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Examining the Effects of Text Genre and Structure on Fourth- and Fifth-Grade Students' High-Level Comprehension as Evidenced in Small-Group Discussions

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Abstract

Although there is a rich literature on the role of text genre and structure on students' literal comprehension, more research is needed regarding the role of these text features on students' high-level comprehension as evidenced in their small-group discussions. As such, the present study examined the effects of text genre (i.e., narrative and informational) and structure (i.e., story, comparison, causation, problem/solution, and sequence) on fourth- and fifth-grade students' small-group discussions, and the text-based discussions were coded for high-level comprehension discourse indicators (i.e., authentic questions, elaborated explanations, and exploratory talk). The results indicated that students evidenced more indices of high-level comprehension when discussing narrative texts than when discussing informational texts. Meanwhile, teachers tended to initiate more questions in discussions on informational texts. The deeper structure of the texts was also shown to influence the discussions. Specifically, students generated significantly more authentic questions during discussions on texts with comparison structures than for any of the other four text structures, while causation structure texts triggered more authentic questions from teachers. Overall, this study contributes to the understanding of the effects of text factors on students' high-level comprehension.

Keywords: reading comprehension, text-based discussion, text genre, text structure, Quality Talk

Análisis de los Efectos del Género y la Estructura Textual en la Comprensión de Alto Nivel de Alumnado de Cuarto y Quinto Curso en Discusiones en Pequeño Grupo

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Resumen

Aunque existe amplia literatura sobre el papel del género y la estructura textual en la comprensión literal del alumnado se precisa más investigación acerca del papel de esas características textuales sobre un alto nivel de comprensión evidenciado en discusiones en pequeño grupo. Este estudio analizó los efectos del género (narrativo e informacional) y la estructura textual (historia, comparación, causación, problema/solución y secuencia) en las discusiones en pequeño grupo de alumnado de cuarto y quinto curso. Las discusiones basadas en los textos se codificaron según indicadores del discurso relativos a comprensión de alto nivel (preguntas auténticas, explicaciones elaboradas y habla exploratoria). Los resultados indicaron que el alumnado mostraba mayores índices de alto nivel de comprensión cuando discutía textos narrativos más que informativos. El profesorado tendía a iniciar más preguntas en las discusiones sobre textos informativos. La estructura profunda de los textos también se mostró que influía las discusiones. Había mayor número de preguntas auténticas durante las discusiones sobre textos con estructura comparativa que para las otras cuatro estructuras, mientras que los textos con estructura de causación producían más preguntas auténticas en el profesorado. Esta investigación contribuye a la comprensión de los efectos de factores textuales en los altos niveles de comprensión del alumnado.

Palabras clave: comprensión lectora, discusión basada en el texto, género textual, estructura textual, calidad del habla



Despite advances in every sphere of our modern existence, the ability to read and process oral and written text remains of paramount importance to daily, human functioning in and out of school. The challenge, of course, is that deep, meaningful comprehension of text remains elusive for many, especially given that text genre and structure can vary dramatically. At its essence, reading comprehension is a multidimensional process involving the reader, the text, the activity, and the context during which the reader engages in meaning making that leads to understanding and insight (RAND Reading Study Group, 2002). A number of text features have been investigated in the extant literature and shown to play substantive roles in students' comprehension (Graesser, Singer, & Trabasso, 1994; McNamara, Ozuru, & Floyd, 2011; Meyer & Freedle, 1984; O'Reilly & McNamara, 2007). For example, comprehension is differentially affected by the genre and structure of the text, the length, and cohesion within and across sentences. Moreover, the content of the text has the potential to amplify challenges for readers.

Although the nature of the text is important in the comprehension process, the skills and abilities that the reader brings to bear during their interaction with the text are also fundamentally important. Strong comprehenders possess a wide range of capacities and abilities including: (a) the cognitive capacity to direct and focus their attention, to make reasoned inferences, or to read for a particular purpose; (b) motivation to engage the text and persist when difficulties are encountered while reading; and, (c) a thorough knowledge of relevant vocabulary and discourse patterns, as well as an understanding of the domain or topic of the text and strategies to invoke when difficulties arise during reading (RAND Reading Study Group, 2002). Students with deficits in one or more of these capacities will likely struggle with everything from basic reading processing to deep, meaningful comprehension, particularly when called upon to comprehend complex text.

Further, the process of the reader interacting with the text is an activity that takes place within a given context. Contexts can vary widely from a remote, rural school in South Africa where 10th graders are reading an emotion-laden, narrative text for an assignment to an 11 year-old American girl who is reading a fascinating, expository account of the social structure of ants for pleasure reading. Arguably, these types of contextual dynamics

affect every aspect of the reading and comprehending processes, and the contextual dynamics are particularly difficult for struggling readers to negotiate (Alexander & Jetton, 2000). For example, when the purpose for reading is not evident, struggling readers may falter when attempting to marshal reading strategies to make meaning of the text. Thus, it is fundamental that the activity and context for reading and comprehending are as explicit as possible for the learner.

When the aforementioned factors interact in productive ways, as they would in an ideal reading model, then deep, meaningful comprehension (i.e., high-level comprehension) can be achieved. The reality, of course, is that such deep, meaningful comprehension as idealized in most reading models is rarely achieved. Rather, what is needed are ways to better gauge and understand the factors that appear most influential in the processes of reading and comprehending, given variations in the aforementioned elements. Such is the focus of the present investigation. Specifically, the purpose was to examine the effects of text genre (i.e., narrative versus expository) and structure (e.g., story versus causation) on 4th- and 5th-grade students' high-level comprehension as evidenced during small-group discussions.

