THE USE OF EXPLICIT COMPREHENSION STRATEGIES DURING ORAL INSTRUCTION OF INFORMATIONAL TEXT STRUCTURES AND THE EFFECT ON FIRST-GRADE RS’ LISTENING COMPREHENSION

by

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ABSTRACT

The Use of Explicit, Comprehension Strategies During Oral Instruction of
Informational Text Structures and the Effect on First-Graders’
Listening Comprehension

by

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The current study evaluated the effect of explicit informational text structure
instruction on first grade students’ listening comprehension outcomes. The read-aloud
instruction targeted the compare-contrast text structures (compare, contrast, and compare-
contrast) found in first grade science trade books and included high-quality
comprehension practices. Students who received oral explicit text structure (OETS)
instruction showed statistically significant improvements in their discrimination of the
compare-contrast text structures compared to students who received content-only
instruction (COI) or no treatment condition (NTC). Classroom observation data revealed
that teachers who were most consistent in their implementation of high-quality
comprehension instruction practices during the reading aloud of science content,
produced the highest mean percentages of gain in students’ listening comprehension of
science content, regardless of whether the teachers of those classrooms engaged in the
explicit text structure instruction routine targeting comprehension of compare-contrast text structures. The results demonstrated that while the instruction of the compare-contrast text structures was not necessary to produce listening comprehension of science content, the OETS instruction added value to the use of comprehension instruction practices in the listening comprehension of science content for students assigned to the OETS group. The results of the study are discussed in terms of the available research on instruction of informational text structures in the early grades. Recommendations for future research are provided.
PUBLIC ABSTRACT

The Use of Explicit, Comprehension Strategies During Oral Instruction of Informational Text Structures and the Effect on First-Graders’ Listening Comprehension

Noelle E. Converse

This study evaluated the effect of an explicit comprehension read-aloud routine of science content on first grade students’ listening comprehension. The read-aloud routine taught the structures common in the informational text (compare, contrast, and compare-contrast) and found in first grade science big books with the goal of improving understanding of the science content. Students who received the intervention showed improvements in their ability to understand the compare-contrast text structures compared to students who were taught the same content without the routine or students who were taught typical science read-aloud content without the routine. Observations revealed that teachers who were most consistent in implementing high quality comprehension strategies during the read aloud had students who made the best gains in listening comprehension of the content, regardless of whether the teachers used explicit text the compare-contrast text structure routine. The results demonstrated that even though the instruction of the compare-contrast text structures was not necessary to produce listening comprehension of science content, the compare-contrast instruction added value to the high quality comprehension instruction for students assigned to the intervention group. The results of the study are discussed in terms of the available
research on instruction of informational text structures in the early grades.

Recommendations for future research are provided.
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CHAPTER I
INTRODUCTION

In recent years, national leaders in business and education have articulated a literacy skill set for students to assist them in transitioning from education into the 21st century workplace (National Council on Teacher Education [NCTE], 2013; Partnership for 21st Century Skills, 2015; Springer, Wilson, & Dole, 2014). The recommended and proposed set of literacy skills has broadened the definition to include both literacy within traditional content areas such as English language arts, mathematics, social sciences, and science, as well as literacy within specialized content areas including finance, business, environmental studies, information, and technology (NCTE, 2013; Partnership for 21st Century Skills, 2015; Springer et al., 2014). Additionally, recommendations for the 21st century literacy skill set call for higher depths of knowledge and comprehension across technical content areas, such that students apply “creativity, critical thinking, communication and collaboration” within “increasingly complex life and work environments” (Partnership for 21st Century Skills, 2015, p. 1).

While the goals for student literacy outcomes have expanded in breadth and depth, current assessment data on student literacy reveals that more than 56% of eighth-grade students score below proficient in reading and less than 50% of twelfth-grade students meet the reading benchmark for college and career readiness (National Assessment of Education Progress [NAEP], 2015). The lag in proficiency on literacy outcomes play out similarly in the data reporting the percentages of students who take remedial or developmental coursework in their first year of college. In fact, the National
Center for Educational Statistics (NCES) reports that approximately 50% of students enrolling in two-year colleges, and 20% of students enrolling in four-year colleges require remediation courses to increase literacy and math skills in order to meet course expectations (Sparks & Malkus, 2013).

While a strong emphasis has been placed on improving literacy outcomes to prepare students for 21st Century college and careers, low achievement scores are not limited to secondary students alone. In fact, researchers report that nearly nine million students in grades fourth through twelfth struggle with the basic literacy demands in school (National Institute of Child Health and Human Development [NICHD], 2013). This national trend is supported by consistently low scores on fourth-grade reading outcomes on the NAEP, compared to international reading assessments administered to 4th-, 8th-, and 10th-grade students annually (NAEP, 2015). In 1990, Chall, Jacobs, and Baldwin first noted that American fourth grade students begin to lose ground in reading when compared to their third-grade scores and when compared to the fourth graders from other countries. Chall et al. referred to this trend as “the fourth grade reading slump.” Since Chall et al.’s study, various researchers have attributed the lower fourth-grade reading achievement scores to students being ill prepared for the increase in complex reading comprehension tasks beginning in the third and fourth grades, such as those that students encounter in informational text across content areas (Pearson & Duke, 2002; Shanahan, 2010; Shanahan et al., 2010).

Concern over the low reading achievement scores across elementary and secondary grades and the negative consequences that poor literacy outcomes have
produced for students transitioning into postsecondary education has prompted researchers to investigate reading instruction, and more specifically, reading comprehension instruction that students receive. Over the past thirty years, there have been multiple commissioned reports to identify what teachers need to know in order to provide effective reading comprehension instruction (Duke & Pearson, 2002; Durkin, 1979; National Reading Panel [NRP], 2000; RAND, 2002; Shanahan et al., 2010; Snow, Burns, & Griffin, 1998).

Around the turn of the century, two expert panels convened to address reading issues facing the nation. First, the U.S. Department of Education assembled the NRP in response to a request by Congress to “evaluate existing research evidence to determine preferred ways of teaching children to read” (NICHD, 2013, para 1). The NRP (2000) assessed the extant evidence on reading instruction, and as one component of the report, recommended that eight explicit, scientifically based comprehension instructional strategies be implemented in K-12 classrooms. These eight comprehension strategies included: (1) comprehension monitoring, (2) the use of graphic organizers, (3) the teaching of story structure, (4) cooperative learning, (5) question answering, (6) question generating, (7) summarization and (8) the teaching of multiple strategies (NRP, 2000).

At about the same time the NRP was preparing to publish the report on reading instruction practices, the Department of Education's Office of Educational Research and Improvement (OERI) charged the RAND Reading Study Group (RRSG) with developing a research agenda to address the most critical issues in the field of literacy (RAND, 2002). Consequently, the RRSG determined that the research agenda should focus
primarily on reading comprehension instruction in order to most adequately address the nation’s educational issues. Based on the existing “well-articulated knowledge base” within the body of literature on reading, the RRSG called for research that targeted the identification of effective instructional practices to teach reading comprehension (RAND, 2002). The RRSG made seven recommendations that extended the findings of the NRP, three of which are particularly significant to the current study’s focus: (1) explicit instruction should be used to teach students how to use comprehension strategies, (2) the teaching of comprehension strategies should be embedded within the context of the content areas such as science and social studies, and (3) the use of a variety of text genres such as informational text should be used during comprehension instruction (RAND, 2002). Notably, both the RRSG and the NRP specifically recommended that research on the instruction of comprehension strategies using informational text would be especially useful to determine if “successful instruction generalizes across different text genres (e.g., narrative and expository) and across texts from different subject content areas” (NRP, 2000, sect. 4, p. 52).

Rather than limiting their various recommendations to specific grade levels, both the RRSG and the NRP designed recommendations that would be applicable to reading comprehension instruction across all grade levels. However, despite the NRP recommendation that the comprehension strategies be implemented in kindergarten through twelfth grade, the panel reported that 75% of the reading comprehension studies in the sample reviewed were conducted in grades third through sixth. The panel further acknowledged that reading comprehension research in kindergarten through second grade
is limited to only testing the merits of experimental curricula, noting that researchers
generally rely on student proficiency in basic reading skills before teaching reading
strategies (NRP, 2000). In other words, the panel suggested that traditionally, literacy
researchers emphasized the examination of acquiring basic reading skills in the early
grades while focusing little on the acquisition of comprehension skills. Thus, there is a
paucity of research examining reading comprehension instruction and comprehension
strategy instruction in the early grades.

Since the NRP (2000) report, a few researchers have evaluated the comprehension
skills of early grade students, such as preschool age children and students in grades K-2
using oral language and listening comprehension measures (Culatta, Hall-Kenyon, &
Black; 2010; Diakadoy, 2014; Hall, Sabey, & McClellan, 2005; Kendeou, Lynch, van de
Broek, 2005; Kraemer, McCabe, & Sinatra, 2012). As a result, several researchers assert
that with appropriate instruction, scaffolding, and assessment, young children can engage
meaningfully in and benefit from comprehension instruction (Culatta et al., 2010; Hall et
al., 2005; Kendeou & van den Broek, 2007; van den Broek, Rapp, & Kendeou, 2005).
Citing several preliminary findings with young learners, van de Broek et al. articulated a
model that supports the parallel development of comprehension and basic reading skills
as an alternative to the traditional view that basic reading development precedes
comprehension development (van den Broek et al., 2005). Furthermore, these researchers
proposed that early comprehension skills, as measured through oral language and
listening comprehension, may demonstrate a unique contribution to future reading
comprehension instruction for young learners (Hogan, Bridges, Justice, & Cain, 2011;
Kendeou et al., 2005; Kendeou, van den Broek, & White, & Lynch, 2009; Zucker, Justice, Piasta, & Kaderavek, 2010). As a result, literacy researchers have doubled their efforts to understand the practices and strategies that improve comprehension instruction, and more specifically, comprehension instruction of informational text in the early grades (Shanahan et al., 2010).

In 2010, Shanahan et al. produced the Institute of Education Sciences (IES) Practice Guide for students in grades K-3. The practice guide provided recommendations for building foundational knowledge and skills to include instruction in phonemic awareness, decoding, sight word vocabulary, and fluency practice. Additionally, the guide provided targeted recommendations for building reading comprehension by developing and strengthening vocabulary knowledge, oral language skills, *text structure knowledge*, thinking and reasoning skills, and motivation to comprehend text. Specifically, Shanahan et al. (2010) recommended that grade K-3 teachers should: (1) provide *explicit instruction on how to use comprehension strategies*, (2) teach students to *understand the organization of text*, (3) use discussion to enhance comprehension, (4) choose texts that enhance comprehension development, and (5) teach strategies in a context that enhances student engagement and motivation. The practice guide also highlighted the need for increased access to and comprehension of a broader range of texts including informational text. Shanahan (2010) further explained, “It’s important that in the primary grades, we raise comprehension abilities to a level that allows these children to fully participate academically in their school life from third grade on.” Shanahan, Fisher, and Frey (2012) acknowledged that the complexities unique to
informational text present particular challenges for young readers including complex sentence structure, text coherence, text organization, and requirements for background knowledge. To address the issue of text complexity, Shanahan et al. (2010) suggested that literacy instruction incorporate practices focused on building skills such as understanding the text structure in a text and fostering persistence to work through the comprehension of complex texts.

Both the IES Practice Guide: Improving Reading Comprehension in Kindergarten through Third Grade (Shanahan et al., 2010) and the Common Core State Standards (CCSS) for early elementary grades emphasize access to and comprehension of complex informational text starting in kindergarten (National Governors Association Center for Best Practices and Council of Chief State School Officers [NGA & CCSSO], 2010). Similarly, the NAEP reading assessment has shifted its focus to place equal priority on both informational text and narrative text comprehension at grades fourth and eighth (Synder & Dillow, 2015). Thus, emphasis on reading comprehension of informational text in the early grades requires that researchers and practitioners determine the most effective, efficient, and engaging ways to increase students’ ability to comprehend informational text in the earliest primary grades.

Despite the current emphasis to improve reading comprehension of informational text in the early grades, researchers have found that early grade teachers have limited experience delivering effective and engaging informational text instruction (Duke, Pearson, Strachan, & Billman, 2011; Hall et al., 2005; Kucan, Hapgood, & Paliscar, 2011; Marinak & Gambrell, 2008, Moss, 2004; Reutzel, Jones, Clark, & Kumar, 2016).
Hall et al. noted several areas in which teachers demonstrate a lack of understanding on how to teach informational text to young children. For example, teachers typically do not understand how to “alter expository texts for young children,” how to “support children’s comprehension through oral and visual means,” and how to “teach children to productively work with the specific text structures” (p. 214). Similarly, Reutzel et al. suggested that teachers need ample support and training to build their knowledge of the text structures found in informational text in order to teach them effectively to young students. To meet the objectives of increasing exposure to and understanding of informational text in the earliest primary grades, teachers need to become proficient in the most effective ways to teach text structures to young learners so as to increase overall reading comprehension (Duke et al., 2011; Shanahan et al., 2010).

**Early Reading Comprehension Instruction**

A handful of researchers investigated several pedagogical approaches that assist young children from preschool age to second grade in building strong comprehension of informational text. These pedagogical approaches include the following: (a) using explicit instruction of comprehension strategies and informational text structures, (b) using dialogic comprehension strategies such as informal teacher-to-student and student-to-student discussion to determine the meaning of text, (c) using scaffolding strategies such as reading aloud, shared reading, and pedagogically appropriate instruction for young students such as hand signals, and auditory and visual aids, and (d) using a broader range of assessment measures, such as listening comprehension (Culatta et al., 2010;
Researchers who studied models used to teach explicit comprehension strategy instruction to develop comprehension of informational text highlight the importance of following an explicit instructional routine. This routine includes the teacher providing direct explanation of key definitions and concepts, ample modeling of new vocabulary, key words and use of comprehension strategies, breaking down of the complex tasks in the routines, and multiple practice opportunities with ongoing feedback (Hall et al., 2005; Reutzel et al., 2009). Findings from the second-grade studies incorporating explicit comprehension strategy instruction provide strong evidence that young students benefit from a direct, systematic approach to teaching comprehension of informational text corroborating the practices previously recommended by expert panels (NRP, 2000; RAND, 2002).

In contrast to explicit comprehension strategy instruction, other researchers investigated using dialogic comprehension strategies as a means to integrate informational content knowledge, create shared understanding of the content, and build motivation to engage with informational text (Palinscar & Duke, 2004; Pappas et al., 2003; Smolkin & Dononvan, 2001 Varelas & Pappas, 2006). These researchers used interactive read-alouds, reciprocal questioning and summarizing discussion activities and/or informal discussion to foster comprehension of informational text in early grade classrooms (Palinscar, 2003; Pappas et al., 2003; Smolkin & Dononvan, 2001 Varelas &
Pappas, 2006). According to some of these researchers, interactive, read aloud during which the teacher reads the text and the teacher and students engage in questioning, summarizing and authentic discussion about the text throughout the read aloud strategy produces a “hybrid” discourse or “dialogue” that represents a shared comprehension of the text (Palinscar & Duke, 2004; Smolkin & Dononvan, 2001; Valeras & Pappas, 2006). Researchers suggest that the iterative, dynamic approach to building meaning from informational text in the early classroom, gives students from diverse backgrounds, as well as emerging readers who struggle with complex content, a stimulating and engaging opportunity to build comprehension of informational text (Valeras & Pappas, 2006).

Additionally, other researchers examined using scaffolding strategies to teach the comprehension of informational text to students in preschool through second grade (Block, Parris & Whiteley, 2008; Culatta et al., 2010; Diakadoy, 2014; Hall et al., 2005; Kendeou et al., 2005; Kraemer et al., 2012; Moss, 2005; Pappas et al., 2003). The scaffolding strategies include oral instruction (reading aloud and/or shared reading of informational text), pedagogically appropriate supports (use of hand signals or nonverbal signals to communicate important ideas and concepts), visual and auditory media (pictures, videos and recordings), and a broader use of assessment measures to include listening comprehension assessment (Block et al., 2008; Culatta et al., 2010; Diakadoy, 2014; Hall et al., 2005; Kraemer et al., 2012; Pappas et al., 2003). These strategies serve as a substitute for or supplement of commonly used written tools and assessments for young learners who must rely on oral, aural and visual means to comprehend text and demonstrate text comprehension. Some researchers assert that providing oral reading
opportunities, incorporating oral questioning and summarizing, and thinking aloud about the meaning of the text provides early elementary teachers with the opportunity to scaffold the comprehension of text regardless of a student’s reading skill (Culatta et al. 2010; Moss, 2005; Pappas et al., 2003; Smokin & Donovan, 2001).

Finally, in a small collection of studies, researchers report on the effectiveness of instruction that focuses on the text structures commonly found in informational text in early grade classrooms (Hall et al., 2005; Williams, Hall, & Lauer, 2004; Williams et al., 2005, 2007, 2009, 2013. Researchers agree that effective informational text structure strategy instruction clearly defines and describes the text structure, identifies associated key words within the text to signal the corresponding text structure, and provides other tools that graphically represent the text structure (Marinak & Gambrell, 2008; Meyer & Ray, 2011; Pearson & Duke, 2002). Researchers contend that text structure strategy instruction makes complex informational text more comprehensible to students by providing learners with strategies to decipher the organizational logic of the text (Marinak & Gambrell, 2008; Meyer & Ray, 2011).

In the early elementary grades, researchers typically focus on investigating the effects of teaching one or two text structures on students’ reading comprehension (Hall et al., 2005; Reutzel et al., 2005; Williams et al., 2005). Although the body of empirical research on informational text structure instruction in the early grades is limited to studies in second grade classrooms (Williams et al., 2004, 2005, 2007, 2009, 2013, the promising outcomes from this body of research suggest that text structure instruction may effectively contribute to building comprehension for early grade readers (Shanahan et al.,
In general, researchers report positive effects of using explicit text structure instruction on students’ comprehension regardless of whether structures were taught individually, or as part of a collection of comprehension strategies. Moreover, when text structures, such as compare-contrast, are taught to early elementary grade students, the students demonstrated transfer of using these text structure strategies to novel and authentic informational texts (Williams et al., 2009). These promising results provide a rationale to further investigate the use of text structure instruction with students in grades earlier than second grade.

**Purpose and Research Questions**

A small, yet convincing body of empirical evidence supports the efficacy of explicitly teaching text structures to strengthen reading comprehension of informational text using oral instruction as a supplement to written instruction to help students comprehend and understand informational text (Hall et al., 2005; Meyer, Brandt, & Bluth, 1980; Reutzel et al., 2005; Williams et al., 2005). However, very few researchers have examined the use of oral instruction to teach the text structures in informational text and the impact on students’ listening comprehension with students before second grade (see Culatta et al., 2010). Importantly, no experimental studies were located in which researchers evaluated the impact of using an explicit, oral instructional routine to teach the text structures of informational text to support and strengthen the listening comprehension of first graders (Hall et al., 2005; Reutzel et al., 2005; Williams et al., 2005, 2007, 2009, 2013). Researchers that solely measured the listening comprehension
of informational text of first graders focused only on “familiarization” with or “preference” for expository texts rather than the explicit oral instruction of informational text structures (Diakadoy, 2014; Kraemer et al., 2010). The preliminary empirical results of the small body of evidence examining informational text structure instruction in the early grades, combined with the growing emphasis on identifying strategies for strengthening the comprehension of informational text in grades earlier than second grade, warrant further study.

The purpose of the current study was to evaluate the effect of comprehension strategy instruction that focuses on explicitly teaching the text structures found in informational text through a scaffolded read aloud routine on first grade students’ listening comprehension outcomes. This study extends the current body of early literacy research to first grade where there is a lack of empirical research examining the effects of text structure instruction on students’ comprehension outcomes using listening comprehension measures (Culatta et al., 2010; Hall et al., 2005; Kraemer et al., 2012; Reutzel et al., 2005; Smolkin & Donovan, 2001; Williams et al., 2005, 2009). This study addressed the following research questions.

1. How does the explicit instruction of the compare-contrast text structure implemented in conjunction with scaffolds (i.e., read aloud, think aloud, hand signals) and high-quality comprehension instruction practices effect first grade students’:

   a. listening comprehension of science content presented in informational texts when compared with first grade students who receive content-only instruction or traditional first grade comprehension instruction?

   b. discrimination of compare-contrast text structures within familiar and novel science content when compared with first grade students who receive content-only instruction or traditional first grade comprehension
2. To what extent did teacher participants in each of the three conditions implement high quality comprehension instruction practices (e.g., explicit instruction of strategies, questioning, summarizing, etc.)?

See Table 1 for a description of the three study conditions.

Table 1

*Comparison of Instructional Components across Study Conditions*

<table>
<thead>
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<th>Condition</th>
<th>Key components of instruction</th>
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<td>Oral text structure instruction (OETS)</td>
<td>Eight-week OETS instructional treatment; 30-40 minute sessions, 3 sessions weekly; explicit instruction of informational text structures used in conjunction with scaffolds (i.e. hand gestures, signals, discussion, read aloud, and think aloud) and comprehension strategies (questioning and summarizing); scripted routines, big books and student readers provided to teachers with initial training, on-going coaching as needed during the 8-week period; content drawn from 1st grade Utah core curriculum, Standard 4, Life Science; teachers also will use teaching materials provided to them for regular science instruction.</td>
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<tr>
<td>Content only instruction (COI)</td>
<td>Eight-week COI instructional condition; 30-40 minute sessions, 3 sessions weekly; big books and student readers provided to teachers; instruction designed by teachers of the classrooms in this condition without specialized training or coaching; content drawn from 1st grade Utah core curriculum Standard 4, Life Science; teachers also will use teaching materials provided to them for regular science instruction.</td>
</tr>
<tr>
<td>Traditional instruction-no treatment condition (NTC)</td>
<td>Eight-week NTC instructional condition; 30-40 minute sessions, 3 sessions weekly; teaching materials provided by the district for regular science instruction; instruction designed by teachers of the classrooms in this condition without specialized training or coaching; content drawn from 1st grade Utah core curriculum Standard 4, Life Science.</td>
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</table>
CHAPTER II
LITERATURE REVIEW

The purpose of this review of the literature was three-fold.

1. To explicate the schools of theory contributing to the design and framework of the current study, including a review of a cognitive reading model and a brief discussion of social-constructivist viewpoints that are pertinent to this study.

2. To detail the extant research on studies examining the impact of comprehension strategy instruction on early grade students’ listening comprehension of informational text.

3. To present the research findings to support the key elements of the current instructional model and how they relate to the purposes of the current study. These elements include: explicit instruction, teacher think aloud, text structure and key word instruction, comprehension strategy instruction, the use of pedagogically appropriate supports such as hand signals and visual and auditory media, and listening comprehension ability as the measurable outcome.

Theoretical Framework

In the first section of the literature review, I discuss the schools of theory contributing to the design and framework of the study. I begin with a review of a cognitive reading model and a brief discussion of social-constructivist viewpoints that are pertinent to this study. Two main theories contributed to the theoretical framework for the current study. The first theory, labeled the Landscape theory by van den Broek et al. (2005) serves as the underpinning for examining the effects of comprehension strategy instruction on text comprehension. This theory addresses the cognitive functions responsible for processing text, building comprehension, and reconciling meaning making within the context of existing knowledge. The model presented by Van den
Broek et al. provides a strong foundation for this study’s emphasis on investigating the role of teaching comprehension strategy use in the earliest grades.

The second theoretical viewpoint originates from Vygotsky’s social learning theory (Vygotsky, 1978, 1986). Social learning theory and the zone of proximal development anchor the use of oral teaching, collaboration and discussion, and a gradual release of responsibility for learning during explicit literacy instruction. The application of the cognitive reading comprehension theories and social learning theories, informs the research questions in the current study.

**Cognitive Theory of Text Comprehension**

The Landscape theory depicts dual processes called *autonomous* and *constructionist* processes that interact iteratively and recursively during text comprehension. This theory (van den Broek et al., 2005; van den Broek, Risden, Fletcher, & Thurlow, 1996) suggests that during text comprehension, an independent memory-based process activates information quickly and easily, as long as the strength of concepts, the associations between those concepts, and the reader’s goals and motivation, are ample to meet the criteria to create mental representations. However, when the criteria for autonomous processing are inadequate, “more effortful, strategic processes will ensue in an attempt to attain the standards,” (van den Broek et al., 2005). A visual interpretation of the Landscape theory by Bernadeu (2013) presents the two types of cognitive processes-autonomous and constructivist- at play during comprehension in a series of stages. The visual model (see Figure 1) shows that initially memory-based processes activate during encounters with text, tapping and re-activating existing mental
representations to derive meaning as depicted in stages one through three. Stage four in the model represents the notion that more laborious constructivist processes take over to construct meaning when autonomous memory processes fall short in meeting a learner’s “standard of coherence” to build new understanding of the text. In other words, when a reader lacks a sufficient or accurate mental representation of the concept being presented in a text, constructivist processes aimed at making meaning of the concept take the place of the autonomous processes to derive correct meaning. Furthermore, when an inaccurate or misconceived mental representation co-activates with an accurate “refutation” of the misconception, the opportunity for new, deeper comprehension presents itself (van den Broek & Kendeou, 2008). When laid out, this series of processes creates a “landscape” of basic and higher order cognition (van den Broek et al., 1996). The theory provides a strong rationale for the current study’s aim at increasing very young students’ banks of
knowledge through the explicit instruction of informational text structures and key words because it explicates the topography of cognitive processes at work during the deepening of understanding of the comprehension strategy use and the text content.

Several research teams have evaluated the tenets of the Landscape model to test the relationship between autonomous and constructionist processes during text comprehension (Kendeou & van den Broek, 2007; Linderholm & van den Broek, 2002; van den Broek et al., 1996; van den Broek, Young, Tzeng, & Linderholm, 1999). Linderholm and van der Broek examined the effects of “entertainment” and “studying” reading purposes on recall of text across groups of readers with low and high working memory capacity (WMC). Results suggested that readers with low and high WMC demonstrated similar patterns of cognitive processing and recall during the reading of entertaining texts. However, low WMC readers demonstrated more restatements of the text, used less metacognitive strategies, and had lower recall scores than high WMC readers (Linderholm & van den Broek, 2002). These findings provide evidence for the principle within the Landscape model that suggests that cognitive processing fluctuates between autonomous and constructionist processes based on a learner’s need to balance the higher and lower demands of comprehension, or one’s “standard of coherence” (van den Broek et al., 2005).

