BACKGROUND KNOWLEDGE, CURRICULUM, AND SOCIOECONOMIC STATUS: WHAT DO SECOND-GRADE READERS KNOW ABOUT TOPICS IN CORE READING PROGRAMS?

By

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ABSTRACT

BACKGROUND KNOWLEDGE, CURRICULUM, AND SOCIOECONOMIC STATUS: WHAT DO SECOND-GRADE READERS KNOW ABOUT TOPICS IN CORE READING PROGRAMS?

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Students living in poverty continually score significantly lower than their more affluent peers on reading and writing achievement tests. One reason this literacy difference or gap may exist is a mismatch between students' background knowledge relevant to the text and the texts the students read daily in classrooms. It is well documented that students with limited background knowledge struggle with comprehension, and therefore, achieving strong background knowledge is a critical component of reading achievement. However, little is known about how students' background knowledge aligns with the knowledge that texts assume of students. This study examined the background knowledge of second-grade students in high-socioeconomic status schools and in low-socioeconomic status schools. Specifically, the study investigated how much each student knew about concepts and topics important for comprehension, but not easily inferred, in program selections in three widely used core reading programs. Results indicate that socioeconomic status (SES) is related to student background knowledge at a level of statistical significance, with high-SES students demonstrating higher background knowledge on a majority of the questions and selections, and across texts of each of the three core reading program publishers. These findings suggest that high-SES students have, on average, substantially more knowledge assumed by the texts used for reading instruction in school, while low-SES students have some knowledge, but substantially less than their more affluent peers. Careful review of core reading programs for the background knowledge assumed by their texts and greater

attention to building background knowledge in low-SES school settings is encouraged. Future research could examine background knowledge relative to key texts at other grade levels and in other subjects, such as science and social studies. Research could also look at what teachers are doing in the classrooms to support building of new knowledge and activation of existing background knowledge for students, especially students from low-SES backgrounds.

For Dad,
who NEVER doubted my destiny
Love Always, Jenny

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

Students living in poverty continually score significantly lower in reading and writing in comparison to students from the middle- and upper-socioeconomic status (SES)[1] (National Assessment Governing Board U.S. Department of Education, 2008; The Education Trust, 2005). "For many disadvantaged, poor-performing students, 'school' is synonymous with 'failure'. For them, school is not fun, it is punishing" (Entwisle, Alexander, & Olson, 2007, pp. 184-185). These students enter school already far behind their peers in academic achievement and continue to struggle to catch up.

One possible reason why this literacy achievement gap exists is a discrepancy between low-SES students' background knowledge and the types of background knowledge expected and emphasized in school (Pearson, 2013). Simply put, background knowledge is "what one already knows about a topic" (Jonassen & Grabowski, 1993, p. 417). Dochy (1994) further extends the notion of background knowledge by stating it is "the whole of a person's actual knowledge that: (a) is available before a certain learning task, (b) is structured in schemata, (c) is declarative and procedural, (d) is partly explicit and partly implicit, (e) and is dynamic in nature and stored in the knowledge base" (p. 4699). Relevant and adequate background knowledge helps a reader tackle a variety of texts with deeper understanding (Anderson & Pearson, 1984; Block & Pressley, 2002; Pearson, Hansen, & Gordon, 1979). The reader is able to assimilate and incorporate new information from the text much more readily than a reader with little background knowledge (Donovan &

[1] I define SES as a person's status in society based on income, occupation, education, and economic opportunities that he/she may experience.

Bransford, 2005; Kintsch, 1994, 2004; Stahl, Jacobson, Davis, & Davis, 1989). The reader with more background knowledge will be better able to understand the gist of the text and fill in missing or vaguely presented information through chunking textual clues with the relevant background knowledge (Afflerbach, 1990; Carrell & Eisterhold, 1983; Pritchard, 1990; Recht & Leslie, 1988; Stahl, 2008). The reader will also be able to process words more easily if he has the necessary contextual background knowledge of the words used or concepts discussed, thus freeing up cognitive space for comprehension (Chall & Jacobs, 2003; Hart & Risley, 2003; Pang, Han, & Pang, 2011; Stahl et al., 1989).

Readers who possess little background knowledge will struggle to make connections to and within the text, leaving them with gaping holes in their understanding and confusion about the overall meaning of the text (Afflerbach, 1990; Hollingsworth & Reutzel, 1990; Johnson, 198, 1982; Langer, 1984; Lee, 2001; Lipson, 1983, 1984; McNamara, Floyd, Best, & Louwerse, 2004; McNamara & Kintsch, 1996). Some students possess limited background knowledge of key concepts that are necessary for comprehending the texts they encounter daily in school (Knight, 2012). The background knowledge some students have is not always aligned with the knowledge publishers of school texts assume students will have and as a result, these students struggle to fill in the knowledge gaps and have a greater potential for misunderstanding. These students struggle to utilize and connect their background knowledge with the information they are reading in the text. When this happens, it can lead to a gap in literacy achievement between the students with adequate pertinent knowledge and the ability to access it and those who lack the knowledge and have limited ability to access it successfully. Kintsch (2004) states that, "Even readers with little domain knowledge can understand information that is given

explicitly in the text (although they might not remember it because their retrieval structures might not be rich enough). However, inferences and thematic integration that build retrieval structures require knowledge" (p. 1307).

In order to comprehend, readers need to draw from and integrate their relevant cultural and general background knowledge with the materials they are reading. Readers access their experiences and background knowledge, build upon and add new knowledge, and then connect new information with the known, ultimately helping with overall reading comprehension. This “virtuous cycle”, as Duke, Pearson, Strachan, & Billman (2011) explain, the more a reader knows, the more he understands and learns, thereby increasing his stock of knowledge for the next encounter. Students with a great deal of background knowledge relevant to the texts they read in schools are at an advantage compared to their peers who do not have the same level of background knowledge. Thus, the students with a great deal of background knowledge continue to increase and build upon their stockpile of knowledge on these given topics, while their peers struggle to understand and add little to their store of knowledge (Neuman, 2001; Neuman & Celano, 2006; Rumelhart, 1980). Over time, the students with richer background knowledge get richer and the students with poorer background knowledge get poorer (Stanovich, 1986).

Core reading programs (referred to from this point on as CRPs), like many curriculum materials, assume particular background knowledge on the part of students (Knight, 2012), and they are used extensively in schools (Dewitz, Jones, & Leahy, 2009; Durkin, 1981; Dutro, 2009; Ede, 2006; Walsh, 2003). According to one study, 74% of schools reported following closely or using some sections from CRPs (Educational Market Report, 2010). CRPs are especially common in schools with a high population of students

from backgrounds of poverty (Dutro, 2009; Ede, 2006; Garan, 2004). The CRPs (sometimes referred to as *basals*[2]) provide a common set of books and literacy curriculum to be used with all readers in the classroom (Garan, 2004), regardless of student ability or background. As a result, use of CRPs greatly increases the likelihood that in a diverse classroom, there will be one or more students whose background knowledge is not well aligned with the knowledge assumed when a given book is assigned. Furthermore, across school settings there may be a disparity between high-SES students' and low-SES students' alignment of knowledge with what CRP selections assume. We already know low-SES students have limited background knowledge on topics found in these CRPs (Knight, 2012), but questions remain as to whether there are differences in background knowledge based on student socioeconomic status.

