

**EFFECTS OF A TEXT STRUCTURE INTERVENTION**  
**FOR READING AND WRITING IN GRADES 4-5:**  
**A MIXED METHODS EXPERIMENT**

by

John Z. Strong

A dissertation submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Education

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## **ABSTRACT**

This mixed methods experimental study investigated the effects and social validity of a text structure intervention in grades four and five. Eleven teachers in three elementary schools were randomly assigned to deliver a text structure intervention or a comprehension intervention. Quantitative data sources included pretest and posttest measures of students' text structure awareness, reading comprehension, and writing quality. Qualitative interviews were conducted after the intervention period to understand teachers' perceptions of the social validity of each intervention. Quantitative measures were analyzed using three-level hierarchical linear modeling. Qualitative data were analyzed typologically. Results were integrated to understand the acceptability of the text structure intervention for upper elementary grades. Quantitative results indicated that the text structure group outperformed the comprehension group on a measure of text structure awareness, a graphic organizer task, and use of ideas and details in informative writing. Qualitative findings revealed that teachers perceived the goals, procedures, and effects of both interventions as socially valid. Integrated results suggest that teachers found the text structure intervention acceptable for teaching text structure and writing, and they were able to implement the intervention consistently and with fidelity. This study contributes to existing research by evaluating the effects of a classroom-based text structure intervention on both reading and writing outcomes compared with an alternative treatment and understanding teachers' perceptions of its social validity and acceptability.

## **Chapter 1**

### **INTRODUCTION**

Many students do not possess the literacy skills necessary to meet grade-level demands in reading and writing (Graham & Hebert, 2011). According to the National Assessment of Educational Progress (NAEP), nearly two-thirds of fourth- and eighth-grade students perform below proficiency in reading; among students from low-income families, nearly 80% are not proficient (National Center for Education Statistics [NCES], 2018). Nearly three-fourths of eighth-grade students perform below proficiency in writing, including 88% of students from low-income families (NCES, 2012).

These results, which have remained unchanged for over a decade, are not surprising. Students typically begin to experience difficulty with comprehension when they are expected to read more informational texts around fourth grade (Snow, 2002). Chall and Jacobs (1983) reported declines in low-income students' writing from grades five to seven and declines in reading beginning in grade four. This "fourth-grade slump" occurs at the time that the tasks in which students engage shift from learning to read to reading to learn. Readers learn about new ideas in texts that require prior knowledge of processes for finding information in the text (Chall, Jacobs, & Baldwin, 1990). This characterization has been challenged, though. Readers may actually learn to read and read to learn, "simultaneously and continuously from preschool through middle school – and perhaps beyond," (Robb, 2002, p. 24). Thus, readers may need to learn how to read and

how to learn from texts in primary, upper elementary, and middle grades (Moss, 2005).

Consistent with the NAEP, next generation learning standards such as the Common Core State Standards (CCSS; National Governors Association Center for Best Practices [NGACBP] & Council of Chief State School Officers [CCSSO], 2010) have called for an increased emphasis on reading and writing about informational texts in elementary school, despite the difficulties that students typically begin to experience with them in upper elementary grades (Chall et al., 1990). The standards' expectation is that half of the texts read in elementary school should be informational texts, and one-third of writing in elementary school should focus on informative/explanatory texts.

The standards' requirement for increased attention to informational texts taps a rich history of research on expository text. The term expository text refers to text designed to inform or explain (Gersten, Fuchs, Williams, & Baker, 2001). Expository texts present unique challenges for readers, including specialized language, unfamiliar topics, and complex structures (Arfé, Mason, & Fajardo, 2018). Expository texts can be difficult for readers to comprehend if they work nearly exclusively with narrative texts in early elementary grades (e.g., Duke, 2000), if they lack the prior knowledge necessary for comprehending these texts (e.g., Best, Floyd, & McNamara, 2008), or if they lack knowledge of the structure of expository texts (Ray & Meyer, 2011; Williams, Hall, & Lauer, 2004). Knowledge of expository text structures is the focus of the present study.

### **The Importance of Text Structure Knowledge**

For over forty years, researchers have examined the relationship between knowledge of expository text structures and reading comprehension (Meyer & Ray,

2011). There are six basic text structures used to organize ideas in expository texts: compare/contrast, problem/solution, cause/effect, sequence, description, and listing (Meyer, 1975, 1985; Meyer, Young, & Bartlett, 1989). Many expository texts also include signal words that cue readers to the organization of ideas in the text (Arfé et al., 2018). Table 1 displays definitions and signal words for the six basic text structures.

Table 1  
*Expository Text Structures and Signal Words*

Text Structure	Definition	Signal Words
Compare/Contrast	Topics or ideas are related by similarities and/or differences	Alike, both, compare, contrast, different, however, on the other hand, same, similar, unlike
Problem/Solution	Topics or ideas are organized by the problem and solution, which responds to the problem	Answer, difficulty, issue, problem, question, reason, solution, solve
Cause/Effect	Topics or ideas are organized by one or more causes, which lead to one or more effects	As a result, because, cause, effect, in order to, in response, led to, since, therefore
Sequence	Topics or ideas are presented in chronological or time order	After, before, finally, first, last, later, next, now, then
Description	Topics or ideas and their attributes are discussed	Attributes, characteristics, for example, for instance, such as
Listing	Topics or ideas are listed or grouped together in collections. Listing can be used in combination with any other text structure; enumeration is a type of listing.	Also, another, at the same time, besides, furthermore, in addition, including, moreover, subsequent

*Note.* Based on Meyer & Ray (2011) and Meyer, Young, & Bartlett (1989).

Knowledge of expository text structures is acquired developmentally and is related to reading and writing ability (Englert & Hiebert, 1984; Hiebert, Englert, & Brennan, 1983; Ray & Meyer, 2011). Older and more skilled readers have greater knowledge of text structures and recall more ideas after reading than both less skilled readers in the same grade and skilled readers in lower grades (McGee, 1982; Meyer, Brandt, & Bluth, 1980; Taylor, 1980; Taylor & Samuels, 1983). Skilled readers use text structure knowledge to determine how ideas in a text are organized and then select a structure that matches the text to organize ideas in memory (Meyer, 1979, 1987). Less skilled readers, however, have less awareness of expository text structures (Englert & Thomas, 1987; McGee, 1982) and use a listing strategy to remember a collection of descriptions about the topic with no attempt to organize them (Meyer et al., 1980).

Some types of text structures are more difficult to understand than others (Ray & Meyer, 2011). In general, less-structured texts that use a description or listing structure are more difficult for readers to comprehend than well-structured texts that use more organized structures (Meyer & Freedle, 1984; Taylor & Samuels, 1983). Description might be the most difficult text structure because it contains less signaling and is often used in combination with other text structures (Englert & Hiebert, 1984). For readers in upper elementary grades, compare/contrast and cause/effect text structures were found to be more difficult to comprehend than sequence and problem/solution (Englert & Hiebert, 1984; Englert & Thomas, 1987; Richgels, McGee, Lomax, & Sheard, 1987). Similarly, cause/effect and compare/contrast were more difficult for upper elementary students to write than other text structures (Englert & Thomas, 1987; Richgels & McGee, 1989).



Together, these studies suggest that text structure knowledge is related to both reading and writing performance, differs based on age and reading ability, and varies for each of the different expository text structures. These developmental differences in text structure knowledge informed instructional studies of how to best teach text structures (Williams et al., 2004). Specifically, they suggested that younger and less skilled readers and writers are often not aware of text structures and would benefit from instruction.

### **The Potential of Text Structure Instruction**

Students can be taught to use text structures to improve reading comprehension (e.g., Shanahan et al., 2010) and writing quality (e.g., Graham, Bollinger et al., 2012). Text structure instruction typically involves teaching students to identify how ideas in expository texts are organized, use text structures as schemas to organize and recall important ideas, and use text structures to organize written summaries (Meyer & Ray, 2011). Researchers have suggested approaches to integrate reading and writing instruction by teaching students to identify a text structure during reading before using the same text structure in writing (e.g., Armbruster, Anderson, & Ostertag, 1989; Englert, 2009; Dickson, 1999; Raphael & Englert, 1990). However, such approaches have not been widely tested. Potentially, students could be taught to use text structures both to aid comprehension after reading and to plan before writing (Gordon, 1990).

Meta-analyses have revealed the components of effective text structure interventions that improve reading comprehension in grades 2-12 (Hebert, Bohaty, Nelson, & Brown, 2016; Pyle et al., 2017). When reading comprehension is the focus, effective instructional features include explicit instruction, signal words, writing, and

graphic organizers. The components of effective text structure interventions on writing quality are less clear. Most studies of text structure instruction that have focused on writing have taught story structure or persuasive essays rather than expository text structures (Graham, McKeown, Kiuahara, & Harris, 2012; Graham & Perin, 2007).

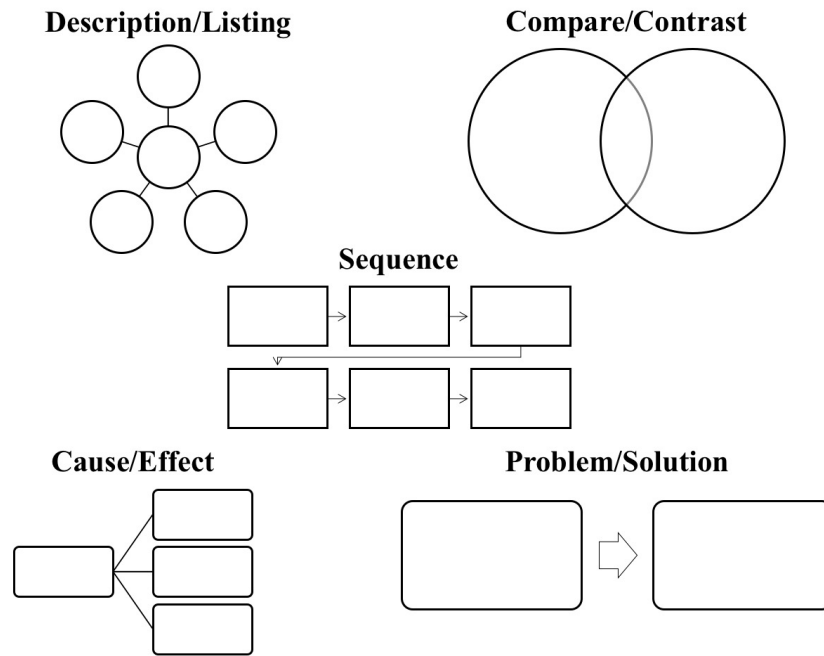
Most text structure interventions designed to improve reading comprehension utilize explicit instruction. Explicit instruction begins with the teacher modeling or explaining a skill or strategy and then gradually releasing responsibility to students until they are able to apply it on their own (Pearson & Dole, 1987). Variations of explicit instruction include direct explanation, modeling, guided practice, independent practice, feedback, discussion, and/or monitoring (Reutzel, Child, Jones, & Clark, 2014). In text structure intervention studies, researchers have used the term explicit instruction to describe various procedures with these features (Hebert et al., 2016; Pyle et al., 2017).

Text structure interventions vary in the extent to which they rely on using signal words. Students can be taught to underline or highlight signal words to help identify text structures, but signal words can be misleading (Hebert et al., 2016; Roehling, Hebert, Nelson, & Bohaty, 2017). For example, some signal words (e.g., first, second) might be used to highlight a sequence of events or aspects of comparison in different texts. Most children's informational texts do not contain any signaling, and those that do often signal multiple text structures rather than a single structure (Jones, Clark, & Reutzel, 2016). Readers who focus too much attention on using signal words to identify structures might ignore important information for comprehending the text (Hebert et al., 2016). Therefore, students might not be taught to use signal words in all text structure interventions.

Some text structure interventions focused on improving reading comprehension have also included a writing component. Hebert and colleagues (2016) found that the effects of text structure instruction on reading comprehension were enhanced by the inclusion of note-taking, writing answers to questions, or written summaries. Most text structure interventions that include a writing component focus on teaching students how to produce written summaries (Meyer & Ray, 2011). Students in upper elementary and middle grades typically have difficulty writing summaries due to inability to determine important information (Taylor, 1986; Winograd, 1984). However, teaching them how to use text structure has the potential to improve both reading comprehension and summary writing quality (e.g., Armbruster et al., 1989). While meta-analyses indicate that writing instruction can improve both reading comprehension (Graham & Hebert, 2011) and writing quality (Graham, McKeown et al., 2012), few studies have examined the effects of text structure interventions on reading and writing outcomes simultaneously.

Most text structure interventions have also provided instruction in the use of graphic organizers. Graphic organizers are visual representations that aid students in organizing important ideas in a text, which has proven to be more effective in facilitating learning from informational texts than instructional methods such as discussion and questioning (Armbruster, Anderson, & Meyer, 1991). Different types of organizers have been used to teach students how to visually represent information in all text structures, but the effects of using them are varied (Hebert et al., 2016; Pyle et al., 2017). Graphic organizers representing each text structure can potentially be used to record ideas from reading material and then organize ideas for writing (Roehling et al., 2017). Figure 1

displays graphic organizers for each of the basic informational text structures:  
description/listing, compare/contrast, sequence, cause/effect, and problem/solution.



*Figure 1.* Graphic organizers for basic text structures. Based on Roehling et al. (2017).

### **Text Structure Instruction in Practice**

Despite the body of research demonstrating the efficacy of text structure instruction (see Bohaty, Hebert, Nelson, & Brown, 2015), research indicates that students rarely receive such instruction. Observations in fourth- and fifth-grade classrooms revealed that teachers and students referred to expository text structures in approximately five percent of the observed time, but they never used the structure to write a summary of the text (Beerwinkle, Wijekumar, Walpole, & Aguis, 2018). In observations of third- through fifth-grade special education classrooms, teachers were observed teaching

students how to identify different expository text structures less than five percent of the time (Klingner, Urbach, Golos, Brownell, & Menon, 2010). In observations of first-through fifth-grade classrooms, text structure instruction was observed two percent of the time (Ness, 2011). Observations of middle and high school classrooms revealed the use of text structure in less than one percent of instructional time (Ness, 2009).

The lack of text structure instruction in classrooms might also be due to teachers' lack of familiarity with text structures (Hall, Sabey, & McClellan, 2005) or poorly organized textbooks (Williams, 2018; Williams & Pao, 2011). Upper elementary teachers have difficulty identifying informational text structures and their textbooks minimize the role of text structure, neglecting to connect it with related skills such as identifying the main idea and summarizing (Beerwinkle et al., 2018; Wijekumar, Beerwinkle, Harris, & Graham, 2019). A study of primary-grade teachers' text structure knowledge found that most teachers had difficulty identifying text structure in children's informational texts, but their ability was improved with training (Reutzel, Jones, Clark, & Kumar, 2016).

### **Social Validity and Acceptability of Text Structure Instruction**

Improving teachers' knowledge of how to teach expository text structures through well-designed intervention research has the potential to increase the frequency of text structure instruction in classrooms. Understanding an intervention's social validity, or teachers' perceptions of its goals, procedures, and effects, can also help to promote its successful adoption in classrooms (Lindo & Elleman, 2010). An intervention is considered to be socially valid when participants consider the goals to be significant, the procedures to be appropriate, and the effects to be important (Wolf, 1978).

Few studies that focus on evaluating the effects of reading interventions also report teachers' perceptions of their social validity (Lindo & Elleman, 2010). This is an important oversight, as teachers' decisions to implement an intervention are not based solely on its effectiveness; they also consider its acceptability (Kazdin, 1980; Von Brock & Elliott, 1987; Witt, 1986). Teachers might consider a classroom-based reading intervention to be acceptable if they perceive it to be effective for their students and easy to implement within their schedule (El-Dinary & Schuder, 1993; Rich & Pressley, 1990).

Evidence of the social validity and acceptability of text structure interventions is limited. A review of experimental reading intervention studies that addressed social validity (see Lindo & Elleman, 2010) included no studies focused on text structure. One recent experimental study of a text structure intervention, though, included teacher interviews to assess its usability (Hebert, Bohaty, Nelson, & Lambert, 2018a). A review of social validity in single-case research (see Snodgrass, Chung, Meadan, & Halle, 2016) included one text structure intervention focused on writing (MacArthur & Philippakos, 2010). Two text structure intervention studies using single-case designs that focused on writing (Carnahan & Williamson, 2013) and comprehension (Carnahan, Williamson, Birri, Swoboda, & Snyder, 2016) have also reported social validity. To date, there are few experimental studies of text structure interventions that address social validity.

### **Theoretical Frameworks**

The text structure intervention in the present study combines reading and writing instruction. There is a strong theoretical rationale for focusing on text structure when integrating reading and writing. Reading and writing draw on shared knowledge of text

structure (Fitzgerald & Shanahan, 2000). Text structure knowledge plays an important role in both the construction-integration model of reading comprehension (Kintsch, 1988) and the cognitive process theory of writing (Flower & Hayes, 1981). During the comprehension process, readers construct a mental representation of the text, including its sentence-level and discourse-level structure, and then integrate the ideas in the text with their background knowledge to form a coherent representation of the meaning of the text (Kintsch, 1988, 2004). According to the text structure model of comprehension (see Meyer, Wijekumar, & Lei, 2018), skilled readers use their knowledge of discourse-level text structures to determine how the ideas in a text are organized and select a structure that matches the text to organize ideas in memory (Meyer, 1979, 1987). During the planning process, writers form a representation of how ideas will be organized in their long-term memory, as well as their knowledge of effective writing formats, to guide the sub-process of organizing text (Flower & Hayes, 1981; Hayes & Flower, 1987).

Taken together, knowledge of text structure helps readers to select and organize ideas in their memory during reading and helps writers to draw on this organization of ideas and knowledge of text structure during the planning process. Connections between text comprehension, structure, and composition emerge by fourth grade, as reading and writing instruction shifts to larger discourse units (Shanahan, 2016). In fact, the CCSS require students to be able to describe the overall structure of informational texts in grades four and five (NGACBP & CCSSO, 2010). As a result, the text structure intervention in the present study was designed to be implemented in grades four and five.

## **Statement of the Problem**

While researchers have examined the effects of text structure instruction since the early 1980s, recent meta-analyses (Hebert et al., 2016; Pyle et al., 2017) and a systematic review (Bohaty et al., 2015) have identified weaknesses in the design of text structure intervention studies. There is a need for studies that report fidelity of implementation, include randomization to treatment and comparison conditions, have more than one teacher per condition, and include an alternative treatment (Hebert et al., 2016). There have also been few studies examining the effects of text structure interventions on writing quality; as such, a similar need for well-designed intervention studies exists (Graham, McKeown et al., 2012). A well-designed text structure intervention integrating reading and writing has the potential to improve both students' learning and teachers' instruction.

## **Purpose and Research Questions**

The purpose of this study was to investigate the effects and social validity of a text structure intervention in upper elementary grades. I conducted a randomized experiment (Shadish, Cook, & Campbell, 2002) to test the effects of the intervention on fourth- and fifth-grade students' text structure awareness, reading comprehension, and writing quality compared with an alternative treatment. The randomized experiment was embedded in a mixed methods experimental design (Creswell & Plano Clark, 2018) in which I conducted interviews after the intervention period to understand teachers' perceptions of the social validity of the text structure intervention. The qualitative findings were combined with the quantitative results to describe the acceptability of the text structure intervention for teachers and students in upper elementary grades.



The three research questions were:

1. To what extent does a text structure intervention focused on reading and writing improve students' awareness of expository text structures, reading comprehension, and writing quality compared to an alternative treatment?
2. To what extent do intervention teachers perceive the goals, procedures, and effects of the text structure intervention as socially valid?
3. How do student outcomes and teacher perceptions of the social validity of the intervention inform its acceptability for upper elementary grades?

### **Summary**

Many students have difficulty with reading and writing, and knowledge of expository text structures can improve both reading and writing achievement. There is a theoretical rationale for combining text structure instruction for reading and writing, as knowledge of text structure helps readers to recall ideas after reading and helps writers to organize ideas before writing. Existing research indicates that students are rarely taught how to use expository text structures and elementary teachers have limited knowledge of how to teach text structure. Understanding teachers' perceptions of the social validity of and acceptability of a text structure intervention may also help to support its continued implementation in classrooms. The goals of this study were to design, implement, and evaluate the effectiveness of a research-based text structure intervention on students' reading and writing outcomes in upper elementary grades; describe intervention teachers' perceptions of its social validity; and understand its acceptability for upper elementary grades based on student outcomes and teacher perceptions of the intervention.

## **Chapter 2**

### **LITERATURE REVIEW**

The effects of text structure interventions on reading comprehension and writing quality have been examined in grades K-12 (see Graham, Bollinger et al., 2012; Graham & Perin, 2007; Hebert et al., 2016; Pyle et al., 2017). A text structure intervention is typically a series of lessons that employs procedures to teach students how to identify one or more text structures when reading expository texts and/or use text structure to improve reading comprehension or writing quality (Meyer & Ray, 2011). The goal of most text structure interventions is to teach students how to use text structures to select and organize main ideas and produce written summaries (Meyer et al., 2018; Williams, 2018).

Researchers have made a variety of decisions in the design of text structure interventions. A preview of the features of text structure intervention studies that informed the design of this study is presented in Table 2. These features include type of study (i.e., experimental or quasi-experimental), number of student participants, grade level(s), text structure(s), materials used for instruction and/or assessment (e.g., authentic or researcher-developed texts), intervention procedures (e.g., use of graphic organizers or signal words), comparison procedures (i.e., alternative treatment or control group), and effect size(s) for studies in which they were reported or which were reported in previous meta-analyses (see Graham, McKeown et al., 2012; Hebert et al., 2016; Pyle et al., 2017).

Table 2  
*Summary of Text Structure Intervention Studies*

Study	Type	<i>N</i>	Grade	TS	Materials	Intervention	Comparison	ES
Al Otaiba, Connor, & Crowe (2018)	QE	172	K-2	CC, CE, SQ	Researcher-developed passages	SW & GO	N/A	1.73
Alvermann (1981)	E	114	10	CC, D/L	Researcher-developed passages	CC GO	No GO	.62
Alvermann (1982)	E	30	10	D/L	Researcher-developed passages	CC/CE GO	No GO	1.62
Alvermann & Boothby (1983)	QE	33	4	L	SS textbook passage	CE GO	No GO	N/A
Alvermann & Boothby (1986)	E	24	4	L	Researcher-adapted SS passages	CC GO 14 sessions	No GO 14 sessions	.62
						7 sessions	7 sessions	.24
Armbruster, Anderson, & Ostertag (1987)	QE	82	5	PS	SS textbook passages	PS GO, summary	Answering questions	N/A
Bakken, Mastropieri, & Scruggs (1997)	E	54	8	D, L, SQ	Researcher-adapted S & SS passages	SW	Paragraph restatement	.46
							Traditional Instruction	2.17
Boothby & Alvermann (1984)	QE	27	4	L	Researcher-adapted SS passages	CC/CE GO	No GO	.91
Clark & Neal (2018)	QE	40	2	SQ	Trade books	SW & GO	N/A	3.84
Englert & Mariage (1991)	QE	28	4-6	D	Researcher-developed passages	POSSE using GO	Predictions, questions, discussion	1.47

Table 2 (*continued*)

Englert, Raphael, Anderson, Anthony, & Stevens (1991)	QE	183	4-5	CC, SQ	Researcher-developed passages	Cognitive strategy instruction in writing (CSIW)	Regular writing activities	.51
Hall, Sabey, & McClellan (2005)	E	72	2	CC	Paragraphs written by authors & trade books	SW, GO, summary	Content and vocabulary	1.49
							Control	1.02
Hammann & Stevens (2003)	QE	63	8	D/L	Passages written by authors	CC GO, summary writing	Summary writing instruction	.56
							Control	.41
Hebert, Bohaty, Nelson, & Lambert (2018a)	E	45	4-5	D, CC, SQ, CE, PS	Researcher-developed SS & S passages	Structures: Definitions and visual icons for each TS	Business-as-usual control	.29 (NS)
Hebert, Bohaty, Nelson, & Roheling (2018b)	E	61	4-5	D, CC, SQ	Information “frames” providing content for writing	Structures Writing: POW writing strategy	Math Writing	.74
Hebert, Bohaty, Nelson, Roehling, & Christensen (2018c)	E	12	4	D, CC, SQ, CE, PS	Researcher-developed SS & S passages	Structures: Definitions and visual icons for each TS & note taking frames	Narrative reading and writing strategies	.75 (NS)
Kirkpatrick & Klein (2009)	QE	83	7-8	D	Passages written by authors	CC GO	Standard writing instruction	1.50
Meyer et al. (2002)	E	60	5	CC, PS, CE, SQ, D	Researcher-developed SS & S passages	Structure Strategy using SW	Accelerated Reader program	.35

Table 2 (*continued*)

Meyer et al. (2010)	E	111	5 & 7	CC, PS, CE, SQ, D	Researcher-developed & authentic passages	Intelligent Tutoring of Structure Strategy (ITSS)	ITSS with elaborated feedback	.23
Meyer, Wijekumar, & Lin (2011)	E	131	5	CC, PS, CE, SQ, D	Researcher-developed & authentic passages	Intelligent Tutoring of Structure Strategy (ITSS)	Individually tailored ITSS	.13
Reynolds & Perin (2009)	QE	121	7	SQ, D/L	Researcher-adapted S & SS passages	Writing strategies with GO	Summary writing instruction	.89
							Control	1.11
Slater, Graves, & Piché (1985)	E	224	9	CE, PS	Researcher-adapted SS passages	GO with and without outline grid	Reading with and without notetaking	.29
Smith & Friend (1986)	QE	54	9-12	SQ, PS, CC, D, CE	Researcher-developed & authentic SS passages	7-step strategy using signal words	Productive Thinking Program	.96
Spires, Gallini, & Riggsbee (1992)	E	74	4	PS, CC	Researcher-adapted passages	Signal words and summary	Previewing and summary	.39
Taylor (1985)	E	98	6	D/L	SS textbook passages	Summary and CC writing instruction	Summary or CC writing only	-.38
Weisberg & Balajthy (1989)	QE	32	10-12	CC	Researcher-adapted SS passages	SW, GO, summary	Reading and discussion	1.2
Wijekumar, Meyer, & Lei (2012)	E	2,643	4	CC, PS, CE, SQ, D	Researcher-developed & authentic passages	ITSS using SW, MI, and GO	Regular curriculum without ITSS	.20

Table 2 (continued)

Wijekumar et al. (2014)	E	2,485	5	CC, PS, CE, SQ, D	Researcher-developed & authentic passages	ITSS using SW, MI, and GO	Regular curriculum without ITSS	.31
Wijekumar, Meyer, & Lei (2017)	E	2,489	7	CC, PS, CE, SQ, D	Researcher-developed & authentic passages	ITSS using SW, MI, and GO	Regular curriculum without ITSS	.18
Wijekumar, Meyer, Lei, Hernandez, & August (2018)	E	739	4-5	CC, PS, CE, SQ, D	Researcher-developed & authentic passages	Strategy instruction on the web for English learners (SWELL)	Regular curriculum without SWELL	.63
Williams et al. (2005)	E	128	2	CC	Paragraphs written by authors & trade books	SW, GO, summary, questions	Content and vocabulary Control	.78 .78
Williams et al. (2007)	E	179	2	CE	Paragraphs written by authors & trade books	SW, GO, questions	Content and vocabulary Control	.44 .41
Williams et al. (2009)	E	215	2	CC	Paragraphs written by authors & trade books	SW, GO, summary, questions	Content and vocabulary Control	.84 1.35
Williams et al. (2014)	E	197	2	CE	Paragraphs written by authors & trade books	SW, GO, questions	Content and vocabulary Control	.60 .75
Williams et al. (2016)	E	258	2	SQ, CC, CE, D, PS	Paragraphs adapted by authors & trade books	SW, GO, summary, questions	Content and vocabulary Control	1.10 1.31

Notes. CC = compare/contrast; CE = cause/effect; D = description; E = experimental; ES = overall effect size; GO = graphic organizer; L = listing; MI = main idea; N/A = not available; NS = non-significant PS = problem/solution; QE = quasi-experimental; S = science; SQ = sequence; SS = social studies; SW = signal words; TS = text structure

The instructional features in previously studied interventions informed the design of the text structure intervention in the present study. Despite the long history of text structure instruction efficacy research (see Bohaty et al., 2015), there is no clear consensus on practical problems such as the number and type of text structures to teach, what reading materials should be used, how to use graphic organizers and signal words, and how to deliver explicit instruction. Questions about when students should receive text structure interventions and for how many lessons can also be answered by previous research. Questions about the social validity of text structure interventions have received scant attention. Because there are more studies focused on reading, these practical questions will be addressed first for studies focused on reading and then for writing.