Introduction

High-level Reading Comprehension

Literal comprehension requires an adequate, yet basic, understanding of the written text. This is a lower form of comprehension because it only results in a verbatim recollection or recognition of text or text-based content. On the other hand, Resnick (1987) suggested a higher form of thinking that involves “elaborating, adding complexity, and going beyond the given” (p. 42). When readers develop and interpret implicit meanings, check assumptions, and build connections between the text and their prior knowledge or personal experiences, they have gone beyond literal understanding, comprehending the text at a higher level (Reninger & Wilkinson, 2010). In the present work, the term *high-level comprehension* refers to critical, reflective thinking about and around the text (Murphy, Wilkinson, Soter, Hennessey, & Alexander, 2009). Such comprehension would be illustrated by a student who, having read an expository text on

major inventions in American history, provides a detailed, multi-part argument as to why the cotton gin played a fundamental role in the industrialization of America. In essence, although the expository text did not refer to the American industrial revolution the student linked the authors' perspectives on important American inventions to her own knowledge of the industrial revolution. In doing so, she showed evidence of high-level thinking through her discourse.

Our conceptualization of high-level comprehension aligns with the National Assessment of Educational Progress (NAEP) reading framework for 2013 (NAEP, 2012). Specifically, the framework comprises three *cognitive targets* underlying meaningful comprehension (i.e., locate and recall, integrate and interpret, and critique and evaluate). The first cognitive target, “locate and recall,” requires readers to be able to identify textually explicit information and make simple inferences within and across texts. The second cognitive target is “integrate and interpret.” Readers engaged in this process think about the text in ways that include comparing or connecting ideas, making assumptions, asking questions, or considering alternatives. The third cognitive target comprising the framework is “critique and evaluate,” within which readers consider the text critically to judge and evaluate the text and synthesize different perspectives in relation to their experiences or even other texts. In sum, our understanding of high-level comprehension parallels the types of comprehension identified in the framework as the second (i.e., integrate and interpret) and third (i.e., critique and evaluate) cognitive target; that is, comprehension that goes beyond locating or recalling explicit details from the text to thinking about, around, and with the text (Murphy et al., 2009).

Text Genre and Structure

Text genre. Comprehension of text is influenced by both the overarching purpose of the text (i.e., genre), as well as, the underlying structures embedded within the text. Although there are many nuanced forms of text genre, three forms (i.e., narrative, informational, and persuasive) are identified within the reading framework (NAEP, 2012) and are particularly common in formal school settings. Within the present study, we are particularly interested in narrative and informational texts as they are

prevalent in the reading curricula for upper elementary-school students (i.e., 9-11 years). Narrative text is written to tell a fictional story, while informational text is intended to inform the reader of an event or provide general information about a given topic or domain. In most American schools, 4th grade marks the transition from *learning to read* to *reading to learn* about topics from various content areas (e.g., science or social studies). During the first three years of schooling, students develop the capacity to decode, interpret, and produce written symbols for oral language and continue to build their repertoire of sight words (Snow, Burns, & Griffin, 1998). By grade four, schooling takes on a different purpose; that is, reading to learn. This shift places greater demands on students' higher-order thinking skills, critical-analytic skills, and their motivation to engage or persist when text complexity increases.

Consequently, young learners encounter more comprehension difficulties with informational texts than they do with narrative materials (Hidi & Hildyard, 1983). The conversational nature of narrative text and the common structure the majority of stories share makes narrative texts easier to comprehend for young learners. In contrast, informational texts place less emphasis on dialogue, contain more abstract, novel concepts than narrative texts, and use various text structures to deliver these ideas (Gersten, Fuchs, Williams, & Baker, 2001).

In comparison to narrative texts, early elementary school readers may not receive the same level of exposure to expository texts (Duke, 2000). This lack of exposure could contribute to later difficulties. Therefore, as students experience the transition from narrative stories to informational texts during the 4th and 5th grades, text genre may be a critical factor that influences their high-level comprehension.

Literature on the relationship between text genre and text-based talk shows that different genres may influence the quantity and quality of talk about and around the text (Price, Bradley, & Smith, 2012). Price et al. (2012) found that teachers generated a significantly greater number of extra-textual utterances during an information book read-aloud, when compared to a storybook read-aloud. Meanwhile, other studies showed that informational texts prompted discussions that were different from those sparked by narrative stories, and they required different types of comprehension activities (e.g., Mason, Peterman, Powell, & Kerr, 1989).

Text structure. Both narrative and informational texts possess an organizational structure unique to their genre, and knowledge of these structures plays a crucial role in comprehension. Text structure knowledge facilitates strategic reading and helps build coherent mental representations of the text that are more sustainable and retrievable (Meyer, 1985).

Narrative text structure. Story structure, also referred to as narrative structure or story schema, was defined by Stein and Glenn (1979) as consisting of two major components: the setting and the episode. The setting mainly consists of the character and the context of the story. The episode is divided into six subcategories: initiating events, internal responses, plans, actions, consequences, and reactions. The awareness of story grammar helps students predict the flow of the text, which consequently facilitates comprehension (Duchan, 2004).

