descriptive pattern, such as: including, characteristics, for example, etc. then the researcher asked the students to find those signal words in the text.

Working with graphic organizers was the next step. At the first sessions a complete graphic organizer was prepared for the students before they started working on the text. This helped them to create a better image of hierarchy of ideas and their interrelationship discussed in the passage. Then, an incomplete graphic organizer was given to them in order to complete it after they had finished their passages.

For the next two sessions, the sequential text structure was taught to the students. The researcher provided four short sequential passages and tried to highlight the key word and phrases related to this structure, such as: first, second, third, later, then, etc. after that the researcher asked the subjects to find those cue words in the texts. Then, a complete graphic organizer was presented to them. After they had finished study their passages an incomplete graphic organizer was given to them in order to complete it.

For the fifth and sixth sessions, the cause and effect texts were taught to the subjects. The way of teaching these passages was similar as the last sessions. After the sixth session had finished, the first post- test was administered to the subjects. This test was administered in order to evaluate the usefulness of instruction up to the sixth session and teaching of three kinds of expository texts. The scores of this test were kept for the later analysis. In the eighth and ninth sessions, the type of expository texts that was taught to the students was the problem and solution one. The way of teaching this structure also was similar as the last three ones.

The comparison kind of expository text structures was taught in the last two sessions. At the end of the term and in the last phase, the second posttest was administered to the students. This test was administered under the same conditions that the pre-test was done. The students were told that the results of this exam would not affect their final score in the school.

C. Statistical Analysis

Having finished the training period, in order to identify the changes that took place as an outcome of instruction done on the two groups as well as differences in achievement among the two groups, the collected scores of the pre-test and the post-tests were statistically analyzed running analysis of Repeated Measures One-Way ANOVA via SPSS software. This statistical formula is used to compare three or more group means where the participants are the same in each group. In this study this method was used because the subjects were measured multiple times to see changes to an intervention.

VII. RESULTS AND DISCUSSION

As stated previously, the purpose of this study was to examine the effect of expository text structure training and using graphic organizers on Iranian intermediate students' reading comprehension performance. In order to answer the research questions, analysis of Repeated Measures One-Way ANOVA via SPSS software was applied to analyze the probable difference between the experimental and control groups' reading comprehension performance. To answer the research questions, 60 female high school students were chosen. They were from two intact classes which randomly assigned to an experimental group and a control group.

In order to make sure of the homogeneity of students, the general English knowledge test of Oxford was administered to the participants. Then a descriptive passage adopted from ACTIVE Book 2 was administered to the subjects as a pre-test. The purpose of this test was to ensure that the differences between two groups regarding their reading comprehension performance were not significant. The results supported this, because the two groups' means were equal. The experimental group's mean was ($M=65.76$), and the standard deviation was ($SD=6.64$). And the control group's mean was ($M=63.76$) and the standard deviation was ($SD=8.50$). Therefore, it was concluded that there was not a significant difference between the two groups. The mean score in this table supports this. Table 1 shows the results.

Table 1. The Results of Descriptive Statistics of Pre-Test

	Mean	Std. Deviation	N
Experimental group	65.76	6.64	30
Control group	63.76	8.50	30

At the middle of the training program, the first post test was administered to the students. To measure the effect of instruction, the mean and the standard deviation of the two sets of scores were then computed. The results show that the two groups' means were not equal, the experimental group's mean was ($M=74.63$) and the standard deviation was ($SD=5.51$), and

the control group's mean was (M=68.83.) and the standard deviation was (SD=4.97). Therefore, it was concluded that there was a significant difference between the two groups regarding their reading comprehension performance of expository texts at the middle of the training program. Table 2 shows the results.

Table 2. The Results of Descriptive Statistics of First Post-Test

	Mean	Std. Deviation	N
Experimental group	74.63	5.51	30
Control group	68.83	4.97	30

At the end of the program, the second post-test was administrated to the both experimental and control groups. The mean and the standard deviation of the two sets of scores were also computed. The results of descriptive statistics revealed that the two groups' means were not equal, the experimental group's mean was (M=84.26) and the standard deviation was (SD=4.88), and the control group's mean was (M=70.12.) and the standard deviation was (SD=7.57). So, it was concluded that there was a significant difference between the two groups regarding their reading comprehension performance of expository texts at the end of the training program. Table 3 presents the results.