### **How Many and Which Text Structures Should be Taught?**

Text structure intervention studies have found positive effects for teaching students how to identify and use a single text structure or multiple structures. Most studies of a single text structure have focused on compare/contrast (Hebert et al., 2016), possibly because its difficulty is appropriate for the ages when most interventions are delivered (Meyer et al., 2018). In studies of multiple structures, students have typically received instruction in a highly structured text structure (e.g., compare/contrast) before learning more complex (e.g., cause/effect) or less-structured ones (e.g., description).

#### **Single Text Structure**

Many studies have focused on using a single text structure to improve comprehension. These studies have examined the effects of instruction in five basic text structures: description (Englert & Mariage, 1991), problem/solution (Armbruster,

Anderson, & Ostertag, 1987), cause/effect (Al Otaiba, Connor, & Crowe, 2018; Williams et al., 2007, 2014), compare/contrast (Al Otaiba et al., 2018; Hall et al., 2005; Weisberg & Balajthy, 1989; Williams et al., 2005; Williams, Stafford, Lauer, Hall, & Pollini, 2009), and sequence (Al Otaiba et al., 2018). Consistent with the text structure model of comprehension (Meyer, 1987), students who received instruction in compare/contrast (Weisberg & Balajthy, 1989), description (Englert & Mariage, 1991), or problem/solution (Armbruster et al., 1987) recalled more main ideas and wrote better-organized summaries than students in a comparison group who read the same passages and answered questions. Together, these studies showed that students can be taught how to use a single structure to improve comprehension in taught structures.

Transfer effects of these studies to less-structured text and untaught structures were mixed. In one study, students did not use the same text structure to organize written summaries when the passages were not adapted by the authors to make the text structure more explicit, indicating lack of transfer to less-structured text (Armbruster et al., 1987). Second-grade students who received instruction in cause/effect performed better on comprehension questions about cause/effect paragraphs, but comprehension did not transfer to less-structured text in an authentic trade book (Williams et al., 2007, 2014). Similarly, second-grade students who received instruction in compare/contrast performed better on summaries about compare/contrast paragraphs, but comprehension did not transfer to less-structured text or untaught text structures (Hall et al., 2005; Williams et al., 2005). In contrast, students in primary grades who were taught cause/effect or compare/contrast text structure did transfer their knowledge to untaught structures, but



students who were taught sequence did not (Al Otaiba et al., 2018). In two other compare/contrast studies, effects also transferred to authentic texts that were not adapted by the authors (Weisberg & Balajthy, 1989; Williams et al., 2009).

Compared with studies focused on improving comprehension, there have been few interventions focused on improving informative writing quality. Studies that have measured informative writing outcomes using the self-regulated strategy development (SRSD) model, for example, have typically only provided instruction in narrative or persuasive writing (e.g., Harris, Graham, & Mason, 2006). Of studies focused on teaching a single text structure to improve informative writing, students received instruction in compare/contrast (Hammann & Stevens, 2003; Kirkpatrick & Klein, 2009) and sequence (Clark & Neal, 2018; Reynolds & Perin, 2009). These studies provide evidence that the quality and organization of students' writing can be improved when taught to use text structure knowledge during the planning process when writing from sources (Flower & Hayes, 1981; Hayes & Flower, 1987). Middle school students who learned how to write text-based compare/contrast essays demonstrated greater gains in writing quality and use of compare/contrast structure than students who received standard writing instruction (Kirkpatrick & Klein, 2009), especially when writing about a less familiar topic (Hammann & Stevens, 2003). Students who received instruction in how to summarize social studies passages written using a sequence structure included more main ideas and wrote better quality summaries than a control group, and effects transferred to science passages written in a description/listing structure (Reynolds & Perin, 2009). Second-grade students included more elements of sequence writing after instruction,

including signal words, introductory and concluding sentences, and capitalization and punctuation; however, other structures were not assessed (Clark & Neal, 2018).

Together, these findings suggest that instruction in a single text structure can improve reading and writing in taught structures, but it might not be effective enough to transfer to untaught structures or less-structured text. For this reason, some studies have focused on teaching students how to identify and use multiple text structures.

### **Multiple Text Structures**

Within intervention studies focused on teaching multiple text structures to improve comprehension, there are differences in the number of taught structures. In two studies, students were taught different combinations of two or three structures (Bakken, Mastropieri, & Scruggs, 1997; Spires, Gallini, & Riggsbee, 1992). These studies provide further evidence that text structure interventions can improve comprehension in taught structures. In ten studies, students were taught five structures (Hebert et al., 2018a; Meyer et al., 2002; Meyer et al., 2010; Meyer, Wijekumar, & Lin, 2011; Smith & Friend, 1986; Wijekumar, Meyer, & Lei, 2012, 2017; Wijekumar et al., 2014; Wijekumar, Meyer, Lei, Hernandez, & August, 2018; Williams et al., 2016). In addition to improving reading comprehension in taught structures, some of these studies showed improvements in general comprehension ability using standardized measures.

Effects of intervention studies that included instruction in two or three text structures were mixed. Eighth-grade students with learning disabilities who received instruction in how to use description, listing, and sequence text structures recalled more main ideas in science and social studies passages than students who learned a paragraph

restatement strategy and a control group (Bakken et al., 1997). Fourth-grade students who learned how to identify and use problem/solution and compare/contrast text structures wrote better summaries than a control group, but students who learned a preview strategy outperformed both groups (Spires et al., 1992). Transfer to general comprehension ability using standardized measures was not measured in either study, so the effects of teaching students how to discriminate between two or three text structures on reading comprehension might be limited to the structures or passages used for assessment.

Studies that included instruction in five text structures were more promising. High school students with learning disabilities who learned sequence, problem/solution, and compare/contrast before learning description and cause/effect recognized more text structures and recalled more main ideas in social studies passages than a control group (Smith & Friend, 1986). Similarly, fourth- and fifth-grade students with reading difficulties who learned description, compare/contrast, and sequence before learning problem/solution and cause/effect identified the structure of passages better than a control group, but they did not perform significantly better on an oral retell (Hebert et al., 2018a). Second-grade students who learned five text structures in the order of sequence, compare/contrast, cause/effect, description, and problem/solution performed better than a treated comparison and a control group in writing summaries of five paragraphs, including one of each text structure, as well as identifying the text structure in authentic texts written in sequence, compare/contrast, and cause/effect text structures (Williams et al., 2016). Although these studies measured comprehension of all five text structures,

none included a standardized measure of comprehension ability, so generalizability to comprehension beyond the assessed passages is limited.

A series of studies that taught students how to use the structure strategy in five text structures led to improvements in general comprehension ability using a standardized test, the Gray Silent Reading Test (GSRT; Wiederholt & Blalock, 2000). The structure strategy has been taught with older adult tutors (Meyer et al., 2002) and web-based instruction using the Intelligent Tutoring of the Structure Strategy (ITSS) program (Meyer et al., 2010, 2011; Wijekumar et al., 2012, 2014, 2017) and strategy instruction on the web for English learners (SWELL; Wijekumar et al., 2018). ITSS teaches skills associated with the text structure model of comprehension, including generating a main idea and selecting important information (see Meyer et al., 2018; Ji et al., 2018).

These studies had the most promising results and provide the most support for the text structure model of comprehension (Meyer, 1987). Students who learned how to identify and use five text structures (compare/contrast, problem/solution, cause/effect, sequence, and then description) recalled more main ideas on compare/contrast and problem/solution passages after instruction (Meyer et al., 2002), and improved general comprehension ability (Meyer et al., 2010, 2011). Classes that received ITSS scored significantly higher than classes that did not on written free recalls of compare/contrast and problem/solution passages, writing a main idea using compare/contrast structure, and general comprehension (Wijekumar et al., 2012, 2014, 2017). SWELL had similar positive findings with two exceptions: fourth-grade students who received SWELL did not outperform the control students on writing a main idea using compare/contrast

structure, and there were no effects on general comprehension in fifth grade (Wijekumar et al., 2018). These studies only assessed comprehension of compare/contrast and problem/solution text structures, the first two text structures that were taught.

Three studies have focused on the effects of teaching multiple text structures on writing quality, providing further evidence that students can be taught to use structures as organizational patterns to scaffold the writing process (Flower & Hayes, 1981; Hayes & Flower, 1987). In a study of Cognitive Strategy Instruction in Writing (CSIW), students learned how to write using both compare/contrast and sequence (Englert, Raphael, Anderson, Anthony, & Stevens, 1991). Students in CSIW classes composed essays with better quality and structure in both text structures and in an essay written using a structure of their choice. Overall, students wrote better-structured essays using compare/contrast structure than sequence structure, suggesting that compare/contrast instruction might be more effective for teaching students how to organize writing. In two studies of components of the Structures Writing intervention, students were taught how to write informational passages using the description, compare/contrast, and sequence structures when provided with information frames (Hebert, Bohaty, Nelson, & Roehling, 2018b), as well as how to take written notes in information frames when reading description, compare/contrast, sequence, problem/solution, and cause/effect passages (Hebert, Bohaty, Nelson, Roehling, & Christensen, 2018c). There were no significant differences between the intervention group and a comparison group that received instruction in narrative reading and writing strategies on the note-taking measure (Hebert et al., 2018c). Students wrote better informational passages in all three structures when provided with

notes than a comparison group that received instruction in mathematics writing, but there were no effects on general writing ability (Hebert et al., 2018b). In all three studies, there were no transfer effects on measures of reading comprehension, suggesting that text structure interventions focused on improving writing quality without an emphasis on reading instruction might not lead to improved reading comprehension. This finding supports the interactive model of reading and writing as separate processes that each require instructional attention (Fitzgerald & Shanahan, 2000; Shanahan, 2016).

Together, these studies suggest that instruction in multiple text structures can improve either reading comprehension or writing quality. Teaching students how to identify and use multiple text structures might also transfer to improvements in general comprehension ability, but it is not clear whether instruction transfers to general writing ability. The present study focused on providing instruction in four text structures (sequence, compare/contrast, cause/effect, and problem/solution) due to their inclusion in the CCSS (NGACBP & CCSSO, 2010). Description was not targeted because it is less structured than the other four structures (Williams et al., 2016). Transfer effects to general reading comprehension and writing ability were also assessed.

### **What Reading Materials Should be Used to Teach Text Structure?**

Text structure interventions have used different reading materials to teach and assess text structure. These include well-structured passages written by researchers, authentic passages, or authentic passages that have been adapted to make the text structure more distinct (Roehling et al., 2017). While well-structured or adapted passages

might make it easier for students to learn how to identify text structures, using authentic passages is more consistent with texts that students are required to learn from in school.

### **Well-Structured Passages**

Many studies have used well-structured passages for assessment and instruction of text structures. Some researchers manipulated passage characteristics. For example, text structure identification and comprehension have been compared between passages with the same content but different structure (Alvermann, 1981), the same length and structure but different content (Englert & Mariage, 1991), the same structure but different readability (Englert et al., 1991), or different structures with similar readability (Al Otaiba et al., 2018; Hebert et al., 2018c). For instruction, some studies used texts that increased in length and difficulty as lessons progressed (Hammann & Stevens, 2003) or used more difficult passages for teacher modeling and less difficult passages for student practice (Hebert et al., 2018a). For both assessment and instruction, the Structures intervention included researcher-developed passages that were written to be ambiguous in order to approximate authentic text (Hebert et al., 2018a). These studies suggest that well-structured passages can be useful for assessment and instruction of text structures.

### **Authentic or Adapted Passages**

Few studies have used passages from authentic texts in assessment and instruction of text structures. Authentic texts have not been modified to add signaling or make the text structure more explicit, instead reflecting a hybrid of multiple structures (St-Jacques & Duquette, 2005). Some have used passages from a grade-level social studies textbook (Alvermann & Boothby, 1983; Armbruster et al., 1987; Taylor, 1985). In another study,

authentic textbook passages were used for instruction, but researcher-developed passages were used for assessment (Smith & Friend, 1986). Students read authentic informational trade books during the instructional phase of one writing intervention (Clark & Neal, 2018). Together, these studies suggest that authentic texts that students typically read in school can be used to assess and teach reading and writing of expository text structures.

Researchers have also adapted passages from authentic expository texts to make the text structure more distinct or to control length and readability. Social studies passages have been adapted to modify the text structure for assessment (Alvermann & Boothby, 1986; Boothby & Alvermann, 1983). Science and social studies passages were adapted to make description, listing, and sequence text structures (Bakken et al., 1997) and compare/contrast structure (Weisberg & Balajthy, 1989) more distinct. Signal words have been added to expository passages to make problem/solution and compare/contrast text structures more explicit (Spires et al., 1992). Length and readability have also been manipulated in science and social studies passages (Reynolds & Perin, 2009; Slater, Graves, & Piché, 1985). These studies provide valid reasons for adapting authentic material to assess text structure awareness.

### **Multiple Types of Passages**

Some text structure intervention studies have used multiple types of materials, including well-structured and authentic passages. Meyer and colleagues (2002) provided instruction with well-structured science and social studies texts in five structures and assessed using long and short compare/contrast and problem/solution passages. In subsequent studies, they included a mix of researcher-developed and authentic texts for



instruction and well-structured problem/solution and compare/contrast passages for assessment (Meyer et al., 2010, 2011; Wijekumar et al., 2012, 2014, 2017, 2018).

Studies of Close Analysis of Texts with Structure (CATS; see Williams, 2018) also included multiple types of passages. In three studies, instruction utilized authentic trade books and well-structured compare/contrast paragraphs written by the authors that increased in length and readability as lessons progressed (Hall et al., 2005; Williams et al., 2005, 2009). In two studies, authentic trade books and well-structured cause/effect paragraphs were used (Williams et al., 2007, 2014). The final study incorporated five authentic trade books, one for each text structure, and four well-structured paragraphs in each text structure increasing in difficulty as the lessons progressed (Williams et al., 2016). Four of these studies also assessed transfer of comprehension to less-structured passages from authentic trade books (Williams et al., 2007, 2009, 2014, 2016).

These studies provide further evidence that multiple types of reading materials may be useful in text structure interventions. Authentic passages, typically less structured, can be used both during instruction and to assess transfer. Students can learn how to identify and use text structures from well-structured passages that can also be leveraged to assess text structure awareness. The intervention in the present study used authentic passages for both assessment and instruction of text structures and well-structured paragraphs adapted from authentic passages to assess text structure awareness.

### **How Should Graphic Organizers and Signal Words be Used?**

Graphic organizers and signal words are commonly included in text structure interventions to help students select and organize important information after reading and

use structured notes when writing summaries (Hebert et al., 2016; Roehling et al., 2017). Organizing important information is associated with comprehension and understanding the author's purpose (Williams, 2018). Many text structure interventions suggest that both of these instructional features can be used effectively to teach text structure.

### **Graphic Organizers**

Graphic organizers help readers to organize information from less-structured and well-structured texts and help writers to organize ideas in their own compositions. Early studies of text structure instruction examined the effects of using graphic organizers to reorganize ideas in description/listing passages using a compare/contrast or cause/effect text structure (Alvermann, 1981, 1982; Alvermann & Boothby, 1983, 1986; Boothby & Alvermann, 1984). Students who received instruction with graphic organizers recalled more main ideas than a control group of students who read the same material without a graphic organizer in all six studies. These studies showed that using graphic organizers to impose a text structure on less-structured text can improve recall of main ideas.

Graphic organizers have been used as an instructional aid to help improve reading comprehension of passages written in different text structures. Students included more main ideas in written summaries after organizing ideas using a problem/solution frame (Armbruster et al., 1987), a semantic map (Englert & Mariage, 1991), a compare/contrast matrix (Hall et al., 2005; Wijekumar et al., 2012, 2014, 2017, 2018; Williams et al., 2005, 2009), and an organizer with an arrow indicating cause/effect (Williams et al., 2007, 2014). One intervention taught students how to construct their own compare/contrast

graphic organizers (Weisberg & Balajthy, 1989). Another included guiding questions to help students select information to complete graphic organizers (Williams et al., 2016).

Teaching students how to organize ideas using graphic organizers before writing can improve writing quality and structure (e.g., Kirkpatrick & Klein, 2009). Students wrote better quality essays after using text structure maps for compare/contrast and sequence essays (Englert et al., 1991). Sequence frames showing time order or steps in a process helped students to improve the quality of their writing (Clark & Neal, 2018; Reynolds & Perin, 2009). The use of information frames, rectangular organizers that share the same basic structure regardless of text structure, also improved the quality of students' written notes, though not consistently (Hebert et al., 2018c).

Together, these studies suggest that students' reading comprehension and writing quality can be improved when they are taught how to use structure-specific graphic organizers to record ideas after reading and use them when planning for writing. This is important, as the ultimate goal of text structure instruction is to impose structure on authentic, less-structured text (Wijekumar et al., 2017; Williams, 2018). The text structure intervention in the present study taught students how to use structure-specific graphic organizers to take notes after reading to aid in comprehension, as well as a basic graphic organizer to plan before writing an informative paragraph.

### **Signal Words**

Students can be taught how to use signal words to focus on the structure of expository texts, leading to improved recall of main ideas and improved writing quality. Some interventions have taught students to recognize or underline signal words to help

identify text structure during reading (e.g., Al Otaiba et al., 2018; Weisberg & Balajthy, 1989) and to structure written compositions after reading (e.g., Clark & Neal, 2018). Signal words were used for sequence (*first, second, third, and finally*; Bakken et al., 1997), compare/contrast (*alike, both, compare, but, however, and contrast*; Hall et al., 2005; Williams et al., 2005, 2009), cause/effect (*because, so, therefore, and since*; Williams et al., 2007, 2014), problem/solution (*as a result*; Spires et al., 1992), and multiple text structures (Meyer et al., 2002, 2010, 2011; Smith & Friend, 1986; Wijekumar et al., 2012, 2014, 2017, 2018; Williams et al., 2016). Teaching students how to add signal words during writing has helped to improve the quality and structure of their compare/contrast essays (Englert et al., 1991; Hammann & Stevens, 2003).

These studies suggest that students can be taught how to use signal words to identify text structure and select important information when reading and to organize their own writing. However, some interventions do not focus on teaching signal words to identify structure; instead, students are taught to focus on content and make a judgment about the structure based on the author's purpose (e.g., Hebert et al., 2018c). After focusing on the organization of ideas to identify structure, they can use signal words as a confirmation (Williams et al., 2016). In the text structure intervention in the present study, students were taught to use signal words to confirm the text's structure following an initial judgment after reading and to aid in organizing information when writing.

### **How Should Explicit Instruction be Delivered?**

The majority of text structure interventions used explicit instruction, but the delivery varied (Hebert et al., 2016; Pyle et al., 2017). Most interventions included direct

explanation, modeling, and guided and/or independent practice (e.g., Clark & Neal, 2018; Hammann & Stevens, 2003; Kirkpatrick & Klein, 2009; Weisberg & Balajthy, 1989). In some studies, materials were designed to enhance the delivery of explicit instruction. These included scripted lesson plans, student workbooks, or a combination of materials.

### **Lesson Plans**

Scripted lesson plans have been used to scaffold teacher delivery of explicit instruction with a gradual release of responsibility to students. Taylor (1985) included an initial lesson modeling how to summarize using main idea and details and how to organize ideas before writing compare/contrast essays, followed by less modeling in two lessons, and independent practice in the final two lessons. Smith and Friend (1986) provided direct explanation of text structure in the first lesson, guided practice using well-structured passages in the second and third lessons, modeling and guided practice using textbook material in the fourth lesson, and independent practice in the fifth lesson.

### **Student Materials**

Interventions included materials designed for students to use during explicit instruction, including modeling, guided practice, and independent practice. Strategy sheets served as supports for each strategy step cued by the acronyms POSSE (Predict, Organize, Search, Summarize, and Evaluate; Englert & Mariage, 1991) and POWER (Plan, Organize, Write, Edit/editor, and Revise; Englert et al., 1991). Teachers were able to transfer responsibility for strategy use to students (Englert & Mariage, 1991).

Some interventions included both student materials and scripted lesson plans. Workbooks contained strategy procedures, graphic organizers, passages, and practice

activities in which supports were removed as lessons progressed (Bakken et al., 1997) or practice passages that increased in length and difficulty (Armbruster et al., 1987).

Students in the comparison groups received workbooks containing the same passages but without text structure instruction. Reynolds and Perin (2009) provided materials for students to record main idea and details, take notes, organize notes to plan for writing, and write summaries. In all three studies, teachers received lesson plans that included modeling, guided practice with monitoring and feedback, and independent practice.

### **Supplemental Programs**

Supplemental programs have also provided explicit instruction to improve reading and writing. Structures and Structures Writing included scripted lesson plans with think alouds to deliver when modeling, accompanying PowerPoint lessons, a program manual with information about the content and passages, and student workbooks with definitions and visual icons to aid in guided and independent practice with identifying text structures (Hebert et al., 2018a) and using the POW (Pick your idea, Organize your notes, Write) writing strategy (Hebert et al., 2018b). CATS, a program with multiple components (see Williams, 2018; Williams & Pao, 2011) included lesson plans and materials to provide explicit instruction in the use of signal words, vocabulary, guiding questions, analysis of well-structured paragraphs, use of graphic organizers, and summarizing (Williams et al., 2005, 2007, 2009, 2014, 2016). The ITSS program uses an animated pedagogical agent, or intelligent tutor, to provide explicit instruction in how to use signal words to identify text structure, organize main ideas using a graphic organizer, and write a well-structured

recall (Meyer et al., 2010, 2011; Wijekumar et al., 2012, 2014, 2017, 2018). These programs were well designed to facilitate the delivery of explicit instruction.

Taken together, most interventions utilized explicit instruction procedures. Researchers facilitated its delivery through scripted teacher lesson plans and student materials, including strategy sheets or workbooks containing passages and instructional supports that were faded as lessons progressed. The intervention designed for the present study included fully-scripted teacher lesson plans in initial lessons to facilitate modeling of an instructional routine with semi-scripted lesson plans in subsequent lessons to facilitate guided and independent practice. It also included a student workbook containing passages of increasing length and difficulty and student materials for each process step.

### **How Many Sessions are Needed to Teach Text Structure Effectively?**

Duration of text structure interventions is an important consideration for effectiveness and social validity. Larger effects were found for interventions delivered for a moderate amount of time (11-20 hours;  $d = 1.21$ ) than for interventions delivered for less ( $d = 0.58$ ) or more time ( $d = 0.35$ ; Pyle et al., 2017). Interventions that were brief, moderate in length, or longer had strengths and limitations.

### **Brief Interventions**

Many brief interventions included between one and ten sessions, with effect sizes ranging from negative or nonsignificant to large effects. In some studies, researchers designed one session in how to use graphic organizers to support comprehension, with small ( $d = 0.39$ ; Slater et al., 1985), medium ( $d = 0.62$ ; Alvermann, 1981), and very large effects ( $d = 1.62$ ; Alvermann, 1982) on passage comprehension.

Some studies employing a single text structure ranged in length from five to ten sessions (Alvermann & Boothby, 1983; Taylor, 1985; Weisberg & Balajthy, 1989). While one study reported large effects on graphic organizers, reading comprehension tests, and written summaries ( $d = 1.11$ ; Weisberg & Balajthy, 1989), another reported negative effects ( $d = -0.38$ ; Taylor, 1985). Writing interventions reported medium-to-large overall effects on writing quality compared to an alternative treatment after five ( $d = 0.89$ ; Reynolds & Perin, 2009) or six sessions ( $d = 0.56$ ; Hammann & Stevens, 2003), with larger effects compared to a control group after six sessions ( $d = 1.50$ ; Kirkpatrick & Klein, 2009). Alvermann and Boothby (1986) compared dosage, finding that seven sessions ( $d = 0.24$ ) were less effective than fourteen sessions ( $d = 0.62$ ).

Studies targeting multiple structures also had mixed effects on reading and writing outcomes. Three sessions in identifying three text structures, one for each structure, had a small-to-medium effect on oral recalls compared to an alternative treatment ( $d = 0.46$ ; Bakken et al., 1997). Likewise, three sessions for identifying each of two structures, for a total of six, had a small effect on summaries compared to an alternative treatment ( $d = 0.39$ ; Spires et al., 1992). Five sessions for identifying five structures had a large effect on written free recalls ( $d = 0.96$ ; Smith & Friend, 1986). However, eight sessions for identifying five structures (Hebert et al., 2018a), as well as three sessions for identifying five text structures followed by five sessions for taking written notes (Hebert et al., 2018c), had nonsignificant effects on reading comprehension.



Together, these studies suggest that students can be taught how to use single or multiple text structures to improve reading comprehension and writing quality in fewer than fifteen sessions. However, effect sizes across studies were not consistent.

### **Moderate-Length Interventions**

Some of the most consistently effective text structure interventions included between eleven and twenty-five sessions, with large effects on reading and writing. Studies that taught a single text structure to improve comprehension found positive effects after eleven (Armbruster et al., 1987) or fourteen sessions (Alvermann & Boothby, 1986). Another study that provided sixteen lessons for using one of three structures delivered had large effects on comprehension ( $d = 1.73$ ; Al Otaiba et al., 2018).

A moderate number of sessions is also effective for teaching students how to write using a single structure or multiple structures. Eighteen sessions had a very large effect on sequence writing, but gains were not compared to a control group ( $d = 3.84$ ; Clark & Neal, 2018). Twelve sessions for writing three structures had a medium-to-large effect on writing quality ( $d = 0.74$ ; Hebert et al., 2018b).

Studies of the CATS intervention had large effects compared to both a control group and an alternative treatment. In three compare/contrast studies, researchers provided nine lessons delivered in fifteen sessions (Hall et al., 2005; Williams et al., 2005) and twelve lessons delivered in twenty-two sessions (Williams et al., 2009). Effect sizes were large across the three studies, ranging from 0.78 to 1.49, when compared to the control group or another intervention. Two cause/effect studies included three units

delivered in twenty-two sessions with effect sizes ranging from 0.41 to 0.75 on researcher-developed measures of reading comprehension (Williams et al., 2007, 2014).

The structure strategy intervention had positive effects that were maintained. Students learned five structures in twenty-five sessions, including five compare/contrast, eight problem/solution, eight cause/effect, two sequence, one description, and one using all five text structures (Meyer et al., 2002). Effects on reading comprehension were small on an immediate posttest ( $d = 0.35$ ) but were larger on a delayed posttest ( $d = 0.74$ ).

Although other variables contribute to the effects of these studies, including intervention design (Pyle et al., 2017), positive effects on reading comprehension or writing quality were consistent. Together, these studies suggest that students can be taught single or multiple text structures in a moderate amount of time.

### **Longer Interventions**

Longer interventions were implemented over several months with mixed effects. Boothby and Alvermann (1984) delivered text structure instruction three days per week for thirteen weeks. While large comprehension effects were found for immediate recalls ( $d = 0.91$ ), effects were smaller after two days ( $d = 0.33$ ) and one month ( $d = 0.38$ ) following instruction. Other interventions had mixed effects on reading comprehension when delivered over two months ( $d = 1.47$ ; Englert & Mariage, 1991) and seven months ( $d = 0.12$ ), though there were moderate effects on writing ( $d = 0.51$ ; Englert et al., 1991).

Extensive supplemental programs also had large effects on comprehension. The CATS program taught 50 lessons in five units of instruction delivered two days per week, including nine lessons in sequence, compare/contrast, cause/effect, description, and

problem/solution, and five review lessons (Williams et al., 2016). Effects were very large compared with an alternative treatment ( $d = 1.10$ ) and a control group ( $d = 1.31$ ). The ITSS program included 65 lessons (12 compare/contrast, 12 problem/solution, 16 cause/effect, 12 sequence, and 13 description) that students completed at their own pace one or two days per week over six to seven months (Meyer et al., 2010, 2011; Wijekumar et al., 2012, 2014, 2017). ITSS studies found positive effects on general comprehension ability using standardized measures, ranging from 0.10 to 0.20. However, the average number of lessons students completed was twenty-seven (Wijekumar et al., 2017). Thus, a greater number of lessons might not be necessary to improve comprehension ability.

The duration of these interventions suggests that text structure can be taught effectively in brief or moderate-length interventions. Longer interventions might lead to larger effects, but not always. The intervention designed for the present study was delivered for a moderate amount of time. It included sixteen two-day lessons delivered in thirty-minute sessions over eight weeks, for a total of sixteen hours of instruction.

### **When Should Students Receive Text Structure Interventions?**

Students benefited from text structure interventions in primary grades, upper elementary grades, middle school, and high school. Effects were larger for interventions in elementary grades ( $d = 1.03$ ) than in secondary grades ( $d = 0.63$ ; Pyle et al., 2017).