Some scholars have argued that in today's schools, there is a great deal of diversity and disparity in student background knowledge (Pearson, 2013). This study will examine the degree to which there is diversity and disparity in students' background knowledge assumed by selections in three CRPs. This study can help publishers and teachers become more aware of the assumptions they make about what knowledge and experiences a student may bring to a text, and whether these assumptions may, on average, disadvantage some students more than others. Low background knowledge has real consequences for students' schooling experiences and success. The main purpose for reading is to construct

[2] Brown and Dewitz (2014) delineate the important difference between core reading programs and basals. They state, "Basals were considered the base for reading instruction and teachers were expected to move beyond them into literature and nonfiction trade books as soon as students were ready. A core program is considered central and important, capturing all that is necessary about learning to read." Thus we see that core programs are comprehensive instead of instruction that needs to be added onto and therefore can have an impact for readers if background knowledge related to them is inequitable.

meaning with and from the text; to accomplish this purpose, readings employ a variety of complex processes, including drawing on the reader's background knowledge and experiences. When students have limited background knowledge, they often struggle to recall important details (Afflerbach, 1990; Johnston & Afflerbach, 1985), make inferences (Cain, Oakhill, Barnes, & Bryant, 2001), and correctly answer comprehension questions (Anderson & Pearson, 1984; Bracken, 1982). This can cause students to become frustrated and fall behind their peers with better background knowledge in regards to reading comprehension. By learning about the gaps students may have in their background knowledge and effectively using and building upon the background knowledge students do possess, publishers and teachers can help students avoid frustration and reading comprehension failure, increase comprehension, and potentially decrease the achievement gap.

Theoretical Framework

The RAND Reading Study Group (2004) explained that there are "three elements participating in comprehension: a reader comprehending, a text to be comprehended, and an activity contributing to comprehension" (p. 720). Duke and Carlisle (2011) suggest that reading comprehension is the "overall meaning made of text through the interaction of reader, text, and context factors" (p. 200). Both statements suggest a triangular approach to comprehension, where it becomes vital for all three elements to be actively involved in the process of comprehending. If one or more are lacking, there will be a breakdown in comprehension. The RAND Reading Study Group recognized the importance of the reader in this process and the interactions with the text and context that help build understanding for each reader. This study addresses two parts of the "comprehension triangle", the text

and the reader; all the while fully acknowledging the importance that all three aspects play in a reader's overall comprehension.

Text is an important factor in reading comprehension (Menon & Hiebert, 2005). Characteristics of texts such as the structure, number of words, presence of illustrations, and the complexity and nature of the language can influence the kinds of experiences children have with reading (Hiebert & Martin, 2004). Text that is too difficult to understand due to many or all of the factors previously listed can likely be the cause of a breakdown in comprehension. Readers who struggle with the complexity and nature of the words will likely struggle to fully understand the meaning of the text.

Comprehension can also be greatly influenced by a variety of reader factors. For example, a reader's inability to monitor his progress for understanding, make predictions about the text, or infer meaning will likely cause a breakdown in understanding. One reader factor to consider is the reader's background knowledge. To make sense of the world around her, a reader will build upon experiences from her life (Duchan, 2004). As a reader continues to have experiences, she builds upon the previous ones, accumulating a variety of events that she stores and retrieves in order to help facilitate understanding. As these events and experiences accumulate, a reader builds a framework for accommodating and assimilating new ideas. This framework is often referred to as a schema (Afflerbach, 1990; Bartlett, 1932; Carrell & Eisterhold, 1983; Johnson, 1982; Kant, 1929; Pritchard, 1990; Richgels, 1982; Rumelhart, 1980). Schemata provide a way for people to make sense of the world through interpretation and remembering experiences, thus allowing predictions to be made about what will happen for a new encounter (Duchan, 2004).

Schema theory, what schemata are and how they work, provides a way for a reader to take what is previously known (McVee, Dunsmore, & Gavelek., 2005) and connect it with experiences through action, talk, people, and culturally situated knowledge to make meaning from words and images (Gee, 2004). The frameworks, or schemata, provide people with an effective and efficient way to organize chunks of information about the world and to easily access them for understanding. Schema theory presumes that humans access these frameworks, or schemata, in order to understand a variety of situations that are similar to them (Al-Issa, 2011; Bartlett, 1932; Carrell & Eisterhold, 1983; McVee, Dunsmore, & Gavelek, 2005; Nassaji, 2007; Richgels, 1982; Rumelhart, 1980).

For example, a person has knowledge or schemata for a birthday celebration—what it is, what it potentially looks like, what happens there, and so on. While birthday celebrations are common, not all are alike, but through repeated exposures to these celebrations, a framework is developed. What happens when a person experiences a new situation, such as a surprise birthday celebration, for the first time? His brain activates his existing birthday schemata and begins to make associations between the new experiences and old ones. By using his existing schemata or background knowledge to help him understand what is happening at the surprise celebration, he begins to understand what is expected during this new experience.

In everyday experiences, people make connections between new experiences with what they know in order to help them better understand what is going on. This happens while reading too. A reader needs strong schemata relevant to the text to help him interpret, remember, and make predictions about what will happen or be conveyed next in his reading. Kintsch (1988, 1994, 1998, 2004) explains this process in his construction-

integration model. In the construction-integration model, there are two main components, the textbase and the situation model. Kintsch (1998, 2004) explains the textbase as being the network of propositions that represent the meaning (microstructure) and the organization of ideas into higher order units (macrostructure) (2004, p. 1274) and also a combination of the text and knowledge about language and the world (1998, p. 180). The situation model then is the information provided by the text and the integration with a reader's background knowledge. While the textbase is similar for each reader, the situation model will vary greatly, based on the goals for reading and the relevant background knowledge each reader has on the topic.

For a reader to comprehend the text beyond surface-level understanding, not only does she have to be able to read the words on the page, but also to make a plethora of connections to her background knowledge, and to sort through those connections to come up with the most plausible explanation for what the author is intending. The more a reader has an extensive background knowledge of the topic to draw upon during reading, the better she will be at filling in the gaps left in the text by the author (Kintsch, 1994; McNamara, Kintsch, Songer, & Kintsch, 1996; Miller & Keenan, 2009) and the better she will be at rapidly constructing an overall understanding of what is being read (Johnson, 1982; Pritchard, 1990; Recht & Leslie, 1988), thereby increasing her overall reading comprehension of the selected text.

