

Informative Text Learning Through Processual Models to Improve Reading Comprehension Skills

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Abstract

This study looked at how teaching informative text structures using a processual paradigm affected the reading comprehension abilities of fourth-graders. An experimental model with pre-test-post-test control groups was used in the research's design. The study's study group was made up of 62 fourth-graders who attended a public school in the Turkish province of Konya during the 2020–2021 academic year. For ten weeks, the experimental group taught the informative texts using the processual paradigm, whereas the control group used the Turkish course's curriculum. The Reading Comprehension Test and the Awareness Test of Informative Text Structures were utilized as data gathering instruments in the study. The study's data were analyzed using the following methods: mean, standard deviation, unpaired t-test, and one-way analysis of variance. The study's findings showed that the experimental group, which had been taught informative texts using a processual paradigm, had significantly lower reading comprehension levels and less understanding of the structures of those texts.

INTRODUCTION

Only by utilizing a variety of tactics is it feasible to improve reading comprehension abilities. Students and teachers can teach and study texts and comprehend the subject matter by utilizing a variety of ways (Dönmez & Yazc, 2006). In addition, findings from previous reviews of studies on the effects of digital reading on comprehension have been inconclusive (Dillon, 1992; Kingston, 2008; Noyes & Garland, 2008; Singer & Alexander, 2017; Wang, Jiao, Young, Brooks, & Olson, 2007). Good readers utilize sophisticated techniques to understand what they read (Vacca & Vacca, 2005). Students will be able to acquire and employ comprehension strategies effectively if teachers model them for them and teach them as models or how-to guides. Students who are successful in learning these techniques will be independent readers (National Reading Panel [NRP], 2000). The goal of the reading instruction should be to create independent readers who actively employ comprehension techniques.

Recently, comprehension training has captured the attention of reading scholars, who have created a variety of comprehension models. The constructivist approach resulted in two understanding models that are well-known and frequently used: the interactive and processual models (Güneş, 2007).

The processual model, which Kintsch and Van Dijk created, is a comprehension model (1978). The processual model is also known as the situation, construction-integration, and understanding models in related literature. The processual model proposes that methodical reconstruction of the information provided

in a text is necessary for proper comprehension. It operates in accordance with the idea that reading texts requires the creation of mental images. This model explains the processes involved in understanding, such as the process and mental building of the information presented in the text. The text's material is selected, ranked, and ordered at both the micro- and macro-structural levels in accordance with the reader's existing knowledge, the organization of the text, and the relevance of the information. The formation of the meaning of a word, a clause, or a sentence takes place at the level of microstructures. On the other hand, meaning of paragraphs, substantial portions, or the entire text is handled at the level of macro structures. In addition, the text's organizational structure (description, sequencing, cause and effect, etc.) is a macro-structure that aids in text comprehension. The linkage of the micro and macro structures, as well as the reader's prior knowledge, results in comprehension of the text. The students' automatic comprehension abilities will advance when these procedures are repeated. This paradigm, with its various components, is not one in which just meaning units are produced. It is a model that incorporates elements like mental images, feelings, and individual experiences (Kintsch & Dijk, 1978; Kintsch, 2002; Kintsch & Kintsch, 2005).

According to the processual model, comprehension develops as a result of the mutual interaction of multiple stages and happens as a mental skill. A text's meaning can be understood by the reader as a consequence of various steps. The processual model's stages, according to Cha and Swaffar (1998), are (1) The reader first decides what is being told in the text. At this point, the reader's attention is drawn to the text's subject; (2) Based on the structural cues and the logical connections between the material presented, the reader assesses how the text is structured. In other words, s/he clarifies the format in which the content was produced; (3) The reader now evaluates how the text is structured. To accomplish that, s/he concentrates on the text's words, sentences, specifics, and underlying concepts. By being aware of the text's structure, s/he recognizes the relationships between concepts and develops supporting arguments. S/he lists the developed supporting arguments. By connecting the supporting concepts in the list supplied, s/he arrives at the core notion. The reader should make new connections between the text's concepts in order to understand the text's core theme; (4) At this point, the reader combines her or his viewpoint with the text's major topic to draw conclusions. By doing this, s/he interprets the text in a way that is unique to them. The processual model is a useful framework that may be applied to the instruction of informative texts and, consequently, to the improvement of comprehension abilities (Weaver & Kintsch, 1996). Because of this, the processual model was applied in this study's teaching of informative texts.

The texts were started to be taught with a theme approach, and students were started to be presented with different text structures in the genres of narrative, informational, and poetry with the Turkish course curriculum dated 2005. This condition suggests that, while teaching, teachers should also call attention to the structural variations of the texts (Akyol, 2007).