### **Secondary Grades**

Few text structure interventions have been implemented in high school. Ninth- (Slater et al., 1985) and tenth-grade students (Alvermann, 1981, 1982) received a single session of instruction. Students in grades 9-12 (Smith & Friend, 1986) and 10-12

(Weisberg & Balajthy, 1989) participated in brief interventions. Though these studies suggest that high school students may benefit from text structure instruction, there are no recent studies of text structure interventions implemented in a high school setting.

There have been several text structure interventions in middle school. Students in sixth (Taylor, 1985), seventh (Meyer et al., 2010; Reynolds & Perin, 2009), and eighth grade (Bakken et al., 1997; Hammann & Stevens, 2003), as well as grades seven and eight (Kirkpatrick & Klein, 2009) received text structure interventions with mixed effects on reading and writing. Most important for this study, Wijekumar and colleagues (2012, 2014, 2017) implemented ITSS in fourth, fifth, and seventh grades. Effects on general comprehension ability were larger in fifth grade than in fourth and seventh grades. It may be that upper elementary school is “a critical window of opportunity” for text structure interventions (Wijekumar et al., 2017, p. 756).

### **Elementary Grades**

Other researchers have also focused their work in upper elementary grades. Classroom-based text structure interventions have been implemented in grades four (Alvermann & Boothby, 1983, 1986; Boothby & Alvermann, 1984; Englert et al., 1991; Spires et al., 1992), five (Armbruster et al., 1987; Meyer et al., 2002), four and five (Hebert et al., 2018a), and four through six (Englert & Mariage, 1991). Two other studies were implemented by pre-service teachers in a university reading clinic with students in grades four (Hebert et al., 2018c) or four and five (Hebert et al., 2018b). Web-based text structure instruction has been implemented mostly in upper elementary school, including grades four (Wijekumar et al., 2012), five (Meyer et al., 2010, 2011; Wijekumar et al.,

2014), and grades four and five (Wijekumar et al., 2018). These studies show promising effects of text structure interventions on reading comprehension and writing quality. A classroom-based text structure intervention has the potential to be both effective and socially valid in upper elementary grades.

Primary-grade students can also learn to use text structure to improve reading comprehension or writing quality. Several versions of the CATS program focused on comprehension of compare/contrast (Hall et al., 2005; Williams et al., 2005, 2009), cause/effect (Williams et al., 2007, 2014), and multiple structures (Williams et al., 2016) have been implemented in second grade. Two recent studies also examined the effects of providing instruction in writing a single structure in second grade (Clark & Neal, 2018) or identifying a single structure in kindergarten, first, and second grade (Al Otaiba et al., 2018). However, neither study included a control group. Beyond these studies, text structure interventions have not been studied widely in primary grades.

Text structure interventions may be especially useful for improving reading comprehension and writing quality in upper elementary grades. Understanding how to use text structure becomes increasingly important as reading and writing expository text becomes more common beginning in fourth grade (Fitzgerald & Shanahan, 2000; Meyer et al., 2018). Also, text structure skills are reflected in the CCSS and other state standards in grades four and five (NGACBP & CCSSO, 2010). As a result, the present study focused on evaluating the effects of a text structure intervention in grades four and five.

### **How Socially Valid are Text Structure Interventions?**

Despite decades of text structure intervention research (see Bohaty et al., 2015), observational research suggests that text structure instruction in classrooms is limited (e.g., Beerwinkle et al., 2018; Wijekumar et al., 2019). Low implementation of research-based practices could be due, in part, to a lack of attention to teachers' perspectives about interventions and their effects (Vaughn, Klingner, & Hughes, 2000). This gap between research and practice can be explained by the limited relevance of research-validated practices to teachers who are expected to implement them (Greenwood & Abbott, 2001).

Few studies have evaluated whether text structure interventions are considered socially valid to teachers. Social validity refers to participants' perceptions of the significance of the goals, appropriateness of the procedures, and importance of the effects of an intervention (Wolf, 1978). Social validity of a classroom-based intervention may also be an indicator of teachers' perceptions of its acceptability or practicality in their classroom (Leko, 2014). Few studies have reported participants' feedback about the acceptability of classroom-based reading interventions (Lindo & Elleman, 2010).

Social validity has been more prevalent in single-case research conducted in special education (Horner et al., 2005; Snodgrass et al., 2016). Single-case studies of text structure interventions for reading (Carnahan & Williamson, 2013; Carnahan et al., 2016) and writing (MacArthur & Philippakos, 2010) have addressed social validity. Carnahan and Williamson (2013) documented teacher perceptions of the feasibility, acceptability, and effectiveness of a middle school text structure intervention for students with autism spectrum disorder (ASD). Carnahan and colleagues (2016) also assessed social validity

for high school students with ASD. MacArthur and Philippakos (2010) used interviews to assess student's perceptions of the efficacy of a compare/contrast writing intervention. These small-scale studies suggest that students and teachers found the goals, procedures, and effects of text structure interventions to be socially valid in special education settings.

Two other experimental studies have addressed teachers' perceptions about a text structure intervention. Seven teachers were interviewed about the relevance and effectiveness of the Structures intervention (Hebert et al., 2018a). All teachers reported that the intervention was effective, but they disagreed about whether it was appropriate or too difficult for their students. They also suggested linking text structure skills to reading of authentic texts to make the program more relevant. In informal interviews, teachers who taught the CATS program indicated that they liked the repetitive procedures in the lessons (Williams et al., 2016). These studies suggest that text structure interventions may be socially valid in general education settings, but neither used qualitative methods to analyze interview data beyond reporting how teachers responded to the programs.

Mixed methods research designs lend themselves well to both establishing the effects of an intervention and evaluating its social validity and acceptability (Snodgrass et al., 2016). Social validity can be assessed before, during, or after an intervention (Schwartz & Baer, 1991). This mixed methods experimental study included qualitative interviews after the intervention to understand teachers' perceptions of its social validity. Evaluating the effects and the social validity of the text structure intervention in this study informed an understanding of its acceptability for upper elementary grades.

## Summary

A text structure intervention is a series of lessons designed to improve reading comprehension or writing quality. A text structure intervention, Read STOP Write, was designed for this study. Its design was informed by previous research.

Interventions typically target the use of a single text structure or the ability to identify and use multiple structures. Read STOP Write lessons taught multiple text structures: sequence, compare/contrast, cause/effect, and problem/solution. Students are taught text structures in most interventions using well-structured passages, authentic passages, or authentic passages that have been adapted to make the structure more organized. Read STOP Write lessons taught students how to identify and use the structure in authentic texts to improve reading and writing. Text structure awareness was also assessed in well-structured passages adapted from authentic passages.

Text structure interventions may include many different types of materials, including lesson plans and student materials, to facilitate the delivery of explicit instruction. Read STOP Write includes both teacher lesson plans and student workbooks. Many text structure interventions include graphic organizers and signal words to aid students in selecting and organizing important information when reading or writing. In Read STOP Write, students were taught to use signal words to confirm their initial judgment about the structure of a passage after reading and to organize their own writing. They used structure-specific graphic organizers to organize information after reading and a basic graphic organizer in each lesson to plan before writing an informative paragraph.



Text structure interventions are most effective in elementary school and when delivered for a moderate amount of time. Read STOP Write comprises sixteen two-day lessons for a total of thirty-two sessions. It was implemented in grades four and five. The purpose of this mixed methods experimental study was to evaluate the effects of Read STOP Write on student achievement and teachers' perceptions of its social validity.

### **Chapter 3**

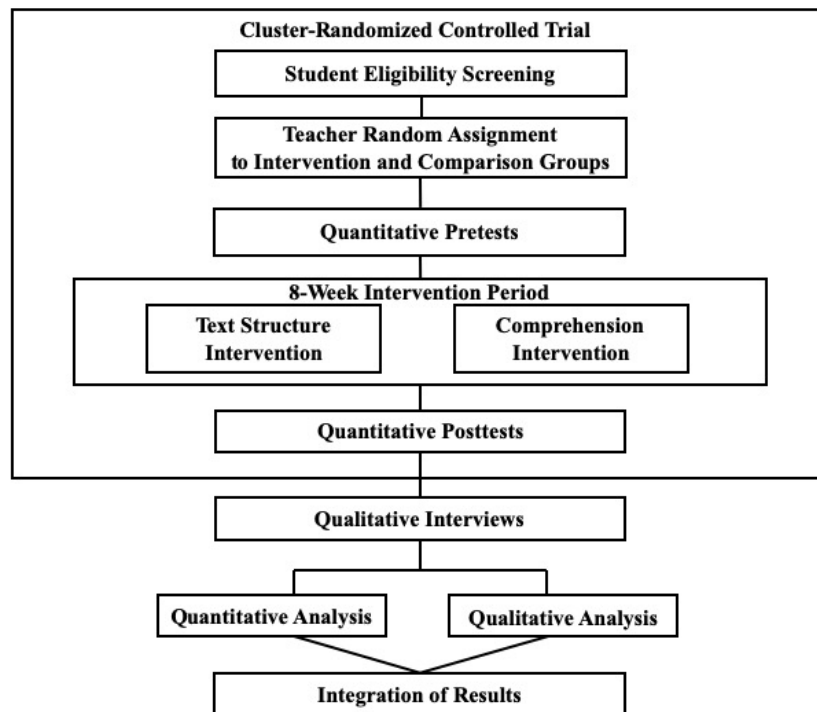
#### **METHODS**

In this mixed methods study, I investigated the effects and social validity of a text structure intervention in upper elementary grades. I evaluated the effects of the text structure intervention on fourth- and fifth-grade students' text structure awareness, reading comprehension, and writing quality compared to an alternative treatment. I also conducted semi-structured interviews to explore teachers' perceptions of the social validity of the text structure intervention and a comprehension intervention.

This inquiry was guided by a pragmatic worldview of literacy research focused on improving students' learning and teachers' instruction (Dillon, O'Brien, & Heilman, 2000). Mixed methods research designs complement pragmatism in the practical use of quantitative and qualitative data to determine what works in the real world (Johnson & Onwuegbuzie, 2004). Dillon (2005) referred to experimental studies that rely on quantitative methods while also collecting qualitative data as a "pragmatic solution" to answering complex questions about learning and instruction (p. 108). Mixed methods research designs combine and integrate quantitative and qualitative methods for data collection, analysis, and interpretation, allowing for understanding from multiple viewpoints (Creswell & Plano Clark, 2018; Johnson, Onwuegbuzie, & Turner, 2007). I describe the mixed methods research design, participants, materials, procedures, data collection, and data analysis procedures in the present study below.

## Research Design

The present study used a mixed methods experimental design, which adds qualitative data collection as a secondary component before, during, or after an experiment to enrich understanding of the results (Creswell & Plano Clark, 2018). The experimental design was a cluster randomized controlled trial with students nested in classrooms randomly assigned to receive the text structure intervention or a comprehension intervention. I used an alternative-treatments pretest-posttest design in which the comprehension intervention serves as a counterfactual to the text structure intervention, providing strong causal inference (Shadish et al., 2002). I conducted qualitative interviews after the intervention. Figure 2 displays the study design visually.



*Figure 2.* Diagram of mixed methods experimental design in the present study.

Prior to the study, teachers conducted student eligibility screening using the school's regular assessment procedures. All students were assessed using the Informal Decoding Inventory (IDI; McKenna, Walpole, & Jang, 2017). The IDI includes six subtests of increasing difficulty, including five that assess single-syllable decoding and one that assesses multisyllabic decoding. All students who pass the first five subtests have demonstrated proficiency in decoding single-syllable words. Students identified as having decoding difficulties did not participate in the present study and continued to receive a word recognition intervention in accordance with the school district's business as usual procedures. Students who passed the first five subtests were considered eligible to receive the text structure intervention or the comprehension intervention.

All fourth- and fifth-grade English language arts (ELA) teachers were randomly assigned to deliver the text structure intervention or the comprehension intervention. I provided training to each group separately. I collected quantitative data using teacher-administered pretests of text structure awareness, reading comprehension, and writing quality. The intervention period lasted for eight weeks. Following the intervention period, teachers administered quantitative posttests. I conducted qualitative interviews with each teacher during the week after posttests were administered. Finally, I analyzed quantitative and qualitative data separately to answer the first two research questions and integrated the results to answer third research question.

### **Participants and Setting**

This study took place in all three elementary schools in a rural school district located in a South Atlantic state. All fourth- and fifth-grade ELA teachers who taught

during a differentiated reading instruction block ( $N = 11$ ) consented to participate in the study. All teachers were randomly assigned to deliver the text structure intervention ( $n = 5$ ) or a comprehension intervention ( $n = 6$ ). Random assignment was blocked by school and grade to ensure a near-equal number of text structure and comprehension teachers in each grade at each school. In all schools, one fourth-grade and one fifth-grade teacher were assigned to each group with the exception of one school in which there was only one fourth-grade ELA teacher, and she was assigned to the comprehension group.

Teachers included ten females and one male. Nine teachers identified as White and two identified as African American. Four teachers held a bachelor's degree, including two in the text structure group and two in the comprehension group. Seven teachers held a master's or specialist degree, including three in the text structure group and four in the comprehension group. Average teaching experience was 12.7 years. Text structure teachers' experience ranged from one to twenty-six years ( $M = 11.8$  years). Teachers' experience in the comprehension group ranged from one to twenty-eight years ( $M = 13.5$  years). The number of students per teacher ranged from fifteen to eighty-one ( $M = 36.8$ ), as some teachers taught multiple sections throughout the school day.

This district was selected purposively because the district had a history of low literacy achievement, a commitment to improving instruction, and a racially and socioeconomically diverse population of students. Publicly available student performance data show that no more than 30% of elementary students had scored at or above the proficient level on the state assessment in ELA for the past three years. The district had adopted a highly-structured reading curriculum that employed instructional routines to

emphasize reading volume and text-based writing in daily 45-minute blocks for shared reading, interactive read-aloud, and differentiated instruction (see Walpole, McKenna, Amendum, Pasquarella, & Strong, 2017). During the school year when the present study took place, the district began implementing a new ELA curriculum in elementary grades (*Bookworms K-5 Reading & Writing*; Open Up Resources, 2018). The district's three elementary schools serve approximately 527, 568, and 622 students in grades K-5. Publicly available demographic data for the school district indicate that approximately 57% of students are White, 33.3% are African American, 5% are Multi-Racial, 4.3% are Hispanic/Latino, and 0.4% are Asian. In addition, 87% are eligible for federal lunch subsidies, 11.2% receive special education services, and 1% are English learners.

Eligible students ( $N = 405$ ) in grades 4 ( $n = 186$ ) and 5 ( $n = 219$ ) received the text structure intervention ( $n = 185$ ) or the comprehension intervention ( $n = 220$ ). In total, 13.1% of the sample ( $n = 53$ ) did not complete the pretest or posttest for one or more measures. Overall attrition was within the 10-20 percent range of missing data typically found in randomized controlled trials in education (Puma, Olsen, Bell, & Price, 2009). Attrition was similar for the text structure intervention (13.5%) and comprehension intervention (13.2%) groups, with a low rate of differential attrition (0.3%). Overall and differential attrition rates met the What Works Clearinghouse (2015) conservative attrition standard. The sample of students in the final analyses ( $n = 351$ ) included 160 students who received the text structure intervention and 191 students who received the comprehension intervention across grades 4 ( $n = 160$ ) and 5 ( $n = 191$ ). The distribution of teachers and students by grade and group is displayed visually in Table 3.

Table 3  
*Number of Teachers and Students by Grade and Group*

	Teachers	Students
<u>Text Structure Intervention</u>		
Grade 4	2	62
Grade 5	3	98
<u>Comprehension Intervention</u>		
Grade 4	3	98
Grade 5	3	93

*Notes.*  $N = 11$  teachers; 351 students.

### **Materials**

For the present study, I designed a classroom-based text structure intervention, Read STOP Write, and a comprehension intervention, RARE Reading & Writing. For both intervention programs, I wrote teacher lesson plans and a student workbook. Prior to the study, I piloted the Read STOP Write instructional routine with two fifth-grade teachers and their students to ensure that it would be appropriate for upper elementary grades and feasible to implement. At the request of the teachers in the present study, I also designed PowerPoint presentations and printed posters to help facilitate delivery of the lessons for both programs. The instructional design was the same in both programs.

### **Instructional Design**

The instructional design for both programs facilitated explicit instruction in four phases: modeling, collaborative practice, guided practice, and independent practice (Duke & Pearson, 2002). Students in both programs read the same passages in the same order.

The first four lessons were scripted for the teacher to model an instructional routine (see Bulgren & Scanlon, 1997) taught in the Read STOP Write or RARE Reading & Writing program. There was one two-day lesson for each structure. The passages

began with a familiar text structure, then two well-structured text structures, and then the most difficult text structure. The passages in subsequent phases also included all four text structures, but they were ordered by word count, increasing in length within each phase. In the second phase, the lessons were designed to help the teacher lead students in practicing the instructional routine collaboratively. The two-day lesson plans advised the teacher to accept students' responses, but there were suggested responses for the teacher if students had difficulty using the instructional routine. In the third phase, the lessons were designed to help the teacher guide students as they practiced using the instructional routine with a partner. The two-day lesson plans included responses for the teacher to remind students of the procedures and to assist them in understanding the content of the texts. In the last phase, the lessons were designed for the teacher to monitor students as they practiced the instructional routine independently. The two-day lesson plans advised teachers to remind students to use the routine, providing no assistance with content.

The informational texts included in both programs were authentic passages used with permission from ReadWorks, a nonprofit website that provides brief informational and literary texts (ReadWorks, 2018). Table 4 lists the passages, text structure, word count, and text complexity using the Lexile Framework for Reading (MetaMetrics, 2019).

Table 4  
*Reading Passages in Both Intervention Programs*

Reading Passages	Text Structure	Words	Lexile
<u>Phase 1: Modeling</u>			
Gettysburg and the Gettysburg Address	SQ	513	1060L
Penguins: Up Close and Personal	CC	651	1070L
Some Laws are Intolerable	CE	796	1070L
Lincoln and the 13 <sup>th</sup> Amendment to End Slavery	PS	704	1050L



Table 4 (*continued*)Phase 2: Collaborative Practice

Chemistry: Atoms and Molecules	CC	168	780L
Recycling & Conservation: Global Warming	CE	199	770L
Electricity & Energy – Energy	PS	201	780L
U.S. Presidents: Abraham Lincoln	SQ	448	770L

Phase 3: Guided Practice

Westward Expansion – The Erie Canal	PS	383	790L
The Great Depression	CE	470	790L
Background to the Colonies	CC	518	830L
Colonization and the Revolutionary War	SQ	641	820L

Phase 4: Independent Practice

WWII: Hiroshima, Japan	CE	306	820L
Immigration	SQ	669	900L
The Two Harriets, Heroines of Abolition	CC	695	870L
Solar Absorbers and the Future of Electricity	PS	995	870L

*Notes.* Passages used with permission (ReadWorks, 2018). CC = compare/contrast; CE = cause/effect; PS = problem/solution; SQ = sequence.

I selected passages based on content, text structure, and text complexity. All passages were about science or social studies content. They were organized using one of the four text structures targeted in the text structure intervention. The average text complexity of the passages was 880L (Lexiles), which is within the CCSS text complexity band of 770L-980L for grades 4-5 (NGACBP & CCSSO, 2010).

The length and complexity of the passages in each instructional phase were slightly different. The passages in the first phase (modeling) were longer ( $M = 666$  words) and more complex ( $M = 1062.5L$ ) than passages in the next three phases because the teachers would be providing support through reading aloud while modeling the instructional routine. The passages in the second phase (collaborative practice) were less complex ( $M = 775L$ ) and shorter ( $M = 254$  words) than the passages in the first phase, as students began to take responsibility for using the instructional routine. In the third phase

(guided practice), the passages were more complex ( $M = 807.5L$ ) and longer ( $M = 503$  words) than the passages in the second phase, as students took on more responsibility for using the routine with a partner. The passages in the fourth phase (independent practice) were more complex ( $M = 877.5L$ ) and longer ( $M = 666.25$  words) than passages in the third phase, as students learned to use the instructional routine independently.

### **Text Structure Intervention**

The text structure intervention comprised a series of sixteen two-day lessons. The book of teacher materials included a program overview, instructional sequence, and two-day lesson plans (see Appendix A). The program overview described the goals and procedures of the intervention. The goal was to teach students how to identify and use the four text structures in the CCSS: sequence, compare/contrast, cause/effect, and problem/solution. The lessons utilized explicit instruction (Duke & Pearson, 2002; Pearson & Dole, 1987) in an instructional routine for reading and writing informational texts. The six-step routine included reading a passage, identifying and summarizing the main idea and key details, identifying the text structure, organizing details using a graphic organizer, and planning and writing an informative paragraph about the topic using the same structure as the passage (Strong, 2018). The routine included processes for reading and writing informational texts, as well as after-reading and before-writing processes cued by the acronym STOP (Summarize, Text structure, Organize, Plan). Figure 3 displays the steps in the Read STOP Write instructional routine.

Read STOP Write	
<b>Read</b>	Read a passage to identify the main idea and supporting details.
<b>Summarize</b>	Summarize the main ideas and supporting details in 20 words or fewer.
<b>Text structure</b>	Identify the text structure that shows how ideas are organized.
<b>Organize</b>	Organize information in the text using a text structure map.
<b>Plan</b>	Plan to write with TIDE (Topic, Ideas, Details, Ending) graphic organizer.
<b>Write</b>	Write an informative/explanatory paragraph about the topic.

*Figure 3.* Read STOP Write instructional routine.

The routine was printed in the program overview and at the beginning of each two-day lesson in the student workbook (see Appendix B). The lessons included a three-step process to identify the main idea and supporting details during reading. Students were prompted to read and stop at the end of each paragraph, highlight the main idea(s), and underline details that support the main idea. Figure 4 displays the process steps.

Read
<ol style="list-style-type: none"> <li><b>1. Read</b> the text, stopping at the end of each section or paragraph.</li> <li><b>2. Highlight</b> any words that tell the main idea of the text.</li> <li><b>3. Underline</b> supporting details (words or phrases that support the main idea).</li> </ol>

*Figure 4.* Process for reading to identify main idea and details.

The lessons also included a three-step process to summarize the text after reading. First, students were prompted to list the main idea on a summary sheet. Next, they chose details to list below the main idea. Then, they combined the main idea and supporting details using twenty words or fewer. Figure 5 displays the summarizing process.

Summarize
1. <b>List</b> the main idea on the summary sheet after reading.
2. <b>Choose</b> 4-6 supporting details and list them below the main idea.
3. <b>Summarize</b> the main idea and supporting details in 20 words or fewer.

*Figure 5.* Process for summarizing main idea and details.

Main Idea			
Supporting Details			
Summary			
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

*Figure 6.* Process sheet for summarizing.

After students summarized the main idea and details on the summary sheet (see Figure 6), the teacher prompted them to identify the structure used to organize information in the passage using a text structure guide. The guide included a description of each text structure, guiding questions and signal words to aid in identifying the text structure, and a set of graphic organizers. Students used the guide to make an initial judgment about the text structure and use signal words to confirm their selection. Figure 7 displays the text structure guide that was printed after the summary sheet in each two-day lesson in the student workbook.

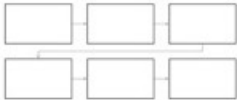
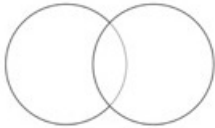


Text Structure	Description	Guiding Questions	Signal Words	Graphic Organizer
Sequence	An author explains how events happen in chronological or time order.	What is the first thing that happened? What happened next? What happened last?	After, before, finally, first, last, later, next, now, then	
Compare/Contrast	An author shows how two or more ideas or items are related by similarities and/or differences.	What ideas or items are being compared? What features are compared? How are they the same? How are they different?	alike, both, compare, contrast, different, however, on the other hand, same, similar, unlike	
Cause/Effect	An author tells how one or more causes leads to one or more effects or results.	What are the cause(s)? What are the effect(s)?	As a result, because, cause, effect, in order to, in response, led to, since, therefore	
Problem/Solution	An author describes a problem and a potential or actual solution.	What are the problem(s)? What are the attempts to solve the problem(s)?	Answer, difficulty, issue, problem, question, reason, solution, solve	

Figure 7. Expository text structure guide.

After identifying the text structure, students were prompted to use an appropriate text structure map to organize the main ideas and details. In the first eight two-day

lessons, a text structure map representing the structure of the passage was provided in the workbook following the text structure guide. In the remaining two-day lessons, there was a blank sheet for students to construct a graphic organizer representing the text structure. Students used the guiding questions to organize information from the text in the graphic organizer. Figure 8 shows the page that was printed in the workbook on which students constructed a text structure map for lessons nine through sixteen. The text structure maps for lessons one through eight resembled those in the text structure guide in Figure 7.

<b>Text Structure Map</b>	
Identify Text Structure: _____	

*Figure 8.* Sheet for organizing information using a text structure map.

After organizing information using the text structure map, students planned to write an informative paragraph using the author's text structure. Students were taught a

variation of the TIDE (Topic, Ideas, Details, and Ending) writing strategy (Ciullo & Mason, 2017) with a graphic organizer. Students used their completed summary sheet (see Figure 6) to record the topic of the passage. Then they used the guiding questions for each text structure (see Figure 7) to select ideas to write about and the completed text structure map (see Figure 8) to select details to include in their informative paragraph. Then, students were prompted to write an ending sentence that summarized the ideas and details. After completing the TIDE graphic organizer, students wrote an informative paragraph that explained the topic of the passage. Students referred to the signal words in the text structure guide during writing. Figure 9 displays the planning and writing sheet that was printed on the final page of each two-day lesson in the student workbook.

Topic	
Ideas	Details
1.	1.
2.	2.
3.	3.
Ending	
Write an Informative Paragraph	

*Figure 9.* Process sheet for planning and writing.

## **Comprehension Intervention**

I designed an alternative treatment to mirror materials and procedures while substituting the goal of text structure knowledge with a goal of question answering and summarizing. The comprehension intervention program also included a series of sixteen two-day lesson plans (see Appendix C) and student workbooks (see Appendix D). The program overview described the goal of the program as teaching students how to use question-answer relationships (QAR) to answer comprehension questions (Raphael, 1982; Raphael & Au, 2005) and a process for summarizing informational texts (e.g., Hare & Borchardt, 1984). The lessons utilized explicit instruction (Duke & Pearson, 2002; Pearson & Dole, 1987) in a six-step instructional routine that included reading and thinking about main ideas, using question-answer relationships to answer comprehension questions, reviewing questions and answers, rereading and highlighting important details, restating the main idea and details in a graphic organizer, and explaining the topic by combining main idea and details in a written summary. The instructional routine included reading and writing processes cued by the acronym RARE (Read, Answer, Review, Reread, Restate, Explain). Figure 10 displays the RARE Reading & Writing routine.



<b>RARE Reading &amp; Writing</b>	
<b>Read</b>	Read a passage and think about the main idea.
<b>Answer</b>	Answer comprehension questions using question-answer relationships.
<b>Review</b>	Review questions and answers to make sure you understand them.
<b>Reread</b>	Reread the text and highlight the important details.
<b>Restate</b>	Restate the main idea and supporting details using a graphic organizer.
<b>Explain</b>	Explain the topic by combining main idea and details in a summary.

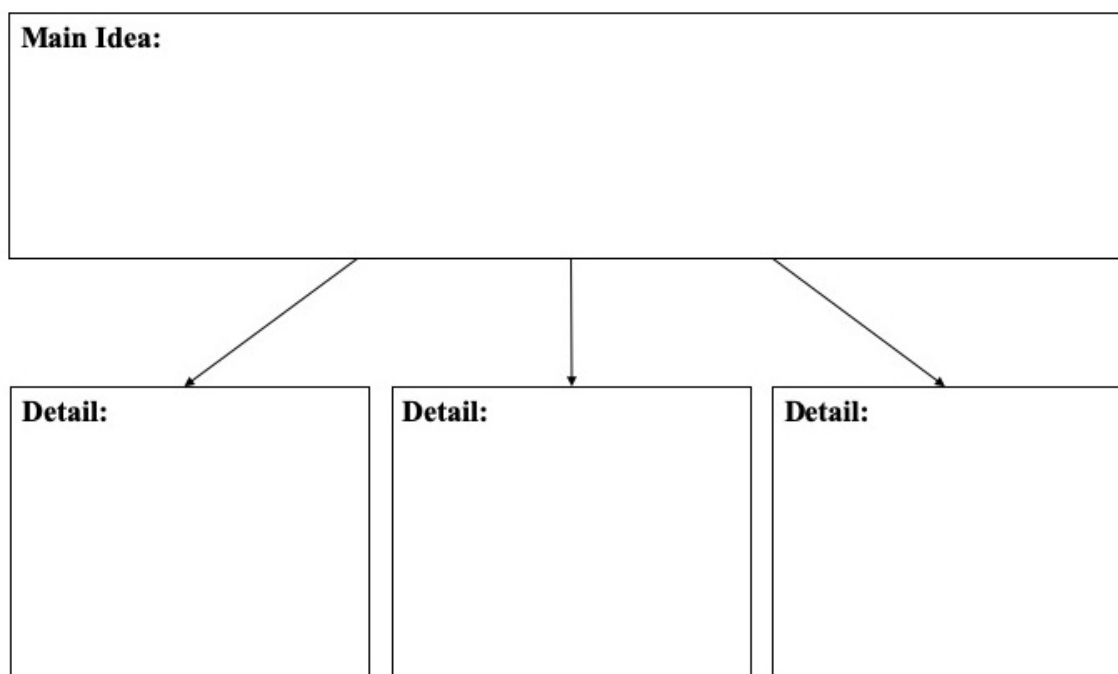
*Figure 10.* RARE Reading & Writing instructional routine.