This study is also framed by sociocultural theory. This theory posits that learning is not only a cognitive process, but also related to cultural, institutional, and historical context. As Bruner (1996) states, "learning and thinking are always situated in a cultural setting and always dependent upon the utilization of cultural resources" (p. 4). Vygotsky

(1979) suggests that what and how we learn is tightly connected to our interactions with others.

Wertsch (1991) highlights Vygotsky's view of learning through social interaction by explaining that individual development is situated in social structures. He explains that as children interact and learn socially, they acquire and internalize new strategies and knowledge of their culture and the world that they can then apply to new learning situations. Bruner (1996) also supports this idea. He states, "passing on knowledge and skill, like any human exchange, involves a subcommunity in interaction" (p. 20). It cannot be done in isolation. It must be done through and within an interaction with a more knowledgeable other, in which, over time, the novice takes on more and more responsibility for his learning (Lave & Wenger, 2009). To help children become successful in accessing and acquiring this knowledge, not only do they need to interact with others, they need to be taught to use various tools of meaning making. Vygotsky (1981) describes these tools and signs (semiotics) as, "language; various systems of counting; mnemonic techniques; algebraic symbol systems; works of art; writing; schemes; diagrams, maps and mechanical drawings; all sorts of conventional signs and so on" (p. 137). As readers are applying semiotics through interactions with others, they are developing a great deal of knowledge that can support their understanding. Thus, our culture and communication are linked. What and how we talk about things are directly linked to our cultural experiences and knowledge. It is through our language and communication that we express our thoughts and ideas. Cultural values and ways of thinking are embedded in this system, and expressly show student understanding and ways in which they learn. As Vygotsky so

clearly states, "thought is determined by language … and the sociocultural experiences of the child" (p.51).

Without this interaction, it would be difficult to build upon what is known and activate new knowledge. Connecting this sociocultural theory with schema theory (Bartlett, 1932; Richgels, 1982; Rumelhart, 1980) and the construction integration model (Kintsch, 1988, 1994, 1998, 2004) we begin to understand how a reader accumulates information and builds upon it to develop a diverse layer of background knowledge that can support reading comprehension.

Among other things, the background knowledge required by the text and the background knowledge possessed by the reader influence comprehension. In this study, the combination of the text and the reader will be examined to determine what readers know about key concepts and topics important for comprehension but not easily inferred from selections in three CRPs.

Purpose of the Study and Research Questions

Background knowledge is an important component of reading comprehension. When children have limited or mismatching knowledge of a topic, it can confound their comprehension. My initial study (Knight, 2012) found that children living in low-SES school districts have limited knowledge of key concepts and terms important to comprehension in CRPs (Knight, 2012), which are used extensively in their schools (Dewitz et al., 2009; Dutro, 2009; Hiebert & Martin, 2001). The purpose of the current study is to learn more about children's background knowledge relative to texts they are expected to comprehend in schools and to determine whether there is a gap in that knowledge for high- and low-SES students. Specifically, I focus on the knowledge that selections contain that is important for

overall understanding, but is not easily inferred by the reader without relevant background knowledge. This study adds to the literature by explaining sources of gaps between children of low-SES and high-SES in regards to academic achievement and reading comprehension (Burkam et al., 2004; Caldas & Bankston, 1997). This research also helps to fill the gap in research on young readers' abilities to verbalize their thoughts and knowledge on a topic (Connor, Morrison, & Underwood, 2007; Norman, 2010).

The research questions for the current study are: (1) To what degree do low-SES and high-SES second-grade students demonstrate background knowledge needed for comprehension, but not easily inferred, from selections in three core reading programs? (2) Does the background knowledge of low-SES and high-SES second-grade students differ and if so, in what ways and to what extent?

Significance of the Study

Students' literacy success is a critical component of overall learning (e.g., Au & Raphael, 2000; Duke, Pearson, Strachan, & Billman, 2011; Pearson, 2013). It is well established that children living in poverty struggle to achieve literacy success at the same rate as their more affluent peers (e.g., Alexander, 1996; Bradley, Corwyn, McAdoo, & Garcia Coll, 2001; Brooks-Dunn & Duncan, 1997; Reardon, 2011). Many researchers have looked at the differences in high- and low-SES students' literacy achievement for various reasons (e.g., early home interactions, vocabulary development, parental talk, early reading skills), yet the gap still exists. In spite of the well-documented magnitude of the problem, there is still a critical need to determine why the difference between high- and low-SES students' literacy achievement exists.

The current study is therefore significant because it will investigate one possible contributor to the gap in literacy achievement for low- and high-SES students. Specifically, it will examine whether the texts used to teach students to read are unequally matched to their backgrounds and experiences. If not, then we have eliminated one factor for comprehension difficulties in students, and must look at other factors such as teacher support, teacher instructional quality and comprehension strategy use in young children to name but a few. If so, then there are potential implications for teachers and publishers. This information may inform CRP publishers that selections need to be written in a way that does not assume students' have the background knowledge necessary for comprehension, especially low-SES students, or that there needs to be necessary instructional support provided. It may also inform teachers to be more aware of their students' past experiences and work to activate and build new knowledge for deeper understanding of the texts read. This support could include such things as focused activation of key concepts important for comprehension of the selection, instead of generalized activation that may not represent what the students need to know in order to comprehend, as well as reading a variety of texts and sharing various methods (e.g., illustrations, video clips, songs, or personal experiences) to help build students' background of the topics being read (e.g., Allington & McGill-Franzen, 2013; Au & Raphael, 2000; Duncan & Magnuson, 2005; Ladson-Billings, 2006; Lubienski, 2003). This, in turn, could reduce disparities that students experience with literacy achievement. This knowledge and support could improve educational experiences and overall literacy success for low-SES students.

Organization of the Study

This dissertation is organized into five chapters. As you have read, Chapter 1 introduces the study and states both the purpose for and significance of the present study. Chapter 1 also contains the research questions and a theoretical framework supporting the study. Chapter 2 is a review of the relevant literature on socioeconomic status (SES) and the reading comprehension achievement gap, the role of background knowledge in reading comprehension, how SES is related to background knowledge differences in students, and the assumptions core reading programs make about students' background knowledge. In this chapter, I review the literature to explain how SES, background knowledge, and CRPs may explain the differences between high- and low-SES students' average reading comprehension achievement. Chapter 3 describes the design of the study and the methods used. It provides information on the participants, measures, data collection, and the approach to data analysis. Chapter 4 reports the significant findings of the study and addresses the research questions. Chapter 5 is a discussion of the key findings in relation to the research questions. It proposes implications for practice and suggestions for future research.