The Landscape theory provides a central contribution to frame the current study, in that it highlights the role of the autonomous memory-based processes that occur when information is comprehensible to the learner during comprehension, in addition to the constructionist processes at play when new understanding is being built. The theory
proposed by van den Broek et al. (2005) addresses the interplay between the less and more demanding cognitive process that take place during comprehension. Assuming that very young learners have fewer opportunities to rely on activations or re-activations of autonomous processes that experienced learners when attempting to comprehend difficult text, the Landscape theory provides an important viewpoint to consider in the investigation of first grade, emerging readers’ listening comprehension of complex informational text. Based on the Landscape theory, the current study’s explicit instruction model in conjunction with the use of think aloud, discussion strategies may serve to bolster comprehension of complex science content for first grade students. As these emerging readers develop understanding of and identify text structures common within informational science texts, students can activate their understanding of the text structure and associated features quickly and easily, shifting the high demand cognitive process of deciphering structure to a low demand cognitive process. In turn, the young learners can strike the suggested balance within the Landscape model between low cognitive demands dedicated to comprehension of text structure and high cognitive demands dedicated to comprehension of content.

The Landscape reading model provides a comprehensive, cognitive perspective to describe the meaning making process during oral instruction of informational text with first grade students. Adopting a viewpoint such as the Landscape theory establishes the cognitive foundation of the current study of comprehension instruction to address the balance that emerging readers must attain between autonomous cognitive processes and constructivist cognitive processes during challenging literacy tasks to achieve the level of
Social Learning Theory and Text Comprehension

Social learning theory provides a complementary viewpoint to that of the Landscape cognitive reading theory discussed in the previous paragraphs. This theory, as defined by Vygotsky (1978), places emphasis on language as the primary, socially shared tool through which learning takes place. Social learning theory asserts that language is a social tool and influences the psychological and behavioral processes central to human communication, comprehension, and the production of knowledge (Vygotsky, 1978). Vygotsky’s conceptually defines the zone of proximal development (ZPD) as, “the distance between the actual developmental level [of a child] as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (p. 86.) In other words, teacher and peer social interactions provide a scaffold toward independent comprehension whenever a student’s actual level of understanding requires the support. The concept of the ZPD provides a complementary foundation for several evidence-based practices incorporated into the current study’s instructional program which include oral instruction, collaborative learning structures, questioning strategies, discussion and pedagogical aids (Guthrie et al. 2007; Shanahan et al., 2010).

Building upon Vygostsky’s social learning theory and the ZPD, Wells (1999) expounded upon the various forms of language as social tools. Among the various forms of language, Wells highlighted spoken language during “dialogue” as the “most
ubiquitous and versatile” tool to derive meaning (Wells, 1999). Thus, the current study’s focus on an oral delivery of reading and assessment, and the use of discussion during the explicit comprehension strategy instruction is part of the ZPD needed to scaffold and support learning for the child.

Wells (1999) explained:

In contributing to a knowledge building dialogue...a speaker is simultaneously adding to the structure of meaning created jointly with others and advancing his or her own understanding through the constructive and creative effort involved in saying and in responding to what was said. And, since a similar constructive effort is required to listen responsively and critically to the contributions of others, that too provides an opportunity to advance understanding. (p. 18)

Wells emphasized the ways in which learners contribute to the shared construction of knowledge through both speaking and listening during discussion, both interpersonally, during the social interaction, and intrapersonally during reflection and formulation of one’s responses during the interaction. Wells’ (1999) definition of “discussion” as a shared meaning making strategy highlights the socially mediated practices that provide the scaffolding of instruction necessary to build comprehension in very young learners.

He suggested that class discussion can be defined as speech that

…allows all participants to enter the dialogue at the level of which they are capable [and] enables the teacher or tutor to offer immediate support and assistance that is tailored to the needs of the individual student. (p. 115)

Wells (1999) argued that group discussion builds comprehension for both the individual student and the group.

Wells (1999) further demonstrated the particular importance of group discussion during instruction in regards to “the power genres” of text, such as informational text. He suggested that the typical, written format of texts, through which “concepts are
systematically related to each other through definition or explanation” (Wells, 1999, p. 144), often proves inaccessible to those “uninitiated” groups who are not familiar with the genres. In these circumstances, Wells argued that “students need to be given every assistance in appropriating [genres of power] so that they can participate fully in the activities in which they are used” (p. 145). Scaffolding that includes collaborative oral instructional strategies such as discussion address these social needs.

In the context of the current study, theories of social learning (Vygotsky, 1978; Wells, 1999) demonstrate the social and dialogic value of making complex text accessible through the use of oral interactions to build knowledge and comprehension of informational text in very young learners. This focus on increasing access to and support of a complex genre of text provides a powerful social element to enrich the primary purposes of the study, especially given evidence that very young learners demonstrate motivation to engage with such text (Mohr, 2006).

**Summary of Theories**

The theories reviewed in this section including van den Broek’s Landscape theory (van den Broek et al., 2005) and social learning theories (Vygotsky, 1978; Wells, 1999) provide a comprehensive and balanced framework to inform the current study. Adoption of these theories provides a strong foundation to examine an explicit instructional model to teach informational text structures to first grade students that is scaffolded through teacher read aloud and think aloud, as well as discussion activities and pedagogical aids. The theories presented attend to the construction of meaning as the main purpose of accessing the text, the integration of newly learned information within existing
knowledge as necessary to cement understanding of the text, and the reliance of autonomous cognitive processes to allow young, emerging readers to make cognitive room to begin to unpack the complex science content information. Additionally, the social learning theory bolsters the theoretical framework by providing a foundation for the use of socially mediated strategies such as teacher read aloud and think aloud, peer practice activities and discussion as a scaffold for very young, emerging readers to build listening comprehension of complex science text.

**Locating the Studies**

To begin the literature review, a comprehensive review of the extant research literature on comprehension strategy instruction of informational text for early grade students included a search of the following electronic databases: Academic Premier, CQ Researcher, Digital Dissertations, eBook Collection (EBSCOhost), Education Full Text, Education Source, ERIC, Primary Search, Professional Development Collection, Psychology and Behavioral Sciences Collection, PsychINFO, Teacher Reference Center and Web of Science. The following search descriptors were used: *comprehension strategy instruction, explicit comprehension strategy instruction, comprehension instruction & early grade students, explicit instruction & early grade students, informational text & young students, informational text instruction and early grade students, text structure instruction, text structure instruction & young students, oral instruction of informational text & young students*. Using the same descriptors, the following research journals were searched electronically: *Applied Cognitive Psychology,*

The internet search of “comprehension strategy instruction of informational text with young students” produced approximately 400,000 results, with the majority of these results being federal, state and sponsored curriculum and professional development documents, followed by commercial educational products designed for early grades, with a small proportion of the results relating to research articles on the topic. Articles located initially included studies ranging from 1980-2016. Relevant articles from 1980-1989 are referenced in one section of the review to provide a foundation of the seminal works associated with comprehension strategy instruction of informational text structures. However, these works are not included in the narrowed selection of literature for the review that met all criteria.
Inclusion/Exclusion Criteria

For the purposes of narrowing the search, comprehension strategy instruction of informational text for early grade students was defined as an instructional routine during which the teacher (1) delivers an oral instruction routine to students in second grade or earlier, (2) uses explicit instruction of research-based comprehension strategies such as instruction of informational text structures and key words, questioning, and summarizing, and (3) uses scaffolding strategies to appropriately match the needs of early grade learners. Articles included in the review of literature met the following criteria.

2. Studies in which participants were in second grade or younger.
3. Studies that utilized oral instructional methods to deliver comprehension strategy instruction as defined for the review.
4. Studies that examined the effects of instruction of informational text using listening comprehension as a formal or informal outcome.

Seven studies were located that met all of the inclusion criteria (Culatta et al., 2010; Hall et al., 2005; Reutzel et al., 2005; Smolkin & Donovan, 2001; Valeras & Pappas, 2006; Williams et al., 2005, 2009). An overview of these studies will be provided. See Table 2 for information summarizing key components of each of the studies.

Overview of Studies

Purpose

A very small body of research has specifically examined the teaching of
### Table 2

**Summary of Relevant Studies Reviewed**

<table>
<thead>
<tr>
<th>Researchers</th>
<th>Relevant research questions</th>
<th>Key study elements</th>
<th>Key findings</th>
<th>Limitations/future study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culatta et al. (2010)</td>
<td>1) To evaluate effectiveness of various instructional practices involved in informational unit taught to preschool students 2) To increase teachers’ awareness of how to make explicit instruction of informational content engaging and relevant for preschoolers</td>
<td>Oral delivery of comprehension instruction to preschoolers with scaffolded discussion opportunities using narrative texts, adapted expository texts, and text structure tasks in various grouping arrangements; use of thematic science units; compare-contrast and problem/solution text structure tasks; quantitative data, non-experimental design</td>
<td>Students showed gains in identifying components of compare/contrast texts, retelling problem/solution texts; students applied problem/solution strategies in non-instructional settings; suggested that preschoolers benefit from explicit instruction that is goal oriented and uses informational topics</td>
<td>Use of quantitative measures and pre-post without experimental or quasi-experimental design; results cannot be generalized outside of intact classrooms</td>
</tr>
<tr>
<td>Hall et al. (2005)</td>
<td>1) To investigate the effectiveness of an instructional program designed to teach an expository text comprehension strategy during small-group (guided-reading) instruction.</td>
<td>Compare-contrast text structures; explicit instruction of text structure delivered by teacher; preteach of key words and vocabulary; guided reading with firm-up strategies; graphic organizers; discussion; second-grade participants; informational science text; empirical design; random assignment of 3 groups: treatment, content only, control (typical instruction); oral assessment of comprehension using isolated and embedded researcher-made text</td>
<td>Treatment participants showed statistically significant improvements in comprehension of compare-contrast text structures in isolation and in familiar content over content only and instruction only students; treatment participants showed better knowledge and use of clue words over content only and instruction only students</td>
<td>Researcher suggest that 6-week length of treatment period and difficulty of dealing with unstructured texts may have prevented transfer of text structure comprehension to unstructured text</td>
</tr>
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</tr>
</thead>
</table>
| Reutzel et al.      | 1) Is teaching comprehension strategies-Single Strategy Instruction (SSI), or as a “set” within an interactive routine-Transactional Strategies Instruction (TSI), more or less effective in helping young students use comprehension strategies and comprehend text?  
2) Will teaching young students comprehension strategies using information texts have similar results to studies in which narrative texts have been used?  
3) How do TSI and SSI affect students’ acquisition of content or domain knowledge from reading information texts?                                                                                                                                                                                                                                                                                                                                 | Explicit instruction of comprehension strategies either one at a time or as a group, use of gradual release of responsibility model, think aloud and collaborative discussion activities (SSI does not include text structure instruction; TSI includes text structure instruction); second-grade participants; experimental design with two comparison groups SSI and TSI, and random assignment of students and classrooms to conditions; informational science text; comprehension measures includes: norm-referenced and criterion-referenced reading comprehension, informal oral comprehension | No statistically significant differences detected between implementation of SSI instruction and TSI instruction on standardized reading comprehension measures; statistically significant and small to moderate effect on criterion-referenced reading comprehension assessments favoring TSI; no differences found between SSI and TSI on oral retellings of informational science information for familiar text; differences favoring TSI on oral retellings of unfamiliar informational science text | Study was limited to eight-week period; used comparison group but no true control group; the incorporation of the text structure strategy and goal setting strategy instruction in TSI may have contributed to the differences detected between SSI and TSI preventing conclusiveness a causal relationship between the structure and routine through which the strategies were taught (SSI v. TSI) and the effects |
| Smolkin & Donovan   | To examine the teachers’ use of “discourse moves,” (think-aloud, summarization and discussion strategies) in the light of three major areas of comprehension strategy instruction, including: establishing links between portions of text (sentence and idea connection and text structure), activating prior knowledge, and developing an awareness of authors’ decisions and readers’ metacognitive thinking.                                                                                                                                                                                                                                                                                                                                 | Use of student-to-teacher interactive discourse to build comprehension; small group or one-to-one read-aloud instruction; informational science text; qualitative case study of teacher’s comprehension instruction of first grade students over two years in two school settings with varying demographic make-up; Several examples of student-teacher interactions highlighted; field notes and observations reviewed and emerging themes identified | Identified use of direct instruction, scaffolding through read-aloud, questioning, summarizing, and metacognitive strategy use (think-aloud, attending to use of text structure, rephrasing, use of prior knowledge) as key components of comprehension instruction; suggested that early reading instruction include comprehension activities with appropriate scaffolding | Reports of significance of using informational text in early grades needs further validation; more research is required on what comprehension strategy instruction models are best for early grade child development; more research is necessary to identify how to train teachers to engage in effective comprehension instruction in early grades                                                                 |

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</table>
| Valeras & Pappas (2006) | 1) To study the types of intertextual connections that teachers and students bring up during read-alouds and similarities/differences between two classrooms considering teachers’ different styles.  
2) To consider the different resources students from diverse backgrounds bring to classroom discourse during informational text read-aloud  
3) To understand how intertextual links impact the development of understandings and language that are coconstructed by students and teacher during read-aloud sessions. | Use of read-aloud sessions of science informational text, teacher-demonstrated experiential lessons of science content with think-loud, hands-on collaborative science activities, small-group narrative literature circles, class discussions; first and second grade teacher and student participants; urban, ethnically and culturally diverse students; qualitative ethnography of the read-aloud sessions; transcriptions coded for emerging themes of the developing discourse of science content comprehension and use of intertextual connections; descriptive quantitative data collected to identify intertextual links and types | Showed that intertextual connections were initiated orally across classrooms; teachers initiated connections to prior knowledge, prior written texts, recounting of generalized events, and hands on explorations (think-aloud with experiential aids); suggested that read-aloud instruction with multiple dialogic opportunities to draw out intertextual connections helped develop scientific discourse; teacher modeling of skills and strategies served as scaffold for students to develop use of thinking skills/strategies | The study does suggest specify ways of organizing the instructional model and use of curricular tools; the researchers did not investigate the organization and sequence of the instruction to evaluate what might produce best instructional experiences |
| Williams et al. (2005) | 1) Can text structure help second-grade students improve comprehension of compare-contrast informational text  
2) Does instruction focused on text structure detract from the amount of content knowledge that would have been acquired had the text structure instruction not been present?  
3) Are there any particular characteristics, including special education status, that are associated with nonresponsiveness to the program? | Compare-contrast text structures; explicit instruction of text structure delivered by teacher; additional comprehension strategies such as discussion, summarization, cue words; second-grade participants; informational science text; empirical design; random assignment of 3 groups: treatment, content only, control (typical instruction); assessment of comprehension using isolated, researcher-made text; 15 45-min sessions | Treatment participants showed statistically significant improvements in comprehension of compare-contrast text structure over content only and instruction only students; results demonstrated that text structure instruction did not detract from content comprehension; responders’ scores on listening comprehension outcome measures showed statistically significant gains compared to nonresponders | Text structure comprehension did not transfer to novel text structures; content comprehension scores were low across all groups; use of intact teachers and instructional routine prevent conclusiveness of causal relationship between various treatment components and effects |

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</thead>
<tbody>
<tr>
<td>Williams et al. (2009)</td>
<td>1) Can explicit instruction in text structure help second graders improve comprehension in writing performance and orally? 2) Can the addition of a limited amount of explicit training in a second structure (pro–con) help second graders improve their comprehension in that structure? 3) Can explicit instruction in text structure help second graders improve their comprehension of authentic text?</td>
<td>Compare-contrast text structures and pro-con text structure; explicit instruction of text structure delivered by teacher; additional comprehension strategies such as discussion, summarization, cue words; second-grade participants; informational science text; empirical design, random assignment of teachers to 3 groups: treatment, content only, control (typical instruction); assessment of comprehension using isolated, researcher made text and authentic text; fidelity assessment; 22 45-min sessions</td>
<td>Treatment group scored significantly higher on a written summary of compare-contrast; treatment group scored significantly higher on an oral pro-con text structure measure than content and instruction only groups; all groups scored low on authentic text measure; some statistically significant differences treatment were found on pairwise comparisons on prompted oral summary of authentic text</td>
<td>Text structure instruction showed inconclusive evidence of transfer to comprehension authentic text; content comprehension scores were low across all groups; use of intact teachers’ classrooms as the unit of analysis prevent conclusiveness of causal relationship between the treatment components and the effects on students</td>
</tr>
</tbody>
</table>
comprehension strategies to improve comprehension of informational text using oral measures and pedagogically appropriate instructional strategies to support early grade students in the current study (see Culatta et al., 2010; Hall et al., 2005; Reutzel et al., 2005; Smolkin & Donovan, 2001; Valeras & Pappas, 2006; Williams et al., 2005, 2009). For the most part, the purposes of these studies were similar.

For example, researchers utilized an explicit, oral instructional routine to teach comprehension strategies, including text structure instruction to improve reading comprehension of informational text (Hall et al., 2005; Reutzel et al., 2005; Williams et al., 2005, 2009). Although these studies focused on reading comprehension, they included oral methods of delivery and oral assessments in addition to written assessments to measure the comprehension skills of the early grade students. Each of these studies demonstrated statistically significant improvements in comprehension using comprehension strategies and content knowledge for students in all treatment groups.

Likewise, Culatta et al. (2010) exclusively assessed listening comprehension as an outcome with preschool and first grade students respectively to measure the effectiveness of comprehension instruction of informational text. Culatta et al. specifically incorporated comprehension strategies into an oral instruction routine that informally measured listening outcomes and reported improved comprehension.

Finally, Smolkin and Donovan (2001) and Valeras and Pappas (2006) utilized authentic teacher read aloud and think aloud routines to build and assess comprehension in very young students. The authors of these studies used qualitative methods to identify several key components such as questioning, summarizing and discussion. The authors
linked the use of these comprehension strategies to improved comprehension of the informational text.

Participants

Authors of all of the studies included in this review described the participants as students in public elementary schools or preschool programs with varying demographic backgrounds. Culatta et al. (2010) described participants as students from a moderate socio-economic status and primarily Caucasian ethnicity. Hall et al. (2005), Reutzel et al. (2005), Valeras and Pappas (2006) and Williams et al. (2005, 2009) described participants as students from lower socioeconomic status and ethnically diverse backgrounds. Smolkin and Donovan (2001) did not report participant demographics. Hall et al. (2005), Reutzel et al. (2005), Smolkin and Donovan (2001), Valeras and Pappas (2006), and Williams et al. (2005, 2009) sampled students from second grade classrooms, while Culatta et al. sampled preschoolers. Hall et al. (2005), Reutzel et al. (2005), and Williams et al. (2005, 2009) utilized randomized selection of participants. While Culatta et al. (2010), Smolkin and Donovan (2001), and Valeras and Pappas (2006) used convenience sampling with students from intact classrooms.

Study Design

The studies included in this review represented a variety of study designs with quantitative approaches representing the majority of the designs. Hall et al. (2005), Reutzel et al. (2005) and Williams et al. (2005, 2009) utilized an experimental or a quasi-experimental pre-post control group design. Smolkin and Donovan (2001) and Valeras
and Pappas (2006) utilized a case study design. The final study, Culatta et al. (2010) utilized a nonexperimental pre-post exploratory design.

**Treatment Intervention**

Hall et al. (2005), Reutzel et al. (2005), and Williams et al. (2005, 2009) evaluated an oral instruction routine during which the teacher delivered the explicit instruction of informational text structures and comprehension strategies such as questioning and summarizing. Culatta et al. (2010), Smolkin and Donovan (2001), and Valeras and Pappas (2006) evaluated a teacher read aloud routine using informational texts, in which the teacher incorporated informal teacher think aloud, questioning, summarizing and discussion.

**Outcome Measures**

Five of the seven studies reviewed utilized researcher-made outcome measures assessing the intervention that relied on transcriptions of students’ oral retellings or students’ oral responses to presented questions that were scored using researcher-set criteria (see Culatta et al., 2010; Hall et al., 2005; Reutzel et al., 2005; Williams et al., 2005, 2009). Two of the studies by Smolkin and Donovan (2001) and Valeras and Pappas (2006) utilized qualitative data collection and coding procedures assessing the impact of the intervention through which researchers identified patterns and themes that were then interpreted to determine study results.

**Study Outcomes**

All seven of the studies included a description of the instructional routine
delivered over a treatment period of 8-15 weeks. All seven of the studies also reported positive findings related to the implementation of intervention that students demonstrated improved comprehension outcomes (see Culatta et al., 2010; Hall et al., 2005; Reutzel et al., 2005; Smolkin & Donovan, 2001; Valeras & Pappas, 2006; Williams et al., 2005, 2009).

Limitations

The studies included in the review informed the structure of the current study in several ways. Hall et al. (2005), Reutzel et al. (2005), and Williams et al. (2005, 2009) provided positive empirical evidence supporting the efficacy of explicitly teaching text structures to strengthen reading comprehension of informational text using oral instruction as a supplement to written instruction. Likewise, Culatta et al (2010), Smolkin and Donovan (2001), and Valeras and Pappas (2006) provided valuable qualitative details to enrich the instructional model of the current study.

However, only one of seven studies reviewed examined the effects of oral instruction of text structures common in informational text on the listening comprehension of students younger than second grade (see Culatta et al., 2010). Further, a key limitation noted within this collection of research studies is that no experimental studies reviewed evaluated the impact of using an explicit, oral instructional routine to teach comprehension strategies and the text structures found in informational text to support and strengthen the listening comprehension of first graders.

The promising empirical results from the very small body of research examining the explicit instruction of informational text structures and comprehension strategies,
combined with the paucity of empirical studies evaluating the effects of oral instruction of comprehension strategies designed to teach informational text structures on the listening comprehension of students in first grade, warrants further study. The current study addressed the gaps in the extant body of evidence by extending the empirical body of research to first grade and utilizing listening comprehension measures as the outcome.

**Instructional Practices Used to Teach Structures of Informational Text in Early Grades**

The studies in this section of the literature review were reviewed for the purposes of detailing the contributions and identifying the key elements of the current study’s instructional model. The following practices were highlighted as the key elements contributing to the instructional model: explicit instruction, teacher think aloud, text structure and key word instruction, comprehension strategy instruction, the use of pedagogically appropriate supports such as hand signals and visual and auditory aids, and listening comprehension skill as the outcome measure. In addition to the seven studies that fit the inclusion criteria, three additional studies included in this section of the review contributed to the current study in meaningful ways although they did not meet the inclusion criteria (Block et al., 2008; Kendeou et al., 2005; Kraemer et al., 2012).

**Explicit Instruction**

Scholars have defined explicit instruction as a routine of instructional supports and scaffolds that are logically sequenced with a clearly defined learning target designed to match the cognitive ability of the students (Archer & Hughes, 2011). Explicit
instruction includes the direct presentation of material in clear and concise language that defines key terms and ideas, teacher-led strategies that break down complex tasks into a series of isolated, manageable steps that build upon each other (scaffolding), teacher-supported and independent student practice opportunities, immediate error correction, and frequent feedback (Archer & Hughes, 2011). Two studies were located that provide strong examples of how explicit instruction has been used to teach the informational text structures used in books that present science content information to first grade students (see Hall et al., 2005; Reutzel et al., 2005). These studies articulate the purposeful use of teacher presentation, gradual release of responsibility for learning to the student, and/or independent practice opportunities, all components of the explicit instructional routine designed to support early grade students in the comprehension of informational text.

In the first study located, Hall et al. detailed their explicit instructional model to teach comprehension of expository text structures to second-grade students. The presentation phase in the Hall et al. study demonstrates a strong example of an explicit instructional routine because it consisted of the instructor first presenting clear definitions, examples and non-examples of concepts and key vocabulary, followed by breaking the major skills to be taught into smaller, simpler skills to aid in comprehension. Specifically, these researchers broke the instructional program into teaching two distinct skills: “the text structure program” and “the content program” to teach the science material comparing and contrasting warm-blooded and cold-blooded mammals. First, they taught the informational text structures “compare-contrast” in isolation of the content by defining key words that signaled the use of the text structure such as alike, both, and, different.
Then, they modeled how the students would look for key words and text structures within the science content when the content was presented. Finally, the instructors in the study presented the content through reading aloud the text as a group while the teacher pointed out the key words in text structures within the content. The results of the study demonstrated significant findings that supported the explicit teaching of the text structure, both in isolation and within a researcher-created paragraph, but did not show significant findings for text structures presented within an authentic text. The researchers noted in their findings that students were unable to transfer the use of text structure strategies to authentic texts indicating a need to refine the explicit instructional routine to include more authentic texts (Hall et al., 2005).

Similar to the focus on explicit instruction used in Hall et al.’s, (2005) study, Reutzel et al. (2005) created a model using a “gradual release of responsibility for learning to the student.” The gradual release of responsibility was first defined by Pearson and Gallagher (1983) and intended for use when teaching comprehension strategies, including text structure strategies. The gradual release of responsibility for learning model has been defined as an integral component of comprehension instruction during which “teachers move from a situation in which they assume all the responsibility...which we would call modeling or demonstrating a strategy...to a situation in which the students assume all the responsibility...which we would call independent strategy use” (Duke & Pearson, 2002). Pearson and Gallagher (1983) built upon Vygotsky’s (1978) ZPD theory by demonstrating the interactive role of teacher and student. Pearson and Gallagher’s original visual model depicts a graph with the
responsibility of the teacher as points along the “y” axis starting at the top left of the graph. As the responsibility of the teacher decreases, the responsibility of the student, represented by points along the “x” axis, increases in direct correlation to the decreased teacher responsibility. This forms a downward diagonal slope with three key identified areas: primarily teacher (upper left), shared responsibility (middle), and primarily student (lower right; see Figure 2). The gradual release of responsibility model demonstrates particular relevance to the text structure strategy instruction used in the proposed study with first grade students because it incorporates learning scaffolds during instruction that allow for the teacher to model complex text structure and comprehension strategies, to guide young learners’ practice, and to eventually shift responsibility completely to the student.

Figure 2. Gradual release of responsibility for task completion (Pearson & Gallagher, 1983).
In their study, Reutzel et al. (2005) designed an explicit instruction model for use with second-grade students that utilized gradual release of responsibility and independent practice in conjunction with comprehension monitoring to investigate the effects of transactional strategy instruction (TSI) compared to single strategy instruction (SSI) on the reading comprehension of second grade students. In other words, these researchers looked for differences in comprehension outcomes that might be noted between students who were taught using an explicit instruction model that employed multiple comprehension strategies and text structure strategies when compared with students who received explicit instruction using only one strategy at a time. Similar to Hall et al. (2005), these researchers explicitly presented and defined the strategies that would be learned, the rationale for using each strategy, and during what part of the reading exercise it could be used to help decipher the content. Additionally, Reutzel et al. described a gradual release of responsibility for learning to the student through teacher-led guided practice, student practice opportunities, and frequent comprehension monitoring. Specifically, the instructors spent five to six instructional sessions gradually transitioning responsibility for use of the targeted comprehension strategies “through interactive discussions during readings” followed by two-three sessions of small group and independent practice during which students engaged in using the comprehension strategies while “re-reading” the science informational content two to three times (Reutzel et al., 2005, p. 286).