Research has shown that young learners developed mental models for story grammar after repeated exposure to narrative stories (Applebee, 1978; Fitzgerald, 1984). Mandler and Johnson (1977) found that children of all ages used their knowledge of how stories were structured to help them learn important details. These indications of the naturalistic development of story grammar knowledge suggest that 4th- and 5th-grade students might have an advantage in generating high-level comprehension with narrative texts structure over informative or persuasive texts.

Informational text structure. Informational text is organized differently from narrative text with which students are more familiar. A well-written informational text is generally organized logically to facilitate readers' comprehension (Meyer, 2003). This organization follows a leveled structure in which the main idea or most salient message situates on the top-level and subsequent details are presented in a hierarchical way based on their relevancy to the main idea. Informational texts can be classified according to one or more top-level structures. Meyer (1975) identified five common patterns in informational text structure: comparison, problem/solution, causation, sequence, and description. Top-level structures can be seen as existing on a continuum from more structured to less structured texts (Meyer & Freedle, 1984). For instance, causation and problem/solution texts contain more structural components than less structural texts like descriptive texts. Previous research found that more organized text structures, like causation, comparison, and problem/solution, generally provide greater mnemonic

advantages for learning and memory than the structures of description and sequence texts (Meyer & Freedle, 1984; Sanders & Noordman, 2000).

Like narrative texts, knowledge of informational text structure allows readers to better organize their ideas and build coherent mental representations of the informational text (Meyer et al., 1980). However, the lack of exposure to non-fiction books during early childhood may lead to the lack of such knowledge and result in difficulties when students are newly exposed to informational texts during their later elementary school years.

Text-Based Discussion

A central finding within the empirical literature on learning is that the quality of classroom talk is strongly associated with the depth of student learning, understanding, and problem solving (e.g., Mercer, 2002; Nystrand, Wu, Gamoran, Zeiser, & Long, 2003; Wegerif, Mercer, & Dawes, 1999). Such empirical findings are deeply rooted in social constructivist and social cognitive theory. In essence, "...talk is a central feature of social-constructivist pedagogy," and talk is an effective tool for promoting thinking (Wilkinson, Murphy, & Soter, 2010, p. 144). Moreover, such effective talk can be modeled by knowledgeable others or comparable peers, cultivated through conversational moves, and sustained through cognitive and environmental prompts or cues. Discussions provide an opportunity for students to ask and answer questions, share ideas, put forth alternatives, and challenge ideas so as to reach higher levels of thinking and comprehension through thoughtful elaboration and co-construction of meaning about and around the text. Further, as a pedagogical tool, discourse also provides a window through which educators can glean understanding regarding students' comprehension.

Former discussion approaches. A considerable number of approaches to conducting classroom discussions exist in the literature. Prior research has identified nine discussion approaches characterized by a peer-reviewed record of research (Wilkinson, Murphy, & Soter, 2003; Soter, Wilkinson, Murphy, Rudge, Reninger, & Edwards, 2008; Murphy et al., 2009): *Collaborative Reasoning* (Anderson, Chinn, Waggoner, & Nguyen, 1998), *Paideia Seminar* (Billings & Fitzgerald, 2002), *Philosophy for Children* (Sharp, 1995), *Instructional Conversations* (Goldenberg, 1993), *Junior Great Books Shared Inquiry* (Great Books Foundation, 1987), *Questioning*

the Author (Beck & McKeown, 2006; McKeown & Beck, 1990), *Book Club* (Raphael & McMahon, 1994), *Grand Conversations* (Eds & Wells, 1989), and *Literature Circles* (Short & Pierce, 1990). Each approach has unique goals for discussion (e.g., students gaining literal comprehension), stance toward text (e.g., efferent or expressive), roles for the teacher and students (e.g., teacher controls turns and topic), and, at a minimum, a loosely articulated conceptualization of how the discussion should unfold (e.g., teacher begins with a question of central importance in the text).

To better understand the ways that classroom discussions play a role in basic and high-level comprehension, Murphy and colleagues (Murphy et al., 2009) conducted a meta-analysis of empirical research conducted on the aforementioned approaches to text-based discussion. The meta-analysis revealed that not all approaches were equally effective at promoting comprehension, and increases in student talk did not necessarily equate to concomitant increases in students' comprehension outcomes. Rather, gains in students' comprehension were strongly associated with the stance toward the text—the approaches with a critical-analytic stance toward the text related to the relatively largest effects. Also important was the structure of the discussion. It appeared that the strongest effects were seen for discussion approaches where there was enough structure for those involved to understand their role, but not so much structure that the approach appeared prescriptive. Finally, strong comprehension effects were seen with approaches where the teacher gradually released control to the students and the students' increasing interpretive authority was recognized and reinforced.

Having identified the approaches with the most substantive effects on students' high-level comprehension, Soter and colleagues (Soter et al., 2008) closely examined the nature of the talk taking place during discussions espousing one of the identified, productive approaches. Soter et al. found that during productive discussions, students hold the floor for longer periods of time compared to the teacher, there is shared control between teachers and students, and teachers facilitate discussion more than they play an active role in the discussion. Also important was the nature of the discourse itself. Teachers and students asked more open-ended questions for which there was not necessarily one correct answer (i.e., authentic questions), rather than declarative or factual knowledge questions (i.e., test questions); students

often provided longer, extended utterances in which they used a series of reasoning words (e.g., because or since) to explain their position; and, students often worked together to build their understanding of the text (i.e., co-construction of meaning). Having conducted the meta-analysis and the discourse analysis of these approaches to text-based discussion, Wilkinson et al. (2010) combined the features of the discussion approaches that were shown to be effective at promoting high-level comprehension into a model of discussion called *Quality Talk*. Subsequent to this initial research, the model has been revised and enhanced based on further research. The contemporary Quality Talk model is described below.