After reading, teachers prompted students to use the QAR strategy (Raphael, 1982) to answer multiple-choice and short-answer questions provided by ReadWorks (2018) for each passage. The questions targeted explicit information, text structure, conclusions and evidence, inferences, main idea, vocabulary, author’s craft, and syntax. The QAR strategy taught students to answer questions by determining the type of question being asked. The answers to “Right There” questions and “Think and Search” questions were found in one place or in multiple places in the text, respectively (Raphael & Au, 2005). “Author and You” and “On Your Own” questions required students to use the text and their background knowledge to answer. Figure 11 displays the QAR strategy sheet that was printed after the passage in each two-day lesson in the student workbook.

Question-Answer Relationships (QAR) Strategy	
<b>In The Text</b>	
<b>1. Right There:</b>	Find the answer in one place in the text.
<b>2. Think and Search:</b>	Put together different parts of the text for the answer.
<b>In Your Head</b>	
<b>3. Author and You:</b>	Use information from the text and background knowledge.
<b>4. On Your Own:</b>	Form your own opinion based on information in the text.

*Figure 11.* Question-answer relationships strategy for answering questions.

After answering the comprehension questions, students used a four-step process informed by summarization steps in previous research (e.g., Hare & Borchardt, 1984). First, they reviewed the questions and answers to make sure they understood the important information. Next, they reread the passage and highlighted important details based on reviewing the questions and answers. Then, they restated the main idea and important details in their own words using a main idea and details graphic organizer. After filling in the organizer, they explained the topic by combining the main idea and details in a summary. They wrote a topic sentence for the main idea and a sentence for each supporting detail. Figure 12 displays the main idea and details graphic organizer that appeared in the summary sheet at the end of each two-day lesson in the workbook.



*Figure 12.* Main idea and supporting details graphic organizer.

## **Procedures**

The present study was conducted over the course of four months, starting in the beginning of the school year. First, I trained teachers in each program. Then, teachers administered pretests, implemented the intervention, and administered posttests. Finally, I conducted teacher interviews after the intervention. The procedures are outlined below.

### **Training**

During the school district's regular professional development before the first day of school, I provided a two-hour training session on the goals, procedures, and materials for the intervention to which teachers were assigned. I informed teachers that the purpose of the study was to compare the effects of two interventions for reading and writing informational text and to understand their perceptions about the goals, procedures, and

effects of each program. I predicted that both programs would improve students' reading and writing achievement. I described the study design and procedures. I also provided written directions and training for administering the assessments described below. For each program, I described the program goals and modeled Lesson 8 (U.S. Presidents: Abraham Lincoln) using either the Read STOP Write or the RARE Reading & Writing materials depending on the group. Groups were blind to the goals, procedures, and materials used in the program to which they were not assigned. Teachers were provided with two-day lesson plans, workbooks, PowerPoint presentations, and posters.

### **Pretests**

Quantitative pre- and posttests were used to assess students' text structure awareness, reading comprehension, and writing quality. Teachers administered pretests in five 30-minute sessions during the schools' differentiated instruction period in the third week of school. Researcher-developed measures were used to assess text structure awareness, reading comprehension, and writing quality. Standardized measures were used to assess reading comprehension and writing quality. Each are described below.

**Researcher-developed measures.** Students completed two types of researcher-developed measures: a test of expository text structure awareness and an assessment of reading comprehension and writing quality based on expository reading passages.

***Text structure identification test.*** In the first session, students completed the Text Structure Identification Test (TSIT). The TSIT is a measure of expository text structure awareness developed prior to this study (see Appendix E). Students read a series of 12 paragraph-length passages and identified the text structure by selecting one of four

answer choices: cause/effect, compare/contrast, problem/solution, or sequence. An exploratory factor analysis conducted prior to this study revealed that 12 items showed salient loadings on a single factor. Reliability on the TSIT was acceptable ( $\alpha = 0.72$ ).

***Reading and writing assessments.*** In the second and third sessions, students completed two forms of a researcher-developed assessment of expository reading comprehension skills and informative writing quality. I developed four forms (A-D), one using each of the four text structures (see Appendix F). Forms were counterbalanced across pretest and posttest. Students' average scores at each time point were used in analyses. Table 5 lists the test form, text structure, word count, and Lexile Measure for each of the four reading passages used for assessment. The mean text complexity of assessment passages was 875L. The mean number of words was 402.5.

Table 5  
*Reading and Writing Assessment Passages*

Form	Reading Passage	Text Structure	Words	Lexile
A	The Mali Empire	Sequence	302	820L
B	The Amazon River and Basin	Cause/Effect	304	840L
C	Native Americans	Compare/Contrast	482	910L
D	The Shortest Path	Problem/Solution	522	930L

*Note.* Passages are used with permission from ReadWorks (2018)

For each assessment form, students read the passage independently and completed four tasks. The first task measured two expository reading comprehension skills: determining a main idea and selecting important information. Students wrote a single sentence to summarize the main idea and key details of the passage. Each summary

sentence was scored for correct identification of the main idea and key details (out of 8).

The main idea and key details for each assessment form are displayed in Table 6.

Table 6

*Main Idea and Key Details for Assessment Passages*

Form	Main Idea	Key Details
A	Mali Empire	Africa(n), Islam, Mansa Musa, Muslim(s), people, ruled/ruler, traveled
B	Amazon River	Animal(s), Brazil, destroy, disappear, endangered, environment, rainforest
C	Native Americans	Chinook, group(s), Hopi, Navajo, Penobscot, people, tribe(s)
D	Verrazano Bridge	Boat(s), Brooklyn, Narrows, New York, people, Staten Island, tunnel(s)

The second task measured the ability to identify text structure. Students identified the text structure from five choices: cause/effect, compare/contrast, description, problem/solution, or sequence. Their choice was scored correct or incorrect. The text structure used in each of the assessment forms is displayed in Table 5.

For the third task, students constructed a graphic organizer to represent the text structure and used it to organize the main idea and key details from the passage. The graphic organizer was scored using a five-point rubric adapted from Roehling and colleagues (2017; see Figure 13).

Graphic Organizer Scoring Rubric	
Score	Explanation of score
5	Uses appropriate text structure graphic organizer and includes the topic of the passage plus most or all (6-8) of the text's main ideas and key details
4	Uses appropriate text structure graphic organizer and may include the topic of the passage plus some (3-5) of the text's main ideas or key details
3	Does not use an appropriate text structure graphic organizer but demonstrates some awareness of text organization, including some to all (3-8) main ideas or key details
2	List (or inappropriate graphic organizer) of some to all (3-8) main ideas or key details
1	List (or inappropriate graphic organizer) of few (1-2) main ideas or key details
0	No main ideas or key details related to the text
<i>Note.</i> Adapted from Roehling, Hebert, Nelson, and Bohaty (2017).	

*Figure 13.* Scoring rubric for graphic organizer task.

The fourth task measured elements of informative writing. Students wrote an informative paragraph about the topic of the passage. Students were asked to: introduce the topic clearly, develop the topic with ideas and details related to the topic, group related ideas and details, link ideas using signal words and phrases, and provide a concluding statement related to the topic. Informative paragraphs were scored for quality using a 3-point analytic rubric developed for this study (see Figure 14). Informative paragraphs were scored on five elements: introduction of topic, ideas and details, concluding (ending) statement, word choice (vocabulary), and signal words. Specific words for scoring word choice and signal words are displayed for each form in Table 7.

Informative Writing Scoring Rubric				
Element	3 – Excellent	2 – Good	1 – Weak	0 – Absent
Topic	Topic of the passage is introduced clearly using two or more sentences	Topic of the passage is introduced clearly using one sentence	Topic is named using a word, phrase, or sentence that is unclear	Topic is absent or copied from the passage
Ideas/Details	Two or more ideas related to topic are included and all are grouped with supporting details from the passage	At least one idea related to the topic is included and it is grouped with supporting details from the passage	At least one idea related to the topic is included but it not grouped with supporting details from the passage	Ideas/details are absent or copied from the passage
Ending	Concluding section or statement is related to the ideas and details presented	Concluding statement is related to the topic	Sense of closure unrelated to topic	Ending is absent or copied from passage
Word Choice	Uses 6-8 specific words to explain about topic	Uses 3-5 specific words to explain about topic	Uses 1-2 specific words to explain about topic	Specific words about the topic are absent
Signal Words	Uses 6-10 signal words to link ideas	Uses 3-5 signal words to link ideas	Uses 1-2 signal words to link ideas	Signal words are absent

Figure 14. Scoring rubric for informative writing task.

Table 7  
*Vocabulary and Signal Words for Assessment Passages*

Form	Vocabulary	Signal Words
A	Africa(n), Islam, Mali Empire, Mansa Musa, Muslim(s), people, ruled/ruler, traveled	After, before, finally, first, last, next, now, second, then, third
B	Amazon River, Animal(s), Brazil, destroy, disappear, endangered, environment, rainforest	As a result, because, cause, due to, effect, led to, in order to, since, so, therefore
C	Chinook, group(s), Hopi, Native Americans, Navajo, Penobscot, people, tribe(s)	Alike, both, but, compare, contrast, different, however, unlike, same, similar
D	Boat(s), Brooklyn, Narrows, New York, people, Staten Island, tunnel(s), Verrazano Bridge	Answer, difficulty, issue, problem, reason, so, solution, solve, suggest, trouble



Another researcher, blind to treatment condition, and I each independently scored a random subset of the completed informative writing tasks to calculate inter-rater reliability. First, I transcribed all responses. Then, I trained the researcher on the scoring rubric using data from students who completed one or more of the tasks but did not participate in the study. Then, we each scored 10% of the informative writing tasks ( $n = 125$ ) for Forms A ( $n = 29$ ), B ( $n = 36$ ), C ( $n = 29$ ), and D ( $n = 31$ ). Inter-rater reliability was high for Forms A ( $r = .99$ ), B ( $r = .97$ ), C ( $r = .99$ ), and D ( $r = .93$ ). Disagreements were resolved through discussion before including scores in analyses.

**Standardized test of reading comprehension.** In the fourth session, teachers administered Form A of the Gray Silent Reading Test (GSRT; Wiederholt & Blalock, 2000). The GSRT is a norm-referenced test of silent reading comprehension. Each form includes thirteen developmentally sequenced paragraph-length passages with five comprehension questions. Testing time ranges from 15 to 30 minutes. The number of questions answered correctly forms the raw score, which is converted to a standard score, the Silent Reading Quotient (SRQ). Cronbach's alpha ( $\alpha$ ) for Forms A and B reported in the examiner's manual are .95 and .94, respectively. Raw scores were converted into SRQ scores using the scoring procedures in the examiner's manual.

**Standardized test of writing quality.** In the fifth session, teachers administered Form A of the Story Composition subtest of the Test of Written Language, Fourth Edition (TOWL-4; Hammill & Larsen, 2009). The Story Composition subtest is a norm-referenced test of spontaneous writing. Students are given 5 minutes to plan and 15 minutes to write a story in response to a stimulus picture. The story is scored for the

quality of composition (vocabulary, prose, plot, and organization) using the Story Scoring Form. The examiner's manual reports inter-rater reliability as correlation coefficients ( $r$ ) of .78 for Form A and .89 for Form B. Following the procedures in the examiner's manual, another researcher and I each independently scored a random subset of the completed Story Composition subtests to calculate inter-rater reliability. First, I transcribed all responses. Then, I trained the researcher on the scoring procedures using the Supplemental Practice Scoring Booklet. We practiced using data from 26 fifth-grade students who completed the pretest and posttest but did not participate in the study. Then, we each scored 20% of the Story Composition subtests for Form A ( $n = 81$ ) and Form B ( $n = 81$ ). Inter-rater reliability was acceptable for Form A ( $r = .80$ ) and Form B ( $r = .87$ ). Disagreements were resolved through discussion prior to conducting data analyses.

### **Intervention Period**

Teachers in the text structure intervention and comprehension intervention groups implemented their assigned intervention four days per week for eight weeks, with a one-week break after the fifth week when school was closed. Each lesson was delivered for 30 minutes of the 45-minute differentiated reading instruction period over two days. During the remaining 15 minutes each day and for the full 45 minutes on the fifth day each week, students completed assignments associated with the school's regular ELA curriculum (*Bookworms K-5 Reading & Writing*; Open Up Resources, 2018).

I observed each teacher once per week, for a total of eight observations per teacher, to assess fidelity of implementation. I used a checklist to document whether each lesson component was completed (2), partially completed (1), or omitted (0). Scores for

each component were added together to calculate the percentage of lesson components completed for each lesson. The total time for each observed lesson was also documented. Fidelity of implementation checklists for both groups are included in Appendix G.

### **Posttests**

Teachers administered posttests in five 30-minute sessions during the schools' differentiated reading instruction period in the twelfth week of school. In the first session, students completed the TSIT. In the second and third sessions, students completed the two remaining forms of the expository reading and writing assessments. In the fourth session, students completed Form B of the GSRT (Wiederholt & Blalock, 2000). In the fifth session, students completed Form B of the Story Composition subtest of the TOWL-4 (Hammill & Larsen, 2009).

### **Teacher Interviews**

Qualitative interviews were used to assess teachers' perceptions of the social validity of the intervention programs. I conducted semi-structured interviews with each teacher during the week following posttests according to Hatch's (2002) guidelines. I developed open-ended questions to gather in-depth information from all participants. I interviewed all teachers using an interview protocol (see Appendix H) adapted from the Teacher Post-Intervention Acceptability and Importance of Effects Survey (Lane & Beebe-Frankenberger, 2004). The interview protocol included background questions and descriptive questions designed to understand teachers' perceptions of the importance, acceptability, feasibility, and effectiveness of the intervention's goals and procedures. Interviews were audiotaped and transcribed. Interviews lasted approximately fourteen

minutes ( $M = 13:51$ ). The length of the interviews was similar for teachers in the text structure intervention ( $M = 14:29$ ) and comprehension intervention ( $M = 13:20$ ) groups.

### **Data Analysis**

In this mixed methods study, quantitative and qualitative data were analyzed separately to answer the first two research questions. I analyzed quantitative pretests and posttests to evaluate the effects of the text structure intervention and the alternative treatment on students' text structure awareness, reading comprehension, and writing quality. I analyzed qualitative interview transcripts to assess teachers' perceptions of the social validity of each intervention. I integrated the quantitative and qualitative results to answer the third research question regarding how student outcomes and teacher perceptions inform the acceptability of the text structure intervention.

### **Power Analysis**

Prior to conducting quantitative analyses on students' pretests and posttests, I conducted a post-hoc power analysis for a cluster random assignment design with the treatment at level two using the *PowerUp!* program (Dong & Maynard, 2013). The power analysis used a two-tailed alpha level set to .10. Power was set to .80. The proportion of variance in outcomes between clusters, or intra-class correlation (ICC), was set to 0.10. The proportion of variance in level 1 outcomes explained by level 1 covariates ( $R_1^2$ ) was set to 0.10. The proportion of variance in level 2 outcomes explained by level 2 covariates ( $R_2^2$ ) was set to 0.50, and the number of level 2 covariates was set to 3. The mean number of students per teacher was set to 37. The total number of teachers was set

to 11. Results indicated a minimum detectable effect size ( $d$ ) of 0.46, representing a small-to-medium effect based on Cohen's (1988) interpretation of effect sizes.

### **Quantitative Analysis**

Because students were nested within classrooms within schools with the intervention delivered at the classroom level, I used three-level hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) to compare the effects of the text structure intervention and the comprehension intervention on text structure awareness, reading comprehension, and writing quality at level two. I conducted analyses in HLM 7.03 software (Raudenbush, Bryk, & Congdon, 2013). Student-level (level 1) pretest scores and classroom-level (level 2) aggregate pretest scores for each outcome measure were entered into the model as covariates to improve precision (Bloom, Richburg-Hayes, & Black, 2007). A dummy variable was included at level two to indicate whether the classroom was assigned to the text structure intervention or the alternative treatment. Because randomization was blocked by grade and school, a dummy variable was included at level two to indicate whether the classroom was in grade four or five; school was included at level three. The three-level model equation can be written as follows:

$$POSTTEST_{ijk} = \pi_{0jk} + \pi_{1jk} * (PRETEST_{ijk}) + e_{ijk}$$

$$\pi_{0jk} = \beta_{00k} + \beta_{01k} * (GRADE_{jk}) + \beta_{02k} * (GROUP_{jk}) + \beta_{03k} * (PRETEST_{jk}) + r_{0jk}$$

$$\pi_{1jk} = \beta_{10k}$$

$$\beta_{00k} = \gamma_{000} + u_{00k}$$

$$\beta_{01k} = \gamma_{010}$$

$$\beta_{02k} = \gamma_{020}$$

$$\beta_{03k} = \gamma_{030}$$

$$\beta_{10k} = \gamma_{100}$$

In this model,  $POSTTEST_{ijk}$  is the posttest score for student  $i$  in classroom  $j$  in school  $k$ .  $PRETEST_{ijk}$  is the student-level pretest score for student  $i$  in classroom  $j$  in school  $k$  entered as a covariate centered around the group (i.e., classroom) mean.  $GRADE_{jk}$  is the dummy variable for fifth grade.  $GROUP_{jk}$  is the dummy variable for the text structure intervention.  $PRETEST_{jk}$  is the classroom-level aggregate pretest score for classroom  $j$  in school  $k$  entered as a covariate centered around the grand mean. The coefficient of interest in this study is  $\beta_{02k}$ , which represents the level-two fixed effect associated with the text structure intervention compared to the alternative treatment.

The intraclass correlation coefficient (ICC), or the proportion of variance in student-level outcomes between classroom-level and school-level clusters, was computed for each outcome at posttest. Intraclass correlation coefficient (ICC) values were calculated for each measure using an unconditional model with no predictors ( $ICC = \tau_{00} / [\sigma^2 + \tau_{00}]$ ). The conditional models compared average posttest scores by group when controlling for student-level pretest scores, classroom-level aggregated pretest scores, and grade-level differences. The proportion of variance explained ( $R^2$ ) by the predictor variables in each of the conditional models was also computed for each outcome.

The Benjamini-Hochberg correction was conducted on researcher-developed posttest measures to minimize the possibility of false discovery rates (Benjamini &

Hochberg, 1995; Thissen, Steinberg, & Kuang, 2002; Williams, Jones, & Tukey, 1999).

A false discovery rate (FDR) of 0.25 was selected to compute new critical  $p$ -values for each outcome based on the total number of comparisons and expected percentage of tests with true null hypotheses (see Schochet, 2008).

Effect sizes were calculated as the standardized mean difference between groups (using the model-derived treatment coefficients) divided by the pooled and weighted within-group standard deviation across groups at posttest ( $g$ ; Hedges, 1981).

### **Qualitative Analysis**

I analyzed interview transcripts using NVivo 12 to assess the social validity of each intervention. Transcripts were coded using typological analysis, which is an appropriate method when interviews are used as the primary source for collecting focused, narrow, and well-structured qualitative data (Hatch, 2002).

First, I coded the transcripts according to three typologies (predetermined categories) based on the components of social validity: goals, procedures, and effects. Next, I read all of the coded entries by typology and recorded the main idea of each entry using the annotations feature in NVivo 12. Then, I looked for hypothetical patterns in the entries within each typology. This led to a second round of coding in which I read the data entries again and coded patterns within typologies. After, I returned to the transcripts to decide if the patterns were supported by the data and search for nonexamples of the patterns. Finally, I looked for relationships among patterns and consolidated them into themes. Themes, patterns, and data excerpts are used to provide generalizations about teachers' perceptions of the social validity of each intervention in the results section.

Several steps were taken to ensure validity and credibility of the qualitative findings (Maxwell, 1996). First, teachers' responses were validated through member checking. Following qualitative data analysis, I e-mailed my themes and generalizations to each teacher and asked if they accurately represented their perceptions of the goals, procedures, and effects of the intervention program. Eight teachers responded and affirmed that my conclusions were accurate. Second, observation data collected to assess fidelity of implementation were compared alongside interview transcripts to triangulate findings related to teachers' perceptions of intervention procedures. Third, qualitative findings (patterns) were transformed into quantitative data (frequencies) in order to compare teachers' perceptions of the social validity of each program using nonparametric statistics. This allowed me to compare the social validity findings of the two programs.

### **Data Integration**

To answer the third research question, I integrated the quantitative and qualitative results (Creswell & Plano Clark, 2018). Using the qualitative data, patterns within each theme were marked as present or not present for each teacher. The quantitative dataset formed from the qualitative data was imported into SPSS 25. I calculated frequencies of the patterns to determine the percentage of text structure intervention and comprehension intervention teachers who reported each pattern. I conducted Fisher's exact tests to compare differences between groups. The transformed qualitative results were integrated with quantitative results to illustrate the acceptability of the text structure intervention based on teachers' perceptions of the intervention and its effects on student outcomes.



## Summary

This study used a mixed methods experimental design to evaluate the effects and social validity of a text structure intervention in grades four and five. The experimental component was a multi-site cluster randomized controlled trial in which teachers were randomly assigned to deliver the text structure intervention or an alternative treatment. I designed the text structure intervention, Read STOP Write, for this study to provide explicit instruction for teaching students how to identify and use expository text structures when reading and writing. I designed a comprehension intervention, RARE Reading & Writing, as an alternative treatment to provide instruction in question answering and summary writing without explicit text structure instruction. Quantitative pretests and posttests measured text structure awareness, reading comprehension, and writing quality. I conducted qualitative interviews with teachers after the intervention period to understand their perceptions of the social validity of each intervention. I analyzed quantitative data using three-level hierarchical linear modeling to evaluate the effects of the text structure intervention compared with the comprehension intervention. I analyzed qualitative interview transcripts typologically. Quantitative and qualitative results were then integrated to understand the text structure intervention's acceptability.

## **Chapter 4**

### **RESULTS**

In the present mixed methods experimental study, I evaluated the effects of a text structure intervention on fourth- and fifth-grade students' text structure awareness, reading comprehension, and writing quality compared to an alternative treatment. Eleven teachers were randomly assigned to teach the Read STOP Write program (text structure intervention) or the RARE Reading & Writing program (comprehension intervention). I observed each teacher eight times during the intervention period to assess fidelity of implementation. I conducted semi-structured interviews with each teacher after the intervention period to understand their perceptions of the social validity of each program. Results will be presented first for fidelity of implementation followed by the results of the quantitative analyses of the effects of the text structure intervention. Next, I will present qualitative findings regarding the social validity of the intervention. Finally, I will present the integrated results to illustrate the text structure intervention's acceptability.

#### **Fidelity of Implementation**

Teachers implemented either the text structure intervention or the comprehension intervention over an eight-week period. I visited each teacher's classroom once per week to conduct observations and document fidelity of implementation. Due to similarities in the instructional routine in both programs, I was able to use a checklist slightly modified

for each program to note the percentage of lesson components completed during each observation and the number of minutes for each lesson. Because each lesson was designed to be delivered in two class periods, a teacher would only be scored on half of the components during each observation. The percentage of lesson components completed was calculated as the total number of components expected to be completed divided by the number actually completed with fidelity. Fidelity of implementation and number of minutes averaged across lessons are presented for each group in Table 8.

Table 8  
*Average Time and Fidelity of Implementation by Group*

	Text Structure		Comprehension	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Time (Minutes)	34.88	6.45	35.83	6.79
Fidelity (% Completed)	92.67	10.82	90.92	11.28

*Note.* *N* = 88 observations.

On average, one day of the two-day lessons in both programs took approximately thirty-five minutes to implement. Independent samples *t*-tests revealed no significant differences in average number of minutes ( $t = -.674$ ,  $df = 86$ ,  $p = .50$ ) or average percentage of lesson components completed by group ( $t = .735$ ,  $df = 86$ ,  $p = .46$ ). Though lessons took slightly longer to implement than intended, the amount of instructional time was not different across groups. In addition, teachers implemented the text structure intervention and the comprehension intervention with a high degree of fidelity (above 90%). These results provide evidence that the lessons in both groups were implemented as intended in terms of fidelity and amount of instructional time.

## Quantitative Results

Quantitative pretest and posttest data were used to answer the first research question, the extent to which the text structure intervention improved students' awareness of expository text structures, reading comprehension, and writing quality compared to a comprehension intervention. Results of three-level hierarchical linear modeling (HLM) conducted on researcher-developed and standardized measures are presented below.

### Pretests

First, I examined average pretest scores on researcher-developed measures of text structure awareness, reading comprehension, and writing quality to determine if there were significant differences between groups. Descriptive statistics are shown in Table 9.

Table 9  
*Descriptive Statistics for Researcher-Developed Measures by Group*

Measure	Text Structure		Comprehension	
	Pretest	Posttest	Pretest	Posttest
	M (SD)	M (SD)	M (SD)	M (SD)
<u>Text Structure Awareness</u>				
TSIT	6.75 (2.78)	8.17 (2.62)	6.60 (2.62)	7.15 (2.72)
Text Structure	0.48 (0.37)	0.65 (0.37)	0.44 (0.37)	0.51 (0.37)
<u>Reading Comprehension</u>				
Summary Sentence	1.34 (0.72)	1.90 (0.98)	1.37 (0.80)	1.57 (0.69)
Graphic Organizer	1.25 (0.94)	2.28 (1.16)	1.08 (0.84)	1.48 (0.91)
<u>Writing Quality</u>				
Introduction of Topic	0.86 (0.84)	0.81 (0.77)	0.64 (0.75)	0.87 (0.76)
Ideas and Details	1.04 (0.69)	1.56 (0.72)	1.04 (0.71)	1.13 (0.70)
Concluding Statement	0.39 (0.71)	0.43 (0.73)	0.27 (0.54)	0.37 (0.66)
Word Choice	1.46 (0.57)	1.76 (0.51)	1.36 (0.58)	1.61 (0.53)
Signal Words	0.64 (0.60)	0.76 (0.55)	0.46 (0.53)	0.71 (0.63)

*Notes.* TSIT = Text Structure Identification Test.

Results of three-level HLM analyses on pretest scores revealed no significant differences between groups on the TSIT ( $t = -0.224$ ,  $df = 6$ ,  $p = .83$ ), Text Structure ( $t = 0.310$ ,  $df = 6$ ,  $p = .77$ ), Summary Sentence ( $t = -0.650$ ,  $df = 6$ ,  $p = .54$ ), Graphic Organizer ( $t = 0.699$ ,  $df = 6$ ,  $p = .51$ ), Introduction of Topic ( $t = 0.938$ ,  $df = 6$ ,  $p = .38$ ), Ideas and Details ( $t = -0.264$ ,  $df = 6$ ,  $p = .80$ ), Concluding Statement ( $t = 1.007$ ,  $df = 6$ ,  $p = .35$ ), Word Choice ( $t = 1.014$ ,  $df = 6$ ,  $p = .35$ ), and Signal Words ( $t = 2.035$ ,  $df = 6$ ,  $p = .09$ ).

I also examined students' pretest scores on standardized measures to describe their general reading and writing achievement. Pretest and posttest scores are presented in Table 10. Results of three-level HLM analyses on pretest scores revealed no significant differences between groups on GSRT SRQ scores ( $t = -0.711$ ,  $df = 6$ ,  $p = .50$ ) or TOWL Story Composition subtest scaled scores ( $t = -0.267$ ,  $df = 6$ ,  $p = .80$ ). Using the guidelines for interpreting GSRT SRQ scores (Wiederholt & Blalock, 2000) and TOWL subtest scaled scores (Hammill & Larsen, 2009), average achievement of both groups fell within the average range for reading comprehension (90-110) and writing (8-12).