Two stages are involved in teaching informative texts: introducing various informative text structures and using fundamental comprehension techniques for each structure (Simonsen, 2004). The organization of concepts in a text and their relationships are reflected in the text's structure (Armbruster, 2004). Students should be explicitly taught how to recognize and use text structures in order to increase their comprehension abilities (Dreher & Gray, 2009; Dymock, 2005; Minskoff, 2005).

The initial years of primary school have narrative texts, which the pupils are more familiar with and like, while the number of informational texts rises in the succeeding years. Since their comprehension of informative text structures is still developing, students typically struggle when switching from reading and comprehending narrative texts to informative texts (Vacca & Vacca, 2005).

In instructional literature, new language and terms are more frequently used, but direct personal experiences are less frequently recounted (Hall, Sabey & McClellan, 2005). However, because they have different patterns from narrative texts, they are more difficult to interpret (Williams, 2005). Researchers typically divide informative text structures into five groups: description, sequence, cause and effect, compare and contrast, and problem-solving, though there is no universal classification (Gunning, 2005; Meyer, 1985, as cited in Moss, 2004; Rozmiarek, 2006; Simonsen 2004; Temple et al. 2005; Vacca & Vacca, 2005; Williams, 2005).

Since the quality of one structure cannot be transferred to another, instructional text structures for informational purposes should be taught individually in the workplace using the proper techniques (Dymock,

2005; Gunning, 2005). (Williams, 2005). For instance, the text structure of a text written in the type of "comparison" cannot be utilized to understand a text written in the type of "sequence". Finding a text's structure is just the first step in teaching students how to read useful texts; the next step requires readers to select key concepts from the text and connect them to one another (Gunning, 2005). Topic, primary idea, and supplementary ideas are all included in informative literature (Akyol, 1999). Text structures organize the ideas in the text. A reader who makes use of the text's organizational structure will find it easier to identify the main theme and any supporting notions (Gunning, 2005).

The relevant information on how to apply processes of selection, sequence, and organization to the paragraphs of the text should be provided when teaching informative texts using the processual model. It needs to be clarified how the text's meaning can be produced at the micro and macro structural levels (Kintsch & Van Dijk, 1978). Additionally, visual organizers and the introduction of clue words that are commonly utilized in the structure of each text should be employed in the teaching of these types of texts in order to provide the information in a methodical manner (Gunning, 2005; Vacca & Vacca, 2005).

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The students' comprehension of the informative texts they will encounter in the next periods will be greatly impacted by the successful teaching of informative texts, particularly at the level of fourth grade (Hall, Sabey & McClellan, 2005). For this reason, instructional strategies, models, and methods for teaching informative texts should begin in the very first years of the educational process. (Akr, 1995; Krakç, 2004; Görgen, 1997; Keçik, 1993). Additionally, some research was done on college students. For instance, Kuzu (2003) investigated the impact of reading instruction based on the transactional model on junior college students' comprehension of informative texts in her study. There is, however, no research that examines the impact of modeling the teaching of informative texts on students' levels of comprehension at the primary school level. It was necessary to conduct a study on this topic as a result.

METHODS

Research Mode

A quasi-experimental model with pre-test-post-test control groups was used in the research's design. Participants are not unbiasedly assigned to experimental and control groups in the quasi-experimental research approach. The researcher employs the groups that are available (Creswell, 2003). Because of this, the quasiexperimental model is a useful model that may be used in research, particularly in the field of education.

Participant

62 fourth-graders who were enrolled in a state school in the province of Konya, Turkey, during the 2020–2021 academic year made up the study group for this investigation. The school is considered to be in the medium socioeconomic class.

The fourth graders at the experimental school were given a reading comprehension exam in the form of a description in order to separate the experimental and control groups. One-way analysis of variance (ANOVA) was used to determine whether or not there was a statistically significant difference between the class average scores (100 total points).

Test of Reading Comprehension: The researcher created the test by reviewing pertinent literature and consulting subject-matter experts. First, reading comprehension milestones for 4th graders who were enrolled in the 2005 Turkish course curriculum were selected in order to prepare for the reading comprehension test. A 65-question reading comprehension quiz was created, including both open-ended and multiple-choice questions pertinent to the chosen accomplishments. 115 kids who had completed the fourth grade in a state school were given the prepared reading comprehension test.

After conducting an item analysis at the conclusion of the practice, 15 questions were removed from the test because the discrimination index for those items was less than .20, there was no difference between the independent samples t-test results, and only a 27% slice of the subgroups and supergroups was considered significant. A 50-question Reading Comprehension Test was obtained as a result. There were five sections in the reading comprehension test (description, sequence, comparison, cause and effect, and problem-solving). There were 10 questions total in each comprehension test, with 5 being multiple-choice and 5 being open-ended.

Test items were scored according to the following criteria: for multiple-choice questions, incorrect answers received 0 points, while correct answers received 1. For open-ended questions, incorrect answers received 0 points, while incomplete responses received 1 point, and correct answers received 2.