Quality Talk. The Quality Talk model of discussion can best be understood as two interleaving strands that inform one another as the teachers' and students' knowledge of the approach grows. The first strand pertains to the conceptual model of Quality Talk, which is characterized by four components including the instructional frame, pedagogical principles, teacher moves, and discourse tools and signs (i.e., discourse elements). The second strand pertains to the operationalization of Quality Talk by teachers and students, and it includes teacher professional development, discourse coaching, and explicit lessons for students on the discussion and their role in Quality Talk discussions.

The first strand. One of the central features of productive Quality Talk discussions, as evidenced through the instructional frame, is the shared control between the teacher and students. Teachers have control over the choice of text and the topic of the conversation, whereas students hold interpretive authority and control of turns. In addition, Quality Talk discussions place emphasis on both expressive and efferent stances toward the text, as research suggests that “a moderate degree of knowledge-driven and affective engagement is necessary, though not sufficient,” for students to foster a high critical-analytic orientation to text (Wilkinson et al., 2010, p. 149). Further, one of the critical pedagogical principals central to Quality Talk pertains to the role of the teacher in Quality Talk discussions, when teachers gradually release responsibility of the discussion to their students (cf. Pearson & Gallagher, 1983), students are afforded the opportunity to take on greater responsibility. Once students begin to gain interpretive authority over the text, they can begin to think, reason, and respond to the text more deeply. Yet it is important to note that, despite their *decreased* role

in Quality Talk discussions, teachers still continue to facilitate and guide the discussion through their careful use of *teacher moves* (e.g., marking, summarizing, modeling). Through their selective use of teacher moves, teachers are able to provide the necessary support and guidance for students without suppressing student talk. Finally, based on an analysis of discourse from 42 quantitative studies, Soter et al. (2008) identified a set of discourse features known to serve as proximal indicators of high-level comprehension. Thus, these indices are the focus of Quality Talk: authentic questions, uptake, and questions that elicit high-level thinking (i.e., generalization, analysis, speculation; Nystrand et al., 2003); questions that elicit extra-textual connections (i.e., affective, intertextual, and shared knowledge connections); students' elaborated explanations (Webb, 1980); and students' exploratory talk (Mercer, 2000).

The second strand. As part of Quality Talk, teachers are provided initial and ongoing professional development training. During this training, teachers are explicitly taught all aspects of the conceptual model, including the four components encompassing *the first strand*. This means that in the professional development, teachers are taught how to implement Quality Talk using the instructional frame and pedagogical principals, when and how to use teacher moves, and perhaps most importantly, how to identify and support students' use of the discourse indicators indicative of high-level comprehension in their discussions. Then throughout their implementation of Quality Talk, teachers participate in discourse coaching. Prior to coaching, teachers prepare by reviewing a video of a recent past discussion, identifying instances of each discourse indicator. Then, they meet with a discourse coach to receive feedback and support to ensure successful implementation of Quality Talk. For the final aspect of the second strand, teachers deliver explicit lessons to their students. Teachers present lessons geared toward teaching students various aspects of the Quality Talk Model (e.g., how to generate authentic questions) using researcher-provided, age-appropriate slides.

Purpose of the Present Study

Quality Talk is effective in enhancing students' ability to think and reason about text and is particularly effective for narrative texts (Reninger & Wilkinson, 2010). However, there is lack of empirical research that

addresses how Quality Talk is influenced by the features of the text being discussed. Given the inherent complexity of text structures, it is possible that young readers encounter more difficulty in comprehending informational texts, compared to the more simply structured narrative texts. Such difficulty may hinder students' critical-analytic thinking about the text. Further, among the five structures of informational text, some structures (e.g., comparison) are more organized than others (e.g., sequence), hence it is possible that within informational text, some structures facilitate reading and foster high-level thinking while others do not. Rooted in social constructivist theory and pedagogy, we would expect the influence of the various text features on students' comprehension to manifest in their small-group Quality Talk discussions. Similarly, it may be that the genre and structure of the text also influence the discourse and pedagogy of the teachers. As such, we also explored teachers' talk as it varied by genre and structure. Specifically, two research questions guided the present study including:

RQ1: To what extent does text genre influence students' high-level comprehension, as indicated by the presence of discourse elements, and teachers' questioning patterns during small-group discussions about text?

RQ2: To what extent does text structure influence students' high-level comprehension, as indicated by the presence of discourse elements, and teachers' questioning patterns during small-group discussions about text?

Method

Participants

The sample of participants consisted of 32 elementary students enrolled in 4th- ($n = 14$) and 5th-grade ($n = 18$) classrooms in the northeastern United States. The teachers from each classroom ($n = 2$) also participated in the study. General academic achievement and reading ability, indexed by students' grade point average for the previous year and standardized assessment outcomes (i.e., Iowa Test of Basic Skills), was approximately evenly distributed across the classrooms by grade. Gender was approximately evenly distributed across the classrooms, most of the students were Caucasian, and the school received funding to provide free or reduced

lunches to approximately 30% of the school population. The teachers involved in the study have taught between 10 and 18 years at a range of grades from 3rd through 8th grade.