Table 10  
*Descriptive Statistics for Standardized Measures by Group*

Measure	Text Structure		Comprehension	
	Pretest	Posttest	Pretest	Posttest
	M (SD)	M (SD)	M (SD)	M (SD)
GSRT SRQ Score	94.72 (15.98)	94.28 (18.89)	96.29 (17.49)	93.71 (20.76)
TOWL Scaled Score	9.10 (2.81)	9.61 (2.69)	9.21(2.80)	9.42 (2.59)

*Notes.* GSRT = Gray Silent Reading Test; TOWL = Test of Written Language.

## Posttests

**Researcher-developed measures.** The results of the unconditional HLM analyses for researcher-developed measures are presented in Table 11. Level-2 ICC values for the posttest measures ranged from 0.00 to 0.19. Level-3 ICC values for the posttest measures ranged from 0.00 to 0.01. Fixed and random effects from the conditional HLM analyses for researcher-developed measures are presented in Table 12. Overall, the proportion of variance ( $R^2$ ) in posttest scores explained at level 2 in the conditional models ranged from 0.00 to 0.27 compared with the unconditional models. Non-significant covariance components for classrooms and schools were retained in the models to fully account for clustering, despite the relatively small variance estimates.

Table 11  
*Unconditional Models for Researcher-Developed Measures*

	$\sigma^2$	$\tau_\pi$	$\tau_\beta$	Level-2 ICC	Level-3 ICC
<u>Text Structure Awareness</u>					
TSIT	6.65	0.81	0.00	0.11	0.00
Text Structure	0.13	0.02	0.00	0.11	0.00
<u>Reading Comprehension</u>					
Summary Sentence	0.65	0.06	0.00	0.08	0.00
Graphic Organizer	1.06	0.25	0.00	0.19	0.00
<u>Writing Quality</u>					
Introduction of Topic	0.55	0.02	0.00	0.04	0.00
Ideas and Details	0.47	0.07	0.00	0.13	0.00
Concluding Statement	0.44	0.00	0.00	0.00	0.00
Word Choice	0.27	0.02	0.00	0.06	0.01
Signal Words	0.35	0.01	0.00	0.02	0.00

*Note.* ICC = intraclass correlation coefficient

Table 12  
*Fixed and Random Effects for Researcher-Developed Measures*

	Fixed Effects					Random Effects		
	Coefficient	<i>se</i>	<i>p</i>	<i>g</i>	VC	$\chi^2$	<i>p</i>	R <sup>2</sup>
<u>Text Structure Awareness</u>								
TSIT	0.82*	0.24	0.02	0.31	0.00	10.06	0.07	0.27
Text Structure	0.13	0.07	0.11	–	0.01	27.22	<0.001	0.00
<u>Reading Comprehension</u>								
Summary Sentence	0.22	0.17	0.23	–	0.05	26.15	<0.001	0.01
Graphic Organizer	0.55*	0.20	0.04	0.50	0.06	30.14	<0.001	0.02
<u>Writing Quality</u>								
Introduction of Topic	-0.08	0.12	0.54	–	0.01	15.00	0.01	0.01
Ideas and Details	0.42**	0.08	0.003	0.57	0.00	14.39	0.01	0.13
Concluding Statement	0.03	0.08	0.69	–	0.00	0.80	>0.50	0.00
Word Choice	0.04	0.08	0.64	–	0.01	15.01	0.01	0.09
Signal Words	0.07	0.10	0.69	–	0.01	19.13	0.002	0.04

*Notes.* Approximate degrees of freedom were equal to 5. TSIT = Text Structure Identification Test. VC = Classroom-Level Variance Component. \**p* < .05. \*\**p* < .01.

There were two researcher-developed measures of text structure awareness. The TSIT prompted students to identify the text structure used in paragraph-length passages. Students who received the text structure intervention had significantly higher average posttest scores than students who received the comprehension intervention on the TSIT (*p* = 0.02), representing a small effect (*g* = 0.31). The Text Structure item on the expository reading and writing assessment prompted students to identify the text structure in an authentic passage. The text structure intervention group obtained higher average posttest scores on the Text Structure item, but the difference was not significant (*p* = 0.11). Figure 15 displays gains from pretest to posttest on text structure awareness measures by group.

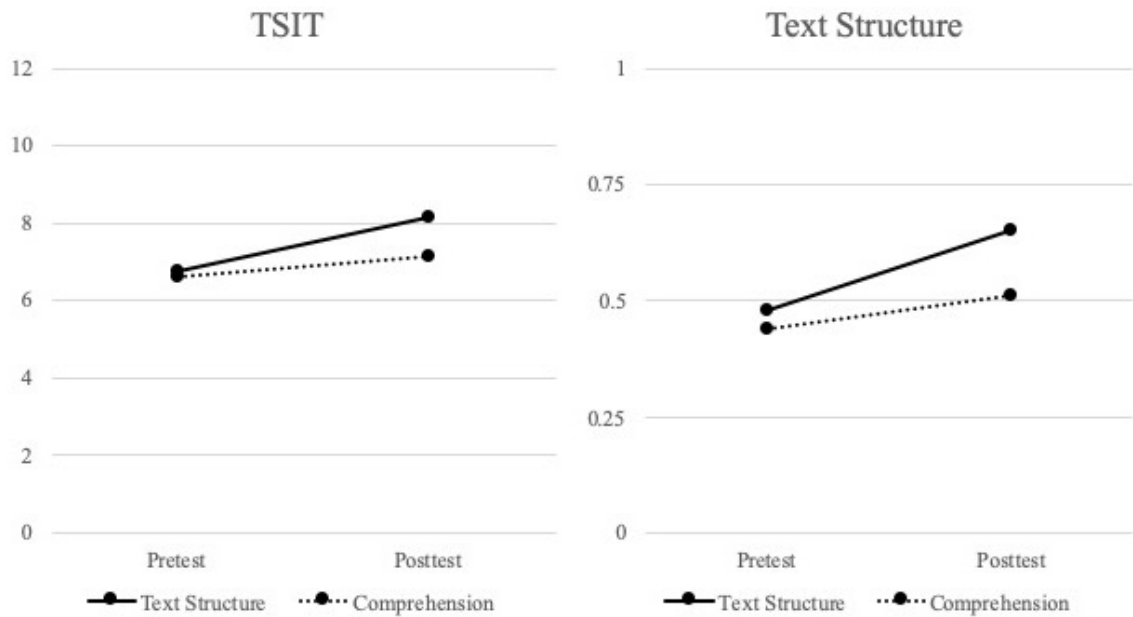


Figure 15. Gains on measures of text structure awareness by group.

There were two researcher-developed measures of reading comprehension skills. On the reading and writing assessment, students were prompted to summarize the main idea and key details in a single sentence. The text structure intervention group had higher average posttest scores than students who received the comprehension intervention on the Summary Sentence task, but the difference was not significant ( $p = 0.23$ ). Students were also prompted to construct a graphic organizer representing the main idea and key details using the text's structure. The text structure intervention group had significantly higher average posttest scores on the Graphic Organizer task than the comprehension intervention group ( $p = 0.04$ ), representing a medium effect ( $g = 0.50$ ). Pretest-to-posttest gains on measures of reading comprehension skills by group are displayed in Figure 16.



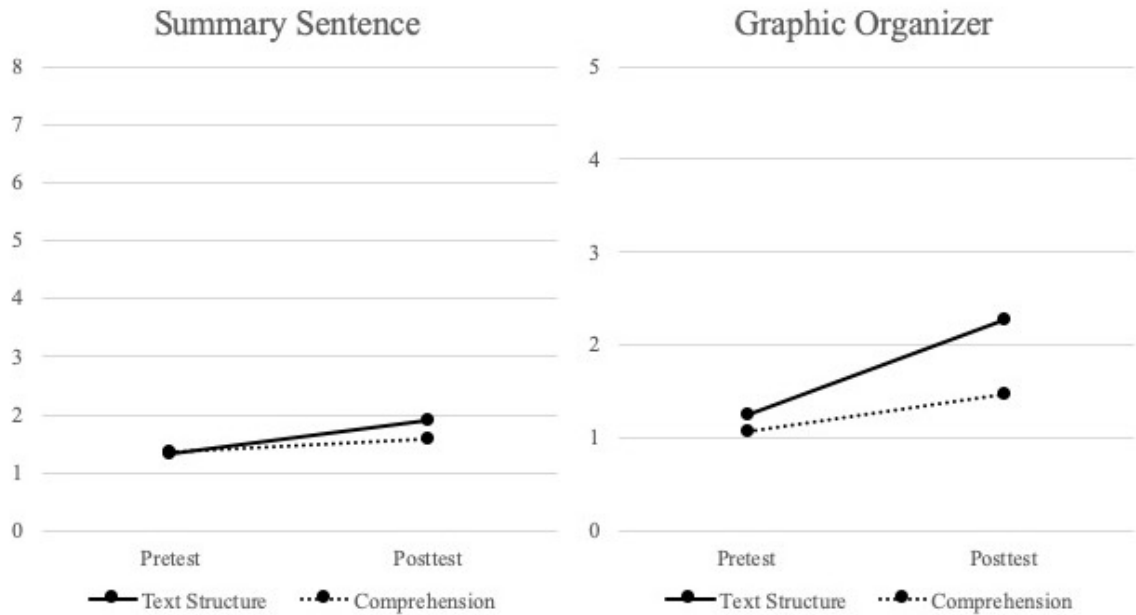


Figure 16. Gains on measures of reading comprehension skills by group.

There were five researcher-developed measures of informative writing quality. Students wrote an informative paragraph explaining the topic of the passage on the reading and writing assessment. The paragraph was scored for Introduction of Topic, Ideas and Details, Concluding Statement, Word Choice, and Signal Words. Students who received the text structure intervention had significantly higher average posttest scores on Ideas and Details than the comprehension intervention group ( $p = 0.003$ ), representing a medium effect ( $g = 0.57$ ). There were no significant differences between groups in average posttest scores on Introduction of Topic ( $p = 0.54$ ), Concluding Statement ( $p = 0.69$ ), Word Choice ( $p = 0.64$ ), or Signal Words ( $p = 0.69$ ). Gains from pretest to posttest on informative writing quality measures by group are displayed in Figure 17.

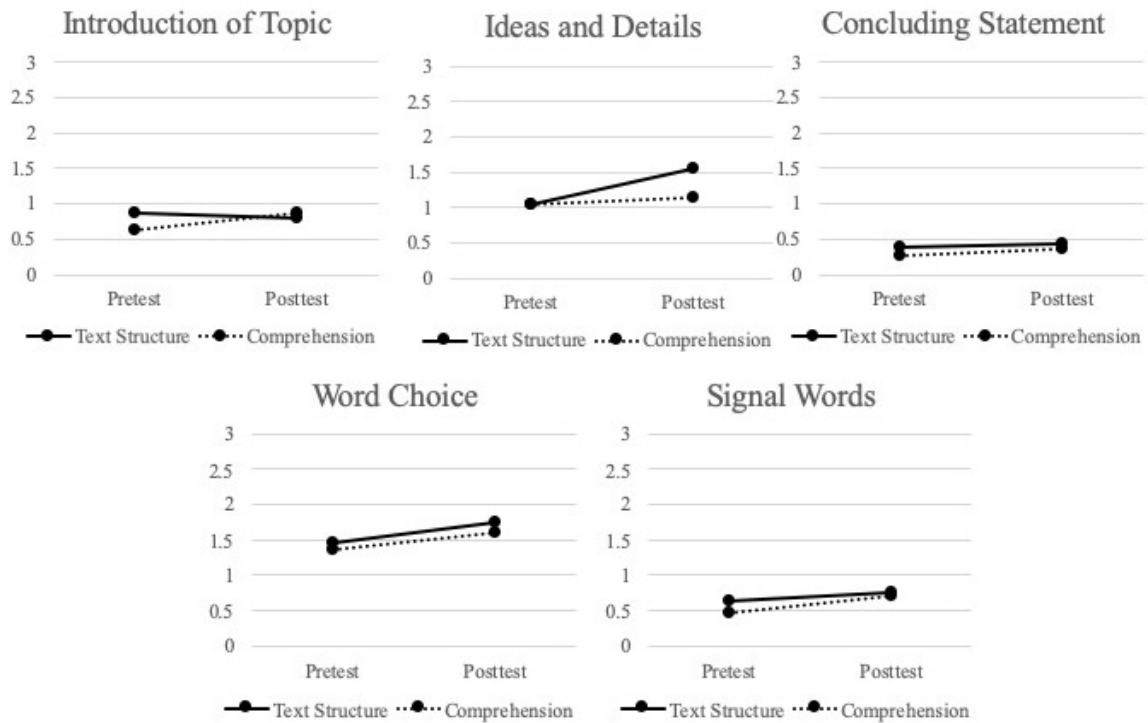


Figure 17. Gains on measures of informative writing quality by group.

Table 13 displays the Benjamini-Hochberg correction used to account for Type I errors given multiple comparisons for researcher-developed measures in this study. All three of the significant outcomes on researcher-developed measures (Ideas and Details, TSIT, and Graphic Organizer) remained significant after the Benjamini-Hochberg correction was applied. Differences between groups on remaining measures (Text Structure, Summary Sentence, Introduction of Topic, Signal Words, Concluding Statement, and Word Choice) remained nonsignificant.

Table 13

*Benjamini-Hochberg Correction for Researcher-Developed Measures*

	<i>p</i> -value	<i>p</i> -value Rank ( <i>i</i> )	Tests ( <i>m</i> )	FDS ( <i>Q</i> )	Critical <i>p</i> -value	Sig.
Ideas and Details	0.003	1	9	.25	0.03	Yes
TSIT	0.02	2	9	.25	0.06	Yes
Graphic Organizer	0.04	3	9	.25	0.08	Yes
Text Structure	0.11	4	9	.25	0.11	No
Summary Sentence	0.23	5	9	.25	0.14	No
Introduction of Topic	0.54	6	9	.25	0.17	No
Word Choice	0.64	7	9	.25	0.19	No
Signal Words	0.69	8	9	.25	0.22	No
Concluding Statement	0.69	9	9	.25	0.25	No

*Notes.* FDS = false discovery rate. Critical *p*-values calculated as  $([i/m]/Q)$ .

**Standardized measures.** The results of the unconditional HLM analyses for standardized measures are presented in Table 14. Level-2 ICC values for the posttest measures ranged from .01 to .03. Level-3 ICC values for both posttest measures were 0.00. Fixed and random effects from the conditional HLM analyses for standardized measures are presented in Table 15. The proportion of variance ( $R^2$ ) in posttest scores explained at level 2 in the conditional models ranged from 0.25 to 0.34. There were no significant differences between groups on the GSRT ( $p = 0.31$ ) or the TOWL Story Composition subtest ( $p = 0.29$ ). Gains by group are displayed in Figure 18.

Table 14

*Unconditional Models for Standardized Measures*

	$\sigma^2$	$\tau_\pi$	$\tau_\beta$	Level-2 ICC	Level-3 ICC
<u>Reading Comprehension</u>					
GSRT SRQ Score	420.95	5.20	0.02	0.01	0.00
<u>Writing Quality</u>					
TOWL Scaled Score	7.49	0.22	0.00	0.03	0.00

*Note.* ICC = intraclass correlation coefficient

Table 15

*Fixed and Random Effects for Standardized Measures*

	Fixed Effects					Random Effects		
	Coefficient	se	p	g	VC	$\chi^2$	p	R <sup>2</sup>
<u>Reading Comprehension</u>								
GSRT SRQ Score	2.51	2.24	0.31	–	0.03	5.57	0.35	0.25
<u>Writing Quality</u>								
TOWL Scaled Score	0.33	0.28	0.29	–	0.00	8.23	0.14	0.34

Notes. Approximate degrees of freedom were equal to 5. GSRT = Gray Silent Reading Test; TOWL = Test of Written Language. VC = Classroom-Level Variance Component. \* $p < .05$ . \*\* $p < .01$ .

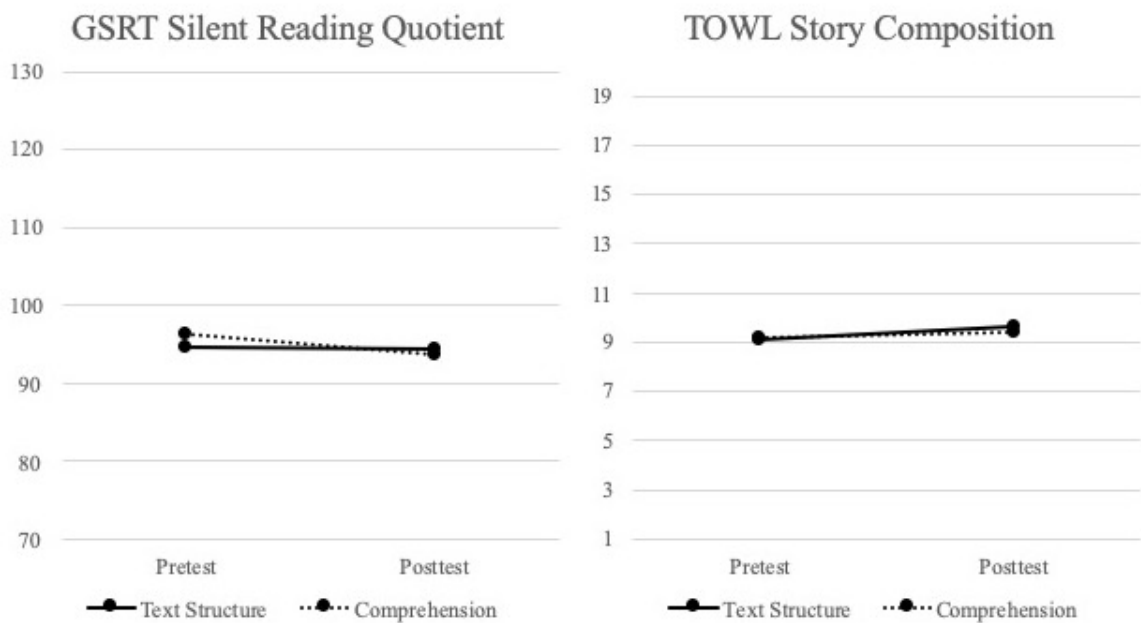


Figure 18. Gains on standardized measures of reading and writing by group.

### Qualitative Findings

Qualitative interview data were used to answer the second research question, the extent to which the text structure and comprehension intervention teachers perceived each program as socially valid. In general, teachers viewed both programs as socially

valid, reporting the goals as significant, the procedures as appropriate, and the effects as important. Multiple themes emerged within each component of social validity that illustrate the social validity of each program. When describing the goals of each intervention program, teachers' responses were consistent with three themes: grade-level literacy standards, content-area reading goals, and level of difficulty. Four themes emerged in teachers' responses about the intervention procedures: scheduling, materials, instructional design, and implementation of the instructional routine. Their perceptions of the effects reflected three themes: effectiveness, literacy skills, and strategy knowledge. Findings are presented below for each program according to social validity components.

### **Text Structure Intervention**

Interviews with teachers who taught the text structure intervention revealed that they perceived its goals, procedures, and effects as socially valid. Teachers perceived program goals to be significant, but they also recommended adjusting the level of difficulty. Teachers believed the procedures were appropriate, but they also provided suggestions for improvement based on their experiences implementing the program. Finally, teachers described important effects they saw after implementing the program.

**Goals.** All five teachers described significant goals that they thought the text structure intervention addressed. Teachers' responses about goals fit one of three themes: grade-level literacy standards, content-area reading goals, and level of difficulty.

Teachers believed that Read STOP Write targeted important literacy standards, including identifying main idea and supporting details, summarizing, identifying and using text structure, and informative writing. One fourth-grade teacher emphasized these

goals, stating, “I really liked that it tied in so many standards. They were summarizing, they were doing text structure, main idea, supporting details, they were writing. It was covering so many standards at one time” (Interview 5). All teachers believed that the focus on text structure, in particular, was important. The same teacher said that she would recommend the Read STOP Write program to other teachers because “it’s really hard to plan a unit for text structure and make sure that it’s rigorous and ties into that many different standards” (Interview 5). All teachers agreed that they would recommend the program to other teachers based on how it addressed these literacy standards.

Teachers also believed that the program addressed content-area reading goals. One teacher suggested that the reading passages and lessons “went along with the curriculum” (Interview 11). Another teacher said that he would recommend the program to social studies and science teachers as a way to learn content through reading and writing about text. In describing the importance of building content knowledge, he said that students “need to learn about American history, and they need to learn a great deal of science and all these other things, so it connected well” (Interview 7). Although the literacy standards were clearly the primary goal to all teachers, they appreciated the opportunity to integrate literacy and content-area instruction.

Teachers also recognized that having students reading complex informational texts was an important goal; however, most teachers agreed that the passages were too difficult for students reading below grade level. While this level of difficulty was appropriate for most students, teachers believed that the text complexity took away from the important goals of the program for some students. One teacher said, “I think that they

would be able to do Read STOP Write with easier texts and do fairly well with it” (Interview 2). In fact, nearly all of the teachers suggested using easier texts with the Read STOP Write instructional routine. A fifth-grade teacher said that the passages were “the only thing that I found really difficult” (Interview 4) about the program as a whole.

**Procedures.** All teachers indicated that the procedures were acceptable. Their responses about the appropriateness of procedures fit one of four themes: scheduling, materials, instructional design, and implementation of the instructional routine.

Overall, teachers suggested that the Read STOP Write program fit within their 45-minute differentiated instruction schedule. For example, one teacher described how students who had decoding difficulties could continue to receive a word recognition intervention while “the other students who don’t need to can practice using these graphic organizers, text structures, all these skills” (Interview 7). However, nearly all of the teachers said that the lessons took longer than two 30-minute sessions to implement. They thought the lessons were “very fast paced,” (Interview 5) and that “you’d need at least three days to get through the lesson” (Interview 4). Teachers cited the length of the passages and the amount of support many students needed to understand the text as particular challenges to completing the lessons with fidelity in two thirty-minute sessions.

Teachers also found the materials, including the lesson plans and workbooks, to be appropriate. Most teachers appreciated that the lesson plans were scripted. One teacher said, “I liked that it was scripted. For the first time around for this program, scripting for me, at least, was helpful. And then the repetition of it every day” (Interview 11).

Teachers also appreciated the student materials. One teacher expressed how she “really

liked the printed passages that they could write on, they could mark, they could make notes, they could highlight, they could underline” (Interview 5). Another teacher described that when she handed out the workbooks, students “knew to get a pencil and that was going to be for underlining those supporting details. They knew that if I don’t have a highlighter, I need to get that highlighter” (Interview 2). In other words, the consistency of the materials helps to facilitate the implementation of the lessons.

Teachers thought that the instructional design was appropriate in terms of a gradual release of responsibility. One teacher explained that “the teacher modeling and then the partner pairing of it” (Interview 2) were helpful. She went on to say, “I do like how you let off the load slowly and didn’t just dump it in their laps” (Interview 2). Other teachers believed that students were not ready for the guided and independent practice phases. One teacher thought “modeling for them and doing it together as a class was great, but when they got in groups, when they got to that point, it was just meltdowns, just really struggling. They didn’t know what to do” (Interview 5).

It was clear that the teachers found the procedures appropriate, as they all stated that they would continue to implement the instructional routine. Several teachers stated that they “use ReadWorks all the time” (Interview 5) and that they would use the instructional routine with informational texts in other content areas. One teacher said, “This isn’t something that’s going to stop just because this program is over. I think we’re still going to incorporate this in our daily writing” (Interview 11). However, consistent with concerns about the level of difficulty, one teacher suggested that she would continue to use the instructional routine with students only if she could “pull easier passages for



some of them,” and that it might help if students began learning the instructional routine in “third grade” (Interview 4). When asked if she would continue to implement the program, one teacher said, “Overall, I love it. I would use it again” (Interview 2).

**Effects.** In general, teachers thought that the effects of the text structure intervention were important. They described three themes related to its effects: overall effectiveness, effects on literacy skills, and effects on strategy knowledge.

Three of the five teachers indicated that the Read STOP Write program, as a whole, was very effective for their students. However, one teacher suggested that it was only very effective “for the majority” of her students (Interview 5). The other teacher also had reservations about the program’s effectiveness. She said, “I think they were effective. Not very effective just because of the Lexile level” (Interview 4). Taken together, teachers indicated that the text structure intervention was very effective for most students but less effective for students reading below grade level.

Teachers saw improvement in important literacy skills, including identifying main idea and details, identifying text structure, using graphic organizers, and informative writing after implementing the intervention. One teacher said that the intervention helped students “in realizing that there are supporting details to the main idea and connecting those two” (Interview 7). Most often, teachers described improvements in text structure knowledge, saying that “showing them text structure really helps kids organize their thoughts, their ideas, their writing” (Interview 11). Another teacher described how the intervention improved students’ awareness of the text structure in both reading and writing, stating that students learned “how to identify how passages are written as far as

the text structure goes and taking what the text structure is in order to create those written response pieces” (Interview 2). However, some teachers suggested that students’ text structure awareness might be more limited to identification than use. One fourth-grade teacher, who used to teach fifth grade, said, “They know their text structure now...they may still struggle with the graphic organizer and pulling information, but they can identify it quickly” (Interview 5). As far as why she thought Read STOP Write was an effective way to teach text structure, this teacher explained how the instructional routine was different from what she had done before. She said:

In fifth grade, we would say tell me the text structure and how you know it’s the text structure, how the author organized the text, and they could never really do that. Maybe it was the way we were teaching it. Maybe it was the resources. But the way you provided them the graphic organizers and went through eight weeks of them doing that, I think they’ll continue to use that (Interview 5).

Teachers also described effects on students’ use of strategies they were taught in Read STOP Write. They reported that students were able to use some processes, especially the TIDE writing strategy, when reading and writing in other content areas. One teacher described how her students used TIDE to plan before writing without being prompted. She said, “They had to plan, but I didn’t say use TIDE or anything. Some kids automatically went to that, automatically did TIDE” (Interview 11). Another teacher also told me how students used TIDE when writing during ELA instruction, saying, “When we started writing, they were like, can we use the TIDE graphic organizer?” (Interview 2). She went on to explain that “it’s something that was familiar. And that piece of it,

being able to take bits and pieces from Read STOP Write and apply it into ELA or that shared reading time, it helped with the kids a lot” (Interview 2).

### **Comprehension Intervention**

Interviews with teachers who taught the comprehension intervention revealed that they also perceived the intervention they taught as socially valid. Their perceptions of the goals, procedures, and effects were similar to the ways that teachers perceived the text structure intervention, though there were some differences due to instructional focus.

**Goals.** All six teachers described significant goals that they believed the comprehension intervention addressed consistent with the three themes of grade-level literacy standards, content-area reading goals, and level of difficulty.

Teachers indicated that the RARE Reading & Writing program addressed important literacy standards, including question answering, identifying main idea and details, and summarizing. One teacher suggested that the goals of the program were significant because “it definitely reiterated main ideas, summaries, what good reading strategies are, how to approach difficult questions” (Interview 9). A fifth-grade teacher also liked “how well it followed with expectations for fifth grade: the main idea, the supporting details, supporting their writing” (Interview 10). Teachers also mentioned the focus on answering questions. Another teacher said she liked “teaching children the type of questions they’re looking for. I think that was the main point of RARE...it was an easy way to teach questioning” (Interview 3). Unlike teachers in the text structure intervention group, only one teacher mentioned text structure as an important goal when reading

informational text. She said, “As far as nonfiction, I think it did really well. I also tied in what you were doing and taught text structure during my reading block” (Interview 8).

Like teachers’ perceptions of the text structure intervention, teachers thought the passages and lessons in the comprehension intervention were consistent with their content-area reading goals, especially in social studies. One teacher appreciated that the passages covered “a lot of different topics of nonfiction, topics they had touched base on in other subject areas and other grade levels and even in fourth-grade standards” (Interview 9). A fifth-grade teacher said, “It went really well with social studies...they even had a ReadWorks passage yesterday with the Great Depression, so I was able to use the exact same skills with them for social studies” (Interview 10). Another teacher also said that “there were lessons that tied into social studies” (Interview 3).

Most teachers believed that the level of difficulty, including text complexity, was too high for students reading below grade level. This was the only goal that some teachers did not like about the program. One teacher said, “I liked everything about it. It was just some of the Lexiles were a little bit above my struggling readers, but other than that it was fantastic” (Interview 1). Another teacher agreed that “it’s great as far as comprehension, but some of the passages were more difficult” (Interview 6). However, teachers disagreed about whether the program should use easier texts. One teacher said, “I know they have to read more complex passages for the test, but...if there is a way to find lower-level passages but still ask the same type of questions skill-wise, that would be great” (Interview 8). Another teacher thought it was “fair and appropriate because it gave them a look at what grade-level material looks like” (Interview 9).

**Procedures.** Teachers in the comprehension intervention group also found the procedures acceptable in terms of the program fitting in their schedule, the materials, the instructional design, and implementation of the instructional routine.