The awareness exam was created by the researcher after studying the pertinent literature and consulting industry professionals. Short passages from Turkish textbooks with informative text structures were chosen to test the students' understanding of informative texts. The multiple-choice format was used to ask questions regarding the paragraph structures in these passages. Additionally, questions about the text's structural elements and clue words that were commonly employed in instructive text structures were included in the test. The 15 multiple-choice questions awareness test of informative text structures was acquired as a consequence of the expert opinions. 120 pupils who had completed the fourth grade in a state school were given the test in order to analyze the items and determine the dependability of the scores.

When the test items' item discrimination coefficients were examined, it was found to be higher than 0.20. As a result, no test item was left off. Cronbach's alpha for the test was calculated to be 0.76.

Process

The researcher taught the lessons to the experimental group, whereas the class teacher taught the lessons to the control group. Studies were done over a 10-week period, with two weeks dedicated to an education campaign regarding the used methodology and eight weeks to practice.

The teaching of the educational texts in the experimental group was done using the processual approach. Before, during, and after reading instructive texts, a variety of activities and methods were employed within the parameters of the stages outlined by Cha & Swaffar (1998). These initiatives and tactics were developed using research from many researchers (Duke & Pearson, 2002; Hall, Sabey & McClellan, 2005; Hoffman, 2010; Gunning, 2005; Güneş, 2007; Karatay, 2011; NRP, 2000; Schirmer, 2010; Temple et al., 2005; Tompkins, 2006; Vacca & Vacca, 2005).

Prior to reading, many exercises and techniques such as setting reading goals, using prior knowledge, examining the title and text, estimating, brainstorming, studying with vocabulary, and KWL were utilized. During the reading, activities such as underlining crucial phrases and sentences, looking for hints, and asking and responding to questions were employed. Following the reading, students engaged in retelling, subject identification, concept discovery, primary topic discovery, aim identification, graphic organizer use, and summarizing exercises. The experimental group received individual instruction in each text structure. The training initially focused on the description type's text structure. The teaching of text structure types for comparison, cause and effect, problem-solving, and sequence followed. In the control group, the informative texts were taught in accordance with the steps outlined in the teacher's manual for the Turkish lesson.

Data Analysis

The analyses of the study's data included one-way analysis of variance, unpaired t-tests, and arithmetic means standard deviation. The statistical package program SPSS 22.0 was used to analyze the data that was acquired from the study. The research's pre- and post-test raw scores were recalculated by more than 100 points.

The Kolmogorov-Smirnov test was used to determine whether or not the results of the research's pre- and post-tests showed a normal distribution. The use of parametric testing was necessary since the data varied between normal values.

RESULTS AND DISCUSSION

Awareness of Informative Text Structures

Understanding of Informative Text Formats The results of the unpaired t-test were used to determine whether there was a statistically significant difference between "the informative text structure awareness" of the students in the experimental group and those in the control group.

Table 1. T-test Results of The Experimental Group and Control Group Students' Pre/Post Test Scores with Regard to The Informative Text Structure Awareness

		n	M	SD	t	P
Pre-test	EG	30	45.78	21.71	-1.126	0.265*
	CG	32	51.46	17.94		
Post-test	EG	30	82.67	11.69	6.342	0.000***
	CG	32	53.33	22.66		

As can be seen in Table 1, the experimental group students' knowledge of text structures ($M= 45.78$) was lower than the control group students' knowledge ($M= 51.46$), as measured prior to practice. The levels of text structure knowledge of the experimental group and control group students, as determined before to practice, do not differ significantly ($p>0.05$).

After practicing, it was found that the experimental group's students had a better level of text structure understanding ($M= 82.67$) than the control group's students ($M= 53.33$). When students' understanding of text structure was assessed after practice, there was a significant difference between the experimental group and the control group on behalf of the experimental group ($p < 0.05$).

Reading Comprehension Levels

The results of the unpaired t-test were used to determine whether there was a significant difference in the students' reading comprehension skills between the experimental group and control group before practice. The results are shown in Table 2.

Table 2. T-test Results of The Experimental Group and Control Group Students' Pre-Test Scores with Regard to Their Levels of Reading Comprehension

Pre-test		n	M	SD	t	p
Description	EG	30	38.22	45.54	0.128	0.898*
	CG	32	37.71	16.82		
Sequence	EG	30	44.44	12.67	0.932	0.355
	CG	32	40.63	18.81		
Cause-effect	EG	30	49.11	18.27	0.252	0.802*
	CG	32	47.92	13.44		
Compare-contrast	EG	30	38.22	13.62	1.845	0.070*
	CG	32	31.88	15.46		
Problem solving	EG	30	33.78	14.74	-1.242	0.219*
	CG	32	38.54	11.44		
Reading Comprehension	EG	30	40.76	12.81	0.460	0.647*
	CG	32	39.33			

* $p>0.05$

When Table 2 is analyzed, it can be seen that the reading comprehension levels of the experimental group students, as measured before the practice, were higher than those of the control group students in the following categories: description ($M= 38.22$), sequence ($M=44.44$), cause and effect ($M= 49.11$), and comparison ($M=38.22$).