CHAPTER 2

REVIEW OF THE LITERATURE

The achievement gap by socioeconomic status exists in large measure due to a wide difference in experiences and opportunities provided and offered to children of different socioeconomic statuses. Students from wealthy homes generally have more opportunities at home and at school to develop background knowledge that suits them well in school, while their peers living in poverty lack some of the same opportunities (Levin, 2007; National Assessment Governing Board U.S. Department of Education, 2008; National Center For Education Statistics, 2009; National Center for Educational Statistics, 2012; Reardon, 2011; Reardon & Bischoff, 2011). Without these opportunities to develop background knowledge and experiences privileged in school, students are more likely to struggle with reading comprehension and academic success. This literature review will support this claim through looking at research that speaks to the following assertions: socioeconomic status (SES) is strongly related to reading comprehension achievement, background knowledge is critical to reading comprehension, differences in low-SES students' background knowledge may partially explain SES differences in reading comprehension achievement, and finally, reading programs make assumptions about students' background knowledge.

SES is Strongly Related to Reading Comprehension Achievement

According to the latest PIRLS (Progress in International Reading Literacy Study) report from the National Center for Educational Statistics (2012), students in the United States have increased their reading scores in comparison to those of their international peers, yet there is still a large disparity between students within the U.S. with regard to test

scores and socioeconomic status (SES). Students with higher SES continue to outperform their lower SES peers (Barton, 2003; Levin, 2007; Reardon, 2011; Rothstein, 2004). This disparity, as well as the disparity in achievement by race, are often known as *the achievement gap* (The Education Trust, 2005). Reardon (2011) suggests that while the gap is closing between White and Black students, it is increasing by SES. According to Reardon (2011), the gap between "a child from a family at the 90th percentile of the family income distribution and a child from the 10th percentile" (p. 91) is roughly "30%-40% larger than it was twenty-five years ago" (p. 91), as reported by test score differences between groups in standard-deviation units adjusted for the estimated reliability of each test (p. 94).

The National Assessment of Educational Progress (NAEP) data suggest that students in affluent schools have a significantly higher reading achievement level than their peers in "disadvantaged" (according to a combination of race/ethnicity, free/reduced lunch status, and academic program membership) schools (Garcia, McIlroy, & Barber, 2008, p. 203). According to PIRLS (National Center for Educational Statistics, 2012), U.S. high-SES students, on average, scored 93 points higher on the combined literacy scale. The NAEP data (2009; 2012) shows that low-SES students scored, on average, 29 points lower than their high-SES peers on multiple standardized tests for literacy measures. The NAEP (2012) data also demonstrates the stark difference between students from low-SES households and students from high-income/economically advantaged households. The 4th grade data shows that 74% of students eligible for free and reduced lunch scored below the 25th percentile on all literacy skills, while only 23% of students eligible for free and reduced lunch scored above the 75th percentile on the same literacy skills. In other words, a large

percentage of low-SES students (those often eligible for free and reduced lunch) do not demonstrate a basic mastery of the literacy skills that are fundamental for proficiency in their grade level. This wide difference in scores did not decrease as students moved up in grades; high-income/economically advantaged students continue to have an advantage in achievement throughout school.

Sadly, this gap starts early and does not close as students get older (Barton, 2003; Levin, 2007). Reardon, Valentino, and Shores (2012) state that, "students from low-income families enter high school with average literacy skills 5 years behind those of high-income students" (p. 26). SES matters a great deal for students' literacy success (Brooks-Gunn & Duncan, 1997; Duncan, Brooks-Gunn, & Klebanov, 1994; Duncan, Yeung, Brooks-Gunn, & Smith, 1998; Foster, 2002; Miller & Korenman, 1994; Patterson, Kupersmidt, & Vaden, 1990; Smith, Brooks-Gunn, & Klebanov, 1997). Many studies find that parent income, SES, and ethnicity (depending on the study[3]) are important early predictors of student success (Chatterji, 2006; Duncan et al., 1998; Fryer & Levitt, 2006; Patterson, Kupersmidt, & Vaden, 1990; Pungello, Kupersmidt, Burchinal, & Patterson, 1996). Looking at student achievement on all measures of standardized tests in math and reading, Duncan et al. (1998) found that students with family incomes of 1-2 times below the poverty level scored significantly lower than their peers with incomes of less than ½ the poverty level. Patterson, Kupersmidt, and Vaden's (1990) study of the academic achievement of over 800 Black and White elementary students (grades 2-4) from high- and low-income families and two-parent and single-parent households found that income levels as well as ethnicity matter for student academic success.

[3] Hereafter, I will use the term related to SES that the authors of the study used.

Other researchers have also found that gaps in reading achievement by SES start early and do not close (Chatterji, 2006; Fryer & Levitt, 2006; Pungello et al., 1996). Pungello et al.'s (1996) research found that low-income and ethnic minority children scored significantly lower than the higher income White students on reading achievement test scores and continued to score lower throughout their schooling. A study utilizing data from the Early Childhood Longitudinal Study-Kindergarten cohort (ECLS-K; Chatterji, 2006) determined that children living in high poverty households begin kindergarten at a lower literacy level and stay at a lower level throughout the school year, compared to students not living in poverty. By the end of first grade, this literacy gap continued to grow. The researcher argues that low reading levels in first grade are associated with a lack of prior reading readiness, and that children living in poverty had the lowest levels of prior reading preparation, thus, these children struggled more with reading success in school. Fryer and Levitt (2006) also agree that low-SES children are lagging behind their higher-SES peers. The researchers hypothesize that this difference between SES may be due to more than just income levels. Differences in school quality (Dutro, 2009; Duke, 2000b), summer month setbacks (Allington & McGill-Franzen, 2013), environmental contributions (e.g., homes, neighborhoods) (Caldas & Bankston, 1999; Purcell-Gates, 1996; Reardon, 2011), and differences in expectations from schools for children living in poverty and black children specifically, may all play an important role in the gap between high- and low-SES students.

Background Knowledge is Critical to Reading Comprehension

A skilled reader often comes to the reading experience with the background knowledge necessary to build more knowledge, while his less skilled peer struggles

because he lacks the background knowledge or the skills to access it effectively (Nusca, 1999). Duke, et al. (2011) state, "knowledge begets comprehension begets knowledge" (p. 55). Thus, the more you know, the more you learn and understand, which in turn allows you to know more. Guthrie's (2004) work suggests that because skilled readers tend to read more and are actively engaged in meaning making, they build their knowledge base and increase their understanding for the next reading encounter.

In the following sections, I will discuss the critical impact background knowledge has in regards to reading comprehension. First I will discuss how having more background knowledge of a topic is strongly linked to higher comprehension. Then I will address the impact culturally relevant background knowledge has on overall reading comprehension. Finally, I will explain the importance teaching relevant background knowledge to students prior to reading can have on reading comprehension.