Overall, teachers reported the program fit within their differentiated instruction schedule. Most teachers suggested that the lessons “fit into my regular schedule perfectly” (Interview 1). Other teachers said that lessons took longer than two thirty-minute sessions to implement. For example, one teacher said that “in the beginning, I think that thirty-minute time crunch was a little stretching it, so I would say scaffold the timing. Start out with forty-five minutes and then work it down to thirty” (Interview 3).

Teachers also found the lesson plans and student workbooks appropriate, including the repetitive procedures and materials each day. They appreciated the scripted lesson plans, saying that “it's nice just to be able to read out loud what the directions are. Sometimes scripted is good, and sometimes it's not so good, but things like this, I like scripted,” (Interview 6). They liked that the instructional routine was repetitive and printed in the lesson plans and student workbooks. One teacher said that she “liked the repetition in the lessons where it constantly says let's review the RARE steps, and I liked how it's just laid out and the students can basically refer back to it” (Interview 1). Like the text structure intervention, teachers “liked the fact that students had their own materials” (Interview 8). They also suggested that the materials helped to facilitate implementation. One teacher mentioned how “the kids automatically knew that was just our routine. They knew to come in and get out their RARE books” (Interview 9).

Teachers appreciated the gradual release of responsibility in the instructional design, but they also thought that some students had difficulty working independently. One teacher said, “what I loved about the program was that it started off with me guiding them, instructing them, and then taking back some of that responsibility...but when they were on their own, they couldn’t do the work” (Interview 10). Teachers were conflicted in terms of the balance between providing support and releasing responsibility to students. One teacher reported, “I liked the way it built from me modeling it, all teacher, then there’s collaborative practice, it was guided practice, and then it was independent practice” (Interview 9). She went on to say that “when they got to the independent practice is when they froze, so for them it may be that we need more time before we put them independently” (Interview 9).

Teachers expressed that they would continue to implement the RARE Reading & Writing instructional routine, though not necessarily every day. One teacher said that she would “continue using it at least two days a week in our differentiation lessons, because it’s a good way to teach the strategies for reading” (Interview 3). What she appreciated most was that she could use the instructional routine with “any passage,” saying that “you can go to ReadWorks or Newsela, or there’s all kinds of texts out there that you can find” (Interview 3). Another teacher said that she “would definitely recommend the RARE lessons to other teachers...we’ve all used ReadWorks passages, but I would recommend teaching them how to attack them and the types of questions” (Interview 9). Like one of the teachers in the text structure intervention group, she thought “it would even be great for our third-grade teachers to get on board with it” (Interview 9).

**Effects.** Teachers described the effects of the comprehension intervention as important, including its overall effectiveness, literacy skills, and strategy knowledge.

Four of the six teachers indicated that the comprehension intervention was very effective for their students overall. Like one of the teachers in the text structure intervention group, one teacher said that it was only very effective “for most of the students” (Interview 9). She described the program as “somewhat effective” for students who were reading below grade level but also said, “They’ve done well. I’m very proud of them” (Interview 9). Another teacher said that it was “between somewhat and very effective” due to the difficulty for students reading below grade level (Interview 8).

Teachers saw improvement in important reading skills, including question answering, identifying main idea and details, and summarizing. One teacher summed up how she perceived the effects: “I’ve noticed growth with their reading and with their summarizing and ability to answer questions within the text. It’s like they’re better prepared for that now than had they been not using the RARE lessons” (Interview 1). Unlike the teachers in the text structure intervention group, one teacher said that her students “still struggle with text structure” (Interview 10). When describing how she thought they did on the posttest, she said, “When the question asked what type of text structure you think is being used, do a graphic organizer that goes with that text structure, they struggled with that” (Interview 10). Another teacher thought that students continued to struggle with text structure. She explained that they “had a passage in reading on text structure. And I said, I want you to read this and figure out what it is, as we did mostly main idea and summarizing, but they were all like, can we do this?” (Interview 8).

Teachers also believed that students were able to use the strategies they were taught in RARE Reading & Writing when reading in other content areas. One teacher said, “I see it now in the classroom with whenever they’re reading materials, they’re using the different strategies. They have the strategies memorized, and they can tell you as we’re reading the next step in the RARE process” (Interview 1). Another teacher said that “it was interesting to see that some of our students are starting to use the vocabulary in other subject areas, in science and social studies. Oh, this is a think and search question. Oh, this is an author and me” (Interview 9). Another teacher said that “when students would have passages either in social studies or in reading...they would ask me can I use the RARE strategy? So, that means that’s deep-seated in them. I feel like they’ll carry it all the way through” (Interview 3). Many of the teachers shared this belief.

### **Integrated Results**

Qualitative patterns were transformed into quantitative data and then integrated with quantitative results to answer the third research question, the extent to which student outcomes and teacher perceptions inform the acceptability of the text structure intervention for upper elementary grades. First, I present the effects of the text structure intervention on student outcomes alongside teachers’ perceptions of its goals and effects. Then, I present implementation data alongside teachers’ perceptions of the procedures.

Two themes related to teachers’ perceptions of whether the goals and effects of both interventions were acceptable are essential to answering the acceptability question: grade-level literacy standards (literacy goals) and literacy skills (literacy effects). Within each theme, the same seven patterns were coded: main idea, question answering, reading



comprehension, summarizing, supporting details, text structure knowledge, and writing competence. An additional pattern was coded within literacy effects: graphic organizer use. Table 16 displays the number of teachers in each group who mentioned each pattern.

Table 16  
*Frequency of Literacy Goals and Literacy Effects Patterns by Group*

Patterns	Text Structure ( $n = 5$ )		Comprehension ( $n = 6$ )	
	Goals	Effects	Goals	Effects
Graphic Organizer Use	—	4	—	1
Main Idea	4	3	4	1
Question Answering	0	0	3	3
Reading Comprehension	1	1	3	4
Summarizing	3	1	2	2
Supporting Details	3	3	2	0
Text Structure Knowledge	5	5	1	1
Writing Competence	4	5	2	0

*Notes.*  $N = 11$  teachers.

I used Fisher's exact tests to compare the frequency of patterns reported by teachers in the text structure group and the comprehension group. Results indicated a significant difference in three patterns. There was a statistically significant difference between groups in the distribution of responses about text structure goals ( $p = .02$ ), text structure effects ( $p = .02$ ), and writing competence effects ( $p < .01$ ). Thus, a greater number of teachers in the text structure intervention group recognized text structure as an important literacy goal, text structure knowledge as an important literacy effect, and writing competence as an important literacy effect. There were no significant differences between groups on any of the other patterns. Therefore, teachers perceived the literacy goals and literacy effects of the two programs to be comparable, but the text structure

intervention teachers also perceived the text structure knowledge goal to be significant and the text structure knowledge and writing competence effects to be important.

This analysis provides some evidence that teachers considered the text structure intervention to be a more acceptable program for teaching text structure and writing than the comprehension intervention. When considered alongside the positive effects of the text structure intervention on measures of students' text structure awareness and informative writing quality, a clearer picture of the program's acceptability emerges. Figure 19 is a joint display (see Creswell & Plano Clark, 2018) illustrating both the effects of the text structure intervention on students' text structure awareness and one fourth-grade teacher's perceptions of its effects on text structure awareness. The results of the TSIT and Text Structure measures (see Table 11) are consistent with teachers' perceptions of the effect of the text structure intervention on text structure awareness.

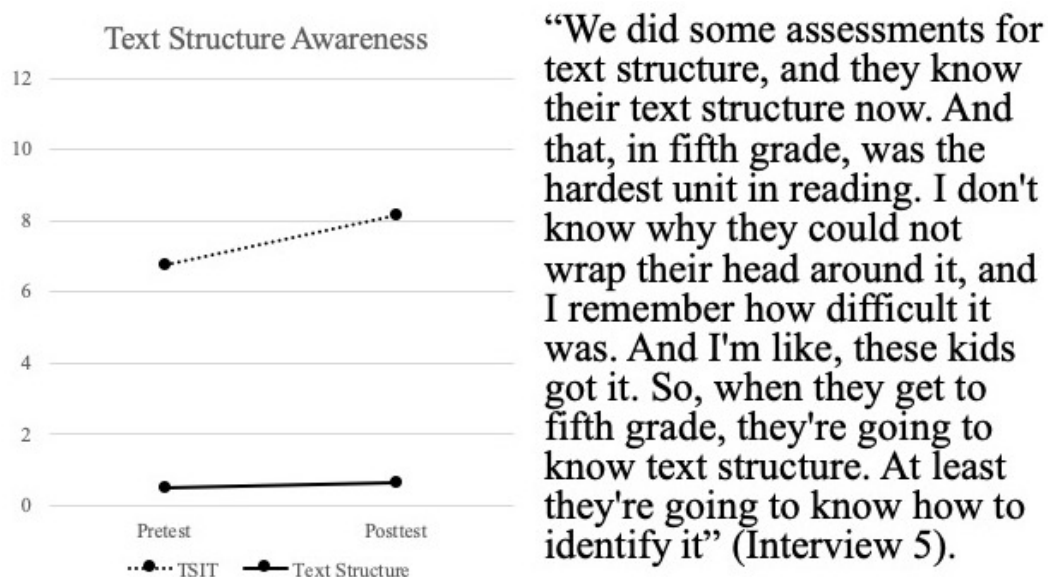


Figure 19. Joint display of effects on text structure and teacher perceptions.

Text structure intervention teachers also perceived Read STOP Write to be effective for teaching writing. This perception was reported more frequently by the text structure intervention teachers than by comprehension intervention teachers. There was a significant effect of the text structure intervention on only one measure of informative writing quality: Ideas and Details (see Table 11). Students who received the text structure intervention did not outperform students who received the comprehension intervention on other measures, including Introduction of Topic and Concluding Statement. Like text structure awareness effects, text structure intervention teachers' perceptions of the effects of the program on writing quality were consistent with its effects. Figure 20 is a joint display illustrating the effects of the text structure intervention on students' informative writing quality and one teacher's perceptions of its effects.

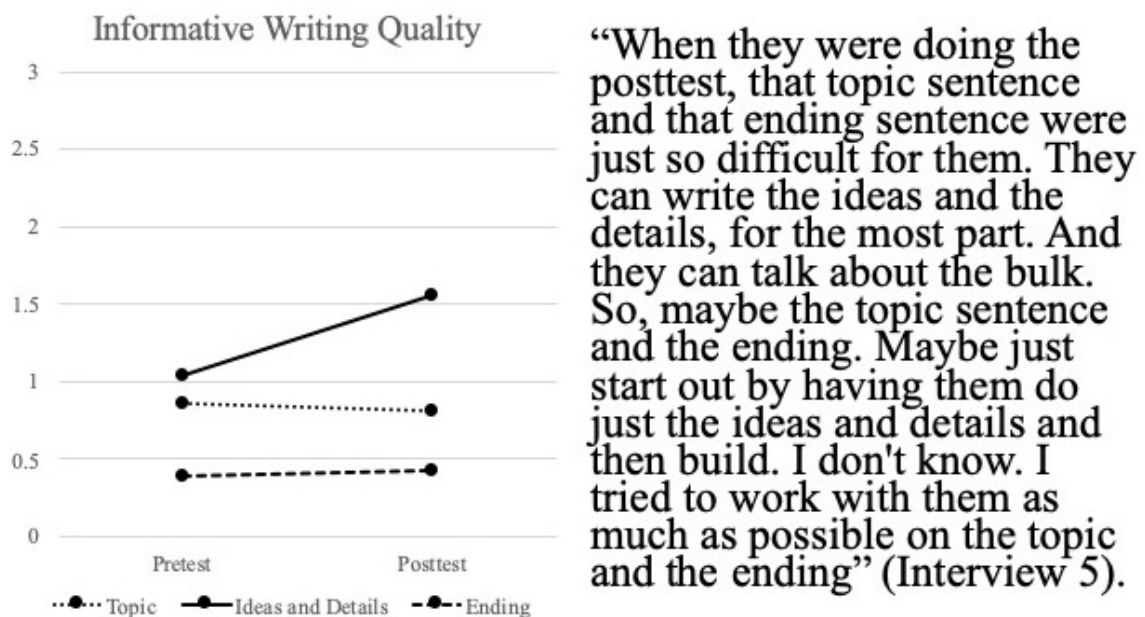


Figure 20. Joint display of effects on informative writing and teacher perceptions.

One theme related to teachers' perceptions of the procedures of the text structure intervention is also essential to answering the question of its acceptability: scheduling. Within this theme, two patterns were coded: differentiation and time. Five teachers in each group indicated that the program fit within their differentiation schedule. Two teachers in the comprehension intervention group and four teachers in the text structure intervention group indicated that the lessons took too much time to implement in the beginning of the program (i.e., during the first of the four phases). Fisher's exact tests revealed no significant difference between groups on frequency of these two patterns.

To test whether the lessons in both programs did take longer to implement during the first phase (modeling) than during subsequent phases, I conducted a one-way analysis of variance (ANOVA) on the average number of minutes for lessons in each phase using the observation data collected for fidelity of implementation. The average number of minutes per observed lesson during each instructional phase is presented in Table 17.

Table 17  
*Average Time of Lessons in Each Instructional Phase by Group*

	Text Structure			Comprehension		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Modeling	12	34.17	4.69	15	40.00	5.98
Collaborative Practice	10	32.50	7.55	11	31.36	6.74
Guided Practice	10	36.50	7.84	12	37.08	6.20
Independent Practice	8	36.88	5.30	10	33.00	4.83
Total	40	34.88	6.45	48	35.83	6.79

*Note.* *N* = 88 observations.

Results for the comprehension intervention revealed a significant difference in the average number of minutes per lesson between the four instructional phases ( $F = 5.351$ ,

$df[3, 47], p < .01$ ). Post hoc analyses revealed that lessons during the modeling phase of the comprehension intervention took longer to complete than lessons during the collaborative practice ( $p < .01$ ) and independent practice phases ( $p = .03$ ) but not longer than the guided practice phase ( $p = .60$ ). For the text structure intervention, there was no significant difference in between phases ( $F = 0.964, df[3, 39], p = .42$ ). Lessons took approximately thirty-five minutes to implement during each phase. Figure 21 is a joint display illustrating the inconsistency between one teacher's perceptions of the amount of time needed to implement lessons in each instructional phase and the observed time.

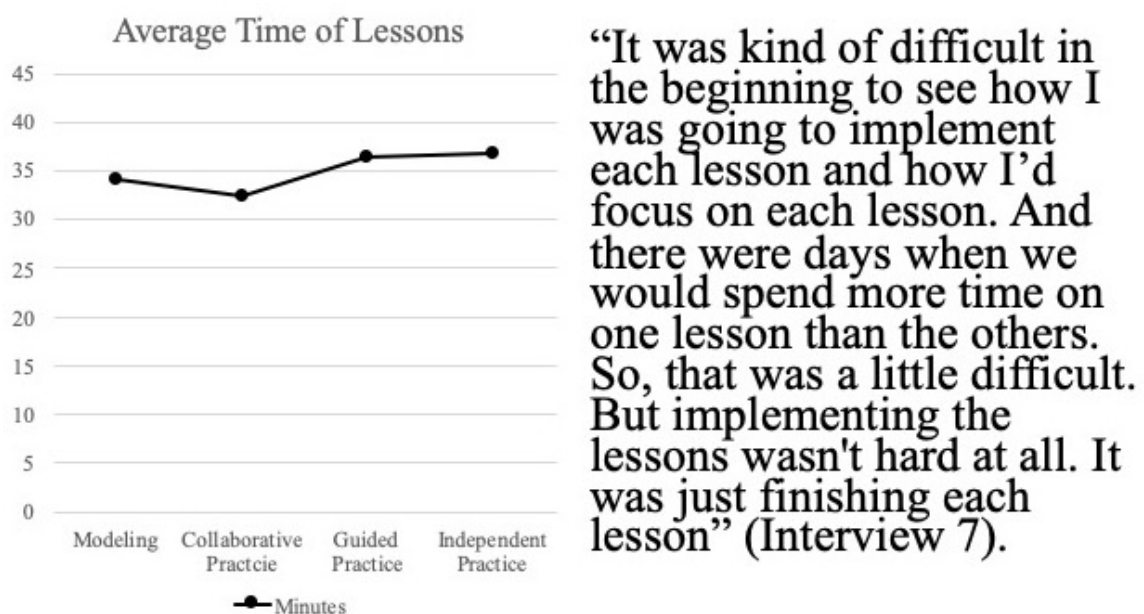


Figure 21. Joint display of average time of lessons and teacher perceptions.

Taken together, the integrated quantitative results and qualitative findings reveal two aspects of the acceptability of the text structure intervention. First, a greater

percentage of teachers in the text structure group considered the intervention they taught to target text structure as a significant goal and to have important effects on text structure knowledge and writing competence than teachers in the comprehension group. These perceptions were consistent with the results obtained through quantitative analyses of students' text structure awareness and informative writing quality. Second, an equal percentage of teachers in the text structure group and comprehension group believed that the lessons took longer to implement during the first phase than during subsequent phases. This perception was not consistent with results obtained through quantitative analyses of teachers' fidelity of implementation for the text structure group, though it was true for the comprehension group. As a result, Read STOP Write may be an acceptable program for teaching text structure and informative writing that can be implemented in an appropriate amount of time for upper elementary grades consistently and with fidelity.

### **Summary**

I used three-level hierarchical linear modeling to compare the effects of the text structure intervention and the comprehension intervention on measures of text structure awareness, reading comprehension, and writing quality. When controlling for student-level pretest scores and teacher-level aggregate pretest scores, students in the text structure intervention group outperformed the comprehension group on one measure of text structure awareness (Text Structure Identification Test), one measure of reading comprehension skills (Graphic Organizer), and one measure of informative writing quality (Ideas and Details). All three measures remained statistically significant after applying the Benjamini-Hochberg correction. However, there were no significant

differences on any other measures. Social validity findings suggested that teachers in both groups found the intervention they taught to be socially valid. Teachers described their perceptions of themes within each component of social validity: goals (literacy standards, content-area reading, level of difficulty), procedures (scheduling, materials, instructional design, and implementation of the instructional routine), and effects (overall effectiveness, literacy skills, and strategy knowledge). When integrated, the quantitative and qualitative findings suggest that the text structure intervention is an acceptable program for improving text structure awareness and informative writing that can be implemented consistently and with fidelity within an upper elementary school schedule.

## **Chapter 5**

### **DISCUSSION**

In this study, I designed a text structure intervention to integrate reading and writing instruction through identification and use of expository text structures. I trained all fourth- and fifth-grade ELA teachers in three elementary schools to implement the text structure intervention or a comprehension intervention over a period of eight weeks. I compared the effects of the text structure intervention with the alternative treatment in a randomized experiment. I also interviewed teachers after the intervention to understand their perceptions of the social validity of each intervention. The quantitative and qualitative results informed the acceptability of the text structure intervention in upper elementary grades. Below, I discuss how the present study fits within previous text structure efficacy research. Then, I discuss the findings in light of previous research and draw conclusions about the implications of this study for research and practice. I conclude with limitations of the present study and directions for future research.

#### **General Discussion**

The present study builds on and extends findings from previous text structure research. The “first generation of text structure research” (Williams, 2018, p. 1929) established that text structure instruction is effective because it provides students with an



organizational framework for comprehending and writing about expository texts. Text structure intervention research has demonstrated improvements in many skills associated with reading comprehension, including text structure awareness, the use of signal words, generating main ideas, selecting important details, and writing better quality and more organized summaries (Meyer & Ray, 2011; Pyle et al., 2017; Ray & Meyer, 2011). Text structure instruction also improves writing quality in taught genres, but few studies have focused on informative writing (Graham, McKeown et al., 2012).

The first generation of text structure research had several limitations. One limitation was that few studies focused on writing instruction (Hebert et al., 2016; Williams, 2018). In the present study, I designed a text structure intervention that integrated reading and writing instruction. The intervention's focus on shared knowledge of text structure in reading and writing (Fitzgerald & Shanahan, 2000) was selected due to the role of text structure knowledge in Kintsch's (1988, 2004) construction-integration model of text comprehension, Meyer's (1987) text structure model of comprehension, and Flower and Hayes' (1981) cognitive process theory of writing. Students' gains in text structure awareness, reading comprehension skills, and informative writing quality in this study may be due to its strategic use of key components of text structure interventions (e.g., explicit instruction, signal words, graphic organizers; Pyle et al., 2017) to draw on text structure knowledge in reading and writing processes.

Another limitation of the first generation of text structure intervention research concerns the quality of study design. Authors of meta-analyses have concluded that few studies have: (a) randomly assigned participants and conducted analyses at the level of

randomization, (b) compared text structure interventions with a competing treatment, (c) included more than one teacher in each group, (d) included more than one hundred students, and (e) reported fidelity of implementation (Bohaty et al., 2015; Graham, McKeown et al., 2012; Hebert et al., 2016; Pyle et al., 2017). In this study, I randomly assigned eleven teachers to deliver the text structure intervention or a comprehension intervention to approximately four hundred fourth- and fifth-grade students. The teachers comprised all English language arts teachers in all three elementary schools in a rural district. I provided the teachers a two-hour training and the intervention materials. I conducted fidelity of implementation observations in all classrooms each week. This study illustrates that these teachers were able to implement the eight-week text structure intervention with fidelity and consistency. Students' gains in text structure awareness, reading comprehension skills, and informative writing quality may be smaller than those previously reported, but they reflect a strong design. Both the correct level of analysis (as the treatment was delivered to groups) and the use of a comprehension intervention for comparison may explain these more modest effects (see Hebert et al., 2016).

According to Williams (2018), some of the most important questions in “second-generation research” are related to context. If the first generation proved that text structure instruction should be part of a comprehensive approach to instruction with expository texts (Hebert et al., 2016), the second generation is focused on when, how, and with whom it is effective (Pyle et al., 2017; Williams, 2018). The context of the present study was three rural elementary schools serving a large number of students from racially diverse backgrounds, most of whom qualified for federal lunch subsidies.

Findings in this study may be generalizable to a larger and more diverse population than many previous studies (Hebert et al., 2016).

Related to context, previous research has illustrated that text structure instruction in practice is limited (e.g., Beerwinkle et al., 2018). A concern of the second generation of text structure research is improving teachers' use of text structure instruction in schools (Meyer & Ray, 2011). Among the largest studies of text structure interventions were several studies of a computer-based intervention by Wijekumar and colleagues (2012, 2014, 2017). Computer-based instruction does not provide the same affordances as teacher-led instruction (Hebert et al., 2016). Teacher-led interventions have the potential to influence teachers' knowledge and transfer of instructional practices to regular classroom instruction. In this study, I designed a classroom-based intervention that was delivered by teachers. I interviewed them about their perceptions of the social validity of the intervention, including its goals, procedures, and effects. In addition to evaluating its effects, it was important to understand whether teachers perceived the text structure intervention's goals and effects as important and the procedures as practical to implement (Lindo & Elleman, 2010; Snodgrass et al., 2016). Understanding the social validity and acceptability of the intervention in this study may help to address the sustainability of text structure interventions in similar contexts.

In summary, this study was informed by the first generation of text structure research, and it addressed an important issue of second-generation text structure research: context. Below, I discuss how the effects of the text structure intervention on text structure awareness, reading comprehension, and writing quality relate to findings in

previous studies. Then, I discuss how understanding its social validity relates to previous research and helps to move the second generation of text structure research forward.

### **Discussion of Findings**

The three research questions in the present study addressed the effects of the text structure intervention on text structure awareness, reading comprehension, and writing quality; the social validity of the text structure intervention; and the acceptability of the text structure intervention for upper elementary school. Each is discussed, in turn, below.

#### **Text Structure Awareness**

The ability to identify text structure in expository texts is an important skill in the text structure model of reading comprehension (Meyer, 1987). In this study, two tasks measured students' ability to identify text structure. The Text Structure Identification Test (TSIT) assessed the ability to identify the structure of well-structured paragraphs. The Text Structure item on the reading and writing assessments assessed the ability to identify the structure of authentic passages. When controlling for pretest differences, students who received the text structure intervention significantly outperformed the comprehension intervention group on the TSIT at posttest, representing a small effect ( $g = 0.31$ ). Differences between the text structure intervention group and the comprehension group on the Text Structure item were not significant.

These results were smaller than other text structure intervention studies that taught students how to identify multiple structures. There were large effects of text structure instruction compared with a control group on identifying the structure of well-structured passages, with very large effects for students with low ( $d = 3.67$ ) and high

comprehension ability ( $d = 3.03$ ; Smith & Friend, 1986). In three studies, there were large effects for identifying the structure of well-structured passages compared with a control group for students who received the Structures intervention (Hebert et al., 2018a;  $d = 0.94$ ), Structures Writing (Hebert et al., 2018b;  $d = 0.94$ ), or both (Hebert et al., 2018c;  $g = 1.43$ ). There were also very large effects of CATS on identifying the structure of well-structured paragraphs and authentic passages when compared with a content intervention ( $d = 1.59, 0.96$ ) and a control group ( $d = 1.55, 0.84$ ; Williams et al., 2016).

One difference between previous studies and this one is the type of text used for instruction. In previous studies, students were taught how to identify text structure using well-structured passages (Hebert et al., 2018a, 2018b, 2018c) or a combination of well-structured passages and authentic texts (Smith & Friend, 1986; Williams et al., 2016). In this study, students were only taught how to identify the structure of authentic passages, which tend to be less structured (Williams, 2018). While students in the text structure group were able to identify the structure of well-structured paragraphs better than the comprehension group, effects were smaller and did not transfer to authentic passages. Students in the comprehension intervention were taught how to answer questions about text structure, much like coverage of text structure in elementary textbooks (Beerwinkle et al., 2018), but they were not taught how to identify and use text structure to support reading and writing. Therefore, the small effects might be attributed to the comparison between the text structure intervention and an alternative treatment that also focused on comprehension of expository texts (Hebert et al., 2016). It may also be that using well-structured texts increases the effects of text structure interventions (Pyle et al., 2017).

## Reading Comprehension

Reading comprehension was assessed using researcher-developed and standardized measures. Researcher-developed reading and writing assessments included two tasks that measured skills associated with the text structure model of reading comprehension, including generating a main idea, selecting important information, and organizing important information (see Ji et al., 2018; Meyer et al., 2018; Williams, 2018). As in previous research, students wrote a single sentence summarizing the main idea and key details (e.g., Hammann & Stevens, 2003) and constructed a graphic organizer (e.g., Weisberg & Balajthy, 1989). Students who received the text structure intervention significantly outperformed the comprehension intervention group on the Graphic Organizer task at posttest, representing a medium effect ( $g = 0.50$ ). However, the difference in posttest scores between the text structure group and the comprehension group on the Summary Sentence task was not significant.

Previous studies have included a graphic organizer task to assess comprehension of a single text structure or multiple structures. There were large effects of text structure instruction compared with a control group on completing a compare/contrast graphic organizer ( $d = 1.25$ ; Weisberg & Balajthy, 1989). When provided instruction in multiple text structures, there was a large effect on a graphic organizer task compared with a content intervention ( $d = 0.99$ ) and a control group ( $d = 1.10$ ; Williams et al., 2016).

The effect on the Graphic Organizer task in this study was smaller than in previous studies, which might also be attributed, in part, to the combination of the alternative treatment and authentic passages. However, students in the text structure

group, on average, were able to organize information using an appropriate graphic organizer. This provides some evidence that they were able to draw on text structure knowledge when organizing important information into a coherent mental representation to support text comprehension (Kintsch, 1988; Meyer, 1987; Williams, 2018). This outcome indicates a promising direction for future research.

Many text structure intervention studies have measured comprehension through recalls or summaries, either oral or written (Pyle et al., 2017). One of the most consistent findings in previous research is that text structure instruction improves the number of main ideas and important details recalled after reading (see Ray & Meyer, 2011). Students who received text structure instruction recalled more important information when compared with a control group ( $d = 2.17$ ) and an alternative treatment ( $d = 0.46$ ; Bakken et al., 1997). In another study, a text structure group wrote better summaries than a control group ( $d = 0.39$ ) but not an alternative treatment ( $d = -0.44$ ; Spires et al., 1992). Students who learned the structure strategy with an adult tutor recalled more main ideas than a control group in written summaries ( $d = 0.49$ ; Meyer et al., 2002). There were large effects of instruction in multiple structures compared with a control group on number of main ideas recalled for students with low ( $d = 1.08$ ) and high comprehension ability ( $d = 1.72$ ; Smith & Friend, 1986). There were also large effects of CATS on generating a main idea sentence when compared with the content intervention ( $d = 1.75$ ) and the control group ( $d = 2.00$ ; Williams et al., 2016). Unlike positive findings in many studies, students who received the Structures intervention did not outperform a control group on the number of main ideas in oral recalls (Hebert et al., 2018a).