Design and Procedure

The research team spent 12 weeks of the 2012-2013 school year examining the effectiveness of Quality Talk in the school setting. As previously described, participating teachers received professional development training at the beginning of the study and coaching over the course of the 12 weeks. Then teachers implemented the explicit Quality Talk lessons for students over a two-week period and conducted weekly group discussions on the main selections from their reading series. Teachers chose the texts based on their sequence in the reading series curriculum. Teachers received discourse coaching periodically during the study and were debriefed with the research team at the conclusion of the study.

Baseline videos of teachers leading discussions were collected prior to professional development. Teachers' feedback on the instructional approach and materials were collected throughout the study during professional development activities. Repeated measures of comprehension and fluency were also collected to assess changes in comprehension and critical-analytic thinking.

Materials

Fifteen texts were included in the study, as shown in Table 1. All discussions were conducted on reading selections selected from the grade-level Scott Foresman *Reading Street*[®]. Coh-Metrix, Version 3.0 (McNamara, Louwerse, Cai, & Graesser, 2013), was used to calculate Flesch-Kincaid grade level and the word count.

Table 1.
Features of the Discussion Texts

Text Title	Genre	Top-level Structure	Flesch-Kincaid Grade Level	Word Count
Grade 4				
<i>Encantado: Pink Dolphin of the Amazon</i>	Informational	Causation	4.6	1882
<i>Navajo Code Talkers</i>	Informational	Problem/solution	8.1	1891
<i>Seeker of Knowledge</i>	Informational	Sequence	5.5	1047
<i>Encyclopedia Brown and the Case of the Slippery Salamander</i>	Narrative	Story	5.2	1101
<i>My Brother Martin</i>	Informational	Sequence	6.4	1555
<i>Jim Thorpe's Bright Path</i>	Informational	Sequence	4.7	2413
<i>How Tia Lola Came to (Visit) Stay</i>	Narrative	Story	4.9	2461
<i>A Gift from the Heart</i>	Narrative	Story	3.7	1368
<i>The Man Who Went to the Far Side of the Moon</i>	Informational	Comparison	5.1	1343
Grade 5				
<i>The Stormi Giovanni Club</i>	Narrative	Story	3.3	2220
<i>The Gymnast</i>	Narrative	Story	5.4	969
<i>The Truth About Austin's Amazing Bats</i>	Informational	Problem/solution	6.2	1706
<i>King Midas and the Golden Touch</i>	Narrative	Story	4.4	1545
<i>Sweet Music in Harlem</i>	Narrative	Story	3.9	1600
<i>The Hindenburg</i>	Informational	Causation	8.3	1351

Data

Small-group discussions were recorded for each text (i.e., either three or four groups per class, per text), resulting in a total of 62 discussions. Baseline videos were not included in the analysis because they were not all small-

group discussions. The remaining 47 small-group discussion videos ranged in length from 10 to 20 minutes. To ensure consistency, the middle 10-minute segment of each video was selected for coding. Specifically, 10 units (i.e., one minute = one unit) from each discussion were coded and analyzed in this study, see Table 2.

Table 2.
Summary of Data Sources

Characteristics of the study	Grade 4	Grade 5
Number of students	14	18
Number of recorded discussions	33	29
Number of coded discussions	27	20
Number of units in coded discussions	270	200

Coding

The discussions were coded according to a modified version of the coding scheme developed by Soter et al. (2008) using *StudioCode* software. During training, coders were taught the discourse features and practiced coding using samples from a comparable set of data. Once training was completed, two trained individuals coded approximately 10% of the discussions ($n = 6$). They reached acceptable agreement above 85%. All disagreements were resolved by discussion between coders. Periodic agreement checks were conducted during coding to protect against drift. Coder agreement exceeded 85% on all checks.

Discourse indicators. As described previously, discussions that facilitate high-level comprehension can be characterized by specific discourse indicators. The discourse indicators of interest in this study were: authentic questions (AQ), test questions (TQ), elaborated explanations (EE), and exploratory talk (ET). With respect to both authentic and test questions, these indicators were also coded with respect to the agent (i.e., teacher or student) that initiated the question. Elaborated explanations and exploratory talk are attributed exclusively to student talk, and thus, students initiated all of these instances.

According to Soter et al. (2008), the fundamental rule when coding a question is to code what the question actually elicits rather than the question itself. A question, and the response it elicits, is called the *question event*. This notion nicely aligns with Nystrand's (2003) articulation that questions should be thought of as "sites of interaction," and that participants' responses to questions reflect their "understandings of the interactions as manifest in their discourse moves" (p. 144). Therefore, question events generally include a question, one or more student responses to the question, and a follow up to the response by either a teacher or student (Nystrand, 2003).

Authentic question. An authentic question is one in which the person asking the question is genuinely interested in knowing the answer because the answer is not pre-specified. In addition, the person who responds to the question generally thinks more fully about the possible answer, since the answers to authentic questions are open to argument, debate, and discussion. Answers to authentic questions should be supported by reasons and evidence from the text, other sources, and/or reasoning.

Transcript excerpt #1. Students were discussing the informational text *The Hindenburg*, which is about the crash of the giant airship in 1937.