Higher Comprehension is Linked to More Background Knowledge. What a reader knows about a topic affects comprehension. Based on his research with expert readers determining the main idea of a text when not explicitly stated, Afflerbach (1990) asserts that prior knowledge of the content "helps readers avoid processing bottlenecks in working memory, because the processing of such a text places relatively little demand on the readers' cognitive resources" (p. 35) and that readers with "high prior knowledge will have well developed schemata into which they assimilate the information from a text" (p. 35). In his study, he found that having more background knowledge helped the reader with both anticipating the meaning of the text and also with automatically constructing the main idea.

Pearson, Hansen, and Gordon (1979) determined that a reader's background knowledge on a topic influences his ability to answer various questions. When second-grade students were asked to read a text about spiders and answer questions, the researchers found that the students with more background knowledge about spiders had better comprehension and were better able to correctly answer the explicit and implicit questions. Nusca (1999) determined that domain-specific knowledge has a strong and significant role in reading comprehension. Her study of fluent adult readers found that those with more background knowledge of the topic were better able to use their knowledge to understand complex text and vocabulary and/or to infer meaning, and to thus increase their comprehension. This is not to say that readers don't learn from text, but that skilled readers are much better prepared to access information and connect it to what is already known, whereas less skilled readers struggle to access and connect information.

Many studies support the idea that the more knowledge a reader has about the topic, the better her comprehension, regardless of reading aptitude. Schneider, Korkel, and Weinert (1989) found that when upper elementary-grade students read about soccer, the students with expert knowledge on soccer were able to recall events and give detailed explanations in comparison to the students with only novice knowledge of soccer. Recht and Leslie (1988) also had junior-high students with expert or novice levels of knowledge read a text about baseball, then recalled events, and summarized the texts. The students with more background knowledge of baseball recalled events and summarized with more accuracy and detail compared to their peers with little background knowledge. In both studies, it is clear that background knowledge makes a larger contribution to students' overall reading comprehension performance, more so than general reading abilities.

We know that skilled readers are able to infer and fill in gaps from the text with their prior knowledge (Duke et al., 2011). McNamara, Kintsch, Songer, and Kintsch's (1996) and McNamara and Kintsch's (1996) research on text coherence and prior knowledge concluded that "high-knowledge" adolescent and adult readers were better at reading low-coherence texts and filling in the gaps by making high-level inferences than were their less skilled peers. The struggling readers, in general, needed high-coherence text to help them comprehend. Therefore, we can deduce that high-knowledge readers will be better equipped to comprehend a variety of texts, thus increasing their understanding and knowledge base.

Ozuru, Dempsey, and McNamara's (2009) recent study of college-age students with low or high background knowledge of biology confirms the previous research that high-knowledge readers are able to comprehend a variety of texts through deeper and more complex inferencing skills. The students in this study were asked to read two biology texts, one with high-coherence and the other low. The results show that students with high background knowledge benefitted from both types of texts, but were able to make global-bridging inferences of information that allowed for deeper integration of content when reading a low-coherence text. Thus, we can see one important mechanism by which background knowledge impacts overall reading comprehension.

Miller and Keenan (2009) worked with fourth- and fifth-grade struggling readers and also found that background knowledge can influence a reader's ability to comprehend. The students in the study all had trouble decoding at the word level. When the students had ample background knowledge of the topic, the cognitive load for decoding was decreased and their comprehension increased. Priebe, Kennen, and Miller (2012), replicating Kennan

and Miller's (2009) study, found that when fourth-grade poor readers had a great deal of prior knowledge on the topic, it helped with their fluency and overall comprehension, compared to their peers who had little prior knowledge. Rydland, Aukrust, and Fulland (2012) found that prior knowledge was an influential predictor of overall reading comprehension for fifth-grade students when reading more authentic texts in comparison to a Woodcock Reading Passage for Comprehension. When reading the more authentic texts, students with higher background knowledge were able to make greater connections to the text, utilize their existing vocabulary and learn new vocabulary to support their understanding, in comparison to their less knowledgeable peers, who struggled to utilize their prior knowledge to aid in comprehension. According to these studies and others, background knowledge of the topic and the background of the reader plays a role in facilitating understanding and assisting in reading so as to support overall comprehension.

Higher Comprehension is Linked to Culturally Relevant Background Knowledge. Readers who are culturally familiar with a topic are more likely to have extensive background knowledge of the topic and utilize that knowledge to help them make connections and construct meaning with the text (Ramirez, 2012). Cultural schemata helps the reader to connect new information with previous experiences, to understand nuances, and to fill in gaps in the text. If cultural schemata is lacking in a reader, comprehension may be impacted adversely. Prichard (1990) suggests, "comprehension of a culturally unfamiliar text is more difficult than comprehension of a culturally familiar text" (p. 275), which is highly supported by other researchers (Johnson, 1981, 1982; Reynolds, Taylor, Steffensen, Shirey, & Anderson, 1982; Steffensen, Joag-Dev, & Anderson, 1979).

Lipon's (1983) research with two religious youth groups supports the notion that cultural schemata are important for comprehension. In her work, the two groups each read a general text, and also texts focused on each religion—Judaism and Catholicism. When each group read the text on their religion, they had higher comprehension when compared to the less culturally familiar text. The youths were able to make more implicit connections, to recall detailed events and ideas, and to read faster and more fluently overall.

Pritchard (1990) determined that high-school-age proficient readers with culturally relevant background knowledge were able to make more connections and elaborations with the text than their peers who lacked the relevant cultural knowledge. In his study, two cultural groups read texts about funeral proceedings from each culture. When asked to recall the texts, the students were able to make more elaborations and connections to the texts about funeral proceedings that were culturally familiar. They related to the material and were able to take their own experiences into account and apply them to make relevant cultural extensions to the text. Yet, when reading the culturally unfamiliar texts about the same topic, the students were unable to use their knowledge to make connections, thus resulting in ambiguous explanations and misunderstandings. It is important to note here that the students were only successful when they applied their cultural schemata to the text to build understanding. That is through in-process verbalizations, Pritchard (1990) determined that when the students were able to utilize their background knowledge and apply it to aid in understanding, they were actively engaged in and learning from the text.

A number of studies with second language learners (L2) focus on the importance of background knowledge in comprehension and support the earlier findings that culturally relevant background knowledge supports overall comprehension. Typically, this work has

been done with adult L2s who are considered advanced English speakers. Many of the studies take multiple texts and ask the students to read them and then answer multiple choice and short answer questions to elicit both their inferential and literal comprehension. Alptekin (2006) determined that Turkish college students enrolled in advanced English as a second language classes were able to make richer and deeper inferences when they read culturally relevant text, due in part to the text content and their background knowledge being more aligned. The students in the study were asked to read an original American short story. One group of students read the original story, while another group read the same story that had undergone 'Turkification' both textually and contextually. All students had similar literal comprehension of the text, but again the students who read the culturally relevant text had greater inferential comprehension.