Reutzel et al. (2005) suggested that the explicit instruction of comprehension strategies, regardless of whether the strategies were taught one at a time or as a “set,”
enabled the students to develop comprehension strategies and as a result aided in their comprehension of the content. This study demonstrated that young learners were able to manage the integration of text structure comprehension strategies during literacy tasks. This study is especially important to the current study in that it serves as a model for integrating text structure strategy instruction with comprehension instruction that includes the “gradual release of responsibility” for learning from teacher to student over time (Reutzel et al., 2005). The study’s “balanced” approach to reading comprehension instruction has been noted by researchers as a way to incorporate both explicit instruction and experiential learning opportunities such as small group activities and discussion to foster optimal comprehension (Pearson & Duke, 2002). The results of this study bolster the case for articulating a clear model of gradual release for learning and independent practice, as well as incorporating the use of multiple comprehension strategies within an explicit instruction routine.

**Teacher Think Aloud During Oral Presentation**

The use of think aloud also was noted in several studies examining reading comprehension instruction for young children. Thinking aloud about text is used to scaffold and facilitate comprehension instruction of informational text for young, emerging readers (Smolkin & Donovan, 2001; Valeras & Pappas, 2006). In a handful of studies researchers examined how the use of teacher think aloud while reading aloud the informational text was used in comprehension instruction (see Hall et al., 2005; Smolkin & Donovan, 2001; Valeras & Pappas, 2006; Williams et al., 2009).
First, Smolkin and Donovan (2001) conducted a case study to explore the interactive reading aloud of informational text performed by one first grade teacher. In this study the researchers examined the reading aloud of text, with the teacher thinking aloud about the comprehension strategies she was employing while reading the book. For example, during the process of reading a book aloud, the teacher paused to think aloud about the way the book ordered the steps of popcorn making and the way the popcorn making steps were featured on the page by saying “And what is [the list] doing [pause for student response]?... It’s giving us, right, the steps of how to make the popcorn.” (Smolkin & Donovan, 2001, p. 108). During this think aloud with students, the teacher “modeled attention to text structure and then scaffolded students' understanding that noting a text's structure may be critical in understanding its presentation of ideas,” (Smolkin & Donovan, 2001, p. 108). The researchers observed that through an interactive approach used when reading the text aloud, the teacher was able to scaffold the students’ learning when gaps were present through direct oral instruction of text content and structure and through the use of appropriate models of “think aloud” demonstrating the comprehension strategy.

With a similar aim as Smolkin and Donovan (2001), Valeras and Pappas (2006) evaluated the use of read aloud instruction with first grade students to explore the phenomenon of *intertextuality*, or the ways that different texts relate to each other, between science and literature texts. Valeras and Pappas observed the development of a shared discourse, or a common understanding of various ideas that emerged from their discussion of the connected texts. These researchers noted that during the read aloud
interactions between teacher and students, the teacher would read the text aloud, reflect about the text, pose questions, then elicit a discussion noting that if “children struggled with ideas, teachers rephrased ideas, and children and teachers explored concepts and ways of expressing [ideas]” (Valeras & Pappas, 2006, p. 251). According to these researchers, a “sense of belonging in the classroom community of learners was emerging as teacher and children were sharing power” through the iterative process of teachers and students responding to text, questioning, rephrasing, and coming to consensus about meaning during their informal discussion (Valeras & Pappas, 2006, p. 251).

The use of “think aloud” comprehension strategies presented in these two studies demonstrate an ideal opportunity for teachers to model metacognitive comprehension strategies used by a “master comprehender” also known as the teacher (Smolkin & Donovan, 2001). According to these researchers, the teacher’s use of think aloud not only provided a means for delivering instruction, but it also provided an opportunity for the teacher to encourage and validate the collaborative sharing of ideas, which in turn led to increased engagement and comprehension during the literacy activity on the part of the young learners (Smolkin & Donovan, 2001).

**Text Structure and Key Word Instruction**

Some researchers have demonstrated how the use of text structure instruction makes complex informational text more comprehensible to students by providing learners with strategies to break down the organizational structure of the text (Marinak & Gambrell, 2008; Meyer & Ray, 2011). Several seminal studies were conducted nearly thirty years ago that introduced text structure and the use of text structure strategies to aid
in memory and understanding of the relationships and organization of informational text. (Armbruster, Anderson, & Ostertag, 1987; Englert & Hiebert, 1984; Englert & Thomas, 1987; Meyer et al., 1980). In these original studies researchers identified several structures unique to informational text, namely, sequence, problem-solution, compare-contrast, cause-effect, enumeration, and description (Englert & Hiebert, 1984; Meyer et al., 1980). Researchers incorporated the use of text structure instruction to help students understand and use the text structure organization to aid comprehension of informational text. Results from these early studies support the premise that “structure strategy instruction increased students’ ability to identify and use the text's top level structure and nearly doubled the amount of information remembered” (Meyer & Ray, 2011, p. 135).

Since the seminal research conducted in the 1980s, a working definition of informational text structures has proliferated within the body of literature. Recently, informational text structures have been defined as structures that enable readers to “organize concepts based on the explicit or implied relationships that are communicated by the text” (Meyer & Ray, 2011, p. 127). According to the extant body of literature, informational text structure types typically are defined as: sequential order, compare-contrast, description, cause-effect, problem-solution, and enumeration (Marinak & Gambrell, 2008; Meyer & Ray, 2011; Moss, 2004; Pyle et al., 2017). Additionally, researchers have identified “key words” associated each text structure to signal readers as to what type of text structure they may be encountering. A list of informational text structures and accompanying key words is shown in Table 3.
Table 3

*Text Structures in the Literature*

<table>
<thead>
<tr>
<th>Text structure</th>
<th>Definition</th>
<th>Key words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequential order</td>
<td>Provides a main idea and supporting details in a time ordered series</td>
<td>first, second, third, next, early, before, to begin with, begins, at the start of, in the beginning, during, later, after, then, followed by, to end, finally, after a short while, soon, now, today, cycle, steps, stages, time line, phases</td>
</tr>
<tr>
<td>Compare-Contrast</td>
<td>Provides main ideas and supporting details that describe similarities and differences between the ideas</td>
<td>compare: same as, both, similar to, resembles, like, alike, related to and comparable to; contrast: different, but, not alike, opposite, as opposed to, instead of, although, however, while</td>
</tr>
<tr>
<td>Description</td>
<td>Describes a main idea the related attributes of the idea</td>
<td>kinds, types, characteristics, attributes, qualities, features, examples, defined as, described as, such as, include(s), including</td>
</tr>
<tr>
<td>Cause-Effect</td>
<td>Provides main ideas and relates the ideas casually; describes causes and the results that occur due to the causes</td>
<td>cause, led to, bring about, produce, make possible, due to, because, in order to, reasons, why, if/then, effect, affects, so, as a result, consequence, therefore</td>
</tr>
<tr>
<td>Problem-Solution/</td>
<td>Provides a main idea (problem) and the responding idea (solution) to address the problem; poses ideas that relate as question and answer</td>
<td>problem; problem, trouble, difficulty, threat, danger, issue, can hurt, not good; solution: to satisfy the problem, ways to reduce the problem, so solve these problems, solution, in response, recommend, suggest</td>
</tr>
<tr>
<td>Question Answer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enumeration</td>
<td>Relates ideas by grouping or listing them together</td>
<td>and, in addition, also, include, moreover, besides, first, second, third, etc., subsequent, furthermore, at the same time, another, and so forth</td>
</tr>
</tbody>
</table>

*Note.* Text structure titles, definitions, and key words derived from literature specifically cited in this study (Marinak & Gambrell, 2008; Meyer & Ray, 2011).

Researchers also agree that effective text structure strategy instruction clearly defines and describes the text structure, identifies associated key words within the text to signal the corresponding text structure, and provides other tools that graphically represent the text structure (Marinak & Gambrell, 2008; Meyer & Ray, 2011; Pearson & Duke, 2002). When effective, text structure strategy instruction makes complex informational text more comprehensible to students by providing learners with strategies to decipher the
organizational structure of the text (Marinak & Gambrell, 2008; Meyer & Ray, 2011).

Two studies from a series of early grade studies utilized explicit instruction routines to teach the text structures found in informational text and employed empirical methods to evaluate the effects of this instruction on the reading comprehension of second graders. These studies are the most rigorous studies in the body of research that evaluated the instruction of informational text structures with early grade students (Pyle et al., 2017). The original study in this series was that of Williams et al. (2005), who investigated the instruction of the compare-contrast text structures across three randomly assigned condition groups. In one condition teachers delivered explicit instruction of compare-contrast text structures in conjunction with comprehension instruction of the science content. In a second, researchers provided no training and direction to teachers to deliver the explicit instructional routine, however included the same science content instruction as provided in the first condition. In the third condition teachers provided typical instruction absent any training or instructional materials. The explicit instruction condition consisted of following seven steps during an instructional routine which included the following: (1) teacher led reviews of lesson purposes and cue words related to the compare-contrast text structure, (2) teacher readings of science trade books and follow-up discussions, (3) teacher led reviews of relevant content vocabulary, (4) shared readings and analyses of target paragraphs, (5) student completion of graphic organizers, (6) text structure questioning and writing exercises, and (7) teacher led summaries of the lessons (Williams et al., 2005). The instruction was delivered in 15 sessions (two per week). The researchers reported the strongest gains in reading comprehension for the
group that received the explicit instruction of comprehension strategies and text structures as measured by several researcher-made oral assessments compared to written measures us. Statistically significant gains and some large effect sizes for the direct recall of the text structures were reported for the group that received explicit text structure instruction taught within the informational text over the group that received content instruction of informational text only or the group that received no instruction of informational text (Williams et al., 2005). Furthermore, Williams et al. reported that explicit instruction of informational text structures enhanced, rather than deterred, comprehension of the informational science content that was taught, although content comprehension remained low across all groups. Thus, the use of explicit instruction to teach comprehension strategies, in conjunction with the teaching of text structures used in informational texts were viable and important elements of comprehension instruction for young learners.

Williams et al. (2009) also utilized the explicit instruction of the compare-contrast text structures using science content targeted for a sample of second graders. This study closely replicated the previous study design and the instructional routine within the treatment condition of Williams et al. (2005). Importantly, this study also incorporated the use of additional oral and written response methods, exposure to more authentic text, and instruction of compare-contrast and pro-con text structures (Williams et al., 2009). The researchers also lengthened the treatment period to 22 lessons (three per week). The study results echoed the effects found in the previous study by Williams et al. (2005), demonstrating statistically significant gains and large effect sizes for direct recall of the
content and text structures within the informational text taught for the text structure group compared to the content-only and no-instruction group. Statistically significant gains were reported on measures that used content similar to the content used during the text structure instruction compared to the measures that used content that was completely unrelated to the content taught within the text structures. Researchers also reported better performance for students in the treatment group on oral and written measures, and a measure involving an authentic compare–contrast text. These findings bolstered and extended the previous findings that teaching comprehension strategies in conjunction with the teaching of text structures used in informational texts, supports the comprehension outcomes of young learners.

**Comprehension Instructional Practices**

Another foundational element drawn from the body of work to inform the current study’s model is the use of comprehension instructional strategies to support the reading comprehension of young learners. As described previously, several studies and national reports suggest consensus among experts that explicitly teaching and incorporating the use of comprehension instructional practices in reading instruction fosters greater comprehension of text (NRP, 2000; RAND, 2002; Shanahan et al., 2010). Specific to the current study’s purpose, most of the studies reviewed employed the use of several comprehension practices including questioning, summarizing and discussion, as components of an instructional routine designed to increase comprehension (Culatta et al., 2010; Hall et al., 2005; Reutzel et al., 2005; Smolkin & Donovan, 2001; Valeras & Pappas, 2006; Williams et al; 2005, 2009).
Explicit questioning and summarizing. While only one of the studies located explicitly taught the use of questioning and summarizing (see Reutzel et al., 2005), the authors of several studies embedded the strategies of questioning, summarizing, and discussion into their instructional design to teach both the text structures and the content of the informational text for early grade students (Hall et al., 2005; Reutzel et al., 2005; Williams et al., 2005, 2009). Authors of these studies built questioning and summarizing into the instructional routine by scripting researcher-made paragraphs, summaries, and questions designed to explicitly present the text structures, key words and vocabulary to the second grade samples of students (Reutzel et al., 2005). Each of these research teams then repeated their use of the comprehension strategies that were modeled during the instructional phases as assessment prompts to measure comprehension through oral summaries and retelling of information relayed by students. Statistically significant results from each of these studies demonstrated that the use of the comprehension strategy instruction yielded positive student outcomes on oral assessments. The students who received the explicit instructional routines (questioning and summarizing) were able to retell and summarize definitions of text structures (Hall et al., 2005; Reutzel et al., 2005; Williams et al; 2005, 2009) In a few cases, the students were able to retell how the text structures were utilized within the content taught to them (Williams et al., 2009).

Questioning and summarizing within discussion. Other studies using the questioning and summarizing strategies utilized a more authentic approach to incorporating the comprehension instructional strategies (Culatta et al., 2010; Smolkin & Donovan, 2001; Valeras & Pappas, 2006). Authors of two of these studies read
informational texts aloud and engaged in questioning and summarizing through open
discussion about the structures and content of the text (see Smolkin & Donovan, 2001;
Valeras & Pappas, 2006). The study with preschool students used questioning and
summarizing incorporated into discussions of personal experiences having to do with the
text structures and content at hand, or during hands-on activities that were created to
practice the use of a text structure (Culatta et al., 2010).

Multiple researchers cited examples of opportunities for questioning and
summarizing emerging through the interactive dialogue between teacher and students,
and students and students (Culatta et al., 2010; Smolkin & Donovan, 2001; Valeras &
Pappas, 2006). For example, Culatta et al. noted that students were able to spontaneously
incorporate the use of a text structure after being introduced to the text structure problem-
solution during previous text structure activities and discussion. The teacher facilitated an
informal discussion, using questioning and summarizing during a muffin making activity
in which the preschool students “discussed the problem of not having enough eggs for
their muffins and brainstormed possible solutions” (p. 26).

Some of these researchers noted that the frequent use of discussion with these
early grade students allowed for more breadth and depth of comprehension and
understanding as the group developed a growing repertoire of common ideas and
explored them more deeply over time (Smolkin & Donovan, 2001; Valeras & Pappas,
2006). One study’s authors explained that “comprehension acquisition certainly cannot
occur when the community of practitioners consists of a single member, the teacher.
Rather, interchange of a broadening number of ideas must be encouraged and fostered,”
Whether taught explicitly, or embedded authentically within a dialogic model of reading aloud, researchers of the studies reviewed in this section reported that the use of multiple comprehension instruction strategies demonstrated improved comprehension of the structures within the informational text taught, as well as the content (Culatta et al., 2010; Hall et al., 2005; Reutzel et al., 2005; Smolkin & Donovan, 2001; Williams et al; 2005, 2009; Valeras & Pappas, 2006). This strong evidence warrants the current study’s use of questioning and summarizing and discussion both explicitly during direct instruction and authentically during reading aloud and practice opportunities.

**Pedagogically Appropriate Instruction**

In consideration of the current study’s focus on young learners and the paucity of comprehension research with young, emerging readers, the use of pedagogically appropriate instruction in the current study’s instructional model warrants discussion. As mentioned previously, researchers have demonstrated that young children can engage with and show comprehension of complex text when provided with the appropriate scaffolding and support (Kucan & Beck, 1997; Pearson & Duke, 2002; van den Broek et al, 2005). In addition to reading the text aloud, the current study draws three pedagogically appropriate instructional supports from previous research (namely, hand signals, visual media and auditory media) to address the developmental abilities and reading ability limitations of first grade students (Block et al., 2008; Kendeou et al., 2005).

**Hand signals.** Block et al. (2008) evaluated the use of hand and body motions
during comprehension strategy instruction with students in kindergarten through fifth grade. Based on a “dual-coding” theory in which a learner benefits more from linguistic and non-linguistic input together than linguistic input alone (Paivio, 1986), these researchers developed an instructional strategy model that included kinesthetic sensory input in addition to oral language. They viewed this instructional strategy as a way to “provide young readers with concrete images to learn how, when, and where to initiate comprehension processes” (Block et al., 2008, p. 461). Block et al. incorporated hand movements to represent different steps in the comprehension process such as making predictions, inferring and clarifying (e.g., moving the right hand across the body to the left hip to represent “inferring,” putting two hands up and spreading all five fingers to represent “clarifying). Statistically significant differences between experimental and control groups on inference measures and other comprehension assessments suggested that use of the hand and body signals taught explicitly in conjunction with comprehension strategies contributed to improved comprehension of the text, particularly among students in kindergarten through second grade.

**Visual and auditory aids.** Related to the concept of dual-coding through multisensory inputs, Kendeou et al. (2005) used visual media (television) and aural media (recordings) of narratives to investigate the listening comprehension ability of four-year-old children. In this study, children either viewed narratives via television or listened to recordings and were asked to retell what they remembered from the stories and then were asked follow-up questions at varying levels or demands of inference-making. Kendeou et al. concluded that the comprehension assessment results from both non-textual media
were highly interrelated, suggesting that the type of media did not play a factor in the comprehension of the information. Further, the results showed that comprehension of the narratives was detected independent from the basic letter and word identification and phonological awareness of the child participants. In other words, the children were able to demonstrate understanding of the nontextual information presented regardless of their letter or word recognition skill, demonstrating the utility of using non-textual media as instructional supports for very young children.

The evidence supporting the use of pedagogically appropriate instruction presented in the Kendeou et al. (2005) and Block et al. (2008) affirms the use of similar supports in the current study’s instructional model. In the current study, the use of hand signals to signal key words in text structures during explicit instruction, and the use of visual x audio media to model listening comprehension and enhance student practice opportunities, throughout the instruction routine provide additional learning aids to support the first-grade students’ comprehension of the text structures and the complex science content.

**Assessment of listening comprehension.** A final pedagogical element of the proposed study entails the use of listening comprehension to measure the comprehension of informational text structure and content knowledge with first grade students. While only a small number of studies have employed the use of oral instruction to teach informational text, even fewer studies have utilized the assessment of listening comprehension as a primary measure to evaluate the impact of informational text instruction in the earliest grades (Culatta et al., 2010; Kraemer et al., 2012).
Two of three studies reviewed in this section demonstrate the use of informal and formal oral measures to test the listening comprehension of the pre-readers or emerging readers in the earliest grades who received informational text instruction (Culatta et al., 2010; Kraemer et al., 2012). A third study’s findings provide evidence of the merit in using listening comprehension outcomes to attain a trustworthy measurement of very young learners’ comprehension (Kendeou et al., 2009). Additionally, the third study contributes evidence connecting listening comprehension outcomes to future reading comprehension outcomes (Kendeou et al., 2009). The assessment of listening comprehension employed by the researchers in the studies reviewed bolsters the proposed study’s use of listening comprehension assessments with first grade learners (Culatta et al., 2010; Kendeou et al., 2009; Kraemer et al., 2012).

First, Culatta et al. (2010) reported positive findings from an exploratory study in a preschool setting that evaluated the impact of teaching informational text structures during read aloud sessions followed by a listening comprehension assessment. These researchers informally assessed the listening comprehension of preschoolers through oral retellings before and after instruction of informational text to measure growth in comprehension of text structures and content orally. Although the researchers acknowledged limitations of the nonexperimental study design, the report provided valuable details outlining the oral instruction of text structures and content in the context of informational science picture books tailored to preschool-age students. For example, instructors explicitly taught key words “with multiple clear examples of each target word and included child-friendly oral definitions and explanations...” (Culatta et al., 2010, p.
The report also described other pedagogically appropriate practices for preschool-age students, such as the use of visual and audio aids, role playing, games, and storytelling to reinforce the concepts being taught. Furthermore, this formative study modeled the utility of measuring listening comprehension for the sample of pre-readers through both the application of a structured listening comprehension assessment, and the anecdotal observation of spontaneous discussion among these very young students (Culatta et al., 2010). The findings indicated that students showed gains in retelling key points from texts that included the problem-solution text structures of the informational text and were able to demonstrate the ability to spontaneously apply the use of the problem-solution text structure during independent play.

Another study evaluated the listening comprehension of first grade students who received exposure to informational text via text read aloud (Kraemer et al., 2012). These researchers examined both the preference of first graders for informational text and the potential effect of reading informational text aloud to students on their listening comprehension compared to narrative text read aloud. Kraemer et al. utilized a quasi-experimental, pre-post control group design and measured listening comprehension using an informal reading inventory, the Qualitative Reading Inventory (QRI-3; Kraemer et al., 2012). The researchers reported statistically significant improvements in the listening comprehension of informational text for students who received exposure to oral readings of informational text over students who received exposure to narrative readings. Students in the latter group experienced a decrease in listening comprehension of informational text. Comprehension of narrative text demonstrated no changes from pre- to post-test.
Additionally, in both groups, all students demonstrated a preference for being read informational text at both pre-and post-test. Kraemer et al.’s findings that showed improvements in the listening comprehension of students who had informational text read aloud to them demonstrates application to the proposed study’s inclusion of a listening comprehension measure. However, the usefulness of the results of Kraemer et al.’s study are limited in that the study’s purpose and research questions did not target the effect of the explicit instruction of the text structures in informational text, but instead focused on how the exposure to and preference for listening to informational text when compared to narrative text might result in improved listening comprehension.

The final study included in this review focused on the use of listening comprehension as an outcome measure with very young learners. The researchers of this study endeavored to solidify the connection between early listening comprehension skill and future reading comprehension skill (Kendeou et al., 2009). Kendeou et al.’s (2009) work suggested that, in addition to demonstrating the practical utility of using listening comprehension to assess the knowledge and skill of emerging readers, the assessment of listening comprehension skill in the earliest years may also be important in predicting of future reading comprehension (Kendeou, van den Broek, White, & Lynch, 2007; Kendeou et al., 2009). Specifically, Kendeou et al. (2009) followed 4- and 6-year-old students for 2 years to evaluate their development of oral language skills and decoding skills in relation to early reading comprehension skill. The researchers reported that oral language, including a strong component of oral language dedicated to the assessment of listening comprehension skills, demonstrated unique contributions to future reading
comprehension skills. Through the use of structural equation modeling, the researchers were able to demonstrate that about 64% of the variance in oral language skills at age six in the students they followed could be attributed to the oral language skills assessed at age four. Furthermore, the results showed that from age six to eight the student’s oral language skills, independent from their decoding skills, demonstrated an independent contribution to the students’ future reading comprehension skills. While this study did not address the use of informational text specifically, the connection drawn by Kendeou et al. (2009) between early oral language and listening comprehension and future reading comprehension strengthens the importance of using listening comprehension as an outcome measure in the current study.

**Summary of Instructional Practices**

The findings from each of the studies reviewed in this chapter provide justification for the proposed study’s purpose, research questions and design. This summary reviews the findings of these studies, the gaps in the current body of research, and how the current study’s instructional model and design will address the gaps. First, in two studies researchers provided strong evidence for utilizing an explicit instructional routine to teach the text structures in informational text to early grade students. Positive findings from Hall et al. (2005) and Reutzel et al. (2005) show that early grade learners benefit from explicit instruction to teach the text structures of informational text, especially when the instruction includes learning scaffolds during instruction that allow for the teacher to model complex text strategies, guide young students’ practice and shift responsibility to the student overtime. However, these
findings were limited to second grade students. The current study extends the research to first-grade students with the goal of verifying the use of explicit instruction with a gradual release of responsibility to younger learners.

Next, in two studies in this review researchers used “think aloud” comprehension strategies to orally model the use of metacognitive comprehension strategies and develop a shared understanding of the text during the read aloud instruction with informational text (Smolkin & Donovan, 2001; Valeras & Pappas, 2006). The findings presented in these reports asserted that authentic modeling and practice of thinking aloud about the informational text not only led to improved comprehension of the text, but increased student engagement and sense of belongingness. However, these studies did not investigate the use of “think aloud” as a metacognitive strategy within an explicit instruction routine that included other comprehension strategy instruction and scaffolding supports. The current study incorporates the use of “think aloud” within an explicit instruction routine to teach informational text structures.

Furthermore, two additional studies extend the use of an explicit instruction routine to emphasize the explicit instruction of the compare-contrast text structures found in informational text (Williams et al., 2005, 2009). These researchers employ empirical methods to measure the effects of the instruction on the reading and listening comprehension of second graders. These studies serve as strong, experimental models for the proposed study’s design and methods. However, the findings from these studies are limited to second grade students.

The current study extends the research of explicit text structure instruction using
compare-contrast to first-grade students to verify the effects of explicitly teaching informational text structures to first-grade learners. Further, the use of the compare-contrast text structure in the current study replicates the selection made by four of the seven researchers included in the literature review to focus on the compare-contrast text structure. Additionally, the prevalence of the compare-contrast text structure in the Utah core standards for first-grade science, the frequency with which the compare-contrast text structure was located by the researcher during the selecting of authentic informational texts to be used in the study underscore the practical utility in studying the compare-contrast text structure opposed to other informational text structures.

Additionally, multiple studies reviewed in this section show the utility of including specific comprehension instruction strategies such as questioning and summarizing in their instruction (Culatta et al., 2010; Hall et al., 2005; Reutzel et al., 2005; Smolkin & Donovan, 2001; Valeras & Pappas, 2006; Williams et al., 2005, 2009). The fact that most of the studies included in this review examined the use of these strategies warrants the current study’s inclusion of questioning and summarizing, both explicitly during direct instruction and authentically during the reading aloud of informational text and the incorporated discussion opportunities.

Particular to the young age of the first-grade learners targeted in the current study, evidence supporting the use of pedagogically appropriate instruction presented by the Kendeou, et al. (2005) and Block et al. (2008) with very young learners affirms the inclusion of hand signals, audio and visual aids and supports in the current instructional model. Targeting younger students than have been included in previous studies
investigating explicit instruction of text structures in informational text warrants not only the use of appropriate instructional scaffolding, but also the application of pedagogically appropriate supports such as hand signals, and the use of visual and audio aids to enhance the listening comprehension of first grade students.