S1: How far away do you think they could hear the explosion? Like how far did it travel do you think? (AQ)

S2: Well it probably went a long way, if they were in the middle of the ocean it would have been different, but it looks like they were near a city. Cause on 418/419 you can see the buildings and stuff. (EE)

T: They were just a little south of NYC, huh?

S3: There was a bunch of smoke, so I bet you could see the smoke from pretty far away, too.

Test question. A test question is an inauthentic question, in that it presupposes a particular answer. The answer can usually be found in the text, and there *is* a correct answer. Test questions often occur when the teacher has a particular answer in mind and wants the students to respond stating this answer. A test question could also be asked by a student. In this case, the question would typically have one factual or text-based answer. This generally occurs when the student asking the question does not know a specific fact.

Transcript excerpt #2. Students were discussing the informational text *The Man Who Went to the Far Side of the Moon*, which is about the story of the three Apollo 11 astronauts.

S1: So who was the first person who landed on the moon? (TQ)

S2 & S3: Neil Armstrong

S1: Really?

S2: Yeah.

Elaborated explanation. Elaborated explanations were coded when students explained their thinking in a fairly coherent form to others in the group. A common example in the discussions involved a student explaining how things work or why things work in a particular way. Elaborated explanations foster greater engagement and “cognitive restructuring and cognitive rehearsal on the part of the student doing the explaining” (Webb, Farivar, & Mastergeroge, 2001, p. 13).

Transcript excerpt #3. Students were discussing a narrative text called *The Stormi Giovanni Club*, in the story a girl got a precious pen from her grandpa and lost it.

T: So was the pen a good gift? (AQ)

S1: I think it was...I think it was a good gift because it started her passion for pens.

S2: Well I thought her passion for pens only started because she lost the pen.

S3: Because she wanted to see if she could find something as cool as...

S4: I don't think it was the best gift. It's kind of in the middle. It was pretty cool, cause like, maybe it was passed down from her great-grandpa to her grandpa to her. But she was not really allowed to do anything with it. So it was one of those gifts that when you were little you don't really pay attention to, cause I have all these little Precious Moments® things that just sit in the cabinet that I got for gifts. I really don't pay attention to them. (EE)

S2: If it was passed down from her great-grandpa and if she was young, I think it is a kind of bad gift, because then if she did lose it, and it's special then you don't want to... (EE)

An additional example of an elaborated explanation can be evidenced in transcript excerpt #1 by Student #2.

Exploratory talk. Exploratory talk was coded when students shared and co-constructed knowledge together. Mercer (2002) defined exploratory talk as talk in which partners engage critically but constructively with each other’s ideas. When exploratory talk occurs, students’ answers to authentic question are challenged by others with reasons and alternatives. Hence, this kind of co-reasoning helps students “share knowledge, evaluate evidence, and consider options in a reasonable and equitable way” (Mercer, 2000, p. 153). An example of exploratory talk can be seen above in transcript excerpt #3.

Results

Impact of Text Genre on Students’ High-Level Comprehension and Teachers’ Questioning Patterns

The first research question pertained to the role that text genre played in students’ high-level comprehension and teacher questioning as indexed by the occurrence of Quality Talk discourse elements. We first discuss the outcomes for students and follow with a discussion of the outcomes for teachers. As indicated in Table 3, the proportion of the two question types varied only minimally by genre. For example, when students read narrative texts they asked approximately 0.40 authentic questions per minute in their discussions, whereas when students read informational texts they asked approximately 0.48 authentic questions per minute. On average students asked slightly less than one question every other minute. This trend was also present for test questions, albeit on average, students asked far less test questions than authentic questions. However, as was expected, students generated relatively more elaborated explanations for discussions on narrative texts than for discussions on informative texts. Yet, the instances of exploratory talk were very few when compared to the instances of elaborated explanation.

Table 3.
Student- and Teacher-initiated Discourse Indicators by Genre

Discourse Indicators	Genre	# of DIs	# of Units	DIs per Unit (SD)
Student-initiated				
Authentic questions	Narrative	84	210	0.40 (0.61)
	Informational	125	260	0.48 (0.69)
	Total	209	470	0.44 (0.66)
Test questions	Narrative	6	210	0.03 (0.17)
	Informational	14	260	0.05 (0.27)
	Total	20	470	0.04 (0.23)
Elaborated explanations	Narrative	155	210	0.74 (0.83)
	Informational	136	260	0.52 (0.67)
	Total	291	470	0.62 (0.75)
Exploratory talk	Narrative	19	210	0.09 (0.29)
	Informational	22	260	0.08 (0.28)
	Total	41	470	0.09 (0.28)
Teacher-initiated				
Authentic questions	Narrative	143	210	0.68 (0.82)
	Informational	237	260	0.91 (0.96)
	Total	380	470	0.81 (0.91)
Test questions	Narrative	46	210	0.22 (0.48)
	Informational	77	260	0.30 (0.68)
	Total	123	470	0.26 (0.60)

Note. Due to the unequal occurrence of narrative and informational texts present in the reading series, the number of discussions conducted on the two genres was not the same. Thus, interpretation of the raw number of discourse indicators per genre is biased. The column pertaining to the proportion of discourse indicators per unit (i.e., one unit = one minute) provides an adjusted value that can be compared across genres. # of DI's = number of discourse indicators; # of Units = number of units; DIs per Unit = number of discourse indicators/number of units; SD = standard deviation.