The effect on the Summary Sentence task in this study was not significant; however, results indicated that the text structure group scored higher than the comprehension group on number of main idea and key details. This finding was consistent with previous studies that found negative (Spires et al., 1992) or reduced effects (Bakken et al., 1997) when a text structure intervention was compared with an alternative treatment. Both interventions in this study included instruction in identifying the main idea and details. The comprehension intervention also included answering questions about the main idea and using a graphic organizer focused on the main idea and supporting details. In contrast, the text structure intervention taught students to organize the main idea and details using a structure-specific graphic organizer. In general, readers recall main ideas better than supporting details, but using text structure to organize information in memory leads to greater recall of details (Meyer, 1987). Investigating the effects of the text structure intervention on the recall of main idea and key details is an important direction for future research, as it might reflect students' ability to organize related details using text structure in memory and recall them in summaries.

General reading comprehension ability was assessed using the Gray Silent Reading Test (GSRT; Wiederholt & Blalock, 2000). Several studies have found positive effects on the GSRT following six months of using a computer-based intervention, ITSS, as a supplemental program (Wijekumar et al., 2012, 2014, 2017). Effect sizes when compared with a control group were small in fourth grade ( $d = 0.10$ ; Wijekumar et al., 2012), fifth grade ( $d = 0.20$ ; Wijekumar et al., 2014), and seventh grade ( $d = 0.18$ ; Wijekumar et al., 2017). Few other studies have included standardized measures of



reading comprehension (see Pyle et al., 2017). In one study, researchers found no effect of the Structures intervention on a standardized measure compared to a control group (Hebert et al., 2018a). There was also no significant difference on the GSRT between the text structure group and the comprehension group in this study. Effects may not have transferred to a standardized measure due to the short duration of the text structure intervention, the fact that both groups spent the same amount of time reading the same texts, and the lack of sensitivity to short-term growth or to comprehension focused on using expository text structures (see Pyle et al., 2017).

### **Writing Quality**

Writing quality was also assessed using researcher-developed and standardized measures. The reading and writing assessments included an informative writing task that measured five elements of informative writing: Introduction of Topic, Ideas and Details, Concluding Statement, Word Choice, and Signal Words (NGACBP & CCSSO, 2010). Students who received the text structure intervention significantly outperformed the comprehension intervention group on Ideas and Details at posttest, representing a medium effect ( $g = 0.57$ ). There were no statistically significant differences on any other elements of informative writing quality.

There has been a lack of attention to informative writing in text structure intervention research (see Graham, McKeown et al., 2012). However, there are some studies that help to explain findings in this study. Students who have received text structure instruction have produced better quality essays with more main ideas (e.g., Englert et al., 1991). In one study, students who received the Structures Writing

intervention outperformed a control group on writing quality using description ( $g = 0.65$ ), compare/contrast ( $g = 0.59$ ), and sequence ( $g = 0.97$ ) structures. In another study, students who received a text structure intervention wrote higher quality summaries than an alternative treatment ( $d = 0.52$ ) and a control group ( $d = 0.96$ ); they also included more main ideas in writing than the control group ( $d = 0.57$ ; Reynolds & Perin, 2009).

The effect on the Ideas and Details element in this study was similar to effects of text structure interventions on the use of main ideas in writing in previous studies (e.g., Reynolds & Perin, 2009). This is notable considering that effects in this study are compared with an alternative treatment. The effect on Ideas and Details favoring the text structure group provides some evidence that students might have been able to use text structure to select and organize main ideas from source material in their own writing (Hayes, 1996). The 3-point rubric used to score Ideas and Details in this study (see Figure 14) was similar to those used in previous research (e.g., Englert & Mariage, 1991). That is, students received higher scores for well-organized groups of ideas and details and lower scores for a list of ideas not grouped with details. Thus, drawing on text structure knowledge might have helped students organize ideas and details in related groups when writing rather than an unrelated list of ideas (Flower & Hayes, 1981; Meyer, 1987).

It should be noted, however, that students who received the text structure intervention did not improve on other elements of informative writing. In a previous study, students who received instruction in sequential writing improved in their use of signal words, introduction sentences, and concluding sentences, resulting in a very large effect on writing quality ( $d = 3.84$ ; Clark & Neal, 2018). However, there was no control

group, so the magnitude of the effect should be interpreted cautiously. In the present study, students in the text structure group did not outperform the comprehension group on Introduction of Topic, Concluding Statement, Word Choice, or Signal Words. These results were somewhat surprising, as drawing on text structure knowledge should help students when selecting and introducing a topic, including key words to signal text structure and convey information, and writing a conclusion (Englert, Raphael, Fear, & Anderson, 1988). It may be that the text structure intervention did not provide sufficient attention on using signal words in writing or that the TIDE writing strategy (Ciullo & Mason, 2017) did not facilitate better quality topic and concluding sentences than students in the comprehension group who received summary writing instruction.

General writing ability was assessed using the Story Composition subtest of the Test of Written Language (TOWL; Hammill & Larsen, 2009). There is inconsistent use of standardized measures of writing quality in writing intervention research (see Graham, McKeown et al., 2012). In one study, the TOWL was moderately correlated with researcher-developed measures of writing ( $r = .46$ ), but it was not included as an outcome measure (Reynolds & Perin, 2009). In another study, researchers found no effect of the Structures Writing intervention on a standardized writing measure compared to a control group (Hebert et al., 2018b). In this study, there was also no significant difference on the TOWL between the text structure group and the comprehension group. Effects may not have transferred to a standardized measure because of the relatively short duration of the text structure intervention or because the picture prompt used in the TOWL was not sensitive to informative writing gains (see Hebert et al., 2018b).

## **Social Validity**

In addition to evaluating the effects of the text structure intervention, I interviewed teachers to understand their perceptions of its social validity. Assessing social validity can help researchers determine an intervention's potential for adoption and sustainability, including whether participants find it acceptable (Lindo & Elleman, 2010; Snodgrass et al., 2016; Wolf, 1978). However, few text structure intervention studies have addressed social validity, suggesting only that teachers responded positively (e.g., Carnahan et al., 2016). In this study, the use of qualitative interviews allowed me to explore subcomponents of social validity in depth (Leko, 2014), which may also help to inform the second generation of text structure intervention research.

In general, teachers considered the goals, procedures, and effects of the text structure intervention socially valid. Findings in this study reveal characteristics of text structure interventions that may be needed to meet social validity criteria for upper elementary grades. Reports from teachers in this study could be captured in three themes related to goals, including literacy standards, content-area reading, and level of difficulty. Teachers responded positively to the text structure intervention because it addressed grade-level literacy standards (e.g., CCSS; NGACBP & CCSSO, 2010) that were difficult to address in instruction, including text structure. Teachers also responded positively to the use of content-area texts from open-access sources they already used (e.g., ReadWorks, 2018). However, teachers were concerned about the level of difficulty, particularly the match between text complexity of passages and their students' Lexile measures (see MetaMetrics, 2019). These themes reflect three of the ultimate goals of

text structure instruction: (a) using structure to comprehend and organize information in expository text, (b) combining literacy instruction with content-area instruction by using text structure to build content knowledge, and (c) teaching students to use text structure to navigate complex, authentic texts (Hebert et al., 2016; Pyle et al., 2017; Williams, 2018). Future text structure interventions should consider these goals in their design.

Teachers' reports yielded four themes related to procedures, including scheduling, materials, instructional design, and implementation of the instructional routine. Teachers reported that the intervention fit within the 45-minute differentiated instruction period in their schedule, but also that the lessons took longer than two 30-minute sessions to implement. Length of instruction is an important consideration in school settings. In a study of the Structures intervention, students received two lessons in one session to adjust to scheduling constraints, which may have impacted its effects (Hebert et al., 2018c). Teachers also found the materials, including scripted lesson plans and student workbooks, to be socially valid. In text structure interventions, lesson plans and workbooks can aid in implementation fidelity and facilitate explicit instruction (Hebert et al., 2018a, 2018b; Williams et al., 2016). Most text structure interventions use explicit instruction in their instructional design (Hebert et al., 2016; Pyle et al., 2017). Teachers in this study found the gradual release of responsibility from modeling to guided and independent practice (Duke & Pearson, 2002) to be socially valid. Finally, teachers found the instructional routine to be socially valid, evidenced by their likelihood of continued implementation. Some instructional routines used in reading and writing interventions may be effective but require too many complex steps (Hebert et al., 2018b). The findings

in this study suggest Read STOP Write was appropriate in upper elementary grades. These themes suggest that the procedures in text structure interventions should fit within a teacher's schedule, include materials that facilitate explicit instruction, and teach an instructional routine that is not too complex to implement effectively.

Finally, teacher interviews revealed three themes related to effects: overall effectiveness, literacy skills, and strategy knowledge. All five teachers who taught the text structure intervention rated it as effective or very effective, but some teachers also suggested that it may have been less effective for some students. Several factors may influence the effectiveness of text structure interventions, including number of structures, use of signal words, use of graphic organizers, focus on writing, types of texts, and content areas targeted (Hebert et al., 2016). Manipulating one or more of these factors in the text structure intervention may have influenced teachers' perceptions of its social validity. For example, the use of less difficult texts or texts written about content for which students had more prior knowledge may have led teachers to perceive the text structure intervention as more effective. Teachers also described important literacy skills on which they saw students improve, including identifying main idea and details, identifying text structure, using graphic organizers, and informative writing. Again, these skills are associated with the text structure model of comprehension (Meyer, 1987). It may be important that text structure interventions lead to some improvement in these outcomes for teachers to find them socially valid. Teachers also described improvements in strategy knowledge and use. While use of text structure is not the same as a cognitive strategy (see Williams, 2018), most text structure interventions teach a strategy that

students can consciously and independently implement when reading or writing expository text (Hebert et al., 2016). Teachers in this study suggested that students were able to use the processes in Read STOP Write on their own when reading and writing in other content areas. This transfer of strategy or process knowledge to other contexts may be another important component of the social validity of text structure interventions.

### **Acceptability**

In this study, I integrated qualitative findings with quantitative results to understand its acceptability for upper elementary grades. Two facets of an intervention's acceptability are its perceived effectiveness and ease of implementation (Lindo & Elleman, 2010; Von Brock & Elliott, 1987; Witt, 1986). Teachers should perceive the effects of an intervention to be important for their students, and implementation should be both practical and cost effective (Horner et al., 2005; Snodgrass et al., 2016). Comparing how teachers perceived the effects and procedures in each intervention with the observed effects and fidelity of implementation data allowed an understanding of its acceptability.

Teachers who taught the text structure intervention and the comprehension intervention both perceived the intervention they taught as socially valid for teaching reading comprehension, including the use of graphic organizers, main idea, question answering, summarizing, and supporting details. There were differences, however, in the number of teachers who perceived each intervention as socially valid for teaching text structure and writing. These differing perceptions were consistent with teacher assignment to condition and with the student results. That is, students who received the text structure intervention outperformed the comprehension group on a measure of text

structure awareness and on use of ideas and details in informative writing. Thus, one conclusion about the acceptability of the text structure intervention in this study is that teachers in upper elementary grades found it a more acceptable program for teaching students how to use text structure knowledge to organize ideas and details when writing (Flower & Hayes, 1981; Meyer, 1987). Few studies from the first generation of text structure research focused on improving writing through text structure knowledge (Williams, 2018). Read STOP Write may be an acceptable intervention to continue to study in second-generation text structure research and to implement in classrooms.

Teachers in both groups also perceived the lessons to take longer than two thirty-minute sessions to implement, especially lessons during the first instructional phase (modeling). Compared with the observed lesson time collected for fidelity of implementation, this perception turned out to be true only for the comprehension intervention. Lessons during the first phase did, in fact, take significantly longer to implement than subsequent phases. The observed lesson times for the text structure intervention contradicted teachers' perceptions. For an intervention to be acceptable, it is important to address contradictions between teachers' beliefs about an intervention and its procedures (Lindo & Elleman, 2010; Witt, 1986). Across all four instructional phases, lessons in the text structure interventions took approximately thirty-five minutes per day to implement with fidelity. Although consistent in timing, the lessons took about five minutes longer to implement than intended. Thus, for Read STOP Write to be acceptable in terms of the practicality of its implementation in upper elementary grades, lessons



should be revised in future research to be implemented in two thirty-minute sessions.

This may include adjusting the length or difficulty of the passages used for instruction.

Implementation of text structure interventions should also be cost effective to be considered acceptable to teachers. Upper elementary textbooks do not adequately cover text structure, but the use of high-quality intervention materials may help teachers to address text structure in their instruction (e.g., Beerwinkle et al., 2018; Wijekumar et al., 2019). The cost of text structure intervention materials should not be prohibitive (Hebert et al., 2018b; Williams et al., 2016). One potential way to keep the cost of interventions low is through the use of open educational resources (OER). OER are practices and resources for teaching and learning that are accessible, free to implement, and able to be re-purposed (O’Byrne, Roberts, LaBonte, & Graham, 2014). One of the challenges of adopting OER in classrooms, though, is teachers’ concern over credibility of the materials (O’Byrne et al., 2014). OER based on educational research that are effective and feasible for implementation have the potential to be acceptable and sustained.

In this study, Read STOP Write incorporated OER in the use of publicly available informational texts from ReadWorks (2018), a resource that teachers were already using in upper elementary classrooms. Enhancing the credibility of this resource, two researchers with a long history of text structure research serve as academic advisors to ReadWorks, Joanna Williams and Elfrieda Hiebert (see <https://about.readworks.org/our-team.html>). While the lessons in the present study used passages from ReadWorks, one of the goals of the text structure intervention was for teachers and students to be able to implement the instructional routine when reading and writing using any informational

texts. The materials are accessible online at <http://www.readstopwrite.com>. In this sense, the Read STOP Write routine is an OER with demonstrated effectiveness, social validity, and acceptability that is both cost effective and practical to implement.

### **Limitations**

As with any study, there were important limitations in this study that may be addressed in future research. First, significant findings may have been influenced insufficient power to detect small effects. There were trends on some researcher-developed measures that favored the text structure intervention but were not significant, including text structure identification in authentic text and the summary sentence. These findings may be important to study in a fully-powered randomized controlled trial.

Second, generalizability may not extend beyond the sample in the present study. This study was conducted in a South Atlantic state in three rural elementary schools serving students from racially diverse backgrounds, most of whom qualified for federal lunch subsidies. Effects and teachers' perceptions of the social validity of the text structure intervention may be different in school settings that serve different populations.

Third, although I used qualitative interviews to understand teachers' perceptions of the intervention's social validity and acceptability, I did not measure changes in text structure knowledge or continued implementation of the instructional routine. Likewise, I did not measure maintenance of text structure awareness, reading comprehension, and writing quality outcomes. These will be important to consider in future research.

Last, this study examined the effects of an intervention with multiple components, including processes for main idea and detail identification, summarizing, text structure

identification, use of graphic organizers, planning, and informative writing. Future research should consider the effects of the individual components.

### **Implications**

In this study, I designed a text structure intervention informed by the first generation of text structure research focused on improving reading comprehension or writing quality, separately. Teachers were able to implement the intervention consistently and with fidelity, and they considered it to be socially valid. I found promising effects on one measure of text structure awareness, one measure of reading comprehension skills, and one element of informative writing quality. Effects were more significant for text structure awareness and informative writing quality. Findings were consistent with both previous research and theoretical models of reading and writing that include text structure knowledge (see Fitzgerald & Shanahan, 2000; Shanahan, 2016).

Based on these results and teachers' recommendations for improving the text structure intervention, I have identified several avenues that might improve the effects and acceptability of the text structure intervention for practice. First, teachers were concerned about the level of difficulty. The passages in the first instructional phase were longer and more complex than subsequent phases. Though this decision was made due to both instructional and practical reasons, I plan to revise the first four lessons in future research to incorporate well-structured passages that are less difficult. I will continue to use authentic passages that increase in length and difficulty in subsequent phases.

Second, teachers believed that the lessons took too long to implement. Fidelity of implementation observations confirmed that, on average, lessons took five minutes longer

to implement than intended. In future research, I will examine which components of the instructional routine took longer to implement in order to reduce the overall lesson time.

Third, one aspect of the intervention that teachers appreciated most was the use of content-area texts. In future research, I will test the effects of integrating the instructional routine within a content-area unit of study. This will allow for both the examination of growth in literacy skills and content knowledge. With these improvements, my goal is to revise the text structure intervention to improve its acceptability and effectiveness.

### **Future Research**

I have already identified directions for future research based on limitations. However, there are several questions being asked by other researchers that require further investigation. The second generation of text structure research is focused on important questions relating to moderating variables (Hebert et al., 2016; Pyle et al., 2017; Williams, 2018). Future research will investigate whether there are differential effects of the text structure intervention in this study by initial reading or writing ability and by grade level. Another moderating variable to consider is dosage. Future research will explore how many lessons are needed to improve text structure awareness, reading comprehension skills, and informative writing elements targeted in the text structure intervention. It may be that some students need more or fewer lessons to make significant gains before they are able to use the instructional routine independently to support content learning. Finally, most text structure intervention research has been conducted in grades four through eight. There is a considerable lack of text structure interventions aimed at the high school level. Future research will investigate effects for older students.

## **Conclusion**

This study provides evidence that a strong experimental design can be implemented in a regular educational setting, including all teachers and all eligible students with random assignment at the classroom level, when researchers provide two socially-valid treatments rather than an untreated control group. While studies of this kind are likely to yield smaller effects, they are also likely to close the research-to-practice gap and provide schools with a number of feasible, effective interventions that they can continue to implement and match to the needs of their students.

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## **Appendix A**

### **READ STOP WRITE TEACHER MATERIALS**

## Read STOP Write: Program Overview

Read STOP Write is an intervention that teaches fourth- and fifth-grade students how to identify and use text structure to support reading and writing in four expository text structures listed in the English Language Arts Standards: sequence, compare/contrast, cause/effect, and problem/solution. The acronym STOP is bookended by reading and writing informative text. First, students read to determine the main idea and details. Next, they STOP: summarize main idea and details, identify text structure, organize information using a text structure map, and plan to write using a TIDE graphic organizer. Then, students write an informative paragraph explaining the topic of the passage.

Read STOP Write	
<b>Read</b>	Read a passage to identify the main idea and supporting details.
<b>Summarize</b>	Summarize the main idea and details in twenty words or fewer.
<b>Text structure</b>	Identify the text structure that shows how ideas are organized.
<b>Organize</b>	Organize information using the text structure map.
<b>Plan</b>	Plan to write using a TIDE (Topic, Ideas, Details, Ending) graphic organizer.
<b>Write</b>	Write an informative paragraph to explain the topic of the passage.

The lesson plans follow principles of explicit instruction (Duke & Pearson, 2002). The lesson sequence includes teacher modeling of the strategies, guided practice on increasingly more difficult passages, teacher monitoring with feedback, and independent practice. The first four lessons are scripted for the teacher to model the strategies for students while teaching each text structure. The next four lessons are scripted for the teacher to use the strategies collaboratively with students. The next four lessons are less scripted, as the teacher provides students the opportunity for guided practice using the strategies with a gradual release of responsibility. The final four lessons are designed for students to practice using the strategies independently.

There are four lessons in each phase of the instructional sequence: teacher modeling, collaborative practice, guided practice, and independent practice. Each lesson is designed to be completed in two 30-minute sessions. Given four sessions per week, these lessons will last eight weeks. There are also pretests and posttests to assess students' progress in reading and writing.

The passages in these lessons are all used with permission from ReadWorks (2018), a nonprofit website that provides high-quality informational texts. Texts were selected based on three criteria: (a) they are organized in a sequence, compare/contrast, cause/effect, or problem/solution text structure, (b) the average Lexile (880L) is consistent with the CCSS Lexile band of 770L – 980L for grades 4-5, and (c) they are about interesting science or history/social studies content that teaches students something about the world. I hope you enjoy teaching these lessons!

### Read STOP Write: Instructional Sequence

Lesson	Reading Passage	Text Structure	Words	Lexile
<b>Phase 1: Teacher Modeling</b>				
1	<a href="#">Gettysburg and the Gettysburg Address</a>	Sequence	513	1060L
2	<a href="#">Penguins: Up Close and Personal</a>	Compare/Contrast	651	1070L
3	<a href="#">Some Laws are Intolerable</a>	Cause/Effect	796	1070L
4	<a href="#">Lincoln and the 13<sup>th</sup> Amendment to End Slavery</a>	Problem/Solution	704	1050L
<b>Phase 2: Collaborative Practice</b>				
5	<a href="#">Chemistry: Atoms and Molecules</a>	Compare/Contrast	168	780L
6	<a href="#">Recycling &amp; Conservation: Global Warming</a>	Cause/Effect	199	770L
7	<a href="#">Electricity &amp; Energy – Energy</a>	Problem/Solution	201	780L
8	<a href="#">U.S. Presidents: Abraham Lincoln</a>	Sequence	448	770L
<b>Phase 3: Guided Practice</b>				
9	<a href="#">Westward Expansion – The Erie Canal</a>	Problem/Solution	383	790L
10	<a href="#">The Great Depression</a>	Cause/Effect	470	790L
11	<a href="#">Background to the Colonies</a>	Compare/Contrast	518	830L
12	<a href="#">Introduction to the Revolutionary War</a>	Sequence	641	820L
<b>Phase 4: Independent Practice</b>				
13	<a href="#">WWII: Hiroshima, Japan</a>	Cause/Effect	306	820L
14	<a href="#">Immigration</a>	Sequence	669	900L
15	<a href="#">The Two Harriets, Heroines of Abolition</a>	Compare/Contrast	695	920L
16	<a href="#">Solar Absorbers and the Future of Electricity</a>	Problem/Solution	995	870L
<b>Assessments: Pretest and Posttest</b>				
A	<a href="#">Mali &amp; African Empires – The Mali Empire</a>	Sequence	302	820L
B	<a href="#">Brazil Today: The Amazon River and Basin</a>	Cause/Effect	304	840L
C	<a href="#">Native Americans</a>	Compare/Contrast	482	910L
D	<a href="#">The Shortest Path</a>	Problem/Solution	522	930L

## Read STOP Write: Lesson Plan Template

### Day 1: Introduction (5 minutes)

"Today we are going to read an article titled \_\_\_\_\_. I am going to show you exactly how to use reading and writing to learn new information. Once you are an expert at that, you can learn whatever you want to learn. We're going to use a strategy to help us learn about information in the text. The strategy is called Read STOP Write. It is important for readers to use strategies during and after reading to remember the main ideas in the text. It is also important for writers to use strategies before writing to plan and organize their ideas. Today, I am going to model how you can use this strategy to help read and write informational text."

### Hand out Read STOP Write Student Guidebook

"Please put your name and my name on the front of your guidebook. Then, open the book and turn to the first page, so I can explain how the Read STOP Write strategy works."

"There are six steps in Read STOP Write. The first step is to read a passage to identify the main idea and supporting details. I will show you how to do this step during reading. The next part of the strategy is to S-T-O-P. STOP stands for summarize, text structure, organize, and plan. These steps help us to use the main ideas and details to summarize the text, use the author's text structure to organize information, and plan to write an informative paragraph explaining what we learned about the topic. I will show you how to do these steps after reading. The last step is to write. After following all the steps, you will be able to write an excellent paragraph."

### Day 1: Read (15 minutes)

"Now I'm going to show you how to read using the Read STOP Write strategy. There are three steps: read, highlight, and underline. I can use these steps any time I read to help me focus on the main ideas and supporting details during reading. First, I will read the text, stopping at the end of each section or paragraph. Next, I will highlight any words that tell the main idea of the text. Then, I will underline supporting details, which are words or phrases that support the main idea."

Make sure each student has a writing utensil and a highlighter. Display your copy of the passage while modeling the reading strategy for students. Monitor students as they follow along while you read the passage. You may use the highlighted passage in the teacher materials as a guide.

"The first step is to read the text, stopping at the end of each section or paragraph. Follow along as I read the first paragraph in \_\_\_\_\_."

After reading, say "Now, I need to highlight any words that tell the main idea of the text. In the first paragraph, I'm going to highlight \_\_\_\_\_, because it tells who or what the passage is about."

"The next step is to underline supporting details, which are words or phrases that support the main idea. I'm going to underline \_\_\_\_\_, because it tells more details about the main idea."

"Let's read the next paragraph to identify the main idea and supporting details."

Repeat using the steps above until finished reading the passage.

**Day 1: Summarize (10 minutes)**

“Now that we’ve finished reading, I’m going to show you how to do the first step in STOP: summarize. Look at the three steps to Summarize in your guidebook. First, I will list the main idea on the summary sheet after reading. Next, I will choose 4-6 supporting details and list them below the main idea. Then, I will summarize the main idea and supporting details in 20 words or fewer. Readers summarize the main idea and supporting details using as few words as possible to help them remember information.”

Display your copy of the summary sheet while modeling the strategy for students. Monitor students as they follow along while you summarize.

“The first step in summarizing is to list the main idea on the summary sheet. Since I highlighted \_\_\_\_\_ in the text, I will put that in the box under main idea.”

Main Idea	
Supporting Details	

“The next step is to choose 4-6 supporting details and list them below the main idea. Since I underlined six words or phrases, I will list each of them under supporting details.”

“The last step is to summarize the main idea and details in twenty words or fewer. I will write: \_\_\_\_\_.”

Summary

“There are 20 lines on your summary sheet where you can summarize the main idea and supporting details. Make sure to copy my summary in your guidebook as I write.”

**Day 2: Text Structure (5 minutes)**

“Now that we’ve summarized the main idea and supporting details, I’m going to show you how to do the next step in STOP: text structure. Identifying the text structure that the author uses to organize information can help you to remember the most important information better.”

Display your copy of the text structure guide while discussing how to identify the text structure.



“There are four main text structures that authors use to organize informational text: sequence, compare/contrast, cause/effect, and problem/solution. In sequence text, an author explains how events happen in chronological or time order. In compare/contrast text, an author shows how two or more ideas or items are related by similarities and/or differences. In cause/effect text, an author tells how one or more causes leads to one or more effects or results. In problem/solution text, an author describes a problem and a potential solution. Look at the description of each text structure on your text structure guide. Which one do you think the author used in this passage?”

Allow one (or two) student(s) to respond before providing the correct answer.

#### Day 2: Organize (5 minutes)

“Now that we’ve identified the text structure, I’m going to show you how to do the next step in STOP: organize. Organizing information using a graphic organizer that represents the author’s text structure can help you to comprehend the passage better. We can use the guiding questions on our text structure guide to fill in the text structure map.”

Display your copy of the appropriate text structure map while modeling how to fill in the graphic organizer and organize information using the guiding questions.

#### Day 2: Plan (10 minutes)

“Now that we’ve organized information using the text structure map, I’m going to show you how to do the last step in STOP: plan. Writers use strategies to help them plan before writing. Later, we’re going to write an informative paragraph that explains everything we learned about the topic. First, we’re going to plan to write using an informative writing strategy called TIDE: Topic, Ideas, Details, Ending. TIDE will help us to use the author’s text structure to organize important information from the passage.”

Display your copy of the planning sheet while modeling how to plan to write using the TIDE graphic organizer.

Topic	
Ideas	Details
1.	1.
2.	2.
3.	3.
Ending	

"The guiding questions on our text structure guide can help us to plan an informative paragraph using the sequence text structure. We can also use information from our summary sheet and our text structure map to help us plan. The first step in TIDE is to write the topic. Looking back at my summary sheet, the main idea of this passage was \_\_\_\_\_, so I will write that under Topic."

"The next step in TIDE is to list three important ideas. The guiding questions can help me figure out which ideas are important. The first guiding question is \_\_\_\_\_? Looking back at my text structure map, I will write \_\_\_\_\_ for my first idea. The second guiding question is \_\_\_\_\_? Looking back at my text structure map, I will write \_\_\_\_\_ for my second idea. The third guiding question is \_\_\_\_\_? Looking back at my text structure map, I will write \_\_\_\_\_ for my third idea."

"The next step in TIDE is to list details for each idea. Looking back at my text structure map, important details for the first idea were \_\_\_\_\_. For the second idea, important details were \_\_\_\_\_. For the third idea, important details were \_\_\_\_\_."

"The last step in TIDE is to write the ending. A good ending reminds your reader of the topic, or main idea, and the text structure. Looking back at my summary sheet, I will write \_\_\_\_\_ to remind me to write about this for my ending."

#### **Write (10 minutes)**

"Now we're ready for the last step of Read STOP Write – write! Writing about what we read can help us understand the information better and explain what we learned about the topic. Our TIDE graphic organizer and the signal words on our text structure guide can help us to write an informative paragraph explaining what we learned using the author's text structure."

Display your copy of the planning sheet while modeling how to write an informative paragraph below the TIDE graphic organizer.