Two recent studies involving Turkish college students reading nativized short stories (Erten & Razi, 2009) and Asian American and Pacific Islander (AAPI) students reading culturally unfamiliar texts found in California standardized tests (Pang et al., 2011) support Pritchard's (1990) and Lipson's (1983) earlier findings, as well as Alptekin's (2006) more recent findings, that cultural schemata and background knowledge support comprehension. Erten and Razi (2009) found that when the students read stories that contained familiar names and places (nativized stories), their comprehension was much higher than that of their peers who read the same story minus the nativized aspects. Pang et al.'s (2011) study found that the AAPI students were reading culturally unfamiliar texts during their testing and therefore struggled to match their relevant cultural schemata with the passages, hindering overall comprehension and ultimately scoring far behind their

White peers in reading comprehension scores. In sum, cultural background knowledge and schemata play an important role in reading comprehension.

Higher Comprehension is Linked to Being Taught Relevant Background Knowledge. If a reader is lacking knowledge of a topic prior to reading about it, research indicates that teaching specifically about that topic aids in overall comprehension. If a reader has background knowledge that is inaccurate or lacking, research also indicates that reading a text that refutes and teaches correct information can be beneficial to students' comprehension.

Teaching students relevant content knowledge to aid in comprehension can be accomplished through either simple means or more complex methods. Bransford and Johnson (1972) showed that providing a simple, small amount of relevant knowledge can have a large impact on students' comprehension. They provided high school-aged readers with a context picture to accompany the text being read. In all comprehension measures involving retell and questions, the students with the picture outperformed their peers who only read the text.

Many other researchers have provided students with important relevant information prior to reading, and found results similar to those of Bransford and Johnson (1972). Stevens (1982) found that when, prior to reading on a topic they knew little about, students who were exposed to pertinent information concerning that topic, they had better comprehension in comparison to the students who were not exposed to that information. The 10th-grade students in her study were pre-taught content about the Texan War of Independence or the Civil War and then read a passage about the Alamo, with questions to follow. The students with the pertinent information about the Texan War of Independence

were better comprehenders of the Alamo passage. Stahl, Jacobson, Davis, and Davis (1989) had similar findings. Students were pre-taught either relevant information about the violent nature of the Amazon tribes or misleading information about views of women in Amazon tribes. As each group read a text about the violence of the tribes. The students with the relevant information outscored their peers; thus, reinforcing the idea that being exposed to and learning accurate information about the content prior to reading enhanced reading comprehension.

Not only is teaching students about a topic prior to having them read important, but utilizing instruction that builds on students' existing background knowledge can also support learning. Lee (2001) discovered that high school students from a poor-performing school with a high population of students living in poverty had difficulty reading and understanding the literature they read in their freshman English classes. Lee (2001) implemented a system (cultural modeling activity) that helped students utilize their background knowledge by reading texts that were culturally relevant to the students and connecting the students' experiences to the less relevant and difficult texts that were normally read during English class. The students were able to use their background knowledge to help them understand the more abstract academic content. Thus, the students were able to discuss both the culturally relevant and traditional class texts with a high degree of understanding and intellectual reasoning. Vaughn et al. (2013) determined that not only teaching students specific background information and vocabulary prior to and during the reading of social studies texts helped students with overall comprehension, but specific teaching strategies that activated the students' background knowledge was also helpful. In their study, eighth grade students were taught the same content, but the

comparison classes were taught with traditional teaching methods while the treatment classes were taught using different learning strategies and were provided with specific content necessary for comprehension (e.g., content vocabulary, activation of prior knowledge, peer discussion, collaborative learning). As in Lee's (2001) study, the students in the treatment classes had stronger overall comprehension and were able to connect their prior knowledge to the new content with a higher degree of understanding.

There is a great deal of research that supports the idea of using refutational texts to aid students in correcting inaccurate background knowledge and building upon already existing correct background knowledge (Sinatra & Broughton, 2011; van den Broek, 2010). Often times when students are reading expository texts, they come to the reading with a lot of inaccurate or incomplete information or lack of background knowledge on the topic (Rupley & Slough, 2010). The use of refutational texts (texts written that make explicit reference to one or more misconceptions, argues against them, and offers a more acceptable conception) helps students understand that their knowledge is inaccurate and helps them learn the correct information. This approach has been found effective for young children as well as adult learners when readers were able to discover distinctions between concepts (Mikkila-Erdmann, 2001), change their prior misconceptions or beliefs about the topic (Guzzetti, Williams, Skeels, & Wu, 1997), and gain a better knowledge base and learning of the desired topic (Alvermann & Hague, 1989; Diakidoy, Kendeou, & Ioannides, 2003; Palmer, 2003). Diakidoy, Mouskounti, and Ioannides' (2011) recent study supports this earlier research. In their study, undergraduate students with varying degrees of accurate as well as inaccurate knowledge on the topic of energy read either a refutational text or a typical expository text. The results indicated that overall, students increased their

learning of the topic. Yet, students with low or inaccurate knowledge had the greatest gains in learning after reading the refutational texts in comparison to the expository text.

Differences in Low-SES Students' Background Knowledge May Partially Explain SES Differences in Reading Comprehension Achievement

Students come to school with vastly different backgrounds and knowledge (Lesaux, 2012; Pearson, 2013). Often these differences are connected to home factors such as cognitive and attitudinal preparation for learning from parental education and experiences, household resources, and styles of upbringing (Caldas & Bankston, 1999), as well as income levels and English language proficiency (Lesaux, 2012). These factors become very important in influencing students' academic success. Research has related these factors to students' SES levels. "Economic privilege may advance children's learning through the cultural skills and knowledge that higher SES children bring to school" (Burkam et al., 2004, p. 5). Alexander and Entwisle (1996) suggest that low-SES students rely more on school experiences for academic literacy development, not because they don't have literacy experiences at home, but that they are less frequent in comparison to those of high-SES students. Burkam et al., (2004) hypothesized:

> Many poor families lack the financial, psychological, and cultural capital to sustain their children's in-school learning rates when school resources are absent. Conversely, middle- and upper-class families can allocate the time and money to compensate for the absence of school resources in the summer, particularly through summer activities and social contexts that foster children's cognitive development (p. 5).

It is well documented that students from low SES backgrounds have, on average, lower vocabulary and reading skills at school entry. This may be due to factors such as less time spent in literacy activities at home, large differences in vocabulary due, in part, to the different types of conversations with others that may or may not allow for knowledge building, and, on average, less time spent together as a family (Burkam et al., 2004; Evans, 2005; Hart & Risley, 1995, 2003; Neuman & Celano, 2001; Snow & Beals, 2006; Snow & Biancarosa, 2003). We also know that progression though academic content and achievement gains is strongly correlated with an individual's background knowledge and experiences, and when there are fewer experiences that increase background knowledge to support school learning, students struggle (Alexander et al., 2001; Allington & McGill-Franzen, 2013). Given this, students whose background knowledge does not match as well that expected in school contexts will likely struggle in schooling compared to their peers. This discrepancy in background knowledge is often associated with the SES levels of students.