To further explore the role of genre on students' high-level comprehension, a one-way multivariate analysis of variance (MANOVA) assessed the impact of genre (i.e., narrative vs. informational) on the four discourse indicators (i.e., authentic questions, test questions, elaborated explanations, and exploratory talk). There was a significant difference between narrative and informational texts on student-initiated discourse indicators, $F(4, 465) = 2.864, p = .023$; Pillai's Trace = .024; partial $\eta^2 = .024$. Follow-up univariate ANOVAs resulted in a significant difference in genre only on elaborated explanations ($F(1, 468) = 9.614, p = .002$; partial $\eta^2 = .02$), where the narrative texts triggered significantly more elaborated explanations than informative texts.

We were also interested in the ways in which teachers' questions varied by genre. As indicated in Table 3, the descriptive statistics demonstrated that when discussing narrative texts with their students, teachers asked fewer authentic questions per minute in their discussions, than when discussing informational texts, (i.e., 0.68 compared to 0.91 authentic questions per minute). This trend was consistent with test questions, albeit on average, teachers asked far fewer test questions than authentic questions.

To further explore these descriptive trends, a one-way multivariate analysis of variance (MANOVA) assessed the impact of genre (i.e., narrative vs. informational) on the two teacher-initiated discourse indicators (i.e., authentic questions and test questions). In examining the data to check the assumptions of the planned analysis, the checking revealed that the data were not normally distributed, as assessed by Shapiro-Wilk test ($p < .05$). However, one-way MANOVA is fairly robust to deviations from normality, and as a result, we interpreted Pillai's Trace. There was a statistically significant difference between narrative text and informational texts on teacher-initiated discourse indicators, $F(2, 467) = 4.526, p = .011$; Pillai's Trace = .019; partial $\eta^2 = .019$.

Follow-up univariate ANOVAs resulted in a significant difference on authentic questions ($F(1, 468) = 7.636, p = .006$; partial $\eta^2 = .016$), but not for test questions ($F(1, 468) = 1.923, p = .166$; partial $\eta^2 = .004$). Teachers initiated significantly more authentic questions for informational texts than for narrative texts, Bonferroni correction was applied to account for multiple ANOVAs and potential family-wise error (i.e., statistical significance at $p < .025$).

Impact of Text Structure on Students' High-Level Comprehension and Teachers' Questioning Patterns

Our second research question pertained to the role of text structure on students' high-level comprehension and teachers' questioning patterns. Again, we first discuss the outcomes for students and follow with a discussion of the outcomes for teachers. As detailed in Table 4 displaying the descriptive data, students asked more authentic questions when discussing comparison texts than when discussing other text structures. Additionally, when discussing comparison structure texts, students generated greater instances of exploratory talk, compared with other text structures. Although as previously indicated, the overall the instances of exploratory talk were few.

Table 4.

Student- and Teacher-initiated Discourse Indicators by Text Structure

Discourse Indicators	Structure														
	Story			Causation			Comparison			Problem/Solution			Sequence		
	# of DIs	# of Units	DIs per Unit (SD)	# of DIs	# of Units	DIs per Unit (SD)	# of DIs	# of Units	DIs per Unit (SD)	# of DIs	# of Units	DIs per Unit (SD)	# of DIs	# of Units	DIs per Unit (SD)
Student-initiated															
AQs	84	210	0.40 (0.61)	28	70	0.40 (0.67)	30	30	1.00 (0.83)	26	70	0.37 (0.57)	41	90	0.46 (0.69)
TQs	6	210	0.03 (0.17)	0	70	0 (0)	6	30	0.20 (0.48)	0	70	0 (0)	8	90	0.09 (0.36)
EEs	155	210	0.74 (0.83)	43	70	0.61 (0.79)	12	30	0.40 (0.56)	44	70	0.63 (0.64)	37	90	0.41 (0.62)
ET	19	210	0.09 (0.29)	3	70	0.04 (0.20)	5	30	0.17 (0.38)	6	70	0.09 (0.28)	8	90	0.09 (0.29)
Teacher-initiated															
AQs	143	210	0.68 (0.82)	80	70	1.14 (1.18)	22	30	0.73 (0.79)	47	70	0.67 (0.72)	88	90	0.98 (0.94)
TQs	46	210	0.22 (0.48)	20	70	0.29 (0.75)	0	30	0 (0)	26	70	0.37 (0.69)	31	90	0.34 (0.72)

Note. Due to the unequal occurrence of text structure present in the reading series, the number of discussions conducted on the various structures was not the same. Thus, interpretation of the raw number of discourse indicators per genre is biased. The column pertaining to the proportion of discourse indicators per unit (i.e., one unit = one minute) provides an adjusted value that can be compared across genres. AQs = authentic questions; TQs = test questions; EEs = elaborated explanations; ET = exploratory talk; # of DIs = number of discourse indicators; # of Units = number of units; DIs per Unit = number of discourse indicators/number of units; SD = standard deviation.

To further explore the role of text structure on students' high-level comprehension, a one-way multivariate analysis of variance (MANOVA) assessed the impact of text structure (i.e., story, causation, comparison, problem/solution, and sequence) on the four discourse indicators (i.e., authentic questions, test questions, elaborated explanations, and exploratory talk). There was a significant difference between the five text structures on the student-initiated discourse indicators, $F(16, 1860) = 3.956, p < .001$; Pillai's Trace = .132; partial $\eta^2 = .033$.