Finally, researchers who employed informal and formal oral measures to test the listening comprehension of the pre-readers or emerging readers in the earliest grades provide support for using listening comprehension as an outcome in the proposed study (Culatta et al., 2010; Kendeou et al., 2009; Kraemer et al., 2012). These researchers suggest that listening comprehension outcomes serve as a strong measure of very young learners’ comprehension and provide a possible link to what future reading comprehension for these young learners will look like based on listening comprehension outcomes (Kendeou et al., 2009). The current study extends the current body of research utilizing an array of informal and formal listening comprehension measures to more comprehensively assess, the first-grade students’ listening comprehension.

The key elements of explicit instruction, the use of “think aloud,” text structure strategy instruction, the use of comprehension instructional strategies, pedagogically appropriate instruction and listening comprehension as an assessment measure, comprise a comprehensive instructional model that includes the appropriate student supports and scaffolding to foster first grade students’ comprehension of informational text structures. The instructional model illustrated in Figure 3 provides a visual representation of the current study’s model of the text structure instruction. Each of the key components of the instructional routine is depicted in the illustration. The elements are integrated into a
sequential, yet flexible four-step explicit instructional routine to teach informational text structures to first grade students orally.

Figure 3. Explicit comprehension instruction practices model to teach informational text structures to first grade students orally.
CHAPTER III

METHOD

Participants and Setting

This study was implemented in two elementary schools in an urban district in an intermountain city. Each school included students with high racial and ethnic diversity from low socio-economic households, as measured by district reported demographic data and free or reduced lunch status.

Teachers

Six, first-grade teachers, self-selected from a pool of approximately 45 teachers identified by the district literacy department as credentialed first grade teachers, were recruited to participate in the study. The status of the teachers in the pool was based on two criteria: (1) a minimum average of 20% student growth on district benchmark assessments in literacy for 2 prior years, and (2) 2 prior years of teaching in schools with low socio-economic status and high racial and ethnically diverse students. From the pool of qualified teachers, six, first-grade teachers from two elementary schools volunteered to participate. All teachers were female (see Table 4 for additional demographic information).

Students

The student population in the six classrooms included 135 first-grade students (21-24 per classroom). The students were randomly assigned to one of the three first-
grade classrooms in each school using an online random assignment calculator as part of each principal’s preparatory classroom assignment procedure. At the start of the 2017-2018 school year, the lead researcher recruited student participants by distributing a parental consent form (see Appendix A) to all students assigned to the six first-grade classrooms. The total number of students who assented to participate was 122 (90% of the available student population). A total of 13 students declined participation (10% of the available student population). Seven students who assented to participate moved during the study period. Thus, the total number of students whose data were included in the analysis was 115 (School A = 53; School B = 62). The student demographics by school and classroom are presented in Table 5.

### Instrumentation

**Listening Comprehension of Science Content Knowledge Measure**

A researcher-created listening comprehension measure of science content
Table 5

**Student Demographics by School and Classroom**

<table>
<thead>
<tr>
<th>Demographic</th>
<th>School A</th>
<th></th>
<th>School B</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>class 1 (n = 16)</td>
<td>class 2 (n = 19)</td>
<td>class 3 (n = 18)</td>
<td>overall (%)</td>
</tr>
<tr>
<td>Gender</td>
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</tr>
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<td>49</td>
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<td>1</td>
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<td>African American</td>
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<td>0</td>
<td>1</td>
<td>6</td>
</tr>
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<td>36</td>
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<td>1</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>Multi-racial</td>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>free/reduced lunch</td>
<td>71</td>
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<td>English learner</td>
<td>37</td>
<td>41</td>
<td>39</td>
<td>39</td>
</tr>
</tbody>
</table>

Knowledge was administered pre- and post-treatment to each student across each condition to answer research question one. The listening comprehension of science content knowledge measure (LCSC; see Appendix B) was individually administered via pre-recorded audiotape during 10-minute assessment sessions. Students listened to 16 statements drawn from science content materials, such as plants and living things, taught during the 8-week treatment phase. The science content selected reflects the Utah Core Science Standard 4 for first grade (Utah Education Network, 2015. Following each statement, students were asked one listening comprehension question (e.g., “Which one is a part of a plant?”). Following the student response, regardless if the information provided was correct or incorrect, the researcher praised the student (e.g., “Good job telling me what you know about plants!”). If, after 5 seconds, the student did not respond
or following the student response (whether it was correct or incorrect), the researcher said, “Thanks, let’s go to the next one!” and moved to the next item.

The researcher and research assistants recorded student responses using an audio recording device. There was a total of 16 items on each LCSC assessment. An LCSC score for each student was expressed as the total number of items responded to correctly.

**Text Structure Strategy Measures**

Two researcher-created comprehension assessments were utilized to measure text structure strategy comprehension. These included: (1) the discrimination of text structures using familiar science content (DTSF) and, (2) the discrimination of text structures using novel science content (DTSN; see Appendix C).

**Discrimination of text structures using familiar content.** Discrimination of text structure strategies using familiar content (DTSF) was delivered using orally read paragraphs during 5-minute assessment sessions. The DTSF assessment consisted of an orally read, grade level paragraphs that exemplified one of three text structures taught in the treatment: compare only, contrast only, or compare-contrast combined, and the associated key words. The content of the paragraphs was drawn from science lessons explicitly taught during the treatment phase of the study. After listening to the paragraphs, the researcher or research assistant asked the student to identify the text structure that was employed (i.e., “Did the speaker compare plants and trees, contrast plants and trees, or compare and contrast plants and trees?”). If the student did not provide a verbal answer to the initial question, the question was repeated (e.g., “Let’s listen to that question again. Did the speaker compare plants and trees, contrast plants ad
trees, or compare and contrast plants and trees?”). If no response was given after 10 seconds of providing the second prompt, the student response was considered incorrect (see Appendix C).

The three options of the compare-contrast text structures within the DTSF probes (compare only, contrast only, or compare-contrast combined) were distributed and counterbalanced across testing groups to ensure that each text structure was presented an equal number of times across the student sample during the pre- and post-assessment periods. Students were randomly assigned to the configured testing groupings. Stratified sampling was used prior to student assignment to assessment groupings to ensure equivalent distribution of students based on gender, ethnicity, socio-economic status, and special program status. Similarly, the science content examples used during the DTSF assessment were varied and distributed evenly within and across each of the groupings such that all students had equivalent exposure to the specific science content that was assessed during the LCSC assessment. This decreased the possibility of additional testing effects (see Appendix C).

The researcher and research assistant recorded each student response using an audio recording device. Each child’s response was scored either “1” for a correct response or “0” for an incorrect response. The DTSF score for each classroom was expressed as the percentage of students within the classroom who responded correctly to their DTSF assessment item by dividing the number of students who responded correctly by the total number of students in the classroom.

**Discrimination of text structure strategies using novel content.** Discrimination
of text structure strategies using novel content (DTSN) was delivered orally in 5-minute assessment sessions immediately following the DTSF assessment. The DTSN assessment consisted of the administrator reading a paragraph that targeted the compare text structure, the contrast text structure or the compare-contrast combined text structure. The science content of the paragraphs for the DTSN was drawn from the district’s first grade science curriculum addressing plant and animal species, derived from Standard 4, Life Science, in the Utah Core curriculum, that were not read or taught during the explicit instruction routines or used in the DTSF test administration to decrease the possibility of testing effects. With the exception of the novel content, the scripted procedural responses to student answers matched the structure of the DTSF assessments identically (see Appendix D).

Similar to the DTSF, the researcher and research assistant recorded student responses using an audio recording device. Each child’s response was scored either “1” for a correct response or “0” for an incorrect response. The DTSN score for each classroom was expressed as the percentage of students within the classroom who responded correctly to their DTSN assessment item by dividing the number of students who responded correctly by the total number of students in the classroom.

**High-Quality Comprehension Instruction Practices Measure**

Two research assistants assessed the quality of the comprehension instruction using the high-quality comprehension practices measure (HQ-CIP) in each of the six teacher participants’ classrooms. The first observation was conducted two weeks after the
start of the treatment period and the second observation was conducted two weeks prior to the end of the treatment period. Each observation was conducted for one instructional session (30-40 minutes). The items on the HQ-CIP were derived from the NRP (2000) recommendations and the Institute of Education Sciences (IES) recommendations for evidence-based reading comprehension instruction for students in grades K-3 (Shanahan et al., 2010; see Appendix E for the HQ-CIP measure). Items included: (1) uses engaging science curriculum, (2) models and provides practice for listening comprehension of the informational science text, (3) uses questioning and summarizing to aid comprehension of the science text, (4) uses visual and auditory scaffolds to support comprehension, and (5) elicits frequent opportunities for student response and feedback during lesson.

Observers rated whether each reading comprehension practice was observed on a scale from 0 to 2 (0-not observed, 1-sometimes observed, and 2-frequently observed). Observers’ ratings across the five items were then summed, divided by 10, and multiplied by 100 to yield an overall quality of comprehension instruction percentage by classroom.

**Experimental Conditions**

The treatment condition was labeled *oral explicit text structure* (OETS), the first comparison condition was labeled *content only instruction* (COI), and the second comparison condition was labeled *no treatment condition* (NTC).

**Oral Explicit Text Structure Instruction**

Oral Explicit Text Structure Instruction (OETS) incorporated a four-phase explicit text structure strategy that consisted of an orally delivered instructional routine using a
research-based explicit instructional model (Archer & Hughes, 2011; Reutzel et al., 2005; Williams et al., 2009). The first-grade teachers assigned to OETS delivered a 30- to 40-minute whole group read-aloud session (with small group and paired practice opportunities) of informational science text using isolated text (e.g., paragraph of science content) and big book versions of science trade books (see Appendix F). Teachers assigned to the OETS condition also used the approved science materials provided to them by the district as part of their regular science instruction (see Appendix L for an example of a first grade district curriculum map).

The teachers assigned to the OETS condition delivered instruction three times weekly over the 8-week treatment period (see the complete OETS treatment period schedule in Appendix G). During the 8-week period, the teachers explicitly taught the compare-contrast text structures (see Appendices H, J, and L for sample lessons). As in previous research (see Miller & Lignugaris/Kraft, 2002), the current study separated introduction of the compare and contrast text structures. Researchers found that breaking down the introduction of the more complex combination of compare and contrast text structures aided in first grade students’ discrimination between the two text structures and contributed to better comprehension of each text structure prior to combining compare and contrast text structures (Marinak & Gambrell, 2008; Meyer & Ray, 2011). In the present study, the compare text structure was introduced first followed by the contrast text structure, and finally the compare and contrast text structures were introduced in the integrated compare-contrast format. An instructional assistant, who was assigned to the teacher’s classroom, assisted with the instructional routine for the duration of the
treatment period. The assistant prepared the guided practice and independent practice materials and routines while the teacher delivered the whole group instruction and participated in delivering instruction during the small group and paired practice activities as described in the following sections.

**Phase 1: Define text structure and practice in isolated text.** During OETS phase 1, the teacher introduced the compare text structure, the contrast text structure or the integrated compare-contrast text structure and associated key words through an explicit instruction routine. The compare text structure referenced in the remainder of this section illustrates the key components of each phase of the instructional routine. The same instructional routine was utilized for the contrast text structure and the integrated compare-contrast text structures in the subsequent weeks of the treatment period (A sample script for teaching the compare text structure is provided in Appendix H.).

To begin the routine, the teacher provided a simple example of the compare text structure using a familiar classroom context. This provided an opportunity for the teacher to demonstrate the text structure and highlight key words prior to teaching the compare text structure within the informational science content. The routine included opportunities for students to practice the definition of the compare text structure orally (e.g., the *compare* text structure shows how two things or ideas are like each other), identify key words, such as “alike” and “both,” and learn associated hand signals to aid in the comprehension of the compare text structure, such as the American Sign Language sign for “equals” (American Sign Language University [ASLU], 2015). The hand signals were the first pedagogical support provided in the explicit text structure lesson. For example,
the teacher opened by saying, “The compare text structure shows how two things or ideas are like each other. First, compare names the things that are alike. Then, compare tells us how the things are alike.” The teacher also modeled the use of a hand signal labeled equals in which the teacher put her/his hands with fingers bent at right angles at the knuckle with finger tips pointing toward each other (ASLU, 2015). The first phase of the explicit routine included presentation of each of the critical components of the compare text structure, including a definition of the text structure, key words, and descriptions of the hand signals.

Next, the teacher played a researcher-created, prerecorded, isolated paragraph of informational science text. Using a think aloud strategy, the teacher modeled how the compare text structure strategy is used to enhance listening comprehension. The think aloud strategy and listening to a recording are two additional forms of scaffolding support provided to the students. During this routine, the teacher modeled listening, repeated the text structure name and key words when they were heard during listening, and used hand signals to visually represent the text structure name and key words when they were heard during listening. For example, the teacher played a recording that states: “An earthworm and a snake look alike,” (the teacher paused the recording following the first statement). During the pause, the teacher modeled thinking aloud about the text that was played, saying, “Let me think about what I just heard for a moment. I just heard the speaker say: ‘An earthworm and a snake look alike.’ This names two things that are alike. This means that the speaker is going to compare two things,” (the teacher used the hand signal, “equals” each time s/he said the key words and the word, “compare”). After the teacher
modeled text structure discrimination, she prompted the students to repeat the text structure name and key words when they were heard during listening, and used hand signals to visually represent the text structure name.

After modeling the compare text structure verbally and with hand signals, and identifying key words, the teacher read the script from the recorded isolated text and prompted the students to name the compare text structure, demonstrate the hand signals for the text structure, and identify key words in the paragraph as she read through the script.

Finally, the teacher used questioning and summarization strategies to link the compare text structure to the science content. Teaching comprehension strategies within text structure instruction was additional scaffolding support provided to students. For example, the teacher would say, “What two things does compare tell us?” followed by, “What two animals did we just compare and what was alike about them?” To close, the teacher provided a statement to summarize the science information, embedding the compare hand signals and emphasizing key words within the summary. For example, the teacher would say: “The paragraph we just listened to and summarized compared earthworms and snakes (teacher uses the “equals’ hand signal). It told us that earthworms and snakes are alike (teacher uses the “equals’ hand signal). They are alike because they both are long and thin (teacher uses a “thumbs up”). Also, they both have no legs (teacher uses a “thumbs up”).

Phase 2: Text structure paragraphs embedded in science trade books. The purpose of phase 2 was for students to practice identifying the compare text structure
when it was embedded in science trade books, and then link the text structure to the 
embedded information science content. The teacher introduced the science topic of the 
day prompting student’s background knowledge of the content from phase 1 and informal 
questioning regarding the topic (e.g., “How many of you like worms? How many of you 
like snakes? Have you ever touched a worm or a snake? Tell me about that.”). The 
teacher introduced and began reading from a big book version of the informational texts 
selected to teach the compare text structure.

For each big book, two to three examples of the compare text structure were 
tagged on the page where the text structures appear for the teacher to use as a think aloud 
strategy during the read aloud. The teacher prewrote the compare text structure 
paragraphs on an easel prior to the lesson for quick reference during the lesson. Each time 
a tagged think aloud opportunity arose, the teacher paused and modeled the think aloud 
strategy that highlights the critical components of the text structure, referencing the 
sentences, key words and content displayed on the easel in paragraph form. For example, 
when the first example of compare arose as the teacher was reading aloud from the text, 
the teacher might pause and say, “Let me think about what I just read. First, I read, ‘An 
earthworm and a snake look alike’ (the teacher pointed to the sentence written on the 
easel). Did this part of what I read just name two things that are alike? (the teacher 
modeled the equals hand signal).”

The teacher also linked the use of the text structure strategy to comprehension of 
the science content by using questioning and summarizing to firm up understanding of 
the text structure within the science content. For example, while reading the book the
teacher might ask, “How did the book say earthworms and snakes are alike?” and to summarize at the end the teacher might say and ask, “So, we learned the part of compare that names two things that are alike. Let’s review: What are two living things that are alike?”

**Phase 3: Gradual release of text structure strategy in embedded science text.**

In phase 3 of the instructional cycle, the teacher gradually released responsibility for learning to the students. The students practiced identifying the text structure, identifying key words, summarizing content and linking the content presented to their prior knowledge. The teacher continued to model the compare text structure strategy while providing opportunities for students to practice. The teacher broke the class into equal halves of approximately 12 students per group and assigned students to pairs. The smaller group size and embedded paired activities supported the gradual release model. An instructional assistant was assigned to one group of students and the teacher led the remaining half. The students switched activities from teacher-led to instructional-assistant-led and vice versa so that all students experienced both small group activities during this phase.

**Teacher-led small group.** The teacher modeled listening comprehension by using recordings of text-embedded text structures read during the read aloud big book activity in phase 2. First, the teacher played the recording and followed the routine exactly as scripted during the isolated text paragraph used in phase 1. During this routine, the teacher replayed the paragraph several times to model listening for the compare text structure components and prompt students to practice the listening comprehension
strategies, as well. This routine included the teacher modeling listening, repeating the key words when they were heard during listening, and using the hand signal, “equals” to visually represent the text structure name and key words when they were heard, and the hand signal, “thumbs up” when the part that tells how the two are alike was heard during listening.

After the teacher modeled listening comprehension, she prompted the students to sit facing each other in pre-assigned pairs. Students practiced listening in the same way as modeled by the teacher. First, they were told to listen for the part of the comparison that names the things that are alike as well as, listen for any key words and when they are heard, to make the “equals” signal. Then, they were told to listen for the part of the comparison that tells how the two things are alike, and when it is heard, to give a “thumbs up.” Students worked in pairs to prompt and assist each other during this phase. The teacher circulated among the student pairs and, as needed, re-cued the recording and helped students identify the features of the target text structure and the relevant key words.

**Assistant-led small group.** While the teacher-led group practiced listening comprehension with the text-embedded text structure examples, the instructional assistant facilitated the activity for the remaining half of the students who were pre-assigned to start in the assistant-led group. Student pairs in the assistant-led group were assigned as number 1 or number 2 and engaged in a book sharing activity, using the smaller, student versions of the big books used in the lesson. The instructional assistant taught the students a “whisper discussion” routine in which students engaged in purposeful, whisper
discussions about the science text. For example, the assistant might say, “Before I hand out your books to share in pairs, let’s practice what a ‘whisper discussion’ looks and sounds like. First, let’s practice the ‘whisper’ part. A whisper is when we make words using only our breath (the assistant models a whisper as she says the words).” After modeling and practicing the whisper component, the assistant taught the “discussion” component. For example, the assistants might say, “Now, let’s practice the ‘discussion’ part of the ‘whisper discussion’. A discussion is when a person shares ideas with someone else using words, then listens as the other person share ideas.” The assistant modeled and students practiced the “discussion” component. The whisper discussion was another scaffolding support provided for students to discuss their ideas with another. The students were told to look closely at the pictures for details, tell each other things that they knew, share things that they liked or learned from the book, and ask each other questions about the book. The assistant modeled the “whisper discussion” activity several times with the students using the student copies of the big books. For example, the assistant said,

> When it is your turn to share, you might whisper to your partner, ‘I remember this part. This is where the book compares earthworms and snakes.’ You might also whisper and ask, ‘Do you remember how they are alike?’ You get to share your own ideas and ask your own questions, but only about the book we are using. Now let’s try the whisper discussion.

The instructional assistants circulated through the pairs to model discrimination of text-embedded examples of descriptions when the students’ discussion did not. For example, the assistant might say, “Did you notice that the page you are looking at compares snakes and lizards?” using the “equals” signal. The assistants also provided questioning
and summarizing of relevant parts of the text (e.g., “Look, it says both snakes and lizards are reptiles. That means they have dry skin with scales and the same kinds of heart and lungs,” using the ‘equals’ signal when key words are repeated and the ‘thumbs up’ when the part that tells how). The assistants praised students for participating in the whisper-discussion (e.g., “Wow, your whisper discussion is going well. You are whispering and telling each other about how the book is comparing snakes and lizards.”).

**Phase 4: Independent practice with text structure strategy.** For the independent practice phase, the students again worked in pre-assigned student pairs. Each student pair was given a student version of the big book used in the lesson. Using student versions allowed students to move into independent practice with the appropriate scaffold. That is, the teacher and assistant prompted, cued, and provided error correction as needed to each student pair, gradually releasing responsibility for learning to the students. As in phase 3, students were assigned either number 1 or number 2. Following the review of the instructions for listening for the text structure and key words, students worked in pairs following a similar routine to what was used during the teacher-led guided practice in phase 3. First, the teacher or the instructional assistant read the paragraph, while the other adult modeled listening comprehension, including use of hand signals, and whispering key words. Then, the teacher and/or the instructional assistant reread the paragraph as the other adults monitored the implementation of the routine, as well as, comprehension of the text structure, associated key words, and science content during independent practice by circulating among the student pairs. As needed, the adults helped students identify the features of the text structure and the relevant key words.
During this phase, the teachers and the assistants provided multiple opportunities for individual teacher feedback, error correction and student success, again prioritizing students who demonstrated a need for extra practice and support, while ensuring that all students received specific, positive feedback.

**Informal assessment of text structure knowledge.** After the compare text structure was introduced sufficiently, the teacher informally assessed comprehension of the compare text structure as measured by 80% of all students demonstrating competency on an informal oral check for understanding (see Appendix I). Teachers were given flexibility to reteach a student individually or in small groups until 80% of all students demonstrated competency. Both teachers in the OETS condition followed the established OETS schedule (see Appendix F) without reteaching material to students.

**Teaching the contrast text structure.** After informally determining that 80% of the students demonstrated competency with the compare text structure, the teachers repeated the OETS instructional routine for the contrast text structure (see the complete script for teaching the contrast text structure in Appendix J). After six sessions of teaching the contrast text structure, the teacher conducted an informal check for understanding to assess competency of the contrast text structure using the same criteria defined for the compare text structure competency (see Appendix K). The teacher included several review sessions of the compare text structure during the gradual release phase 2 and phase 3 after 3-4 sessions of the OETS contrast text structure routine. For example, following a teacher-led small group listening comprehension routine contrasting snakes and worms, the teacher incorporated a compare text structure listening
comprehension routine comparing snakes and worms from a prior compare text structure lesson.

Adding the compare text structure review into the gradual release component of the contrast text structure routine addressed the goals of the study’s instructional model in two ways. First, it provided concurrent practice with the compare text structure and the contrast text structure. Second, it forced students to discriminate the unique features of the contrast text structure from those of the compare text structure. Students practiced making the discrimination between compare and contrast during independent practice (see Appendix J). These steps ensured appropriate scaffolding to aid students during comprehension building of the integrated compare/contrast text structure when presented as the combined text structure.

**Integrated compare-contrast text structures.** After the students were taught the contrast text structure with compare text structure reviews, the teachers presented the integrated compare-contrast text structure following the same 4-phase routine as used to teach the compare and contrast text structures independently (see Appendix L). For example, the teacher compared and contrasted snakes and lizards in a single listening comprehension routine using the key words and descriptors from previously taught compare or contrast text structure lessons. Teaching the integrated compare-contrast text structure accomplished the final objective of the OETS treatment routine to build comprehension of the integrated compare-contrast text structures as they are commonly presented in complex informational text such as science text. To support maintenance of the isolated compare and contrast text structures previously taught, review of these
isolated text structures was incorporated into the integrated compare-contrast examples after 4-5 sessions.

Finally, the teacher reviewed examples of the isolated compare and contrast text structures as well as examples of the integrated compare-contrast application as they occur while re-reading the big books read previously. The teacher reviewed examples of the compare text structure in isolation, the contrast text structure in isolation, and then the integrated compare-contrast examples an equal number of times during the final 2 weeks of treatment. To accomplish this, the teachers tallied the number of reviews of example type per day and chose the next day’s book such that the number of reviews could be counterbalanced. The students continued to participate in the teacher-led and instructional assistant-led small group practice and independent practice during this period as well. The teachers introduced excerpts from novel science big book paragraphs during the last 2-3 sessions of the treatment phase to model and practice the text structure strategies with novel content. This provided the students practice in transferring comprehension of known text structure strategies (compare, contrast, compare-contrast) to novel science content.

**Content Only Instruction**

During the 8-week treatment period, the teachers assigned to the content only instruction (COI) condition implemented COI by using the commercial materials provided to teachers in the OETS condition in the current study, such as the big books and accompanying smaller, student books three times weekly for approximately 30-40 minutes. Teachers assigned to the COI condition also used the approved science materials
provided to them by the district as a part of their regular science instruction (see Appendix F for an example of a first-grade district curriculum map). Teachers in the COI condition received no training beyond the directions for lesson frequency and duration. Likewise, the teachers were not provided the text structure lesson plans, prerecorded scripts or annotations for the big book read-aloud activities. Teachers assigned to the COI condition documented the frequency and duration of lesson delivery in teacher logs identical to teachers in the OETS condition. COI teachers were observed engaging in read-aloud and using call and response, questioning and summarizing, and provided opportunities for student responses and feedback during their instruction sessions.

All formal and informal comprehension measures selected for the study were administered pre- and post-treatment to the students within the COI condition to determine any differences between and within groups. Teacher observations were conducted and data was collected using the High Quality Comprehension Instruction Practices Measure and OETS fidelity assessment (OETS-FA; see Appendix M).

**No Treatment Condition**

Throughout the treatment period, teachers assigned to the no-treatment condition (NTC) group implemented the NTC condition by following the district’s scope and sequence for science instruction using only materials assigned by the district. During the 8-week treatment period, the teachers assigned to the NTC condition implemented NTC by providing read-aloud science instruction three times weekly for approximately 30-40 minutes. The teachers in the NTC conditions taught the topics drawn from the district’s first grade science curriculum addressing plant and animal species, derived from Standard
4, living things for first grade in the Utah Core curriculum aligned with the OETS and COI conditions and were instructed to follow the district’s curriculum maps for those topics (see Appendix F). No additional training or materials were provided to teachers assigned to the NTC group. NTC teachers were observed engaging in read-aloud and using call and response, questioning and summarizing, and provided opportunities for student responses and feedback during their instruction sessions.

All formal and informal comprehension measures selected for the study were administered pre- and post-treatment to the sample of students within the NTC condition to determine any differences between and within groups. Teacher observations were conducted and data were collected using the High Quality Comprehension Instruction Practices Measure and the Oral Explicit Text Structure-Fidelity Assessment (OETS-FA) (see Appendix M).