There has been a great deal of research on the differences in experiences children have at home and school. Much of the research speaks to the notion that those children who have more materials and resources available to them will gain more knowledge (both of the world and school) to support them in school contexts and thus, will have higher reading comprehension. Neuman (2006) coins this as the "knowledge gap" and it appears to be growing as the income gap increases, due in part to the differences in learning opportunities and experiences, both at home and in schools, that high-SES and low-SES children encounter.

Many scholars have connected lower income and SES more broadly to fewer knowledge-building opportunities. Reardon (2011) and Reardon and Bischoff (2011) concluded low-income families tend to have fewer options for housing and often cluster together, inadvertently causing a school segregation of high-SES and low-SES settings. They found that when this happens, parents with higher incomes tend to spend more money on their schools and the resources they can provide. This influx of resources and expendable money impacts test scores, and students in those schools outperform their lower SES peers. The expendable money allows families to purchase books, lessons, technologies, and other learning materials that engage learning about reading and the world (Duncan et al., 1998; Foster, 2002). Bradley, Corwyn, McAdoo, and Garcia Coll (2001) looked at the National Longitudinal Survey of Youth (NLSY) data and confirmed that there were, on average, large differences in the degree to which children of different SES engaged in various life experiences, including talking with parents, and book reading. Low-SES children had, on average, less exposure to activities that promoted school-oriented knowledge building in and out of the home. Thus, the knowledge gap, and thus, potentially, academic achievement, continues to widen for those children. Entwisle, Alexander, and Olson (1992) and Alexander, Entwisle and Olson (2007) also found that high-SES families had more money to support cognitive growth during the summer months. Families were better able to devote more time and money to learning activities such as reading books and newspapers/magazines, trips to various locations, and attending plays. The high-SES families also spent more time talking and explaining in-depth concepts with their children. When there are more exposures and resources to facilitate learning, it in turn increases the

quantity and quality of interactions and stimulating learning activities, thus increasing and extending a students' knowledge base (Yeung, Linver, & Brooks-Gunn, 2002).

Hart and Risley's (1995, 2003) seminal work with vocabulary development speaks to how differences in opportunities and experiences for students translate into one index of background knowledge–vocabulary. The authors state that children living in poverty enter school with, on average, knowledge of fewer words. This is due in part to fewer reading opportunities that allow for experiences with new, different, and more sophisticated vocabulary outside of the daily routines. When this happens, students will likely struggle with school tasks that assume knowledge of such vocabulary and the information and concepts that vocabulary represent. Fisher et al., (1996) call this being "information poor", and suggest that it contributes to reading difficulties and acquisition of new knowledge for students.

Children come to school with very different backgrounds and experiences. Income levels and SES are a large factor in the amount of knowledge that children may have about the world that fits with knowledge necessary for school success. When there is a mismatch, students' reading comprehension suffers.

Importantly, it is not only homes but also schools that play a role in low-SES students' lower levels of background knowledge and reading comprehension. For example, low-SES schools spend very little instructional time devoted to science (Griffith & Scharmann, 2008) and social studies (VanFossen, 2005; Vogler et al., 2007). In addition, Anyon's (1981) work highlights the influence of school location and knowledge generation on students. The educational experiences of students in working-class schools were procedural in nature. The focus was on teaching students what they needed to know in a

simple way. All knowledge generation, from the students' perspective, involved simply knowing and doing things. At higher income levels, the knowledge generation of students from middle class, affluent, and elite schools shifted from a simple procedural basis to involving understanding and discovery and finally, to knowledge as an intellectual process of reasoning and understanding. This likely contributed to the fact that students in middle-class schools believed that knowledge was something you got from a more knowledgeable "other" and is not connected to your own activities, whereas students from affluent schools believed that knowledge is discovered and connects broadly to your own experiences. Finally, students from elite schools understood knowledge as coming from past experiences and other people/traditions. Thus, we can see how students' opportunities to learn and apply their own background knowledge and experiences to text varies greatly from school setting to school setting and from income level to income level, and serves to widen the achievement gap.

Core Reading Programs Make Assumptions About Students' Background Knowledge

Many schools across America use a core reading program (CRP), a popular type of reading curriculum in elementary schools (Chall, 1987; Dewitz et al., 2009; Moss & Newton, 2002). One intended goal of core reading programs is to be a comprehensive curriculum that is designed to meet all students' literacy needs, despite student background (Garan, 2004). Can this lofty goal be reached without leaving some children behind?

"Commercial literacy curricula necessarily operate from assumptions about students and what they do, can, and should know" (Dutro, 2009, p. 91). The students' academic content knowledge and general background knowledge will influence how well they read and comprehend the core reading program selections. If texts in these curricula

assume students possess background knowledge that some students do not, they may place those students at a disadvantage and inappropriately burden them with increased challenges. When this happens, the students must spend a disproportional amount of time and additional effort to sort through the confusion and deal with likely comprehension issues related to the mismatch in background knowledge. Students come from all different types of backgrounds and locations. The experiences they have may not map directly the characters, settings, and topics found in the reading materials they encounter daily in the classroom.

Knight's (2012) study looking into second-grade students' knowledge of key terms and concepts in core reading programs speaks directly to this mismatch. In this study, low-SES students from rural and urban settings were asked about key terms and concepts that were important to comprehension but not easily inferred in the selections from the CRPs. The results showed that low-SES students had limited background knowledge of those concepts and terms important for comprehension. This mismatch may lead to comprehension difficulties and extend the reading and knowledge gaps for those students, potentially pushing them further behind their more affluent peers. The present study is designed to build upon this research by looking at the differences that may exist between high-SES and low-SES students' background knowledge of those key concepts and terms important to comprehension, but not easily inferred, in CRP selections.

CHAPTER 3

METHODS

Design of the study

This study was designed to examine to what degree low- and high-SES second graders demonstrate background knowledge of key concepts or terms important to comprehension of book selections in CRPs, but not easily inferred. This study employed a structured interview design; each participant was asked a range of questions about key concepts or terms important to comprehension of CRP selections. The questions addressed the concepts that are key to understanding the selections but not easily inferred from the text. For example in the selection "*Where on Earth is My Bagel?*" a key concept that is important for understanding, but not easily inferred, is some basic information about the country Korea. If students lack this information, it may impact their overall comprehension of the selection. The questions came from 18 randomly selected main selections sampled from three major core-reading programs (CRPs). Three selections were selected from the first unit and three were selected from the last unit of each CRP. The students' responses were coded and analyzed to find out how knowledgeable they were about the topics and how their knowledge levels compared across SES, questions, selections, and program publishers.

Participants

Prior to conducting the study, I received approval from Michigan State University's Institutional Review Board (IRB); the study was approved and deemed exempt.