Follow-up univariate ANOVAs showed that text structure had statistically significant effects on student-initiated authentic questions ($F(4, 465) = 6.178, p < .001$; partial $\eta^2 = .05$), test questions ($F(4, 465) = 5.986, p < .001$; partial $\eta^2 = .049$), and elaborated explanations ($F(4, 465) = 3.739, p = .005$; partial $\eta^2 = .031$), using a Bonferroni adjusted α level of .0125. No significant difference for text structure was found on exploratory talk ($F(4, 465) = 1.033, p = .389$; partial $\eta^2 = .009$). Bonferroni post-hoc tests showed that when discussing comparison structure texts, students generated significantly more authentic questions than for each of the other four text structures: story ($p < .001$), causation ($p < .001$), problem/solution ($p < .001$), sequence ($p = .001$). A similar trend was present when comparing the number of test questions generated when discussing comparison structure texts to the other structure types: story ($p = .001$), causation ($p = .001$), problem/solution ($p = .001$); but, there was not a significant difference between comparison structure and sequence structure ($p = .206$). Further, consistent with the results on text genre, students discussing story structure texts generated significantly more elaborated explanations than students discussing sequence texts ($p = .005$).

In addition to the role of text structure on students' high-level comprehension, we were also interested in the influence of text structure on teachers' questioning patterns. From the descriptive data shared in Table 4, it is evident that teachers asked more authentic questions when discussing causation texts compared to when discussing texts with other structures. Also worthy of note is that teachers did not ask *any* test questions when discussing a text with a comparison structure.

To further explore the role of text structure on students' high-level comprehension, a one-way multivariate analysis of variance (MANOVA) assessed the impact of structure (i.e., story, causation, comparison,

problem/solution, and sequence) on the two teacher-initiated discourse indicators (i.e., authentic questions and test questions). There was a significant difference between the five text structures on the teacher-initiated discourse indicators, $F(8, 930) = 3.716$, $p < .001$; Pillai's Trace = .062; partial $\eta^2 = .031$. Follow-up univariate ANOVAs showed that text structure resulted in a significant effect on teacher-initiated authentic questions ($F(4, 465) = 4.816$, $p < .001$; partial $\eta^2 = .04$); but not on test questions ($F(4, 465) = 2.775$, $p = .027$; partial $\eta^2 = .023$), using a Bonferroni adjusted α level of .025.

Bonferroni post-hoc tests showed that when discussing causation structure texts, teachers initiated significantly more authentic questions than story structure texts ($p = .002$), but no significant difference was found when comparing causation structure texts with other text structures.

Discussion

The purpose of this study was to examine students' high-level comprehension during small-group discussions as a function of the characteristics of the text that they discussed. Our findings suggested that students evidenced more indices of high-level comprehension when discussing narrative texts than when discussing informational texts. Yet when inspecting the discourse indicators of high-level comprehension independently, only the proportion of elaborated explanations was significantly different between discussions based on narrative texts compared to informational texts. This result may be due to the fact that narrative texts contained more familiar information, and thus, students had more knowledge available to facilitate comprehension. Further, it is possible that the conversational nature of the narrative texts made it easier for students to connect to their personal life experiences during the discussions and put forward coherent and reasoned explanations.

For instance, in transcript excerpt #3, one student was able to relate a gift she had once received to the gift in the story. She used her personal experience as evidence to support her argument. In responding to authentic questions about informational text, however, students often need to develop their explanations based on certain facts. Without the requisite prior knowledge, students may encounter difficulties in generating elaborated

explanations to support a well-developed argument, and students may need to seek help from the textbook. For example, in transcript excerpt #1 students were discussing the explosion of the Hindenburg. One of the students (i.e., Student #2) cited the illustration in the textbook as the evidence to support her reasoning. Thus, it is reasonable that students in this study articulated more elaborated explanations when discussing narrative texts.

Alternatively, teachers asked more authentic questions during discussions about informational texts. Because students who participated in the study were experiencing a critical transition from *learning to read* to *reading to learn*, the informational texts may have been more demanding than narrative texts to comprehend. Thus, the higher frequency of teacher-generated authentic questions could be due to the extra guidance teachers needed to provide to their students when discussing the informational texts.

Yet perhaps a clearer picture becomes apparent when considering the deeper structure of the texts. While all of the narrative genre texts were characterized as having a story structure, the informational genre texts were characterized as having one of four structures, with the different structures varying widely. As expected, texts with a story structure (i.e., narrative texts) elicited the greatest number of students' elaborated explanations. Importantly though, of the five text structures analyzed in the study, texts with a comparison structure elicited significantly more questions (i.e., both authentic and test) from students in discussions, despite being classified as informational genre text. This finding is supported by prior research that showed mnemonic advantages of comparison structure (e.g., [Richgels et al., 1987](#)). Additionally, teachers asked more authentic questions during discussions about texts organized with the causation structure (i.e., one type of informational text).

In short, this study found that text features, in particular text genre and structure, influenced classroom discussions about text, as evidenced by indices of students' high-level comprehension and teachers' questioning pattern. These findings also suggest that perhaps certain individual difference variables (i.e., topic knowledge and topic interest) may play essential roles in text-based discussions. Topic knowledge has long been associated with individual's understanding and memory of text ([Alexander & Murphy, 1998](#)) and interest often predicts students' response to a

particular topic (Alexander, Kulikowich, & Schultz, 1994). Therefore, it is imperative that these characteristics be examined in subsequent studies.

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