**Teacher Training for Oral Explicit Text Structure Instruction**

The researcher trained the teachers participating in the OETS treatment group during a 1-day, 4-hour training within 2 weeks prior to the start date of the instructional phase of the study. The researcher had three objectives for the training: (1) introduce the teachers to the study purpose and components, (2) provide a research base and general overview of compare-contrast text structures, and (3) familiarize teachers with the specific compare-contrast text structure instructional routine.

To meet the first objective of the training, the researcher provided teachers with a general overview of the requirements of the study such as the scope and sequence of the
study and the requirements for individual lesson lengths and total number of sessions.

During the study overview, the researcher introduced the documentation requirements the teachers were expected to fulfill, including attendance and data tracking for each lesson session. The researcher also reviewed the details of monetary compensation for the additional time teachers were to spend to complete the documentation requirements for the study.

To meet the second objective, the researcher introduced teachers to the components of the compare-contrast text structures common in informational text (Reutzel et al., 2016). During this component of training, the teachers reviewed research on informational text structure instruction, reviewed the utility of embedding text structure instruction within science content, and examined the text features and vocabulary common in science trade books. The teachers also received detailed instruction on the compare-contrast text structures they were expected to teach during this component, including common key words and vocabulary associated with the compare-contrast text structures from the body of literature (Marinak & Gambrell, 2008).

To meet the third objective of the training, the teachers received explicit instruction in the instructional routine that defined the instructional treatment condition, OETS. The teachers in the OETS condition received an outline of the 8-week instructional program, the lesson plans outlining the specific instructional routines for the program, and the content materials for the program. During this phase of training the teachers: (1) viewed and critiqued live models of literacy specialists modeling the OETS instructional program, (2) engaged in role plays during which they implement the
instructional program as the teacher, and (3) received and provided feedback on implementation of the instructional condition from the literacy specialists and the research facilitator. The teachers’ competence implementing the OETS instructional program was assessed based on their delivery of a mock OETS routine to the program facilitator. The teachers were scored on each of the key elements in the OETS instructional phases using the OETS fidelity observation checklist assessment (see Appendix A). The teachers were determined competent to deliver the OETS program with a minimum score of 80% based on the OETS fidelity checklist. The teachers were permitted to practice and repeat the assessment as necessary to reach minimum competence.

Study Design

A pre-post-test control group design was utilized to evaluate the effect of explicit instruction of an informational text structure on students’ listening comprehension outcomes and knowledge of text structures. Internal validity was addressed through the use of random assignment of students across groups and multiple control conditions. The content-only instruction condition (COI) was included to address the possible interpretation that providing informational science content consistently over 30-40 minute read-aloud sessions 3 times weekly might produce effects comparable to the OETS condition treatment. The no treatment condition (NTC) was included to address the possible interpretation that providing typical instruction of informational science within the science core and/or read-aloud consistently over 30-40 minute read-aloud
sessions 3 times weekly instruction might produce effects that are comparable to the OETS condition. Based on teachers’ self-report documentation, the number of instructional sessions and the number of minutes in each session was equivalent across conditions (see Table 6). The average student attendance during treatment sessions was comparable.

**Procedures**

One hundred thirty-five first-grade students were randomly assigned to six first-grade classroom teachers across two participating elementary schools. A total of 115 students were in the analysis after 122 student assent and guardian consent forms were collected and seven students withdrew from the schools during the study. Two teachers were randomly assigned to one of the three groups across the two schools such that one OETS condition, one COI condition and one NTC condition was implemented in each school. This controlled for contamination effects. Teachers assigned to all conditions received and signed an informed consent form that detailed the requirements for the

<table>
<thead>
<tr>
<th>Table 6</th>
</tr>
</thead>
</table>

**Descriptive Statistics of Treatment Sessions by School and Condition**

<table>
<thead>
<tr>
<th>Statistic</th>
<th>School A</th>
<th>School B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OETS</td>
<td>COI</td>
</tr>
<tr>
<td>Number of sessions</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Number of minutes</td>
<td>30-40</td>
<td>30-40</td>
</tr>
<tr>
<td>Average # of sessions attended by students</td>
<td>20.68</td>
<td>20.62</td>
</tr>
</tbody>
</table>

*Note. OETS = Oral Explicit Text Structure Condition; COI = Content-Only Instruction Condition; NTC = No Treatment Condition.*
study, including confidentiality regarding instructional training, materials, instructional progress and student outcomes.

**Training**

Teachers assigned to the OETS condition participated in a 1-day, 4-hour training within 2 weeks prior to the start date of the instructional phase of the study. The training addressed the main study purpose and components, provide a research base and general overview of the compare-contrast text structures, and familiarize the teachers with the specific compare-contrast text structure instructional routine. The two OETS teachers participated in a fidelity checklist assessment to demonstrate their competence to deliver the OETS routine.

Teachers in the COI condition received no training; however, they received the same materials provided to teachers in the OETS condition at the same time the OETS teachers received their materials. The teachers in the COI condition received direction regarding the instructional session time and frequency requirements during the 8-week period and how to document compliance with the requirements. The NTC teachers received no training or materials; however, they were contacted at about the same time to remind them of the instructional session content, time and frequency requirements during the 8-week period as well as how to document compliance with the requirements.

**Assessment Procedures**

The initial assessment period of the study took place during a 2-week period prior to beginning the treatment phase of the study. Each student in each of the six classrooms
was assessed using the listening comprehension assessment of science content knowledge (LCSC), as well as the discrimination of text structure using familiar content assessment (DTSF) and the discrimination of text structure using novel content assessment (DTSN). The assessment sessions lasted a total of 7-10 minutes, with the individual assessments ranging in duration from 3-4 minutes.

The researcher and trained research assistant facilitated the initial assessment sessions for each student. The assessment administrators orally delivered the researcher-made assessments, including the LCSC, DTSF, and DTSN. All student responses were recorded using an audio recording application loaded to a tablet. The researcher and research assistants also scored the LCSC, DTSF and DTSN assessments.

The treatment period of the study began immediately following the 2-week assessment period. The teachers in the OETS and COI condition implemented their assigned experimental conditions beginning on the same start date and followed the routine specifications for frequency, duration and program delivery per week over the 8-week treatment period as detailed in the previous section (see Appendix F for the weekly schedule for the OETS treatment period).

The post-assessment period took place during the 2-week period immediately following the 8-week treatment period. Each student in each of the six classrooms again was assessed using the listening comprehension assessment of science content knowledge (LCSC) as well as the discrimination of text structures using familiar content assessment (DTSF), and the discrimination of text structures using novel content assessment (DTSN). The assessment administrators applied the identical assessment procedures used
in the initial assessment period during the post-assessment sessions.

**Fidelity of Implementation**

Fidelity of implementation of the explicit instruction of text structures routine in the treatment group was measured by conducting two unannounced observations using the OETS-FA (see Appendix M) per classroom during the study. The OETS-FA tool was utilized for training purposes. The tool was designed to measure the five components identified as critical to the explicit, scaffolded instruction of the compare-contrast text structure targeted in the OETS instruction, including: (a) explicitly defining the text structures (b) identifying and defining the key words associated with the text structures (c) using hand signals to scaffold learning of the text structures and key words (d) using call and response to familiarize students with the text structures and key words, and (e) modeling thinking aloud about the text structures and key words within the context of orally delivered science content. Fidelity of implementation for the teachers in each of the OETS condition was scored based on the extent to which the teachers utilized the OETS strategies defined on the OETS-FA in the same way the HQ-CIP measure was scored. Raters scored each item on a scale from 0 to 2 (0-not observed, 1-sometimes observed, and 2-frequently observed). The two OETS classrooms were assessed on 20% of the total lessons taught. The observations were conducted at the same time as the HQ-CIP observations were conducted.

Researchers also used the OETS-FA tool to document whether any critical text structure components associated with the OETS treatment were observable in the COI or
NTC classrooms. Teachers of the two COI classrooms were assessed during the scheduled 30-40 minute sessions when the study content materials were utilized. Teachers in the two NTC classrooms were assessed during their 30-40 minute scheduled science read aloud instruction as well. Fidelity of implementation for the teachers in each of the COI and NTC conditions was scored based on the extent to which they utilized any of the text structure components defined on the OETS-FA using a scale of 0 to 2 (0-not observed, 1-sometimes observed, and 2-frequently observed). Data were collected using the same schedule (30-40 min) as the treatment condition across 25% of observations two times across the treatment period.

The fidelity of implementation of each of the five OETS components was calculated by component, by teacher, and across teachers within each condition as a mean percentage OETS-FA score, or the sum of their scores divided by the total number of observations, multiplied by 100. The average percentage of overall fidelity of implementation (or adherence to the treatment procedures) to the OETS instruction routine for each condition was calculated as the sum of the scores of all five OETS practices across teachers within the condition, divided by the total score possible (10), multiplied by 100.

**Interobserver Agreement**

Interobserver agreement (IOA) for each of the researcher-developed assessments, *(listening comprehension of science content (LCSC) assessment, discrimination of text structures of familiar content (DTSF), discrimination of text structures of novel content)*
(DTSN), high quality comprehension instruction practices measure (HQ-CIP) was measured using a minimum IOA criterion set at 80% agreement. A total of 20% of the pre-test and post-test scores of the LCSC, DTSF and DTSN student assessments were randomly sampled to measure the IOA following individual scoring of the LCSC, DTSF and DTSN student assessments.

Twelve observations were conducted across the six participating teachers (two observations/teacher) to assess the High Quality Comprehension Instructional Practices (HQ-CIP) teachers employed and OETS Fidelity. A second observer randomly scored one observation for each of the six teachers. In both the HQ-CIP and the OETS Fidelity Assessment (OETS-FA), if both of the research assistants recorded the same scores an agreement was scored. If the research assistants recorded different values for the item, then a disagreement was scored. Interobserver agreement was calculated by dividing the total number of agreements by the total number of agreements plus the disagreements and multiplying by 100 (Watkins & Pacheo, 2000). The mean interobserver agreement for the HQ-CIP across the conditions (OETS, COI, and NTC) was 87% (range 80% to 100%). The interobserver agreement for the OETS-FA for each of the three conditions (OETS, COI, and NTC) was 80%.

For the LCSC, DTSF and DTSN assessments, a random sample of 24 pretest/posttest student score sets were selected to conduct IOA representing just over 20% of the total sample of score sets. Mean interobserver agreement was calculated for each pre and post assessment. Interobserver agreement was 96% for the pre-LCSC assessment (range 83% to 100%), 96% for the post-LCSC assessment (range 83% to 100%), and 100% for
the each of the pre and post DTSF and DTSN assessments.

**Data Analysis**

Student performance between groups on each dependent measure was analyzed using an analysis of covariance (ANCOVA). An ANCOVA allows for the pre-treatment scores on evaluation measures to be used as the covariate to equalize the groups on the dependent variables, providing some statistical control for threats to internal validity (B. Cohen, 2013). An ANCOVA was conducted to determine if post-treatment scores for the OETS group on the three comprehension measures differed significantly from the post-treatment scores for the COI and NTC groups, using the pre-test comprehension measures as the covariate in each analysis. An alpha of \( p < .05 \) was used to assess the risk for committing a Type 1 error. Post hoc analyses were conducted to provide additional pairwise comparisons between the groups to determine the specific differences. Partial eta squared effect sizes were calculated to describe the magnitude of the effects of specific group comparisons for each assessment variable. There are few guidelines available for determining when an effect size is educationally significant. For partial eta squared, J. Cohen (1988) defined a small effect as partial \( \eta^2 = 0.01 \), a medium effect as partial \( \eta^2 = 0.06 \), and large effect as partial \( \eta^2 = 0.14 \).
CHAPTER IV

RESULTS

The purpose of the current study was to evaluate the effect of comprehension strategy instruction that focuses on teaching the compare-contrast text structures found in informational text through a scaffolded read aloud routine on first grade students’ listening comprehension outcomes. The research questions addressed in this study were as follows.

1. How does the explicit instruction of the compare-contrast text structures implemented in conjunction with scaffolds (i.e., read aloud, think aloud, hand signals) and high-quality comprehension instruction practices effect first grade students’:
   a. listening comprehension of science content presented in informational texts when compared with first grade students who receive content-only instruction or traditional first grade comprehension instruction?
   b. discrimination of compare-contrast text structures within familiar and novel science content when compared with first grade students who receive content-only instruction or traditional first grade comprehension instruction?

2. To what extent did teacher participants implement high quality comprehension instruction practices (e.g., explicit instruction of strategies, questioning, summarizing, etc.)?

A pre-posttest control group design was utilized to evaluate the effect of explicit instruction of informational text structures on students’ listening comprehension outcomes and knowledge of text structures. Descriptive and inferential statistics were utilized. An ANCOVA was conducted using pre-treatment scores on the evaluation measures as the covariate to establish baseline equivalence of the groups on the dependent variables. This provided some statistical control for threats to internal validity. An alpha of $p < .05$ was set to assess the risk for committing a Type 1 error. Partial eta
squared effect sizes were calculated to describe the magnitude of the effects of specific group comparisons on each measure as well.

**Research Question 1a**

Research question 1a stated, “The Effect of OETS on the Listening Comprehension of Science Content (LCSC) assessment compared to COI and NTC Groups.” Prior to the treatment phase of the study, students in the OETS group scored a mean of 7.92 ($SD = 1.64$) on the listening comprehension of science content (LCSC) assessment while students in the COI had a mean score of 7.78 ($SD = 2.79$) and students in the NTC had a mean score of 7.86 ($SD = 2.62$; see Table 7). Following the 8-week treatment phase, students in the oral explicit text structure (OETS) group scored a mean of 9.86 ($SD = 1.93$) on the LCSC assessment while students in the COI group had a mean score of 8.68 ($SD = 2.62$) and students in the NTC had a mean score of 9.35 ($SD = 2.49$). Each of the study groups demonstrated gains on the LCSC assessment. The OETS group demonstrated a mean percentage gain of 12%, the COI group yielded a gain of 6%, and the NTC group had a 9% gain.

An ANCOVA (using pretest scores as the covariate) was conducted to determine if post-treatment mean scores for the OETS group on the LCSC differed significantly from the post-treatment mean scores for the comparison groups (see Table 8). There was a statistically significant difference between the group means favoring the OETS group, $F(2, 112) = 4.17$, $p = .018$. A Bonferroni correction was applied to address the potential issues of family-wise error associated with multiple comparisons by dividing the set
### Table 7

**Descriptive Statistics and Specific Comparisons on Student Outcome Measures**

<table>
<thead>
<tr>
<th>Measure</th>
<th>Oral explicit text structure ((n = 37))</th>
<th>Content-only condition ((n = 41))</th>
<th>No treatment condition ((n = 37))</th>
<th>Statistically significant comparisons ((p &lt; .016)^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretest (M), SD</td>
<td>Posttest (M), SD</td>
<td>% Gain</td>
<td>Pretest (M), SD</td>
</tr>
<tr>
<td>LCSC</td>
<td>7.92, 1.64</td>
<td>9.86, 1.93</td>
<td>12</td>
<td>7.78, 2.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTSF</td>
<td>22%, 4%</td>
<td>68%, 2%</td>
<td>46</td>
<td>20%, 5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTSN</td>
<td>32%, 14%</td>
<td>65%, 3%</td>
<td>33</td>
<td>29%, 1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^a\) = Bonferroni correction applied.
Table 8

Analysis of Covariance of Listening Comprehension of Science Content

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>F</th>
<th>Sig.</th>
<th>Partial $\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected model</td>
<td>354.255$^a$</td>
<td>3</td>
<td>118.085</td>
<td>42.717</td>
<td>.000</td>
<td>.536</td>
</tr>
<tr>
<td>Intercept</td>
<td>125.439</td>
<td>1</td>
<td>125.439</td>
<td>45.378</td>
<td>.000</td>
<td>.290</td>
</tr>
<tr>
<td>PRELSCS</td>
<td>326.794</td>
<td>1</td>
<td>326.794</td>
<td>118.218</td>
<td>.000</td>
<td>.516</td>
</tr>
<tr>
<td>GROUP</td>
<td>22.995</td>
<td>2</td>
<td>11.498</td>
<td>4.159</td>
<td>.018</td>
<td>.070</td>
</tr>
<tr>
<td>Error</td>
<td>306.841</td>
<td>111</td>
<td>2.764</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>10561.000</td>
<td>115</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Corrected total</td>
<td>661.096</td>
<td>114</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

$^a R^2 = 0.536$ (Adjusted $R^2 = 0.523$).

alpha level of $p = .05$ by three (representing the total number of comparisons). This calculation resulted in a corrected alpha level of $p < .016$ to determine statistical significance for the pairwise comparisons. A statistically significant difference was detected between the post group mean of the OETS group and the COI group $F(2, 76) = 7.81, p = .007$. No significant difference between the post group mean of the OETS group and the NTC group was detected.

Effect sizes were calculated to determine the educational importance of the main group effect and any pairwise group comparisons (see Tables 8 and 9). A medium effect ($\eta^2 = 0.07$; J. Cohen, 1988) favoring the OETS group was shown for the main effect. Additionally, a follow-up pairwise comparison between the OETS group and the COI group showed a medium effect ($\eta^2 = 0.09$) and a comparison between the OETS group and the NTC group showed a small effect ($\eta^2 = 0.02$).
Research Question 1b

Research question 1b stated, “The Effect of OETS on Discriminating Compare-Contrast Text Structures compared to COI and NTC Groups Familiar Science Content (DTSF measure).” Prior to the treatment phase of the study, 22% of the students in the OETS group correctly discriminated the text structures within familiar (DTSF) content while 20% of the students in the COI group and 35% of the students in the NTC correctly discriminated the text structures within the familiar content. Following the 8-week treatment phase, 46% of the students in the OETS group correctly discriminated the text structures within familiar content while 34% of the students in the COI group and 38% of students in the NTC group correctly discriminated text structures within familiar content (see Table 7). Overall, 46% more students in the OETS group correctly identified the three text structures (compare, contrast, and compare-contrast) within familiar content from pretest to posttest. In contrast, only 13% more students in the COI group and only 3% more students in NTC group correctly identified text structures within familiar content from pretest to posttest.

An ANCOVA was conducted to determine if the percentage of students in the OETS classrooms who responded correctly on the DTSF assessment following treatment differed significantly from the percentage of students in the COI or NTC classrooms who responded correctly on the DTSF assessment following treatment in the OETS classrooms (see Table 9). There was a statistically significant difference between the groups favoring the OETS classrooms, $F(2, 112) = 6.52, p = .002$. A Bonferroni correction was applied to address the potential issue of family-wise error associated with
Table 9

Analysis of Covariance of Discrimination of Text Structures within Familiar Science Content

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III sum of squares</th>
<th>df</th>
<th>Mean square</th>
<th>$F$</th>
<th>Sig.</th>
<th>Partial η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected model</td>
<td>3.017*</td>
<td>3</td>
<td>1.006</td>
<td>4.355</td>
<td>.006</td>
<td>.105</td>
</tr>
<tr>
<td>Intercept</td>
<td>18.400</td>
<td>1</td>
<td>18.400</td>
<td>79.697</td>
<td>.000</td>
<td>.418</td>
</tr>
<tr>
<td>PREDTSF</td>
<td>.025</td>
<td>1</td>
<td>.025</td>
<td>.109</td>
<td>.742</td>
<td>.001</td>
</tr>
<tr>
<td>GROUP</td>
<td>3.010</td>
<td>2</td>
<td>1.505</td>
<td>6.519</td>
<td>.018</td>
<td>.105</td>
</tr>
<tr>
<td>Error</td>
<td>25.627</td>
<td>111</td>
<td>.231</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>54.000</td>
<td>115</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Corrected total</td>
<td>28.643</td>
<td>114</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

*$R^2 = .105$ (Adjusted $R^2 = .081$).

multiple comparisons by dividing the set alpha level of $p < .05$ by 3 (representing the total number of comparisons). This calculation resulted in a corrected alpha level of $p < .016$ to determine statistical significance for the pairwise comparisons. A statistically significant difference was detected between the percentage of students in the OETS group who responded correctly on the DTSF posttest and the percentage of students who responded correctly in the COI group $F(1, 76) = 11.18, p = .001$). Also, there was a significant difference in the percentage of COI students who responded correctly on the DTSF posttest and the percentage of NTC students who responded correctly on the posttest, $F(1, 72) = 8.99, p = .004$).

Effect sizes were calculated as a part of the analysis of the DTSF assessment results to determine whether the observed main effect and any pairwise group observed effects were educationally important (see Tables 7 and 9). A comparison of the OETS group to the two comparison conditions (COI and NTC) showed a medium effect (partial
\( \eta^2 = 0.11 \) based on the criteria for partial eta squared (Cohen, 1988). Similarly, a follow-up pairwise comparison between the OETS group and the COI group produced a medium effect (partial \( \eta^2 = 0.13 \)) and a comparison between the OETS group and the NTC group produced a medium effect (partial \( \eta^2 = 0.11 \)).

**Novel Science Content (DTSN Measure)**

Prior to the treatment phase of the study, 32% of the students in the oral explicit text structure (OETS) correctly discriminated the three text structures (compare, contrast, and compare-contrast) within novel (DTSN) content while 29% of the students in the content only instruction (COI) group and 24% of the students in the no treatment condition (NTC) correctly discriminated the text structures within novel content. Following the 8-week treatment phase, 46% of the students in students in the OETS group correctly discriminated the text structures within novel content assessment while 27% of students in the COI group and 27% of students in the NTC group correctly discriminated text structures within novel content (see Table 7).

Overall, the correct response rate increased 33% in the OETS group. A total of 65% of OETS students correctly discriminated text structures within novel content from pretest to posttest. In contrast, 2% fewer students in the COI group and only 3% more students in NTC group correctly discriminated text structures within familiar content from pretest to posttest.

An ANCOVA was conducted to determine if the percentage of students in the OETS classrooms who responded correctly on the DTSN assessment following treatment differed significantly from the percentage of students in the COI and NTC groups who
responded correctly on the DTSN assessment following treatment in the OETS classrooms (see Table 10). There was a statistically significant difference between the group favoring the OETS classrooms, $F(2, 112) = 8.23, p = .000$. A Bonferroni correction was applied to address the potential issues of family-wise error associated with multiple comparisons by dividing the set alpha level of $p < .05$ by 3 (representing the total number of comparisons). This calculation resulted in a corrected alpha level of $p < .016$ to determine statistical significance for the pairwise comparisons. A statistically significant difference was detected between the percentage of students in the OETS group who responded correctly on the DTSN posttest and the percentage of students who responded correctly in the COI group $F(1, 76) = 12.72, p = .001$. Also, there was a significant difference in the percentage of COI students who responded correctly on the DTSN posttest and the percentage of the NTC students who responded correctly on the posttest, $F(1, 72) = 11.41, p = .001$.

Table 10

Analysis of Covariance of Discrimination of Text Structures within Novel Science Content

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III sum of squares</th>
<th>$df$</th>
<th>Mean square</th>
<th>$F$</th>
<th>Sig.</th>
<th>Partial $\eta^2$</th>
</tr>
</thead>
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<tr>
<td>Corrected model</td>
<td>4.156*</td>
<td>3</td>
<td>1.385</td>
<td>6.617</td>
<td>.000</td>
<td>.152</td>
</tr>
<tr>
<td>Intercept</td>
<td>10.136</td>
<td>1</td>
<td>10.136</td>
<td>48.422</td>
<td>.000</td>
<td>.304</td>
</tr>
<tr>
<td>PREDTSN</td>
<td>.543</td>
<td>1</td>
<td>.543</td>
<td>2.593</td>
<td>.110</td>
<td>.023</td>
</tr>
<tr>
<td>GROUP</td>
<td>3.446</td>
<td>2</td>
<td>1.723</td>
<td>8.23</td>
<td>.000</td>
<td>.129</td>
</tr>
<tr>
<td>Error</td>
<td>23.236</td>
<td>111</td>
<td>.209</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
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</tr>
<tr>
<td>Corrected total</td>
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<td>114</td>
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</tbody>
</table>

*R^2 = .152 (Adjusted R^2 = .129).*
Effect sizes were calculated as a part of the analysis of the DTSN assessment results to determine the magnitude of the main group effect and any pairwise group comparisons (see Tables 7 and 10). A comparison of the OETS group to the two comparison conditions (COI and NTC) showed a medium ($\eta^2 = 0.13$) based on the criteria for partial eta squared (Cohen, 1988). Additionally, a follow-up pairwise comparison between the OETS group and the COI group showed a large effect (partial $\eta^2 = 0.15$) and a comparison between the OETS group and the NTC group showed a large effect (partial $\eta^2 = 0.14$).

**Fidelity of Implementation of Text Structure Instruction**

The fidelity of implementation of each of the five OETS components was measured in percentages by component, by teacher, and across teachers within each condition (see Table 11). The overall mean OETS-FA score for the teachers in the OETS condition was 90% (range from 50% to 100%). The mean OETS-FA score for the teachers in the COI condition was 45% (range from 0% to 75%). The mean OETS-FA score for the teachers in the NTC condition was 33% (range from 0% to 75%).

Regardless of condition, all teachers in the study demonstrated some fidelity (range from 50% to 100%) to component 5 of the text structure fidelity assessment, *uses call and response to familiarize students with text structures and key words*. Additionally, teachers across all conditions in the study demonstrated some fidelity (range from 25% to 75%) to component 4, *models thinking aloud about the text structures and key words*, although no teacher across any condition demonstrated 100% fidelity to component 4 of
### Table 11

**Fidelity of Implementation to the Explicit Instruction of Compare-Contrast Text Structure Percentages**

<table>
<thead>
<tr>
<th>OETS-FA</th>
<th>Oral explicit text structure condition (%)</th>
<th>Content-only instruction condition (%)</th>
<th>No-treatment condition (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teacher A</td>
<td>Teacher B</td>
<td>OVERALL</td>
</tr>
<tr>
<td>1.</td>
<td>100</td>
<td>50</td>
<td>75</td>
</tr>
<tr>
<td>2.</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>3.</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>4.</td>
<td>75</td>
<td>75</td>
<td>75</td>
</tr>
<tr>
<td>5.</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>OVERALL</td>
<td>95</td>
<td>85</td>
<td>90</td>
</tr>
</tbody>
</table>

*Note. OETS-FA = Oral Explicit Text Structure Fidelity Assessment; 1 = Component 1: Explicitly defines the text structures; 2 = Component 2: Identifies and defines the key words associated with the text structures; 3 = Component 3: Uses hand signals to scaffold learning of key words and text structures; 4 = Component 4: Models thinking aloud about the text structures and key words; 5 = Component 5: Uses call and response to familiarize students with text structures and key words.*
text structure instruction.