In contrast, it was discovered that the control group students' reading comprehension level for problem-solving ($M=38.54$) was greater than that of the experimental group students. When reading

comprehension levels for description, sequencing, comparison, cause and effect, and problem-solving were assessed prior to practice, there was no statistically significant difference between the experimental group and control group of students ($p>0.05$).

The unpaired t-test was used to determine whether there was a significant difference in the students' reading comprehension skills between the experimental group and the control group after practice. The results are shown in Table 3.

Table 3. T-test Results of The Experimental Group and Control Group Students' Post-Test Scores with Regard to Their Levels of Reading Comprehension

Pre-test		n	M	SD	t	p
Description	EG	30	70.00	14.73	5.530	0.000*
	CG	32	46.25	18.70		
Sequence	EG	30	72.89	13.33	7.213	0.000*
	CG	32	43.13	18.55		
Cause-effect	EG	30	66.89	18.24	2.912	0.000*
	CG	32	53.33	18.39		
Compare-contrast	EG	30	63.55	16.40	4.244	0.000*
	CG	32	45.55	17.92		
Problem solving	EG	30	63.33	18.34	3.090	0.000*
	CG	32	47.50	21.73		
Reading Comprehension	EG	30	67.33	14.26	5.193	0.000*
	CG	32	47.04	16.36		

* $p>0.05$

When Table 4 is analysed, it is observed that the experimental group students' reading comprehension levels with regard to description ($M= 70.00$), sequence ($M=72.89$), cause and effect ($M= 66.89$), comparison ($M=63.55$), and problem solving ($M= 63.33$) which were measured after the practice, were higher compared to the levels of control group students. And statistically, a significant difference was found between the experimental group and control group students' levels of reading comprehension with regard to description, sequence, comparison, cause and effect, and problem solving skills, which were measured after the practice ($p<0.05$).

General reading comprehension level of the experimental group students, measured after the practice, was found higher ($M= 67.33$) compared to the level of control group students ($M= 47.04$). And statistically, a significant difference was found between the experimental group and control group students' levels of general reading comprehension measured after the practice ($p<0.05$). The acquired difference is on the behalf of the experimental group.

When the post-test scores obtained by the experimental group students after the practice are analysed, it is observed that they succeeded most in the sequence type comprehension test ($M= 72.89$), and then in description ($M= 70.00$), cause and effect ($M= 66.89$), comparison ($M=63.55$), and problem solving ($M= 63.33$) comprehension tests.

According to the study's findings, students' reading comprehension abilities improved after they learnt how to read informative materials using efficient procedures. These results align with those of researchers who have introduced instructive text structures using a variety of techniques (Baştuğ & Keskin, 2011; Dreher & Gray, 2009; Hall et al., 2005; Hoffman, 2010; Mcginley, 2008; Newman, 2007; Nubla-Kung, 2008; Özmen, 2011; Reutzel, Read & Fawson, 2009; Stagliano & Boon, 2009; Williams, 2005; Williams, 2008).

It is indicated in the research' conclusions that teaching text structures has a good impact on reading comprehension. These results have the strength to support the study's findings. Learning a text's structure is the first step in the processual paradigm of teaching informative texts. Reading comprehension will then move on to the next phase, when readers will select key textual concepts and connect them (Gunning, 2005). Activities that would aid students in organizing the key concepts presented in the book were used at

this stage of the research. These tasks allowed students to arrange supporting ideas and more quickly and methodically pinpoint the text's main idea, topic, and author's purpose.

According to the results of the research, the average value of the scores that students from the experimental group got from the "sequence" type, one of the reading comprehension tests applied after the practice, was higher compared to other tests. And, the types of "description", "cause and effect", and "comparison" followed it. The minimum point average was observed in the reading comprehension test of the "problem solving" type. These results showed similarities with the findings that Sharp (2004) acquired from his study. In his study, Sharp (2004) assessed the informative text (description, sequence, cause and effect, and problem-solving) comprehension skills of the students in the study group through gap-filling and recall tests. According to the results of the study, the students succeeded most in understanding the texts written in "sequence" type. And, texts written in "description" and "cause and effect" types followed it. The text type in which the reading comprehension level was the lowest was the "problem-solving" type.

CONCLUSION

The findings of this research show similarities with the findings of other researches in the literature. According to the results of the research, the teaching of informative texts through processual model develops the reading comprehension skills of students.

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