"Now I will take information from my TIDE organizer and put it together in a paragraph. Watch as I write out all the information and group the ideas with the details that support them. It's also important to include signal words that show the text structure. Make sure to copy as I write."

#### **Informative Paragraph**

"We have done a lot with this article! We read to identify main ideas and supporting details, summarized, identified the text structure, organized information, planned for writing, and wrote an informative paragraph. Great job reading and writing!"

#### **Collect Read STOP Write Student Guidebook**

## **Appendix B**

### **READ STOP WRITE STUDENT MATERIALS**

### Read STOP Write: Student Materials

Read STOP Write	
<b>Read</b>	Read a passage to identify the main idea and supporting details.
<b>Summarize</b>	Summarize the main idea and supporting details in 20 words or fewer.
<b>Text structure</b>	Identify the text structure that shows how ideas are organized.
<b>Organize</b>	Organize information in the text using the text structure map.
<b>Plan</b>	Plan to write with TIDE (Topic, Ideas, Details, Ending) graphic organizer.
<b>Write</b>	Write an informative paragraph to explain the topic of the passage.

Read
<ol style="list-style-type: none"><li>1. <b>Read</b> the text, stopping at the end of each section or paragraph.</li><li>2. <b>Highlight</b> any words that tell the main idea of the text.</li><li>3. <b>Underline</b> supporting details (words or phrases that support the main idea).</li></ol>

Summarize
<ol style="list-style-type: none"><li>1. <b>List</b> the main idea on the summary sheet after reading.</li><li>2. <b>Choose</b> 4-6 supporting details and list them below the main idea.</li><li>3. <b>Summarize</b> the main idea and supporting details in 20 words or fewer.</li></ol>

**Read STOP Write  
Summary Sheet**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Title of Passage: \_\_\_\_\_

Main Idea	
Supporting Details	

**Summary**


**Read STOP Write**  
**Text Structure Guide**

<b>Text Structure</b>	<b>Description</b>	<b>Guiding Questions</b>	<b>Signal Words</b>	<b>Graphic Organizer</b>
Sequence	An author explains how events happen in chronological or time order.	What is the first thing that happened? What happened next? What happened last?	After, before, finally, first, last, later, next, now, then	
Compare/Contrast	An author shows how two or more ideas or items are related by similarities and/or differences.	What ideas or items are being compared? What features are compared? How are they the same? How are they different?	alike, both, compare, contrast, different, however, on the other hand, same, similar, unlike	
Cause/Effect	An author tells how one or more causes leads to one or more effects or results.	What are the causes? What are the effects?	As a result, because, cause, effect, in order to, in response, led to, since, therefore	
Problem/Solution	An author describes a problem and a potential or actual solution.	What are the problems? What are the attempts to solve the problems?	Answer, difficulty, issue, problem, question, reason, solution, solve	

**Read STOP Write**  
**Text Structure Map**

**Identify Text Structure:** \_\_\_\_\_

A large, empty rectangular box with a thin black border, occupying the central portion of the page. It is intended for students to draw or write their text structure maps.

**Read STOP Write**  
**Planning and Writing Sheet**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Title of Passage: \_\_\_\_\_

Topic	
Ideas	Details
1.  2.  3.	1.  2.  3.
Ending	

**Write an Informative Paragraph**

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## **Appendix C**

### **RARE READING & WRITING TEACHER MATERIALS**

## RARE Reading & Writing: Program Overview

These lessons are designed to teach fourth- and fifth-grade students how answer questions and summarize to support reading comprehension of informational text. The questions (written by ReadWorks.org) target explicit information, text structure, conclusions and evidence, inferences, main idea, vocabulary, author's craft, and syntax. The acronym RARE is used as a support to follow the strategy steps. First, students read a short informational text. Next, they answer comprehension questions using question-answer relationships (QAR). The QAR strategy teaches students how to find information to answer four types of questions: Right There, Think and Search, Author and You, and On Your Own. After, students review the questions and answers, reread the text while highlighting important parts, and restate the main idea and supporting details. Then, they explain the topic in a written summary.

<b>RARE Strategy</b>	
<b>Read</b>	Read a passage of informational text and think about the main ideas.
<b>Answer</b>	Answer comprehension questions using the QAR strategy.
<b>Review</b> <b>Reread</b> <b>Restate</b>	Review questions and answers to make sure you understand them. Reread the text, and this time highlight the important information. Restate the main idea and supporting details in your own words.
<b>Explain</b>	Explain the topic of the passage by combining main idea and details in a summary.

The lesson plans follow principles of explicit instruction (Duke & Pearson, 2002). The lesson sequence includes teacher modeling of the strategies, guided practice on increasingly more difficult passages, teacher monitoring with feedback, and independent practice. The first four lessons are scripted for the teacher to model the strategies for students. The next four lessons are less scripted for the teacher to use the strategies collaboratively with students. The next four lessons are much less scripted, as the teacher provides students the opportunity for guided practice using the strategies with a gradual release of responsibility. The final four lessons are designed for students to practice using the strategies independently.

There are four lessons in each phase of the instructional sequence: modeling, collaborative practice, guided practice, and independent practice. Each lesson is designed to be completed in two 30-minute sessions. Given four sessions per week, these lessons will last eight weeks. There are also pretests and posttests to assess students' progress in reading and writing.

The passages in these lessons are used with permission from ReadWorks (2018), a nonprofit website that provides high-quality nonfiction texts and questions. Texts were selected based on two criteria: (a) the average Lexile (880L) is consistent with the CCSS Lexile band of 770L – 980L for grades 4-5 and (b) they are about interesting science or history/social studies content that teaches students something about the world. I hope you enjoy teaching these lessons!

### RARE Reading & Writing: Instructional Sequence

Lesson	Reading Passage	Content	Words	Lexile
<b>Phase 1: Teacher Modeling</b>				
1	<a href="#">Gettysburg and the Gettysburg Address</a>	U.S. History	513	1060L
2	<a href="#">Penguins: Up Close and Personal</a>	Life Science	651	1070L
3	<a href="#">Some Laws are Intolerable</a>	U.S. History	796	1070L
4	<a href="#">Lincoln and the 13<sup>th</sup> Amendment to End Slavery</a>	U.S. History	704	1050L
<b>Phase 2: Collaborative Practice</b>				
5	<a href="#">Chemistry: Atoms and Molecules</a>	Physical Science	168	780L
6	<a href="#">Recycling &amp; Conservation: Global Warming</a>	Earth Science	199	770L
7	<a href="#">Electricity &amp; Energy – Energy</a>	Physical Science	201	780L
8	<a href="#">U.S. Presidents: Abraham Lincoln</a>	U.S. History	448	770L
<b>Phase 3: Guided Practice</b>				
9	<a href="#">Westward Expansion – The Erie Canal</a>	U.S. History	383	790L
10	<a href="#">The Great Depression</a>	World History	470	790L
11	<a href="#">Background to the Colonies</a>	U.S. History	518	830L
12	<a href="#">Introduction to the Revolutionary War</a>	U.S. History	641	820L
<b>Phase 4: Independent Practice</b>				
13	<a href="#">WWII: Hiroshima, Japan</a>	World History	306	820L
14	<a href="#">Immigration</a>	U.S. History	669	900L
15	<a href="#">The Two Harriets, Heroines of Abolition</a>	U.S. History	695	920L
16	<a href="#">Solar Absorbers and the Future of Electricity</a>	Physical Science	995	870L
<b>Assessments: Pretest and Posttest</b>				
A	<a href="#">Mali &amp; African Empires – The Mali Empire</a>	World History	302	820L
B	<a href="#">Brazil Today: The Amazon River and Basin</a>	Earth Science	304	840L
C	<a href="#">Native Americans</a>	U.S. History	482	910L
D	<a href="#">The Shortest Path</a>	Geography	522	930L

## RARE Reading & Writing: Lesson Plan Template

### Day 1: Introduction (5 minutes)

"Today we are going to read an article titled \_\_\_\_\_. I am going to show you exactly how to use reading and writing to learn new information. Once you are an expert at that, you can learn whatever you want to learn. We're going to use a strategy to help us learn about information in the text. The strategy is called RARE. It is important for readers to use strategies during and after reading to remember the main ideas in the text. Today, I am going to model how you can use this strategy to read and answer questions about nonfiction text."

### Hand out RARE Reading & Writing Student Guidebook

"Please put your name and my name on the front of your guidebook. Then, open the book and turn to the first page, so I can explain how the RARE strategy works."

"There are six steps in RARE. The first step is to read the text. The next step of the strategy is to answer comprehension questions using the QAR strategy. QAR stands for question-answer relationships. I will show you how to do this step after reading. The next three steps are to review the questions and answers to make sure you understand the important information, reread the text to find the important information, and restate the main idea and supporting details in your own words. The last step is to explain the topic in a summary. After following these steps, you will remember more of the new information."

### Day 1: Read (5 minutes)

"First, we're going to read the passage before looking at the questions. Sometimes readers look at the questions first, but then they only remember the information in the questions. We want to think about the main ideas during reading."

Display a blank copy of the passage while reading and answering questions aloud. Answers to the questions that follow are highlighted in the passage for your reference.

### Day 1: Answer (20 minutes)

"Now that we've finished reading, I'm going to show you how to answer comprehension questions using the QAR strategy. Remember that QAR stands for question-answer relationships. There are four types of questions: Right There, Think and Search, Author and You, and On Your Own. Knowing these types of questions can help you determine where to find the answers. You can find the answer to 'Right There' questions in one place in the text. 'Think and Search' questions require you to look in more than one place in the text to find the answer. 'Author and You' questions require you to use information provided by the author and from your background knowledge to answer the question. Finally, 'On Your Own' questions require you to form your own opinion based on information in the text."

Continue to display a blank copy of the passage while modeling how to use the QAR strategy for students. Monitor students as they follow along.

"Let's read the \_\_\_\_\_ question and answer choices." (Read question \_\_\_\_ and choices aloud).

"I know that this is a \_\_\_\_\_ question, because \_\_\_\_\_. Let's look back in the text (or let's think) to figure out the answer. Choice \_\_\_\_ doesn't sound right, because \_\_\_\_\_. Choice \_\_\_\_

doesn't sound right, because \_\_\_\_\_. Choice \_\_\_\_ doesn't sound right, because \_\_\_\_\_. Choice \_\_\_\_ sounds right, because \_\_\_\_\_. Let's circle choice \_\_\_\_\_."

Repeat using the steps above until finished answering the multiple-choice questions.

"Let's read the \_\_\_\_\_ short-answer question." (Read question \_\_\_\_ and choices aloud).

"I know that this is a \_\_\_\_\_ question, because \_\_\_\_\_. Let's look back in the text (or let's think) to figure out the answer. You can copy my answer as I write."

Repeat using the steps above until finished answering the short-answer questions.

#### **Day 2: Review (5 minutes)**

"Now that we've answered the comprehension questions, let's practice the next step in RARE: Review. To make sure we understand the text, we should review the questions and answers. While reviewing, we can make note of any of the information we don't understand."

Display your copy of the questions in the student guidebook while reviewing the answers. Read each question and allow one (or two) student(s) to respond before reviewing the correct answer. You may use the answer key in the teacher materials to review correct answers.

#### **Day 2: Reread (10 minutes)**

"Now that we've reviewed the questions and answers, let's reread the text. This time, we will highlight the important information as we read to make sure we understand everything."

Display a copy of the passage while rereading and highlighting important information. You may use the highlighted passage in the teacher materials as a guide for highlighting.

#### **Day 2: Restate (5 minutes)**

"Now that we've reread the text, let's restate the main idea and supporting details in our own words. We can use the graphic organizer on the summary sheet to help us restate."

Display your copy of the summary sheet while modeling the strategy for students. Monitor students as they follow along while you restate the main idea and details.

"The first step is to restate the main idea in our own words on the summary sheet. Since I highlighted \_\_\_\_\_, I will write that in my own words in the box labeled Main Idea."

<b>Main Idea:</b>		
<b>Detail:</b>	<b>Detail:</b>	<b>Detail:</b>

"The next step is to list supporting details. Since I highlighted \_\_\_\_\_, I will list this in the first box labeled Detail. I also highlighted \_\_\_\_\_, so I will list this in the second box labeled Detail. I also highlighted \_\_\_\_\_, so I will list this in the third box labeled Detail."

**Day 2: Explain (10 minutes)**

“Now that we’ve reviewed the questions and answers, reread the text, and restated the main idea and supporting details, we’re ready for the last step of RARE – explain. Explaining about what we read in a written summary can help us understand the information better. To write a summary, we can combine the main idea and supporting details in one paragraph. We can write a topic sentence using the main idea and one sentence for each of the details.”

Display your copy of the summary sheet while modeling how to write a summary below the main idea and details graphic organizer.

“For my topic sentence, I can restate the main idea I listed in the graphic organizer since it is already in my own words. Make sure to copy as I write. I will write \_\_\_\_\_.”

“Next, I can write a sentence in my own words about the first detail. I remember from answering the questions that \_\_\_\_\_. I will write \_\_\_\_\_.”

“Next, I can write a sentence in my own words about the second detail. I remember from answering the questions that \_\_\_\_\_. I will write \_\_\_\_\_.”

“Next, I can write a sentence in my own words about the third detail. I remember from answering the questions that \_\_\_\_\_. I will write \_\_\_\_\_. Now I have a complete summary of the text!”

**Summary**

“We have done a lot with this article! We read, answered questions about the important information, reviewed, reread, restated, and explained. Following these steps helped make sure we really understood the passage. Great job reading and writing!”

**Collect RARE Reading & Writing Student Guidebook**

## **Appendix D**

### **RARE READING & WRITING STUDENT MATERIALS**

### RARE Reading & Writing: Student Materials

RARE	
<b>Read</b>	Read the text and think about the main ideas.
<b>Answer</b>	Answer comprehension questions using the QAR strategy.
<b>Review</b>	Review questions and answers to make sure you understand them.
<b>Reread</b>	Reread the text, and this time highlight the important information.
<b>Restate</b>	Restate the main idea and supporting details in your own words.
<b>Explain</b>	Explain the topic of the passage by combining main idea and details in a summary.

Question-Answer Relationships (QAR) Strategy
<p style="text-align: center;"><b>In The Text</b></p> <ol style="list-style-type: none"><li>1. <b>Right There:</b> Find the answer in one place in the text.</li><li>2. <b>Think and Search:</b> Put together different parts of the text for the answer.</li></ol>
<p style="text-align: center;"><b>In Your Head</b></p> <ol style="list-style-type: none"><li>3. <b>Author and You:</b> Use information from the text and background knowledge.</li><li>4. <b>On Your Own:</b> Form your own opinion based on information in the text.</li></ol>



**RARE Reading & Writing  
Summary Sheet**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Title of Passage: \_\_\_\_\_

**Main Idea:**

**Detail:**

**Detail:**

**Detail:**

**Summary**

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## **Appendix E**

### **TEXT STRUCTURE IDENTIFICATION TEST**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### Text Structure Identification Test

**Directions:** Read each paragraph and answer the question, "What type of paragraph is this?"

1. Many children were displaced, or forced to move, after Hurricane Katrina. In 2005, Hurricane Katrina hit the states on the coast of the Gulf of Mexico. When New Orleans flooded, evacuees moved 350 miles west to Houston. As a result, the Houston school district reopened two schools to make room for the 2,000 students who had relocated. Many of the displaced children stayed in Houston and their new schools after the storm.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

2. Deforestation is destroying the Amazon rain forest. It is decreasing the variety of animals and plants in forests and increasing greenhouse gases in the air. Deforestation was caused by population growth. Farmers and loggers made room for homes and farms by cutting down trees in the forest. One solution to the problem is that Brazil's government created two national parks in the Amazon. They protected 3.7 million acres from deforestation by making them off-limits for development. Deforestation is a problem, but there are some possible solutions.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

3. The life of the Vikings has many interesting events. First, Vikings attacked and conquered villages in Europe from the late 700s to 1100. Next, Viking explorers made ships and traveled to North America 500 years before Columbus did in 1492. Later, Vikings became less powerful as villages in Europe and North America learned to defend themselves. Archaeologists learned about the life of the Vikings after discovering objects in a burial ground in England.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

4. People have different views about drilling for oil in Alaska. Supporters of oil drilling in the Arctic National Wildlife Refuge believe it would bring jobs to Alaska. They also think it would help lower oil prices, because it would be cheaper than using foreign oil. Opponents think that oil drilling would pollute the land. They don't want to harm plants and animals for only a small supply of oil. Supporters and opponents of oil drilling have different views.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

5. North and South Korea are two countries with many differences. They have different forms of government. North Korea is a communist country run by a dictator, but South Korea is a democracy. They have different access to food. Many North Koreans have died of starvation or eat mostly corn and potatoes, but there is plenty of food to eat in South Korea. People in the two countries have different living conditions. Some families in North Korea live in huts and wash clothes by beating them with sticks, but they live in apartments in South Korea and have washing machines. Although the two countries are neighbors, they are different in many ways.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

6. The history of medical operations has many important “firsts.” The first surgery in ancient civilizations was trepanation. It involved drilling a hole into a person’s skull to drain fluid. During the Stone Age, dentistry involved using stone drills to make holes in teeth to remove tooth decay. Archaeologists recently made these discoveries by digging up bones of ancient people in a graveyard in Pakistan. Their discoveries were proof that doctors have practiced operations for thousands of years.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

7. Availability of clean water is a problem in many parts of the world. Only half a percent of the water on Earth is fresh water, and it is only renewable through precipitation. Over one billion people do not have access to drinkable water. People in many countries don’t have ways to conserve water, and much of their water is contaminated. Representatives from many countries met to exchange ideas about how to save water at the World Water Forum. They suggested that governments build more dams, pool resources, and provide water to their people. Access to drinking water is a problem, but governments are searching for solutions.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

8. A ‘dead zone’ occurs in the Gulf of Mexico every summer. Fertilizer from farms in the Midwest flow into the Gulf of Mexico from the Mississippi River. This causes algae to grow larger and use too much oxygen in the water. As a result, other sea creatures die due to lack of oxygen. The ‘dead zone’ also leads to shark attacks near the Texas beaches. Sharks looking for food in shallow waters find human swimmers instead of fish. The ‘dead zone’ in the Gulf of Mexico can lead to dangerous consequences.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

9. Slavery in the United States was different in the North than in the South. Many people associate slavery with the South, because South Carolina was the biggest importer of slaves. Although there were fewer slaves in the North, slaves made up 12 percent of the population of New York City in 1771. Factories brought slaves to cities and towns in the North during the Industrial Revolution. In the South, slaves worked mostly on plantations. People usually talk about slavery in the South, but there was also slavery in the North.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

10. Children in Darfur, a region of Sudan, are struggling to survive under bleak conditions. Many families left their homes after armed fighters attacked their villages. As a result, people walked over 100 miles to refugee camps to escape the war. The refugee camps were set up to provide food, medical care, and safety to the victims of attacks. However, many people have to sleep on the ground, because there are not enough beds for everyone. The situation in Darfur is a humanitarian crisis.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

11. The timeline of women's role in government has many important events. In 1920, women gained the right to vote when the 19<sup>th</sup> Amendment was passed. Margaret Chase Smith became the first woman nominated for the presidency by a major party in 1964. In 1997, Madeline Albright was chosen as the first female Secretary of State. Condoleezza Rice became the first African American woman to hold that position in 2005. Although Hillary Rodham Clinton was not nominated as president, she became Secretary of State in 2009. There has never been a female president, but several women have held high-power positions in government.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

12. Malaria is a dangerous disease that infects millions of people in some parts of the world. It is caused by a parasite that gets into a person's blood through a mosquito bite. Malaria can lead to blindness, brain damage, and death if left untreated. Controlling malaria is a problem in poor countries in Africa, because people cannot afford the drugs to treat the disease. They also cannot afford mosquito nets that could help save lives. As a result, scientists are working on a vaccine to help prevent the disease. Some countries are using insecticides to kill malaria-carrying mosquitoes. Several organizations are trying to help prevent the spread of malaria.

- A. Cause/Effect
- B. Compare/Contrast
- C. Problem/Solution
- D. Sequence

## **Appendix F**

### **READING AND WRITING ASSESSMENT TASKS**

Name: \_\_\_\_\_

Date: \_\_\_\_\_

### **Reading and Writing Assessment**

1. Write a single sentence that summarizes the main idea and key details of the passage.

**Summary:**

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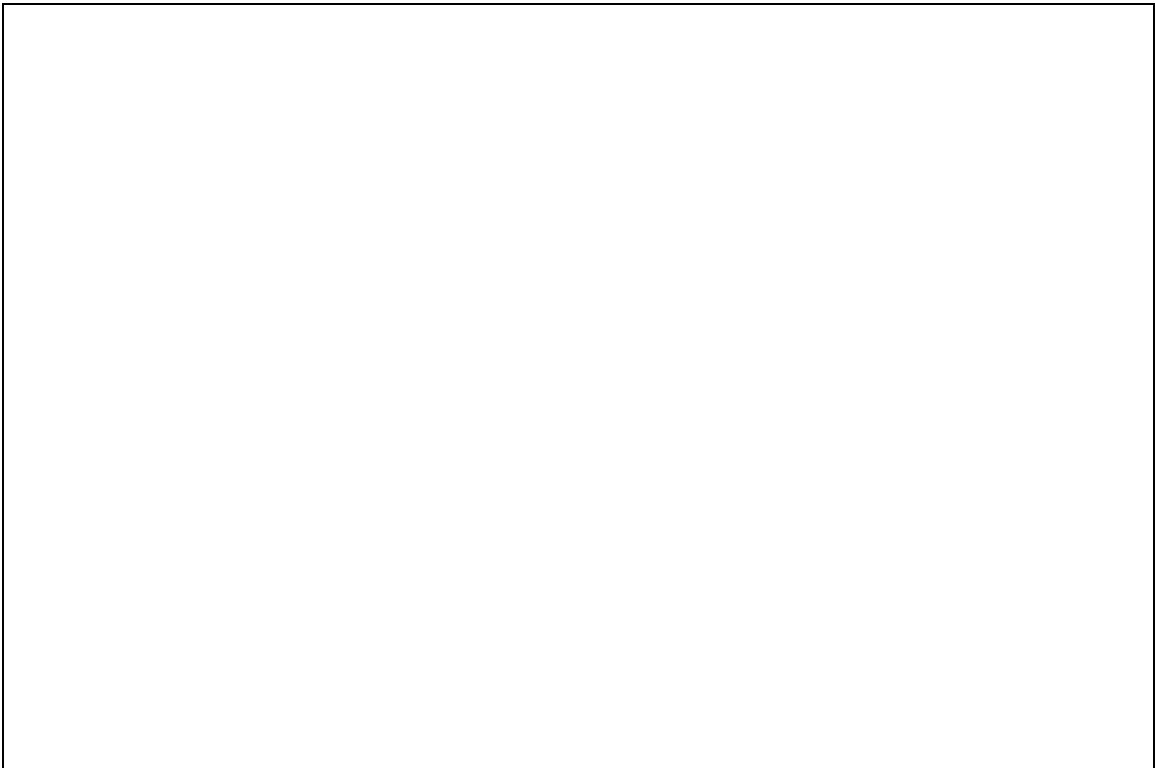
2. Circle the text structure below that you think the author used to organize the passage.

**Text Structure:**

Cause/Effect    Compare/Contrast    Description    Problem/Solution    Sequence

3. Create a graphic organizer representing the text structure you selected above. Organize main ideas and key details in the passage using the graphic organizer you created.

**Graphic Organizer:**



4. Write an informative paragraph that explains the topic of the passage. Be sure to:

- Introduce the topic clearly,
- Develop the topic with ideas and details related to the topic,
- Link ideas using signal words and phrases,
- Use precise vocabulary to explain the topic, and
- Provide a concluding statement related to the topic.

**Plan:**

**Informative Paragraph:**

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## **Appendix G**

### **FIDELITY OF IMPLEMENTATION CHECKLISTS**

**Read STOP Write**  
**Fidelity of Implementation Checklist**

**Teacher:** \_\_\_\_\_ **Lesson:** \_\_\_\_\_ **Number:** \_\_\_\_\_

**Time Start:** \_\_\_\_\_ **Time End:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Component	Steps	Notes	Start	End	Score
Introduction	Direct Explanation				
<b>Read</b>	Reading Highlighting Underlining				
<b>Summarize</b>	Main Idea/Details Summary				
<b>Text structure</b>	Text Structure Guide				
<b>Organize</b>	Text Structure Map Guiding Questions				
<b>Plan</b>	Topic, Ideas, Details, Ending				
<b>Write</b>	Writing Signal Words				
Conclusion	Lesson Review				
Explicit Instruction	Modeling? Collaborative? Guided? Independent?				
Materials	Student Guidebook? PowerPoint? Poster?				
<b>Total Score</b>					/
<i>Note: 2 = completed, 1 = partially completed, 0 = omitted</i>					

**RARE Reading and Writing  
Fidelity of Implementation Checklist**

**Teacher:** \_\_\_\_\_ **Lesson:** \_\_\_\_\_ **Number:** \_\_\_\_\_

**Time Start:** \_\_\_\_\_ **Time End:** \_\_\_\_\_ **Date:** \_\_\_\_\_

Component	Steps	Notes	Start	End	Score
Introduction	Direct Explanation				
<b>Read</b>	Read Aloud? Choral Read? Partner Read? Silent Read?				
<b>Answer</b>	QAR Strategy				
<b>Review</b>	Questions/Answers				
<b>Reread</b>	Highlighting				
<b>Restate</b>	Main Idea Details				
<b>Explain</b>	Summary				
Conclusion	Lesson Review				
Explicit Instruction	Modeling? Collaborative? Guided? Independent?				
Materials	Student Guidebook? PowerPoint? Poster?				
<b>Total Score</b>					/
<i>Note: 2 = completed, 1 = partially completed, 0 = omitted</i>					

**Appendix H**  
**TEACHER INTERVIEW PROTOCOLS**

**Read STOP Write  
Teacher Interview Protocol**

1. Please tell me about your background. What degrees have you earned? How many years have you been teaching? For how long have you taught this grade?
2. How well do you feel the Read STOP Write lessons fit into your regular schedule?
3. How well do you think the lessons supplemented your literacy instruction?
4. Do you feel that the lessons taught important skills? Please explain.
5. Do you think the lessons were fair and appropriate for your students?
6. Were the lessons suitable for your classroom culture? Please explain.
7. How well do you feel that you were able to implement the lessons?
8. Do you think the lessons will have lasting positive effects?
9. Would you use the Read STOP Write procedures again with your students?
10. Would you recommend the Read STOP Write lessons to other teachers? Why?
11. What are some things you liked about the Read STOP Write program? Why?
12. Was there anything you did not like about the Read STOP Write program? Why?
13. How well would you rate the effectiveness of the Read STOP Write lessons and why? You might say not effective, somewhat effective, or very effective.

**RARE Reading & Writing  
Teacher Interview Protocol**

1. Please tell me about your background. What degrees have you earned? How many years have you been teaching? For how long have you taught this grade?
2. How well do you feel the RARE Reading & Writing lessons fit into your regular schedule?
3. How well do you think the lessons supplemented your literacy instruction?
4. Do you feel that the lessons taught important skills? Please explain.
5. Do you think the lessons were fair and appropriate for your students?
6. Were the lessons suitable for your classroom culture? Please explain.
7. How well do you feel that you were able to implement the lessons?
8. Do you think the lessons will have lasting positive effects?
9. Would you use the RARE Reading & Writing procedures again with your students?
10. Would you recommend the RARE Reading & Writing lessons to other teachers? Why?
11. What are some things you liked about the RARE Reading & Writing program? Why?
12. Was there anything you did not like about the RARE Reading & Writing program? Why?
13. How well would you rate the effectiveness of the RARE Reading & Writing lessons and why? You might say not effective, somewhat effective, or very effective.

**Appendix I**  
**IRB APPROVAL**



RESEARCH OFFICE

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DATE: June 13, 2018

TO: John Strong  
FROM: University of Delaware IRB

STUDY TITLE: [1255392-1] Expository Reading and Writing Intervention Study

SUBMISSION TYPE: New Project

ACTION: DETERMINATION OF EXEMPT STATUS  
DECISION DATE: June 13, 2018

REVIEW CATEGORY: Exemption category # (1)

Thank you for your submission of New Project materials for this research study. The University of Delaware IRB has determined this project is EXEMPT FROM IRB REVIEW according to federal regulations.

We will put a copy of this correspondence on file in our office. Please remember to notify us if you make any substantial changes to the project.

If you have any questions, please contact Nicole Farnese-McFarlane at (302) 831-1119 or [nicolefm@udel.edu](mailto:nicolefm@udel.edu). Please include your study title and reference number in all correspondence with this office.