Although all teachers were observed using components 4 and 5 to some degree, the OETS teachers demonstrated higher and more consistent fidelity to each of the components of the text structure instruction than teachers in the COI and NTC conditions. The OETS teachers demonstrated 100% fidelity to three of the five fidelity components of the text structure instruction, including: component 2: identifies and defines the key words associated with the text structures, component 3: uses hand signals to scaffold learning of key words and text structures, and component 5: uses call and response to familiarize students with text structures and key words. In addition, their average fidelity on component 4 (models thinking aloud about the text structures and key words) was higher than either the COI or the NTC teachers at 75%. In contrast, teachers in the COI and NTC conditions demonstrated low fidelity to component 2: identifying and defining the key words associated with the text structures (range from 38% to 25%) and component 3: using hand signals to scaffold learning of key words and text structures (25% for both conditions), while their fidelity to component 5: using call and response to familiarize students with text structures and key words, was also lower (63% to 75%) than the OETS teachers.

**Relationship Between Teachers’ Text Structure Implementation Scores and Student Gains on the Text Structure Discrimination Assessments**

There is a clear relationship between teacher’s “adherence,” to the critical components of the oral explicit text structure routine (OETS-FA) and the percentage of students who responded correctly to *Discrimination of Text Structures of Familiar*
(DTSF) content and Discrimination of Text Structures of Novel (DTSN) content (see Figure 4). High adherence to the critical components of the OETS instruction was reported for the OETS group with a mean percentage of implementation of 90%. In contrast, considerably lower fidelity of implementation of the critical OETS components was detected in the COI classrooms, with a mean of percentage of 45%, and the NTC classrooms, with a mean percentage of 33%. In parallel, the percentage gain of OETS students from pretest to posttest who responded correctly on the DTSF and the DTSN (46% and 33%, respectively) exceeded the pretest to posttest percentage gain of COI students (14% for DTSF; and -2% for DTSN) and NTC (3% for DTSF; and 3% for DTSN).

Figure 4. Comparison of teachers’ OETS-FA implementation to student gains on discrimination of text structures within familiar and novel content measure (DTSF/DTSN).
Research Question 2


The second research question addressed the extent to which the teacher participants in the study implemented the high-quality comprehension instruction practices (HQ-CIP) recommended for K-3 reading comprehension instruction (NRP, 2000; RAND, 2002; Shanahan et al., 2010). Descriptive statistics were utilized to determine the percentage of high-quality comprehension practices observed in each classroom (see Appendix E for the HQ-CIP measure).

A mean percentage of implementation of high quality comprehension practices was calculated by item and by teacher within each condition across two observation sessions. The average percentage of overall implementation of high quality practices for each condition was the average of teachers’ individual scores for each observation.

Overall, the average percentage of high quality practices for the OETS teachers was 98% (range from 95% to 100%; see Table 12). The average percentage of high quality practices for the COI teachers was 85% (range from 80% to 90%). The average percentage of HQ-CIP for the NTC teachers was 85% (range from 70% to 100%). Five of the six teacher participants across conditions in the study demonstrated the acceptable minimum percentage of 80% overall implementation of high-quality comprehension practices (U.S. Department of Education, 2015, p. 3). The OETS teachers had the highest average implementation of 98% across observations, while the COI and the NTC teachers had a mean implementation score of 85% across observations. By classroom, the two
Table 12

*Implementation of High-Quality Comprehension Instruction Practice Percentages*

<table>
<thead>
<tr>
<th>HQ-CIP</th>
<th>Oral explicit text structure condition (%)</th>
<th>Content-only instruction condition (%)</th>
<th>No-treatment condition (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teacher A</td>
<td>Teacher B</td>
<td>OVERALL</td>
</tr>
<tr>
<td>1.</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>2.</td>
<td>100</td>
<td>75</td>
<td>88</td>
</tr>
<tr>
<td>3.</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>4.</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>5.</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>OVERALL</td>
<td>100</td>
<td>95</td>
<td>98</td>
</tr>
</tbody>
</table>

*Note.* Practice 1 = Uses engaging science curriculum aligned directly to 1st grade standards in state core curriculum; Practice 2 = Models and provides practice for listening comprehension of the informational science text; Practice 3 = Uses questioning and summarizing to aid comprehension of the science text; Practice 4 = Uses visual and auditory scaffolds to support comprehension; Practice 5 = Elicits frequent opportunities for student response and feedback during lesson
OETS teachers, one teacher in the COI group (average score of 90%), and one teacher in the NTC group (average score of 100%) demonstrated comparatively high implementation of high quality comprehension practices. In contrast, one teacher in the COI group and one teacher in the NTC group had lower high quality comprehension practice implementation with an average score of 70% and 80%, respectively.

**Relationship Between Teachers’ High-Quality Comprehension Instruction Practice Scores and Students’ Science Listening Comprehension**

There is a clear relationship between teacher’s implementation of the high quality comprehension instruction practices defined in the HQ-CIP and student outcomes on the *Listening Comprehension of Science Content* measure (LCSC; see Figure 5 and Table 13). The students of the OETS teachers who had mean scores of 95% and 100% on the HQ-CIP, demonstrated mean LCSC gains of 12.5% and 11.6%, respectively. The students of the COI teacher with a 90% mean implementation score on the HQ-CIP had a 9.6% gain, and the students of the NTC teacher with 100% implementation of HQ-CIP had a 11.4% gain on the LCSC assessment. In contrast, the teachers in the COI and NTC groups with lower percentages of HQ-CIP (70% and 80%, respectively) demonstrated lower student gain on the LCSC assessment. The COI teacher with an HQ-CIP mean of 70% had students who gained an average of 7.2% on the LCSC assessment, while students of the NTC teacher with an HQ-CIP mean of 80% had a mean percentage gain of 1.1% on the LCSC assessment.
Figure 5. Comparison of teachers’ HQ-CIP implementation to student gains on listening comprehension of science content (LCSC) measure.

Table 13

Gain Scores for Listening Comprehension of Science Content by Classroom

<table>
<thead>
<tr>
<th></th>
<th>Oral explicit text structure</th>
<th>Content-only instruction</th>
<th>No treatment condition</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teacher A</td>
<td>Teacher B</td>
<td>Teacher A</td>
</tr>
<tr>
<td>LCSC</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
</tr>
<tr>
<td>Pre</td>
<td>8.44</td>
<td>1.50</td>
<td>7.52</td>
</tr>
<tr>
<td>Post</td>
<td>10.31</td>
<td>1.20</td>
<td>9.52</td>
</tr>
<tr>
<td>Raw gain (%)</td>
<td>1.87</td>
<td>11.60</td>
<td>2.00</td>
</tr>
</tbody>
</table>

Note. LCSC = Listening Comprehension of Science Content Measure; Pre = Pre-test Raw Score; Post = Post-test Raw Score; Gain (%) = Raw Gain Score (Percent Gain); OETS = Oral Explicit Text Structure Condition; COI = Content-Only Instruction Condition; NTC = No Treatment Condition.
CHAPTER V
DISCUSSION

The purpose of this study was to evaluate the effect of explicit comprehension strategy instruction of informational text structures on first grade students’ listening comprehension outcomes. Specifically, the oral instruction targeted the compare-contrast text structures found in big book versions of first grade science trade books. The instruction was scaffolded through an interactive read aloud routine that included high-quality comprehension practices. Students were randomly assigned to one of three groups: oral explicit text structure instruction (OETS), content-only instruction (COI), or no treatment condition (NTC). The research questions addressed two main areas: (1) the effect of OETS instruction on first grade students’ (a) listening comprehension of science content compared to students in the COI and NTC groups, and (b) discrimination of compare-contrast text structures in familiar and novel content compared to students in the COI and NTC groups, and (2) the extent to which teacher participants’ implemented high quality comprehension instruction practices as recommended for kindergarten through third grade reading comprehension instruction (NRP, 2000; Shanahan et al., 2010).

Listening Comprehension of Science Content Findings

In regard to Research Question 1a, a statistically significant difference was detected between the post-test scores of the three study groups for the listening comprehension of science content (LCSC) assessment favoring the OETS group. Results from follow-up pairwise comparisons showed a statistically significant difference
between the post-LCSC means of the OETS group and the COI group, favoring the OETS group. However, post-hoc pairwise comparisons showed no differences between the post-LCSC means of the OETS group and NTC group, or between the post-LCSC means of the COI group and NTC group. Partial eta squared effect sizes showed medium observed effects (range .07 to .09). That is, 7% of the variance in the listening comprehension of science content scores was accounted for by membership in the OETS group as compared to the other groups. When compared to the COI group alone, 9% of the variance in students' LCSC score was accounted for by membership in the OETS group. These findings extend the findings from previous studies (Williams et al., 2005, 2009) that showed no significant differences between text structure instruction treatment groups and content-only groups on students’ knowledge of science content following the study periods. Based on the LCSC findings, providing first grade students with orally delivered science content may lead to differential improvements in their listening comprehension of science content across conditions and across classrooms depending on the quality of the comprehension instruction provided by the teacher. Importantly, each of OETS teachers of students who produced positive outcome on the LCSC implemented the high quality comprehension instruction practices (HQ-HIP) consistently, while one teacher in the COI group and one teacher in the NTC group also implemented the high quality comprehension instruction practices consistently and produced positive outcomes on the LCSC. These findings suggest that consistent implementation of high quality comprehension instruction practices may be linked to the listening comprehension of science content. Discussion of the findings from the
remaining research questions provide additional insight upon which more detailed conclusions can be drawn.

**Discrimination of Text Structures Findings**

Specific to Research Question 1b, a statistically significant difference between the percentage of students who discriminated text structures with familiar and novel content (DTSF, DTSN) was detected favoring the OETS classrooms. Post-hoc pairwise comparisons showed statistically significant differences between the percentage of students in the OETS and COI groups and the OETS and NTC groups who correctly identified text structures favoring the OETS group. In contrast, no differences were detected on the DTSF or the DTSN between the COI and NTC groups. These results suggest that significantly more first grade students who received oral explicit text structure instruction correctly discriminated compare, contrast, or compare-contrast text structures when presented within both familiar and novel content in comparison to students who received content only instruction and no treatment instruction. Moreover, effect sizes suggest that membership in the OETS group accounted for 11% to 15% of the variance. Approximately two-thirds of the first grade students in the OETS group at post-test could identify compare, contrast or compare-contrast text structures within familiar and novel content while less than one-third of the same first grade students could identify the text structures prior to the instruction. In contrast, the only appreciable improvement in the discrimination of the compare, contrast, and compare-contrast text structures noted in the comparison groups was a 14% increase in the DTSF for the COI classrooms. These
findings support previous research conducted in classrooms of second-grade students in which researchers found that students who were provided text structure instruction transferred their knowledge of the compare-contrast text structures to both familiar and novel content (Hall et al., 2005; Williams et al., 2005, 2009).

**Linkage Between Fidelity of Implementation of Text Structure Instruction to Students’ Discrimination of Text Structure Outcomes**

The results from the teachers’ fidelity of implementation, or “adherence,” to the critical components of the oral explicit text structure routine as measured by two observations using the oral explicit text structure - fidelity assessment (OETS-FA), provided further insight into the outcomes of the discrimination of text structures within familiar (DTSF) science content and discrimination of text structures within novel (DTSN) science content outcomes. As expected, high adherence to the critical text structure components of the OETS instruction was reported for the OETS group. In contrast, teachers in the COI and NTC classrooms employed some components of the strategies. That is, teachers in the COI and NTC classrooms included the use of call and response to familiarize students with text structures and modeled thinking aloud about the text structures within the science text. Moreover, the teachers used these strategies less consistently than the OETS teachers. Importantly, implementation of this these strategies alone did not lead to a larger percentage of students identifying compare, contrast or compare-contrast text structures with familiar or novel content. These results suggest that when students are taught the informational text structures within a scaffolded, explicit routine with high levels of fidelity, students’ discrimination of the compare, contrast or
compare-contrast text structures within the science content improves regardless of whether the text structures are presented with familiar content or novel content.

**High-Quality Comprehension Instruction Practices**

Overall, four teachers demonstrated high implementation of comprehension instruction practices (HQ-CIP), including the two OETS teachers, one COI teacher and one NTC teacher. In contrast, the two remaining teachers demonstrated lower implementation of comprehension instruction practices. Interestingly, one teacher in the NTC group demonstrated consistent use of high-quality comprehension practices. This suggests that teachers’ implementation of high quality comprehension instruction practices is independent of the implementation of an explicit routine to teach the compare-contrast text structures. It also suggests that, at least some teachers are learning these comprehension practices through professional development or as part of their teacher preparation program.

**Linkage of High-Quality Comprehension Instruction Practices to Students’ LCSC Outcomes**

As stated previously, the teacher in the COI group and the teacher in the NTC group who demonstrated high-quality comprehension practices similar to the OETS teachers showed percentage gains on the LCSC assessment comparable to the OETS teachers, while the two teachers who had lower implementation of high-quality comprehension practices demonstrated lower percentage gains on the LCSC assessment. While the HQ-CIP was a global measure, this observation suggests that consistent
implementation of high-quality comprehension instruction practices during the reading aloud of science content may result in maximizing science listening comprehension gains among first grade students, regardless of whether the teachers include text structure instruction. These findings extend the findings from previous studies in which no differences were detected between the text structure groups and the content only and no treatment groups on students’ knowledge of science content following the instructional intervention (Hall et al., 2005; Williams et al., 2005, 2009). The findings from the present study suggest that high quality comprehension instruction practices improve students’ knowledge of science content. This observation supports the recommendations of previous researchers who have emphasized a need to increase early grade teachers’ knowledge of and ability to implement effective comprehension practices as a first step toward improving students’ comprehension of complex informational text (Shanahan et al., 2010; Reutzel et al., 2016). Further, given the positive outcomes across both OETS classrooms on the LCSC science content measure, consistent implementation of high quality comprehension practices might serve as the foundation on which to build an explicit text structure instruction routine to teach informational text structures to early grade students. Importantly, it appears that embedding an explicit compare-contrast text structure routine within a suite of comprehension instruction strategies does not interfere with the acquisition of knowledge of science content gained by using high quality comprehension instruction practices alone. This conclusion is tentative given that the observations are based on few teachers and a global measure of high quality comprehension instruction.
Contributions to the Research on Informational Text Structure Instruction for Students in Early Grades

The current study adds to the limited body of rigorous comprehension research targeting early grade students (Pyle et al., 2017). This study is an important addition, given limitations cited in national reports regarding the dearth of comprehension research in the early grades (NRP, 2000; RAND, 2002; Shanahan et al., 2010). This study’s focus on the explicit comprehension strategy instruction of informational text structures and the effect of first grade students’ listening comprehension outcomes drew upon previous research in a few key ways and differed from previous research in several other ways.

Similarities to the Previous Research on Informational Text Structure Instruction for Students in Early Grades

The current study drew upon the research-based instruction practices utilized and found to be effective in previous research from preschool through second grade (Culatta et al., 2010; Hall et al., 2005; Reutzel et al., 2005; Smolkin & Donovan, 2001; Valeras & Pappas, 2006; Williams et al., 2005, 2009). The use of key instructional features, such as: comprehension strategy instruction, questioning and summarizing opportunities, modeling and thinking aloud, and age appropriate scaffolds, were embedded into the OETS strategy. Overall, the first-grade students in the OETS group were provided explicit instruction of text structures within a context that was rich in high-quality, engaging and developmentally appropriate instruction practices. This study included the key features of rigorous reading comprehension studies that target early grade students (Hall et al., 2005; Reutzel et al., 2005; Williams et al., 2005, 2009).
Further, the current study extends the positive findings of two previous research studies. Similar to the second graders in Williams et al. (2005, 2009), the first graders in the current study demonstrated positive comprehension outcomes. Specifically, students assigned to the treatment condition in the current study learned to discriminate the compare-contrast text structures in both familiar and novel content. Moreover, similar to second graders in Williams et al. (2005, 2009), the first graders in the current study learned the compare-contrast text structures without detracting from their ability to make gains in the comprehension of the science content.

The current study replicates the demographic characteristics of the students who participated in previous studies (Williams et al., 2005, 2009). The majority of students in the Williams studies as well as those in the current study were ethnically and racially diverse and from low socioeconomic backgrounds. Moreover, approximately 40% of the students in the current study were receiving support in English language learning (Williams et al., 2005, 2009 did not report comparable demographic data).

**Extensions of the Research on Instruction of Text Structures Within Informational Text**

The current study targeted first-grade students as the subjects of a rigorous study design to investigate the explicit comprehension strategy instruction of informational text structures. The previous early grade text structure studies that utilized rigorous study designs and methods targeted second-grade students (Williams et al., 2005, 2009). The current study’s focus on students in first grade suggests that high-quality comprehension instruction practices that include the explicit instruction of the text structures found in
science content can lead to positive comprehension outcomes in first grade students in the same way that similar comprehension practices have led to positive outcomes with second grade students. This extension of previous research bolsters the evidence to support the use of high-quality comprehension instruction practices that include the explicit instruction of the text structures found in science content in the earliest grades.

A distinction between the current study and previous studies was assessing first grade students listening comprehension rather than their reading comprehension. While researchers in a few informational text structure studies accommodated their emerging readers by using oral delivery and verbal response strategies to assess student performance (Hall et al., 2005; Reutzel et al., 2005; Williams et al., 2005, 2009), only one study focused on listening comprehension of preschool age students as the outcome (Culatta et al., 2010). The use of a listening comprehension measure in the current study provided a sensitive and developmentally appropriate measure of the comprehension of first grade emerging readers.

Finally, there were differences between the researcher developed assessments in this study and those used in other, closely aligned studies (Williams et al., 2005, 2009). For example, Williams et al. (2005, 2009) assessed the knowledge of the compare-contrast text structures both in isolation of science content as well as within familiar and novel science content. In contrast, in the current study we assessed the knowledge of the compare-contrast text structures only within the context of orally read paragraphs that included familiar and novel science content. Additionally, Williams et al. (2005, 2009) assessed the comprehension of science content using recall of vocabulary and content
details from the content used during the instruction. In contrast, in the current study we sampled science content questions from the entirety of the core science standard that served as the focus of content during the 8-week study.

Limitations and Implications for Future Research

This study was limited in several ways. First, the findings were limited by the duration and intensity of the study compared to other similar studies investigating the effect of the instruction of informational text structures on students’ comprehension (Pyle et al., 2017). A longer study duration or more sessions within the existing period might lead to the detection of differences between groups and/or classrooms. Moreover, a longitudinal study period that follows students across multiple years might help to uncover long-term outcomes associated with consistent implementation of text structure instruction as a component of listening comprehension and reading comprehension instruction throughout elementary school. In the future, researchers should focus on the longitudinal effects of the instruction of informational text structures within the context of high-quality comprehension instruction practices. There is a small body of reading comprehension research in which positive outcomes are associated with explicitly teaching second-grade students the text structures within informational content (Hall et al., 2005; Reutzel et al., 2005; Williams et al., 2005, 2009). Moreover, there is an established body of research on the positive effects from teaching middle school students the text structures within informational content (Hebert, Bohaty, Nelson & Brown, 2016; Meyer, Wijekumar, & Lin, 2011; Meyer et al., 2010). A longitudinal evaluation that
bridges the gap from first grade through fourth grade or higher would provide evidence of whether teaching the informational text structures in science content serves as a comprehension aid to improve the future comprehension of complex informational text.

Second, the sample size was limited to 115 first-grade students. While the sample size was adequate for the current analysis, a larger sample size would allow for the use of more sophisticated statistical models, such as hierarchical linear modeling (HLM; Huta, 2014). In future research, investigators could utilize HLM analyses to disaggregate the variance at various levels and analyze effects of data nested within level of interest (e.g., student, classroom, school; Huta, 2014). The current study was underpowered for an HLM analysis; therefore, the ANCOVA model was an appropriate analysis in the current study.

A third limitation to the study was that the explicit text structure routine in combination with comprehension instruction practices was evaluated as a single program of instruction. We did not examine whether there is value in teaching the compare-contrast text structures in the absence of the high-quality comprehension instruction practices. Additionally, we did not compare how specific comprehension instruction practices or text structure instruction components impacted student performance. Future research could target specific components of the text structure instruction and/or comprehension instruction practices to determine any differential effects on students’ listening comprehension.

A fourth limitation of the current study was that the HQ-CIP implementation measure and the OETS-FA fidelity assessment were fairly gross measures. For example,
both measures were based on a simple 3-point Likert-type scale and were limited to two 30 to 40-minute observations conducted two times within each classroom during the treatment period. Also, both assessments measured “adherence” to the components, without consideration of the overall “quality” of the implementation (Gersten et al., 2005). Future researchers should include more frequent observations and more sensitive measures of comprehension instruction and text structure instruction determine what instructional practices are required and the level of implementation integrity needed to produce meaningful listening comprehension or text structure discrimination outcomes.

A final limitation noted in the current study was that it was limited to a quantitative evaluation of outcomes. The addition of qualitative methods may be useful in understanding early grade students’ thought processes as they experience the intervention and assessment measures related to comprehension of text structures and/or comprehension strategies. Additional, qualitative research that focuses on capturing students’ and teachers’ perceptions about the intervention, including their motivation to participate and attitudes about various elements of the intervention would enrich any future empirical research.

**Summary**

The results of the current study demonstrate that the implementation of high-quality comprehension practices (i.e., the explicit instruction of strategies, question generating/answering and summarizing, comprehension monitoring, scaffolding with visual and auditory aids, and selections of text that enhances comprehension) are
associated with improved first grade students’ listening comprehension of informational science content. Findings from the current study corroborate the findings of prior research focusing on instruction of informational text structures with early grade students is associated with improved comprehension (Hall et al., 2005; Williams et al., 2005, 2009).

The current findings also suggest that a teacher’s repertoire of high-quality comprehension instruction practices need not include the explicit instruction of text structures in order to produce improvements in first grade students’ listening comprehension of science content. These findings support the recommendations previously made by the NRP (2000) and the RAND (2002) regarding the merits of using high-quality comprehension instruction practices kindergarten through twelfth-grade. Findings also support the findings of more recently conducted early grade comprehension intervention research studies that demonstrate positive outcomes for preschool through second-grade students (Culatta et al., 2010; Hall et al., 2005; Reutzel et al., 2005; Williams et al., 2005, 2009).

Despite the current study’s finding that the explicit instruction of text structures is not necessary to improve first grade students’ listening comprehension of science content, the results suggest that the explicit instruction of the compare-contrast text structures taught within informational science content (in addition to the high-quality comprehension instruction practices) does not interfere with students’ acquisition of listening comprehension of science content. Moreover, first grade students with little demonstrated prior knowledge of the compare-contrast text structures can learn to
discriminate compare-contrast text structures within the context of explicit science instruction. Additionally, these students transfer their discrimination of compare-contrast text structures to novel science content without negatively impacting their listening comprehension of science content. The current study’s findings confirm the positive outcomes reported by Hall et al. (2005) and Williams et al. (2005, 2009) who found that reading comprehension outcomes of second grade students who were explicitly taught the compare-contrast text structures within science content improved in both familiar and novel content. Additionally, the current study extends the findings of the previous studies to assess the listening comprehension of first grade students.

Based on these conclusions, the explicit instruction of compare-contrast text structures can be viewed as “value added” to the high-quality comprehension instruction practices already recognized to improve comprehension in early grade students (NRP, 2000; RAND, 2002; Shanahan et al., 2010). Teachers can look to the use of explicit instruction of text structures within informational science content as one approach (rooted in the evidence-based practice of explicit instruction and high-quality comprehension practices) to meet the increased demand in the field to provide early grade students with meaningful access to complex informational text (Duke et al., 2011; RAND, 2002; Shanahan et al., 2010). Through a research-based, systematic approach to comprehension instruction, such as the model in the current study, first grade students can experience informational text more regularly, learn to discriminate the structures of the informational text when presented within the content and, most importantly, improve their comprehension of the content of complex informational text.
REFERENCES


Linderholm, T., & van den Broek, P. (2002). The effects of reading purpose and working memory capacity on the processing of expository text. *Journal of Educational Psychology, 94*, 778-784.


Appendix A

Consent Forms and Recruitment Materials
The Use of Explicit Comprehension Strategies during Oral Instruction of Informational Text Structures and the Effect on First-Graders' Listening Comprehension

Introduction
Your child is invited to participate in a research study conducted by Dr. Sarah Clark and Noelle Converse, a researcher and doctoral student in the School of Teacher Education and Leadership at Utah State University. The purpose of this research is to determine the impact of a read-aloud informational science instructional program on first grade students' listening comprehension. This form includes detailed information on the research study to help you decide whether to allow your child to participate in this study. Please read it carefully and ask any questions you have before you agree to participate.

Procedures
There will be three groups in this study, and your child's classroom will be randomly assigned to one of those groups. This means that you will not get to choose the group your student is in. The first group will be students whose teachers will deliver district-reviewed and approved read-aloud science instruction. This instruction will happen three times each week during regular instruction time. The second group will be students whose teachers receive the same approved content, but do not use the read-aloud instruction. This content will be delivered by the teacher three times each week during regular science instruction time. The last group will receive the standard district curriculum during their science instruction time.

All students will participate in a listening comprehension assessment two weeks before, and two weeks after, the content is scheduled to be taught in class. These will take about 45 minutes of class time. All students will also have information collected about them, so we know where this curriculum is most effective. That information includes demographic information like sex, ethnicity, and age. Approximately 160 children will participate in this research.

Alternative Procedures
Rather than participate in this research, you might prefer alternative procedures such as consideration for enrollment in Granite School District's STEM elementary school, which will not be a utilized site in this study.

Risks
This is a minimal risk research study. This means that the risks of participating are no more likely or serious than those your child will encounter in everyday activities at school. The foreseeable risks include a minimal risk of a loss of confidentiality. In order to minimize those risks and discomforts, the researchers will collect the data and keep it in an encrypted electronic file or in a locked file cabinet in the researcher's office. There is some chance that the curriculum used is less effective than the normal curriculum, but the district has reviewed and approved the content and noted that it meets all district standards. This research may involve risks that are not yet known. If you have a bad research-related experience during your child's participation, please contact the principal investigator of this study right away at sarah.clark@usu.edu.

Benefits
Participation in this study may directly benefit your 1st grade child by increasing comprehension of informational text structure and content which has become an important component of the 1st grade science and literacy core curriculum. More broadly, this study will help the researchers learn more about the effectiveness of using an explicit read-aloud routine to teach comprehension strategies in informational text to 1st graders and the effect on
their listening comprehension. This research may help future populations with similar issues/future researchers design instruction to help with improving comprehension of informational text in early grade students.