Table 3. The Results of Descriptive Statistics of Second Post-Test

	Mean	Std. Deviation	N
Experimental group	84.26	4.88	30
Control group	70.12	7.57	30

From the Descriptive Tables, it is revealed that mean of the students' performance on reading passages had remarkably changed for the best. As it is depicted in these Descriptive Tables, students in the experimental group achieved low mean score at the pre-test stage (M=65.76) but mean of their performance improved (M=74.63) at the first post-test after some training on text structure strategy conducted and they appeared as proficient readers with high score on the mean of their performance (M=84.26).

According to these tables also it is revealed that mean of the students' performance on reading passages in the control group had a very little growth which was not practically significant. As it is depicted in these Descriptive Tables, students in the control group achieved low mean score at the pre-test stage (M=63.76) but Mean of their performance changed at the first post-test (M=68.83) after they had practiced some reading passages but in a traditional way of teaching reading. Mean of their performance achieved very little unimportant growth at the second post-test (M=70.12). The results of the students' performance in the two groups are depicted in Table 4.

Table 4. The Results of Tests of Within-Subjects Effects for Experimental and Control Groups

Groups	Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Experimental	Sphericity Assumed	5136.68	2	2568.34	101.57	.00	.82
Control	Greenhouse -Geisser	658.86	1.58	415.54	6.47	.006	.18

Based on this Table, tests of within subjects effects revealed that there was a significant difference ($p=.000<.05$) between the pre-test, first post-test and second post-test of subjects in experimental group. This result proved the effectiveness of the training program in the present research. Tests of within subjects effects for the control group also revealed that there was a significant difference ($p=.006<.05$) between the pre-test, first post-test and second post-test. This result would be further investigated in the test of Pairwise comparison to reveal that which of the tests are significantly different.

Table 5. The Results of Pairwise Comparison for Experimental Group

(I) Test	(J) Test	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
					Lower Bound	Upper Bound
	2	-8.86*	1.08	.00	-11.62	-06.10
1	3	-18.50*	1.37	.00	-21.98	-15.01
	1	8.86*	1.08	.00	6.10	11.62
2	3	-9.63*	1.41	.00	-13.21	-6.04
	1	18.50*	1.37	.00	15.01	21.98
3	2	9.63*	1.41	.00	6.04	13.21

From the Pairwise comparison Table for the experimental group, it is interpreted that the pre-test and the two post-tests were significantly different ($p=.000<.05$). It means that the students reading comprehension of expository passages were remarkably improved from the beginning to the end of the training program using text structure awareness and training.

Table 6. The Results of Pairwise Comparison for Control Group

(I) Test	(J) Test	Mean Difference (I-J)	Std. Error	Sig. ^b	95% Confidence Interval for Difference ^b	
					Lower Bound	Upper Bound
1	2	-5.06*	1.89	.036	-9.86	-.264
	3	-6.23*	2.19	.024	-11.79	-.67
	1	5.06*	1.89	.036	.264	9.86
2	3	-1.16*	1.34	.93	-4.58	2.25
	1	6.23*	2.19	.024	.67	11.79
3	2	1.16*	1.34	.93	-2.25	4.58

From the Pairwise comparison Table for the control group, it is revealed that the pre-test and the first post-test ($p=.03<.05$) and the second post-test ($p=.02<.05$) were significantly different, but there was no significant difference between the two post-tests ($p=.93>.05$). It means that the students reading comprehension of expository passages were improved after some practice sessions on reading passages accomplished using traditional method of teaching reading but no noticeable growth was observed as they moved forward to the second posttest.

Table 7. The Results of Multivariate Tests

Groups	Value	F	Hypothesis Df	Error df	Sig.	Partial Eta Squared
Experimental	.13	93.70 ^a	2.00	28.00	.00	.82
Control	.77	4.146 ^a	2.00	28.00	.26	.22

From the Multivariate Tests Table for experimental group, it is interpreted that 82% ($\eta^2=.82$) of the dependent variable (students' reading comprehension progress) had been defined by the independent variable (expository text structure training). However, according to this Table, it is revealed that for control group only 23% ($\eta^2=.23$) of the dependent variable (students' reading comprehension progress) had been defined by the independent variable.