Confidentiality
The researchers will make every effort to ensure that your child’s information as part of this study remains confidential. Your child’s identity will not be revealed in any publications, presentations, or reports resulting from this research study.

We will collect your child’s information through audio recordings of the test administrations. This data will be securely stored in a restricted-access folder on Box.com, an encrypted, cloud-based storage system and in a locked drawer in a restricted-access office for all physical content. All data with identifiable information will be separated and destroyed within 3 years of completion of the study. This form will be kept for three years after the study is complete, and then it will be destroyed.

It is unlikely, but possible, that Utah State University or state or federal officials may require us to share the information you give us from the study to ensure that the research was conducted safely and appropriately. We will only share your child’s information if law or policy requires us to do so, if the researchers learn that you are abusing/neglecting/exposing yourself to self-harm/intend to harm another, state law requires that the researchers must report this behavior/intention to the authorities.

Voluntary Participation & Withdrawal
Your child’s participation in this research is completely voluntary. If you agree to allow your child to participate now and change your mind later, you may withdraw at any time by contacting the Dr. Sarah Clark by email at sarah.clark@usu.edu. If you choose to withdraw after we have already collected information about your child, all data, will be separated and destroyed. The researchers may choose to terminate your child’s participation in this research study if your family moves, your child is absent, or any other circumstance necessitates removal.

Findings & Future Participation
If the researchers learn anything new during the course of this research study that might affect your willingness to continue participation, you will be contacted about those findings. This might include changes in procedures, changes in the risks or benefits of participation, or any new alternatives to participation that the researchers learn about.

IRB Review
The Institutional Review Board (IRB) for the protection of human research participants at Utah State University has reviewed and approved this study. If you have questions about the research study itself, please contact the Principal Investigator at 435-797-0370 or sarah.clark@usu.edu. If you have questions about your rights or would simply like to speak with someone other than the research team about questions or concerns, please contact the IRB Director at (435) 797-0567 or irb@usu.edu.

Dr. Sarah Clark
Principal Investigator
435.797.0370; sarah.clark@usu.edu

Noelle Converse
Student Investigator
385.646.8495; nconverse@graniteschools.org

School of Teacher Education and Leadership 2605 Old Main Hill
Emma Eccles Jones College of Education & Human Services
Logan, Utah 84322-2805
Informed Consent

By signing below, you agree to allow your child to participate in this study. You indicate that you understand the risks and benefits of participation, and that you know what your child will be asked to do. You also agree that you have asked any questions you might have, and are clear on how to stop your participation in the study if you choose to do so. Please be sure to retain a copy of this form for your records.

______________________________
Parent of Participant’s Signature

______________________________
Parent of Participant’s Name, Printed

______________________________
Date

______________________________
Name of Student Participant

______________________________
Relationship to Student
The Use of Explicit Comprehension Strategies during Oral Instruction of Informational Text Structures and the Effect on First-Graders’ Listening Comprehension

Purpose
You are invited to participate in a research study conducted by Dr. Sarah Clark and Noelle Converse, a researcher and doctoral student in the School of Teacher Education and Leadership at Utah State University. The purpose of this research is to determine the impact of a read-aloud informational science instructional program on first grade students’ listening comprehension. This form includes detailed information on the research to help you decide whether to participate as a teacher participant in this study. Please read it carefully and ask any questions you have before you agree to participate.

Procedures
We anticipate that a total of 6 teachers will participate in this research study with 3 at your school site in 1st grade classrooms and 3 from another school site’s 1st grade classrooms in the district. You may be 1 of 2 teachers randomly assigned to the treatment group which will include one session training on a read-aloud instructional routine (4 hours), instructional delivery of read-aloud instruction using informational science content provided to you (8-weeks, 3-times per week during regular instruction for 30-40 minutes each) and 3 classroom observation/coaching sessions (30 minutes each). You also may be 1 of 2 teachers assigned to receive the science content materials used for the treatment without the training and lesson scripts (8-weeks, 3-times per week during regular instruction for 30-40 minutes each) or you may be 1 of 2 teachers assigned to the no treatment group, during which you will cover the same content topics for the times designated for all groups using the resources provided to you for typical science instruction. If you agree to participate, the researchers will also collect your demographic data such as gender, ethnicity, years teaching, class average of benchmark assessment scores and instructional observation data. The other group of participants will include the approximately 150 1st grade students across the 6 classrooms for a total of 156 people. Teachers assigned to the content-only or control groups will receive the materials and training for the instructional routine after the study period.

Risks
This is a minimal risk research study. That means that the risks of participating are no more likely or serious than those you encounter in everyday activities. The foreseeable risks include a minimal risk of a loss of confidentiality. In order to minimize these risks, the researchers will collect the data and keep it in an encrypted electronic file or in a locked file cabinet in the researcher’s office. This research may involve risks that are not yet known. If you have a bad research-related experience or are injured in any way during your participation, please contact the principal investigator of this study right away at sarah.clark@usu.edu.

Benefits
Participation in this study may directly benefit you by potentially increasing your knowledge and awareness of strategies to teach comprehension of informational text for the first grade student in your classroom. More broadly, this study will help the researchers learn more about the effectiveness of using an explicit read-aloud routine to teach comprehension strategies in informational text to 1st graders and the effect on their listening comprehension. This research may help future populations with similar issues/future researchers design interventions to help with improving comprehension of informational text in early grade students.

Confidentiality
The researchers will make every effort to ensure that the information you provide as part of this study remains confidential. Your identity will not be revealed in any publications, presentations, or reports resulting from this
research study. We will collect your information through audio recordings and observations protocols. This data will be securely stored in a restricted-access folder on Box.com, an encrypted, cloud-based storage system and in a locked drawer in a restricted-access office for all physical content. All data with identifiable information will be separated and destroyed within 3-years of completion of the study. This form will be kept for three years after the study is complete, and then it will be destroyed.

It is unlikely, but possible, that Utah State University or state or federal officials may require us to share the information you give us from the study to ensure that the research was conducted safely and appropriately. We will only share your information if law or policy requires us to do so. If the researchers learn that you are abusing/neglecting/going to engage in self-harm/intend to harm another, state law requires that the researchers report this behavior/intention to the authorities.

**Voluntary Participation & Withdrawal**
Your participation in this research is completely voluntary. If you agree to participate now and change your mind later, you may withdraw at any time by contacting the Dr. Sarah Clark by email: sarah.clark@usu.edu. If you choose to withdraw after we have already collected information about you, all information about the data will be separated and destroyed. The researchers may choose to terminate your participation in this research study if you do not implement the requirements of the study.

**Payment**
For your participation in this research study, you will receive a $200 stipend and instructional materials if you are assigned to the control condition at the completion of the study, $200 stipend and instructional materials if you are assigned to the content-only condition at the completion of the study and a $400 stipend and instructional materials if you are assigned to the treatment condition (extra compensation due to the additional training and coaching requirements) at the completion of the study.

Because this study pays $200 or $400 for full participation, please know that if you receive more than $600 in payments from Utah State University in a calendar year (January through December), USU is required to report the payments to the Internal Revenue Service (IRS).

**Findings & Future Participation**
If the researchers learn anything new during the course of this research study that might affect your willingness to continue participation, you will be contacted about those findings. This might include changes in procedures, changes in the risks or benefits of participation, or any new alternatives to participation that the researchers learn about.

Once the research study is complete, the researchers will email you or call you with the findings of the study, including aggregate results relating to your participation.

**IRB Review**
The Institutional Review Board (IRB) for the protection of human research participants at Utah State University has reviewed and approved this study. If you have questions about the research study itself, please contact the Principal Investigator at 435-797-0370 or sarah.clark@usu.edu. If you have questions about your rights or would simply like to speak with someone other than the research team about questions or concerns, please contact the IRB Director at (435) 797-0567 or irb@usu.edu.
Informed Consent
By signing below, you agree to allow your child to participate in this study. You indicate that you understand the risks and benefits of participation, and that you know what your child will be asked to do. You also agree that you have asked any questions you might have, and are clear on how to stop your participation in the study if you choose to do so. Please be sure to retain a copy of this form for your records.

Parent of Participant’s Signature

Parent of Participant’s Name, Printed

Date

Name of Student Participant

Relationship to Student
Email Recruitment Script:

Dear 1st grade teachers in Granite School District,

You are invited to be considered for participation in a 8-week research study under the leadership of Principal Investigator, Dr. Sarah Clark, email: sarah.clark@usu.edu and student researcher, Noelle Converse, nconverse@graniteschools.org with the Teacher Education and Leadership department at Utah State University. The study will take place during your normal instructional class time during the first several months of the 2016-2017 school year upon gaining your consent. Teachers participating in the study will be selected for participation based on their assignment to a 1st grade classroom for the 2016-17 school year, their expertise in teaching literacy tasks and the teacher’s demographic information and based on a minimum of 3 years teaching. The goal of the study is to determine the impact of a read-aloud informational science instructional program on first grade students’ listening comprehension.

If you choose to participate as a teacher participant, your classroom may be randomly assigned to one of two instructional treatment classrooms during which you would participate in a one-day 4-hour training, then implement the read aloud routine 3 times per week for 30-40 minutes using the researcher-provided materials. You could also be assigned to one of two content-only classrooms during which you will use the researcher-provided materials for the same time period and number of sessions. Finally, you could be assigned to one of two control classroom during which you will use the district-provided materials for the same time period and number of sessions.

The potential benefits include increased knowledge and awareness of strategies to improve comprehension of informational text for your first grade students, increased motivation to participate in literacy activities that involve informational text and increased teacher knowledge of practices to teach comprehension strategies and increased teacher knowledge of informational text use in first grade. Participants assigned to the content-only or control group will have the opportunity to be trained and receive materials associated with the instructional routine after the study period is completed.

Please contact Dr. Sarah Clark, at sarah.clark@usu.edu or Noelle Converse at nconverse@graniteschools.org if you for further information regarding participation by June 30, 2017.

Dr. Sarah Clark  
Principal Investigator  
435-797-0370; sarah.clark@usu.edu

Noelle Converse  
Student Investigator  
385-646-7459; nconverse@graniteschools.org

School of Teacher Education and Leadership 2605 Old Main Hill  
Emma Eccles Jones College of Education & Human Services  
Logan, Utah 84322-280
Appendix B

Listening Comprehension of First-Grade Science Content Knowledge (LCSC) Measure
Listening Comprehension of 1st Grade
Science Content Knowledge (LCSC) Measure

Instructions: Listen to the following questions and say the correct answer after you have listened to each of the choices.

1. Which one is a part of a plant: (1 pt)
   a) roots
   b) water
   c) soil
   d) food storage

2. What one does a plant need to live? (1 pt)
   a) tree
   b) house
   c) light
   d) clothes

3. How do ants work together? (1 pt)
   a) The ants dig big nests.
   b) They make honey.
   c) They make food.
   d) Ants live alone.

4. Which part of the plant soaks up water and nutrients from the soil. (1 pt)
   a) seeds
   b) roots
   c) fruit
   d) leaves

5. Which one is not a need for all living things? (1 pt)
   a) air
   b) house
   c) water
   d) nutrients

6. Which part of a plant makes seeds or fruit? (1 pt)
   a) roots
   b) flower
   c) stem
   d) leaves

7. Which part of a plant takes in sunlight? (1 pt)
   a) leaves
   b) stem
   c) roots
   d) flower

8. Which one does an animal not need to live? (1 pt)
   a) sunlight
   b) food
   c) water
   d) shelter
9. First, a butterfly is a(n)_. (1 pt)
a) adult
b) egg
c) larva
d) baby

10. How many body sections do bugs have? (1 pt)
a) 3
b) 6
c) 12
d) 1

Directions: Point to the picture that shows an animal

1. Which picture below shows an animal?

2. Which picture below shows a plant?

3. Which picture below shows an animal?
Directions: Point to the living thing (read to student before each selection).

4.

5.

6.
Appendix C

Discrimination of Text Structure within Familiar and Novel Content Measures (DTSF/DTSN)
Sample of DTSF and DTSN Measure and Groupings

1. **Discrimination of Text Structure Pre-tests/Post-tests**

2. **Grouping Assignments for Discrimination of Text Structure Pre-tests/Post-tests**

1. **DTSF(Content a-b) / DTSN(Content c-d)-Compare(1), Contrast(2) or Compare/Contrast(3) (options 1-3)**

   **Discrimination of Text Structure Familiar Content (DTSF)**

   **Discrimination of Text Structure Novel Content (DTSN)**

   **Contrast (options 1-3) (Code-3b)**

   **DTSF(b)-Comp/Cont-Opt1:** The test administrator will read the scripted directions and then play the recording of the familiar content for the *compare/contrast* text structure while recording the test session on a separate recording device.

   When I play the recording, you will listen to the speaker so that you can answer some questions. Remember to listen closely while the speaker tells you something about living things (test administrator will start the recording): ‘Listen to this paragraph: Earthworms and snakes are alike in some ways and different in other ways. Both animals are long and thin and have no legs. A snake has bones, but an earthworm has no bones. Also, earthworms and snakes are not in the same animal group. Listen again: Earthworms and snakes are alike in some ways and different in other ways. Both animals are long and thin and have no legs. A snake has bones, but an earthworm has no bones. Also, earthworms and snakes are not in the same animal group.

   The test administrator then will say: “Did the speaker *compare* worms and snakes, *contrast* worms and snakes or *compare* and *contrast* worms and snakes?” The test administrator will wait several seconds for the student response. If the student provides a correct response, the test administrators will say, “Good job!” Likewise, if the student does not provide a verbal answer to the initial question, a prompt will be given such as, “Let’s listen to that again. Did the speaker *compare* worms and snakes, *contrast* worms
and snakes or compare and contrast worms and snakes?” If no response is given after 10 seconds of providing the second prompt, the researcher will say “Good job.”

DTSF(b)-Comp/Cont-Opt2: The test administrator will read the scripted directions and then play the recording of the familiar content for the compare/contrast text structure while recording the test session on a separate recording device.

When I play the recording, you will listen to the speaker so that you can answer some questions. Remember to listen closely while the speaker tells you something about living things (test administrator will start the recording): ‘Listen to this paragraph: Earthworms and snakes are alike in some ways and different in other ways. Both animals are long and thin and have no legs. A snake has bones, but a earthworm has no bones. Also, earthworms and snakes are not in the same animal group. Listen again: Earthworms and snakes are alike in some ways and different in other ways. Both animals are long and thin and have no legs. A snake has bones, but a earthworm has no bones. Also, earthworms and snakes are not in the same animal group.

The test administrator then will say: “Did the speaker contrast worms and snakes, compare worms and snakes, or compare and contrast worms and snakes?” The test administrator will wait several seconds for the student response. If the student provides a correct response, the test administrators will say, “Good job!” Likewise, if the student does not provide a verbal answer to the initial question, a prompt will be given such as, “Let’s listen to that again. Did the speaker contrast worms and snakes, compare worms and snakes, or compare and contrast worms and snakes. If no response is given after 10 seconds of providing the second prompt, the researcher will say, “Good job.” If the student responds incorrectly, the researcher also will say “Good job.”

DTSF(b)-Comp/Cont-Opt3: The test administrator will read the scripted directions and then play the recording of the familiar content for the compare/contrast text structure while recording the test session on a separate recording device.
When I play the recording, you will listen to the speaker so that you can answer some questions. Remember to listen closely while the speaker tells you something about living things (test administrator will start the recording): ‘Listen to this paragraph: Earthworms and snakes are alike in some ways and different in other ways. Both animals are long and thin and have no legs. A snake has bones, but an earthworm has no bones. Also, earthworms and snakes are not in the same animal group. Listen again: Earthworms and snakes are alike in some ways and different in other ways. Both animals are long and thin and have no legs. A snake has bones, but an earthworm has no bones. Also, earthworms and snakes are not in the same animal group.

The test administrator then will say: “Did the speaker compare and contrast worms and snakes, compare worms and snakes, or contrast worms and snakes?” The test administrator will wait several seconds for the student response. If the student provides a correct response, the test administrators will say, “Good job!” Likewise, if the student does not provide a verbal answer to the initial question, a prompt will be given such as, “Let’s listen to that again. Did the speaker compare and contrast worms and snakes, compare worms and snakes, or contrast worms and snakes?” If no response is given after 10 seconds of providing the second prompt, the researcher will say, “Good job.” If the student responds incorrectly, the researcher also will say “Good job.”

**DTSN (Content c-Zebras and Horses)-Compare (options 1-3) (Code-1c)**

**DTSN(c)-Comp-Opt1:** The test administrator will read the scripted directions and then play the recording of the novel content for the compare text structure while recording the test session on a separate recording device.

When I play the recording, you will listen to the speaker so that you can answer some questions. Remember to listen closely while the speaker tells you something about living things (the test administrator will start the recording): ‘Listen to this paragraph: Zebras and horses are alike. Both zebras and horses have hard hooves for running and long hair down their necks called a mane. Also, both zebras and horses can run fast.’ Listen again: “Zebras and horses are alike.” Both zebras and horses have hard hooves for running and long hair down their necks called a
mane. Also, both zebras and horses can run fast.’

The test administrator then will say: ‘Did the speaker compare zebras and horses, contrast zebras and horses or compare and contrast zebras and horses?’ The test administrator will wait several seconds for the student response. If the student provides a correct response, the test administrators will say, ‘Good job!’ Likewise, if the student does not provide a verbal answer to the initial question, a prompt will be given such as, ‘Let’s listen to that again. Did the speaker compare zebras and horses, contrast zebras and horses or compare and contrast zebras and horses?’ If no response is given after 10 seconds of providing the second prompt, the researcher will say, ‘Good job.’ If the student responds incorrectly, the researcher also will say, ‘Good job.’

**DTSN(c)-Comp-Opt2:** The test administrator will read the scripted directions and then play the recording of the novel content for the compare text structure while recording the test session on a separate recording device.

When I play the recording, you will listen to the speaker so that you can answer some questions. Remember to listen closely while the speaker tells you something about living things (the test administrator will start the recording): ‘Listen to this paragraph: Zebras and horses are alike. Both zebras and horses have hard hooves for running and long hair down their necks called a mane. Also, both zebras and horses can run fast.’ Listen again: ‘Zebras and horses are alike.’ Both zebras and horses have hard hooves for running and long hair down their necks called a mane. Also, both zebras and horses can run fast.’

The test administrator then will say: ‘Did the speaker contrast zebras and horses, compare zebras and horses or compare and contrast horses?’ The test administrator will wait several seconds for the student response. If the student provides a correct response, the test administrators will say, ‘Good job!’ Likewise, if the student does not provide a verbal answer to the initial question, a prompt will be given such as, ‘Let’s listen to that
again. Did the speaker *contrast* zebras and horses, *compare* zebras and horses or *compare* and *contrast* horses?” If no response is given after 10 seconds of providing the second prompt, the researcher will say, “Good job.” If the student responds incorrectly, the researcher also will say, “Good job, let’s go to the next one!” and move on to the next assessment.
2. Grouping Assignments

**Discrimination of Text Structure of Familiar and Novel Content Assessments:**
Grouping assignments to ensure equivalency and control for testing effects across text structures and science content

- Students assigned using stratified sampling across demographics
- Test groupings A-F
- Text structure correct answer codes: 1-Compare
  2-Contrast
  3-Compare/Contrast
- Content examples:
  a-Familiar living things example 1
  b-Familiar living things example 2
  c-Novel living things example 1
  d-Novel living things example 2

<table>
<thead>
<tr>
<th>Grouping</th>
<th>Pre-DTSF/LTE</th>
<th>Pre-DTSN/LTE</th>
<th>Post-DTSF/LTE</th>
<th>Post-DTSN/LTE</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>1/a</td>
<td>2/c</td>
<td>2/b</td>
<td>3/d</td>
</tr>
<tr>
<td>B</td>
<td>2/b</td>
<td>3/d</td>
<td>3/a</td>
<td>1/c</td>
</tr>
<tr>
<td>C</td>
<td>3/a</td>
<td>1/c</td>
<td>1/b</td>
<td>2/d</td>
</tr>
<tr>
<td>D</td>
<td>1/b</td>
<td>2/d</td>
<td>2/a</td>
<td>3/c</td>
</tr>
<tr>
<td>E</td>
<td>2/a</td>
<td>3/c</td>
<td>1/b</td>
<td>1/d</td>
</tr>
<tr>
<td>F</td>
<td>3/b</td>
<td>1/d</td>
<td>2/a</td>
<td>3/d</td>
</tr>
</tbody>
</table>
Appendix D

High-Quality Comprehension Instruction Practices (HQ-CIP) Measure
High Quality Comprehension Instruction Practices Measure (HQ-CIP)

1. Uses engaging science curriculum aligned directly to 1st grade standards in state core curriculum.
   
   1-not observed    2-sometimes observed    3-always observed

2. Models and provides practice for listening comprehension of the informational science text.
   
   1-not observed    2-sometimes observed    3-always observed

3. Uses questioning and summarizing to aid comprehension of the science text.
   
   1-not observed    2-sometimes observed    3-always observed

4. Uses visual and auditory scaffolds to support comprehension.
   
   1-not observed    2-sometimes observed    3-always observed

5. Elicits frequent opportunities for student response and feedback during lesson.
   
   1-not observed    2-sometimes observed    3-always observed
Appendix E

Sample of First-Grade District Curriculum Map
Sample of First-Grade District Curriculum Map

Standard 4

Life Science. Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.

Objective 1

- Communicate observations about the similarities and differences between offspring and between populations.
- Communicate observations about plants and animals, including humans, and how they resemble their parents.
- Analyze the individual similarities and differences within and across larger groups.

Objective 2

- Living things change and depend upon their environment to satisfy their basic needs.

<table>
<thead>
<tr>
<th>1st Grade Science Curriculum Map</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit of Study</td>
</tr>
<tr>
<td>Interconnections Lessons</td>
</tr>
<tr>
<td>Science Content/Language Objectives</td>
</tr>
<tr>
<td>Key Concepts for Differentiation</td>
</tr>
<tr>
<td>Vocabulary</td>
</tr>
<tr>
<td>Additional Resources/Notes</td>
</tr>
<tr>
<td>Assessment</td>
</tr>
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</table>
Appendix F

Science Big Book Titles
Science Big Book Titles


Appendix G

Oral Explicit Text Structure Treatment Schedule
### OETS 8-Week Treatment Period Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 1</strong></td>
<td>3 30-minute sessions of the OETS Compare text structure routine (Sessions 1-3)</td>
</tr>
<tr>
<td><strong>Week 2</strong></td>
<td>3 30-minute sessions of the OETS Compare text structure routine (Sessions 4-6)</td>
</tr>
<tr>
<td><strong>Week 3</strong></td>
<td>1 30-minute session of the OETS Compare text structure routine and 2 sessions of the OETS Contrast text structure routine if 80% competency was not achieved on informal check for understanding after Session 6 or 3 30-minute sessions of the OETS Contrast text structure routine if 80% competency was achieved on informal check for understanding after Session 6 (Sessions 7-9)</td>
</tr>
<tr>
<td><strong>Week 4</strong></td>
<td>3 30-minute sessions of the OETS Contrast text structure routine (Sessions 10-12)</td>
</tr>
<tr>
<td><strong>Week 5</strong></td>
<td>1 30-minute sessions of the OETS Contrast text structure routine and 2 sessions of the OETS Compare/Contrast text structure routine if 80% competency on informal check for understanding was not achieved after Session 12 or 3 sessions of the OETS Compare/Contrast text structure routine if 80% competency on informal check for understanding was achieved after Session 12 (Sessions 13-15)</td>
</tr>
<tr>
<td><strong>Week 6</strong></td>
<td>3 30-minute sessions of the OETS Compare/Contrast text structure routine (Sessions 16-18)</td>
</tr>
<tr>
<td><strong>Week 7</strong></td>
<td>1 30-minute session of the OETS Compare/Contrast text structure routine and 2 sessions reviewing phases 2-4 of the OETS instructional routine for compare, contrast, and integrated compare/contrast text structures, including, embedded read aloud of the big books previously used during the study period, small group practice and independent practice if 80% competency on informal check for understanding was not achieved after Session 18 or 3 sessions reviewing phases 2-4 of the OETS instructional routine for compare, contrast, and integrated compare/contrast text structures, including, embedded read aloud of the big books previously used during the study period, small group practice and independent practice if 80% competency was achieved on the informal check for understanding on the OETS Compare/Contrast text structure routine after Session 15 (Sessions 19-21)</td>
</tr>
<tr>
<td><strong>Week 8</strong></td>
<td>3 30-minute sessions of informal checks for understanding of the OETS Compare, Contrast and Integrated Compare/Contrast text structure routines (Sessions 22-24)</td>
</tr>
</tbody>
</table>
Appendix H

Sample Lesson Scripts of Compare Text Structure
Compare Text Structure

Phase 1: Define *compare* text structure and practice in isolated text

The teacher will open by saying, “The *compare* text structure shows how two things or ideas are like each other. First, *compare* names the things that are alike. Then, *compare* tells us how the things are alike.” The teacher will use an easel and write the target text structure *compare* as s/he introduces the text structure. The teacher will model the use of a hand signal labeled *equals* during which the teacher will put her/his hands in the sign for equals, according to the American Sign Language dictionary (ASLU, 2015) to reinforce the concept of the text structure, *compare*. The teacher will ask all students to make the *equals* signal together, while saying the word, *compare*. Then, the teacher will say, “*Equals* is a good signal for *compare* because the *equals* hand signal shows that two things are alike just like the text structure, *compare* does when we are learning about things that are alike. In our lessons, we will use the *equals* signal when we hear the part of the *compare* text structure that names things and tells us that they are alike—Okay?”

The teacher will then begin a routine of direct instruction prompts and student responses to familiarize students with the new concept, *compare*, by saying: “When a group of words names things that are alike, and then tells us how they are alike, it is called *compare* (the teacher will use the equals hand signal when s/he describes the first part of *compare*). What is it called when words names things that are alike, and then tells us how they are alike?” (the teacher will cue students to provide the choral response and the *equals* hand signal): “*Compare.*” The teacher will repeat this as necessary until most students demonstrate understanding through responding and using the hand signal on cue.
The teacher will then prompt students to recite the definition of *compare* by modeling call and response while using the hand signal. The teacher will say, “What does *compare* do first?” The teacher will model the response and *equals* sign: “Names things that are alike.” After modeling, the teacher will say, “Now let’s say it together—What does *compare* do first?” The teacher will prompt the choral response from students and the hand signal: “Names-things-that are-alike.” Following the call and response, the teacher will provide an example of the first part of *compare* that names things that are alike. The easel will show the written statement as s/he speaks. S/he might say:

So we know that first, *compare* names things that are *alike*. Let me give you an example: ‘Colored pencils and crayons are alike,’ (teacher will use the *equals* hand signal giving the example of *compare*). Did you notice that I used equals hand signal when I named two things that are *alike*? I am going to use the *equals* hand signal whenever I am naming things and telling you they are alike. Let me say that again, and this time everyone use your *equals* hand signal when you hear me name things and tell you they are alike. Ready? ‘Colored pencils and crayons are alike’ (the teacher will use the *equals* signal and prompt students to do so also).

Let’s try another one. Listen closely and tell me if I name things and tell you they are alike. “Finger paints and markers can make a mess.” Did I name finger paints and markers and tell you they are alike? (the teacher will check for understanding by scanning students’ visual gestures, and if necessary, by calling on several students. If necessary, the teacher will repeat the statement). No, I did name those two things but I did not tell you they are alike, did I? Let me try again. Ready? ‘Finger paints and markers are alike’ (the teacher will check for understanding by scanning students’ visual gestures).

Okay, let’s try an example with colored pencils and crayons again. Ready? ‘Colored pencils and crayons are alike.’ Did I name the things and tell you they are alike? (the students will respond and teacher will affirm or correct). Okay, one more time, and this time if I name the things and tell you they are alike, use your *equals* hand signal (teacher will model the *equals* hand signal). Ready? ‘Colored pencils and crayons belong in their boxes.’ Did I name the things and say they are alike? (students will respond and teacher will affirm or correct). Okay, let’s try again. Ready? ‘Colored pencils and crayons are alike.’ Did I name the things and
say they are alike (students will respond and the teacher will model the use of the \textit{equals} hand signal and prompt students to do so also).

Then the teacher will say, “Okay, now we know that, first, compare names things and tells us that they are alike. After compare names things that are alike, then, it tells us \textit{how} the things are alike.” The teacher will then lead a call and response, saying, “First, \textit{compare} names things that are alike; then what does \textit{compare} do?” The teacher will prompt the choral response from students: “\textit{Tells-us-how-the-things-are-alike}.” The teacher will repeat this several times until most students demonstrate understanding through oral responding on cue. Following the call and response, the teacher will provide an example of the next part of \textit{compare} that “tells us how things are alike.” Again, the easel will show the written statement as s/he speaks. S/he might say:

Do you remember that when I told you the first part \textit{comparing} colored pencils and crayons, I said, ‘Colored pencils and crayons are alike?’ Now, I will give you an example of the next part of comparing colored pencils and crayons-the part that ‘tells us how they are alike.’ What does the next part of \textit{compare} do? (the teacher will prompt choral response, ‘tells us how things are alike). Listen closely to the next part comparing colored pencils and crayons: ‘Both colored pencils and crayons come in many colors (the teacher will hold up some colored pencils and crayons in several colors). Did the next part of \textit{compare}, tell us how the two things are alike? (Students will respond and teacher will affirm or provide error correction). What did the next part of comparing colored pencils and crayons tell us those things? (the students will provide responses). Okay, I just gave a \textit{comparison} of colored pencils and crayons because first I named the things that were alike-colored pencils and crayons, and then I told you how the things are alike-that they both come in many colors. From now on, when I hear the part of compare that tells us how things are alike, I am going to give a ‘thumbs up’ (teacher will model a ‘thumbs up’) to show that it is telling me the next part of \textit{compare}-how the things are alike. Let me say the next part of \textit{compare} again and let’s try it: ‘Both colored pencils and crayons come in many colors’ (the teacher will model a ‘thumbs up’ and prompt students to use the hand gesture).

Now listen again. I am going to read the first part of \textit{compare} and the next part of the comparison of colored pencils and crayons together: ‘Colored pencils and crayons are alike,’ (the teacher will the \textit{equals} hand signal). ‘\textit{Both} colored pencils and crayons come in many colors’ (the teacher will model a ‘thumbs up’ and prompt students to use the hand gesture).
and crayons come in many colors,’ (the teacher will give a ‘thumbs up’). Did you hear that? The first part named the things that are alike: ‘colored pencils and crayons,’ (the teacher will use the equals signal) and the next part told us how they are alike: ‘Both come in many colors,’ (the teacher will give a ‘thumbs up’).

The teacher will continue by introducing the associated key words for compare:

Now we know that compare has two parts: first, the part that names the things that are alike, then the part that tells us how they are alike. When we listen to these parts of compare, we often hear special words called key words that signal to us that the words are going to compare two or more things. Sometimes when we hear a comparison (teacher will model the equals hand signal), we will hear key words like: alike, same and both. These words mean we are going to hear a comparison of things (the teacher will underline the words alike and both in the sentence on the easel), Let’s say ‘alike’ together, (the teacher will prompt the choral response: ‘alike’). This word is used a lot when we compare things. Let me read the key word in the sentence again. ‘Colored pencils and crayons are alike’ (teacher will point to the key word on the easel). Now, let’s say this together (teacher will prompt the choral response: ‘Colored pencils and crayons are alike’). The key word, alike, signals to us that the words are comparing things (the teacher models the equals signal). Let’s say this together again and use a ‘equals signal’ when we hear the word alike (teacher prompts the choral response: ‘Colored pencils and crayons are alike’).

The teacher will repeat the key word introduction with the key word, both, using the second part of the example, “Both colored pencils and crayons come in many colors.” As with the first part of compare, the teacher will model and students will practice the hand signal, ‘thumbs up’ when the key word, both, is heard.

After introducing the text structure, compare and key words associated with it, the teacher will model listening comprehension of compare, including associated key words, by playing a prerecorded paragraph of isolated informational science text. While modeling being a listener, the teacher will model thinking aloud about the text structure, compare, and the associated key words. The teacher might say:

Now let me listen to a comparison of something that has to do with a science topic we are going to learn about. When I listen to the speaker compare things I am
going to listen for two parts: the first part that ‘names things that are alike’ (the teacher will model the equals signal), and the next part that “tells us how the things are alike” (the teacher will model a ‘thumbs up’).

The teacher will play a recording that says: “An earthworm and a snake look alike,” (the teacher will pause the recording following the first statement). During the pause, the teacher will model thinking aloud about the text that was played, saying:

Let me think about what I just heard for a moment. I just heard the speaker say: ‘A worm and a snake look alike.’ This names two things that are alike. This means that the speaker is going to compare two things. When the first part names things and tells me they are alike, I am hearing a comparison of those things (the teacher will model the equals signal).

Now, let me think some more. Since a comparison names things that are alike and tells me how they are alike, the next part will probably tell me how these things are alike. I am going to listen closely for any key words for compare, and give a ‘thumbs up’ when I hear the part that tells me how they are alike.

The teacher will resume the recording and model listening as the recording plays:

‘Both animals are long and thin,’ (the teacher will give a ‘thumbs up’ as s/he hears a key word and the part that tells us more, then pause the recording after the statement).

Now, let me think about the next part I just heard (the teacher will repeat what the recording played). ‘Both animals are long and thin.’ The word both (the teacher will model the ‘thumbs up’) signals us that we are about to hear how the two things are alike. So, the words that come after both must compare worms and snakes. ‘Does the part that says both animals are long and thin tells us how worms and snakes are alike?’ (the teacher will affirm or correct based on student responses). How are worms and snakes alike in other ways? (students will provide ideas). Okay, keep those in mind as I play the next part to find out if the text mentions how they are alike in other ways (teacher will resume recording).

‘Both animals have no legs,’ (again, the teacher will give a ‘thumbs up’ when s/he hears the key words and the part that tells how earthworms and snakes are alike).

Again, the teacher will model thinking aloud about the key words by saying: “Let me
think about if I just heard a key word for compare. Is both a key word for compare?

Did the speaker tell me how worms and snakes are alike in other ways?” The students and teacher will reflect on the details that were provided during a brief discussion.

Next, the teacher will replay the recording of the isolated compare paragraph without pausing, to model listening comprehension of the text structure components within the embedded paragraph. The students will practice listening, saying the word, compare, and using the equals signal, when the first part of the comparison is heard and giving a ‘thumbs up’ when the key word both and ‘the part that tells how they are alike’ are heard. The teacher might say:

Now, I am going to play the comparison of worms and snakes again. This time, I want us all to listen carefully for the first part that names two things that are alike. When we hear the part that names two things that are alike, let’s all use our equals signal and say ‘compare’. Then, for the next part, we will listen carefully for any key words that tell us we are going to hear how two things are alike (the teacher will model a ‘thumbs up’). Each time we hear the part that tells us how two things are alike any key words, let’s all give a ‘thumbs up’. Everyone ready? Listen and watch what I do.

The teacher will play the isolated paragraph, modeling listening, repeating the words and using the hand signals for the compare statement and the key words. After modeling, the teacher will prompt the students to join her. The teacher will provide fewer and fewer prompts as students demonstrate better recognition of the text structure components through their oral responses and use of the hand signals.

Finally, the teacher will read the same isolated paragraph for compare and prompt children to identify each of the critical components of the text structure, in the paragraph by saying the word “compare” and using the equals hand signal when they hear ‘the part that names two things that are alike, and by giving a “thumbs up” when they hear the key
word, “both” and “the part that tells how two things are alike,” following the key word.

The teacher will firm up understanding of the text structure by questioning students using the vocabulary associated with the target text structure, such as, “What two things does compare tell us?” followed by “What two animals did we just learn about that are alike?” and “How are worms and snakes alike?” To close, the teacher will provide a statement to summarize the paragraph in his/her own words. For example, the teacher might say: “The paragraph told us that worms and snakes are alike. They both are long and thin. Also they both have no legs (the teacher will use the hand signals during the summary as well).

**Phase 2: Compare paragraphs embedded in science trade books.**

The teacher will begin phase 2 by discussing the science topic that was introduced in the isolated text example provided in phase 1 of the instructional routine. S/he will pique interest in the topic through questioning and other informal dialog with the student group regarding the topic. The teacher will begin reading from a big book version selected from the informational texts selected to teach the text structure, compare. During phase 2, the teacher will model the use of the text structure strategy by modeling thinking aloud about compare during the reading aloud of the big book and how it can be used as a comprehension strategy during the oral reading of the text. For each big book, 2-3 scripted examples of compare embedded within the text will be identified and noted for the teacher to use as a thinking aloud opportunity, when it arises during the reading. The teacher will write the 2-3 examples in paragraph form on the easel. For example when the first example of compare arises as the teacher is reading aloud from the text, the teacher will reference the notation provided. The notation will say: “Compare Think Aloud, Part
1. *Grouping Living Things*, p. 6: ‘An earthworm and a snake look alike.’ Review: ‘names two things that are alike’ using thinking aloud about the sentence, as well as questioning and call and response with students.” For this thinking aloud strategy, the teacher might pause and say:

Let me think about what I just read. First, I read, ‘An earthworm and a snake look alike’ (the teacher points to the sentence written on the easel). Did this part name two things that are alike? (the teacher will model the equals hand signal). Did it name earthworms and snakes and say they are alike? (the teacher will model equals again and pause for students’ nonverbal or verbal responses). ‘Yes, I think it did-it told me that earthworms and snakes look alike. What did it tell me are alike? (the teacher will prompt a choral response: ‘earthworms and snakes’). Okay, because it named two things that area alike (the teacher will model equals), I am pretty sure I am reading a *compare* paragraph, but I need read more to know for sure. Remember, *compare* names things that are alike (the teacher will model equals), and then it tells me how they are alike (teacher will model a ‘thumbs up’). What does *compare* do after it names things that are alike? (the teacher will prompt a choral response from students: ‘tells us how they are alike’ while giving a ‘thumbs up’).

Now, I am going to read on to see if the next part tells me how earthworms and snakes are alike. Listen as I read and see if you can tell if the next part tells me how they are alike (the teacher will read on and pause for the next notation: Compare Think Aloud, Part 2, *Grouping Living Things*, p. 6., tells HOW two things are ALIKE. Use thinking aloud about the sentence, as well as questioning and call and response with students’). ‘BOTH animals are long and thin. BOTH animals have no legs.’ Let me think for a minute about what I just read (the teacher will repeat and point to the sentence written on the easel under the statement ‘Earthworms and snakes look alike’). Did that part just tell me how earthworms and snakes are alike (the teacher will model the ‘thumbs up’)? Did it tell me *how* they are alike? (the teacher will model the ‘thumbs up’ again and prompt students to give a ‘thumbs up’). How did it say earthworms and snakes are alike? (the students will provide responses as the teacher points to features in the book as students say them). Yes, they have some of the same features. Can you think of other living things that are alike and how they are same? Think about that as I will read on and listen to the next part to see if it names other living things that are alike and how they are the same.

The teacher will follow a similar routine for thinking aloud for each notation of a think-aloud provided, using thinking aloud about the two main components of *compare* and the
key words. The teacher will link the use of the text structure strategy, compare, to comprehension of the science content. For example, following modeling thinking aloud of the examples from the compare science lesson the teacher might summarize, saying:

So we learned the part of compare that names two things that are alike. Let’s review: What are two living things that are alike? (the teacher will prompt the choral response: ‘earthworms and snakes’). Then we learned that part that tells us how things are alike. How are earthworms and snakes alike? (the teacher will prompt student responses, ‘they both are long and thin and have no legs).

The students will provide other possible responses from the science text reviewed and the teacher will firm up understanding of the science content.

**Phase 3: Gradual release of compare text structure in embedded science text.**

In phase 3 of the instructional routine, after the introduction to compare and the initial reading aloud of the text, the teacher will release responsibility for learning to the students gradually by continuing to model the text structure strategy orally while providing opportunities for guided practice between teacher and students, and between students and students through discussion activities. For example, for the first gradual release activity, the teacher will break the class into equal halves. An instructional assistant will be assigned to one group of students and the teacher will lead the remaining half. The students will switch from teacher-led to instructional-assistant-led and vice versa half way through the phase so that all students experience both small group activities during this phase.

**Teacher-led small group.** The students in the teacher-led group will engage in a small-group activity in which the teacher provides guided practice through continued modeling of use of the compare text structure strategy to half of the class. The students
will sit facing the teacher as the teacher models listening comprehension by using recordings of text-embedded descriptions read during the reading aloud big book activity in phase 2. First, the teacher will play the recording and follow the routine as s/he did during the isolated text paragraph used in phase 1. During this routine, the teacher will replay the paragraph several times to model listening for the components of compare as students practice listening comprehension, as well. For example, the teacher will say:

Now we will practice listening to some of the same compare paragraphs you just heard me read from the big book. I am going to play the comparisons and I want you listen really carefully for when the speaker names things that are alike. When she does that, make sure you use the equals signal (teacher will model the signal). Then, I want you to listen for some key words for compare. Remember, when you hear words like alike, both or same, this means we are going to learn how the things are alike. I will give a ‘thumbs up’ whenever I hear any key words.

The teacher will model listening comprehension of the prerecorded paragraphs in the same fashion as the isolated paragraph in phase 1 and invite students to practice as s/he models. The recordings will include various key words associated with the text structure, compare, from the literature to familiarize students with the key words for compare. For example, a recording might summarize a compare paragraph from the text using other key words by stating; “Lizards and snakes are alike. They are similar in a few ways. Both animals are reptiles. Also, both have dry scaly skin and the same kind of heart and lungs.” The teacher will replay the recording several times pausing to model and prompt the text structure components, key words and hand signals. The teacher will provide fewer and fewer prompts as students demonstrate increasing comprehension of the critical features of compare through oral responses and hand signals.

After the teacher has modeled listening comprehension, s/he will prompt the
students to reposition themselves and sit facing each other in pre-assigned pairs. Students will be instructed to practice listening in the same way as modeled by the teacher. First, they will be told to listen for the part of the compare statements that “names two things that are alike” and say the word “compare” (while making the equals signal) when it is heard, as well as, listen for any key words and the part that tells how the things are alike (while giving a ‘thumbs up’). The student pairs will prompt and assist each other during this phase. The teacher will circulate among the student pairs and, as needed, re-cue the recording and help students identify the features of the target text structure and the relevant key words.

**Instructional-assistant-facilitated paired discussion.** While the teacher-led group practices listening comprehension with the text-embedded text structure examples, the instructional assistant will facilitate the activity for the remaining half of the students, who also will be pre-assigned to pairs. Student pairs in the assistant-facilitated group will be assigned as Number 1s or Number 2s and will engage in a book sharing activity, using the smaller student versions of the big books used in the lesson. Students will be taught the rules of a “whisper discussion” routine and in which they are instructed to engage in whisper discussions about the science text. The students will be told they may look closely at the pictures for details, tell each other things that they like from the book, and ask each other questions about the book. Prior to beginning book sharing, the assistant will say:

Before I hand out your books for you to share in pairs, let’s practice what a ‘whisper discussion’ looks and sounds like. First, let’s practice the ‘whisper’ part. A whisper is when we make words using only our breath (the assistant models a whisper as she says the words). When we whisper, we can never hear
someone’s voice, only the breath (the assistant models the difference between speaking using one’s voice and whispering. Let’s practice. Say the word, “whisper” to your partners using a whisper (the students will say ‘whisper’ several times in a whisper). Now, say the word, “talk” to your partners using your voice (the students will say ‘talk’ several times using their voices). We will not be talking using our voices at all during our whisper discussion, we will only be whispering. This means you need to listen very closely, when your partner is whispering so that you can hear them.

Now, let’s practice the ‘discussion’ part of the ‘whisper discussion’. A discussion is when a person shares ideas with someone else using words, then listens as the other person shares ideas. Today, you and your partners will take turns sharing your ideas about the pictures you see in the books that I am going to hand out. First, we will have Number 1s share their best ideas or questions. Then, we will ‘switch’, and Number 2s will get to start the discussion. When it is your turn to share, you might whisper to your partner, ‘I wonder what this planet is in this picture?’ You might also whisper, ‘Did you hear the part the teacher told us about the sun?’ You get to share your own ideas and ask your own questions, but only about the big book that the teacher read to you. Now let’s try the whisper discussion. I will pass out these books and give you a signal when Number 1s can start the whisper discussion. I will come around to whisper with you from time to time. Make sure you take turns talking after Number 1s start the discussion. Practice good listening to each other so both of you have a chance to whisper and listen to your partners. If you see me make the ‘sshh’ signal, it means that your ‘whisper’ is becoming ‘talk’ and you need to change it to a whisper. Okay, let’s try it (the student will begin the discussion).

The instructional assistant will circulate through the pairs to model questioning and summarizing of relevant parts of the text, model discrimination of text-embedded examples of compare statements that students may be discussing, and provide authentic and meaningful instructor-to-student interactions and high rates of praise to each pair for engaging in the whisper-discussion appropriately.

**Phase 4: Independent practice of compare text structure strategies**

For the independent practice phase, students will work in pre-assigned student pairs. The pairs will be given a student version of the science big book to share within in their pairs. Following teacher review of the instructions for listening for *compare* and key
words, the pairs will be instructed to place the book in between the pair so that both can follow along. The pair will practice listening in the same way as modeled by the teacher and practiced in phase 3. First, they will listen for the part of the compare that “names two things that are alike” and whisper the word “compare” (while making equals signals) when it is heard. Then, they will listen for the part that “tells how they are alike” and whisper any key words when they hear them, while giving a ‘thumbs up’. The student pairs will prompt and assist each other during this phase.

The teacher and instructional assistant will monitor comprehension of the text structure compare, associated key words, and science content during independent practice by circulating among the student pairs and, as needed, prompting students to identify the features of the compare text structure and the relevant key words as needed. During this phase, the teacher and assistant will provide multiple opportunities for individual teacher feedback, error correction and student success, again prioritizing students who demonstrate a need for extra practice and support, while ensuring that all student receive specific, positive feedback.

The teacher and instructional assistant will conduct an informal check for understanding with each pair to determine their level of competence after several sessions of independent practice as specified in the OETS Treatment Schedule.
Appendix I

Compare Text Structure Check for Understanding
Teacher Informal Check for Understanding: Compare Text Structure

☐ In response to teacher prompt, “What does compare do first, student can orally state that the compare text structure, “names two things that are alike or the same.”

☐ In response to teacher prompt, “What does compare do next, student can orally state that compare, “tells how the two things are alike.”

☐ In response to teacher prompt, “What is the hand signal for compare” student can demonstrate the equals hand signal to represent the compare text structure

☐ In response to teacher prompt, “What is it when we name two things that are alike or the same and tell how those things are alike?” student can orally state the word “compare.”
Appendix J

Sample Lesson Scripts of Contrast Text Structure
Phase 1: Define *contrast* text structure and practice in isolated text

The teacher will open by saying, “The *contrast* text structure shows how two things or ideas are different from each other. First, *contrast* names the things that are different. Then, *contrast* tells us how the things are different.” The teacher will use an easel and write the target text structure *contrast* as s/he introduces the text structure. The teacher will model the use of a hand signal labeled *different* during which the teacher will put her/his hands in the sign for *different*, according to the American Sign Language dictionary (ASLU, 2015) to reinforce the concept of the text structure, *contrast*. The teacher will ask all students to make the *different* signal together, while saying the word, *contrast*. Then, the teacher will say, “*Different* is a good signal for *contrast* because the *different* hand signal shows that two things don’t go together just like the text structure, *contrast* does when we are learning about things that are different. In our lessons, we will use the *different* signal when we hear the part of the *different* text structure that names things and tells us that they are different-Okay?”

The teacher will then begin a routine of direct instruction prompts and student responses to familiarize students with the new concept, *different*, by saying: “When a group of words names things that are different, and then tells us how they are different, it is called *contrast* (the teacher will use the *different* hand signal when s/he describes the first part of *contrast*). What is it called when words names things that are different, and then tells us how they are different?” (the teacher will cue students to provide the choral response and the *different* hand signal): “*Contrast.*” …(see Appendix H for a sample of complete lesson script).
Appendix K

Contrast Text Structure Check for Understanding
Teacher Informal Check for Understanding: Contrast Text Structure

☐ In response to teacher prompt, “What does contrast do first, student can orally state that the contrast, “names two things that are different or not alike.”

☐ In response to teacher prompt, “What does contrast do next, student can orally state that contrast, “tells how the two things are different or not alike.”

☐ In response to teacher prompt, “What is the hand signal for contrast” student can demonstrate the different hand signal to represent the contrast text structure.

☐ In response to teacher prompt, “What is it when we name two things that are different or not alike and tell how those things are different?” student can orally state the word “contrast.”
Appendix L

Sample Lesson Scripts of Compare-Contrast Combined Text Structures
**Phase 1: Define *compare/contrast* text structure and practice in isolated text**

The teacher will briefly review that students have learned *compare* and *contrast* in isolation and will now learn how to compare and contrast things or ideas at one time. The teacher will open by saying, “Remember that we learned that *compare* (teachers uses *equals* hand signal) names two things that are or alike and then shows how those things are alike (teacher gives thumbs up). Also remember that we learned that *contrast* (teachers uses *different* hand signal) names two things that are different and then shows how those things are different (teacher gives thumbs up). When we put *compare* and *contrast* together into one text structure, we hear about how two things or ideas are like each other in some ways and we also hear about how those two things or ideas are different in other ways. First, *compare/contrast* names the things that are alike and tells us how the things are alike.” The teacher will use an easel and write the target text structure *compare* as s/he introduces the text structure. The teacher will model the use of a hand signal labeled *equals* during which the teacher will put her/his hands in the sign for equals, according to the American Sign Language dictionary (ASLU, 2015) to reinforce the concept of the text structure, *compare*. The teacher will ask all students to practice the *equals* signal together, while saying the word, *compare*. “Next, the *compare/contrast* text structure names the things or ideas again and tells us how they are different from each other.” The teacher will use an easel and write the target text structure *contrast* right next to *compare* separated by a slash as s/he reviews the text structure. The teacher will model the use of a hand signal labeled *different* during which the teacher will put her/his hands in the sign for *different*, according to the American Sign Language
dictionary (ASLU, 2015) to reinforce the concept of the text structure, *contrast*. The teacher will ask all students to make the *different* signal together, while saying the word, *contrast*. The teacher will review the combined *compare/contrast* again saying, “So, together, the *compare/contrast* text structure names the things that are alike in some ways and different in other ways. Then, *compare/contrast* tells us how the things are alike and how they are different” (see Appendix H for a sample of a complete lesson script).
Appendix M

Oral Explicit Text Structure Fidelity Assessment Measure (OETS-FA)
Oral Explicit Text Structure-Fidelity Assessment (OETS-FA)

1. Explicitly defines the text structures

1-not observed | 2-sometimes observed | 3-always observed

2. Identifies and defines the key words associated with the text structures

1-not observed | 2-sometimes observed | 3-always observed

3. Uses hand signals to scaffold learning of key words and text structures

1-not observed | 2-sometimes observed | 3-always observed

4. Models thinking aloud about the text structures and key words

1-not observed | 2-sometimes observed | 3-always observed

5. Elicits frequent opportunities for student response and feedback during lesson

1-not observed | 2-sometimes observed | 3-always observed
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Experience

Director of Special Education, Granite School District 2009-present
Associate Director, Secondary Special Education, Granite School District 2007-2009
Assistant Principal, Cyprus High School 2005-2007
Administrative Intern, Kennedy Junior High School 2004-2005
Special Education Specialist, Granite School District 2001-2004
Special Education Teacher, Westbrook Elementary School 1997-2001

Education

Ph.D. / Curriculum/Literacy Focus at Utah State University, Logan, Utah 2018
M.S. in Special Education at Utah State University, Logan, Utah 2005
Administrative/Supervisory License at Utah State University, Logan, Utah 2005
Utah Teacher Certification in Mild/Moderate Special Education at Utah State University, Logan, Utah 1997
B.A. in English at Franklin and Marshall College, Lancaster, Pennsylvania 1991

Communication


Grants


Professional Accomplishments

Thesis of the Year Award, Department of Special Education Utah State University 2005
Outstanding Special Educator Award for Granite District 1999

Affiliations/Memberships

Vice Chair of the Utah Personnel Development Network (UPDN) Advisory Board 2015-present
Treasurer Utah Chapter of Council of Special Education Administrators 2015-present
Council for Exceptional Children (CEC)
International Literacy Association (ILA)
Council for Children with Behavior Disorders (CCBD)
Association for Supervision and Curriculum (ASCD)
Association for Middle Level Educators (AMLE)