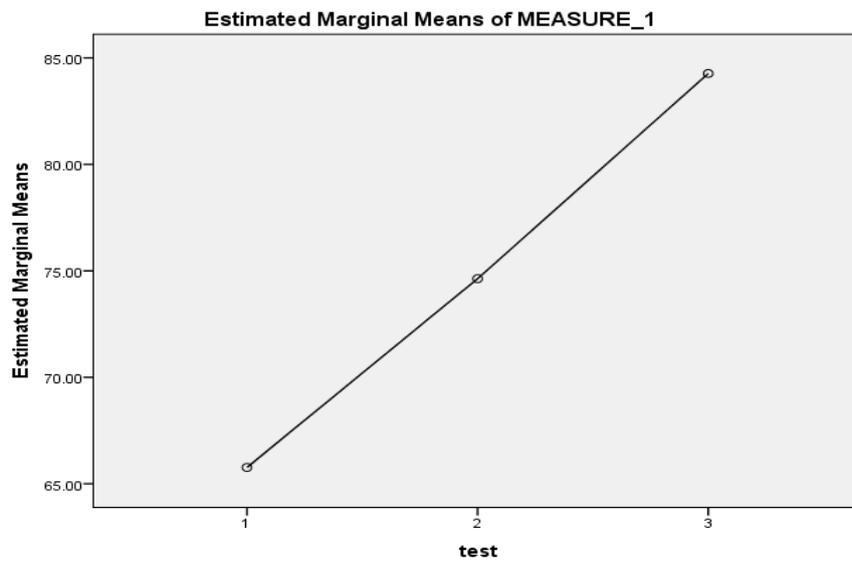


Figure 1. The Profile Plot of Experimental Group

As profile plot shows, there is a remarkable growth for the students' reading comprehension of expository passages in the experimental group using text structure strategy and graphic organizers.

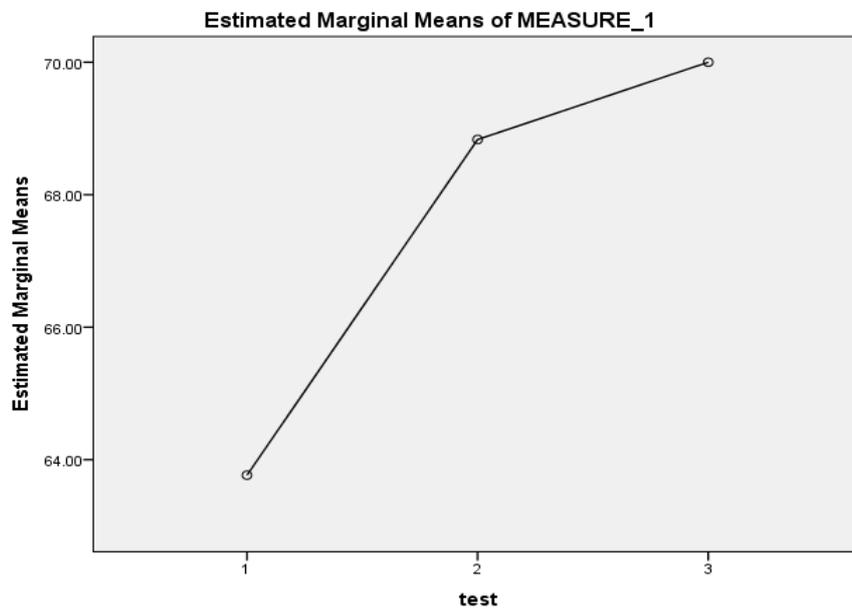


Figure 2. The Profile Plot of Control Group

As it can be seen from the profile plot, there is a growth for the students' reading comprehension of expository passages in the control group from the pre-test to the first post-test but no significant progress was observed from the first post-test to the second post-test.

Based on the findings, it was found that the difference in mean scores was due to the treatment rather than error. And so the subjects, who received the treatment, were better performers, that is to say, expository text structure training and using graphic organizers had a stronger positive effect on students' reading comprehension performance of expository passages than teaching reading in a traditional way. Most school readers would likely benefit from explicit instruction in the use of expository text structures. All students, but particularly younger readers, need instruction in more organized text structures like comparison, causation, and problem-and-solution.

Not only do these structures provide maximal benefits for memory of expository texts, these structures may also pose the greatest challenge to school readers. Previous research indicates that later elementary and middle school students continue to find these structures difficult (Richgels et al., 1987; Meyer et al., 1980). Students in elementary grades may also benefit from instruction in the hierarchical structure of expository texts.

In addition, less skilled readers are likely in the greatest need of intensive and explicit instruction in text structure, including instruction in text signaling. In an intervention study, Meyer et al. (2010) found that an interaction between type of structure strategy instruction (elaborated feedback with scaffolding vs. just giving information about correctness of answers) and reading ability (below grade level vs. grade level or above) predicted 31% of the variance in who would make large gains in competency using the problem-and-solution structure before and after instruction. Below-grade-level readers were more likely to jump from no awareness of the problem-and-solution structure to competency using the problem-and-solution structure if they received elaborated feedback with modeled responses. However, the feedback condition did not make a difference for better readers.

Poorer readers improved only with elaborated feedback, while better readers improved with structure strategy instruction with both types of feedback. In general, previous research which has examined development of structural awareness, suggests that these students may fail to develop competency in structural awareness without explicit instruction. These readers may also benefit from instruction in text signaling as they may be less sensitive to these devices.

VIII. CONCLUSION

The present study investigated the effect of expository text structure training and using graphic organizers on Iranian intermediate students' reading comprehension performance. This study was conducted with the aim to explore the effectiveness of expository text structure training and applying graphic organizers to the reading classes. To achieve this end, 60 female high school students were chosen. They were from two intact classes of 30 and randomly assigned to an experimental group and a control group.

The training program lasted for six weeks, two sessions each week, and one hour each session. Before starting the intervention program, in order to make sure of the homogeneity of the students, the general English knowledge test of OXFORD was administrated to the participants. After that, the pre-test was administrated to them to make sure that the subjects didn't have enough knowledge regarding the reading comprehension of expository texts. Then, in each session one lesson from ACTIVE book2 was taught to the students. The experimental group received a different treatment including teaching expository text structures and using graphic organizers. The control group received traditional method of teaching reading. As

mentioned previously, two sets of post-tests, also taken from ACTIVE Book 2, were administered to the students. The first post-test was at the middle of the training program and the second one at the end. The collected scores of the pre-test and the post-tests were statistically analyzed running analysis of Repeated Measure One-Way ANOVA via SPSS software.

The results of this study indicated that teaching expository text structures and applying graphic organizers to the reading classes facilitate reading comprehension of these kinds of texts for high school students. In fact both experimental and control groups showed improvements in their reading comprehension. However, the statistical analysis of Repeated Measure One-Way ANOVA proved the hypotheses of the study.

Much progress has been made in the extent of research examining the effects of the structure strategy with different types of readers in different contexts. There is substantial and consistent evidence over 30 years that instruction with the structure strategy increases recall from expository text and the organization and quality of readers' recalls. Additionally, there is evidence that structure strategy instruction can increase understanding and use of signaling words, production of good main ideas and summaries, standardized reading comprehension tests scores, and answers to questions.

Teachers need to carefully select texts when teaching readers how recognize and use expository text structure. Texts which are well organized and clearly reflect the structure being taught will help readers to apply structural knowledge. Texts which contain difficult and unfamiliar material may pose a challenge to readers' ability to apply structural knowledge. However, once readers gain greater levels of structural awareness, they should also be provided opportunities to read a variety of texts. Finally, because readers vary in their knowledge and ability to use expository text structures, it is important for teachers to assess reader's levels of structural awareness prior to instruction. Awareness studies have relied heavily on recalls, usually written. While these are easy measures to administer they may be challenging for teachers to analyze and interpret. Additional research is needed on classroom-based assessments of students' structural awareness.

In a nutshell, knowledge of text structure may help readers to overcome the difficulties of reading expository texts. However, in order to gain competency in recognizing and using expository text structure, many students will likely require explicit instruction. In designing effective, text structure instruction, it is important to understand the needs of individual readers. Unfortunately, the individual needs of a particular reader may not always be clear given the complex nature of the relationship between reader and text.

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