After receiving approval, I began recruiting schools that did not use the three core reading programs in this study as part of their reading curriculum and that met the criteria,

detailed below, of a high-SES or a low-SES school. Once schools were recruited, I recruited teachers within schools. Finally, I recruited students within classrooms, using a process ensuring that the individual students recruited from the high-SES districts were indeed of high-SES homes and that individual students recruited from the low-SES districts were indeed of low-SES homes. My goal was to recruit a sample of 60 second-grade students with equal number of students in each SES group (30 high SES and 30 low SES). Second-grade students were the focus of this research because many students this age are beginning to develop and use more complex reading comprehension skills and strategies and are better able to articulate and explain their thinking.

To select eligible districts and schools, I utilized levels of poverty and education (Entwisle & Astone, 1994). I used public documents to identify potential districts and then refined my selection based on specific criteria. First, I identified school districts with high and low levels of students of poverty based on the Michigan Department of Education Center for Educational Performance and Information (CEPI) 2011 Free and Reduced Lunch Count by Districts. To avoid districts that had a very mixed free lunch and socioeconomic status, it was decided to focus on schools that had a small percentage of students qualified for free lunch for high-SES districts and to focus on schools that had a high percentage of students qualified for free lunch for low-SES districts. To be considered a high-SES district with respect to levels of poverty, the percentage of students receiving free lunch had to be 25% or lower. To be classified a low-SES district with respect to levels of poverty, the percentage of students receiving free lunches had to be 70% or higher. Second, I identified education levels of the residents within the districts who are aged 25 years and older from City-Data.com (http://www.city-data.com/city/Michigan.html), a website that provides the

most complete and up-to-date data on all cities in the state of Michigan. The criteria defining high- and low-SES districts with respect to educational levels were based on the percentage of residents with a bachelors' degree or higher. Districts were identified as low SES if 20% or fewer of the residents had a BA or higher. High-SES districts had 50% or more residents with a BA or higher.

Three districts from each SES group were recruited due to their proximity and willingness to participate in the research project. From each district, one school was recruited. From the high-SES schools, one second-grade classroom participated from each of two schools and two second-grade classrooms participated from one school. From the low-SES schools, one second-grade classroom participated from each of two schools, and three second-grade classrooms participated from one school. The number of classrooms was determined by how many classrooms were required to derive a sample of 60 consented students who meet the SES criteria. Thus, three classrooms from the one low-SES school were used because, when looking at the sample of students, there were not enough from only two classrooms to fit the criteria.

Once the schools that met the high- and low-SES school districts were identified, I obtained permission to conduct the study from the schools' principals and then from each second-grade teacher willing to participate. Each school also varies in their reported school statistics and fit within the criteria for high- or low-SES schools. See the following tables for information on school demographics. Table 1 shows free lunch percentages, education of the entire district above a bachelors, and ethnicity for the participating high-SES school districts. Table 2 shows the same information for the participating low-SES school districts. Table 3 shows the free lunch, maternal education above a bachelors, and ethnicity of

students participating from both the high- and low-SES schools as well as the total for each SES group. At that point, letters of consent were distributed via the teachers to all of the students in their classrooms. See Appendix A for the principal and teacher permission and the parental consent letters.

Table 1

High-SES District Statistics

			Ethnicity by Percentage						
High-SES Districts	**% Free Lunch***	**BA or higher***	White	Hispanic	2 or More	Asian	Black	American Indian/Native Alaskan	Hawaiian/Pacific Islander
District M	9%	40.40%	58%	6%	2%	3%	19%	1%	0%
District D	22%	55.30%	58%	6%	2%	3%	19%	1%	0%
District B	10%	55.30%	94%	2%	2%	1%	1%	0%	0%

* Criterion used to select district/school participation.

Table 2

Low-SES District Statistics

			Ethnicity by Percentage						
Low-SES District	**% Free Lunch***	**BA or higher***	White	Hispanic	2 or More	Asian	Black	American Indian/Native Alaskan	Hawaiian/Pacific Islander
District F	96%	17.20%	70%	31%	2%	3%	19%	1%	0%
District I	86%	11.30%	10%	5%	6%	1%	78%	0%	0%
District L	80%	24.00%	33%	6%	10%	2%	49%	0%	0%

* Criterion used to select districts/schools for participation.

Table 3

High- and Low-SES Schools Reported School Free Lunch and Participant Statistics

				Ethnicity by Percentage							
Schools		**% Free Lunch**	**BA or Higher**	White	Hispanic	2 or More	Asian	Black	American Indian/Native Alaskan	Hawaiian/ Pacific Islander	Member or race not listed
High -SES	School M	12%	87.5%	88%	12%	0%	0%	0%	0%	0%	0%
	School D	22%	100%	50%	0%	0%	12.5%	25%	0%	0%	12.5%
	School B	10%	50%	100%	0%	0%	0%	0%	0%	0%	0%
	All Schools	NA	87.5%	83%	3%	0%	3%	6%	0%	0%	3%
Low-SES	School F	96%	12.5%	62.5%	25%	12.5%	0%	0%	0%	0%	0%
	School I	86%	0%	13%	0%	20%	%	67%	0%	0%	0%
	School L	65%	28.6%	86%	0%	14%	0%	0%	0%	0%	0%
	All Schools	NA	5.4%	43%	7%	17%	0%	33%	0%	0%	0%

Originally, 7-8 students who met the individual SES criteria (detailed later in this section) were going to be randomly selected from each participating classroom, but due to rates of consent and SES information provided on consent forms, that did not happen in all classrooms. One high-SES classroom had 6 participating students who met the criteria, one less than the desired target. Therefore, the other three classrooms each had 8 students participating who met the criteria, to make a total of 30 high-SES students. In the low-SES school where three classrooms participated, the students were equally split between each classroom with 5 students who met the criteria selected from each, while the two remaining classrooms had 7 and 8 students who fit the criteria participating, making a total of 30 low-SES students. In the end, there was a sample of 60 students—30 from high-SES and 30 from low-SES schools and districts. The process for student selection will be explained in detail later on in this section.

As noted earlier, parental consent forms were sent home to each child in the participating classrooms. I received 81 consent forms. From these forms, I selected students eligible to participate based on SES criteria. To be eligible for participation, students in high-SES schools could not be eligible for free lunch and must have a maternal education level (unless identified as a household without a mother) that was high school or higher. Eligible students in low-SES schools had to receive free lunch and have a maternal education level (unless identified as a household without a mother) that did not exceed Bachelors level. Maternal education was used as an eligibility criterion due to maternal education being a measure of SES most related to young children's literacy development (Harwell & LeBeau, 2010). See Table 4 for maternal education by school. Figure 1 illustrates the maternal education percentage for all participants, while Figure 2 shows

maternal education for participating high-SES students and Figure 3 illustrates maternal education for participating low-SES students in the study. There were 28 boys and 32 girls; 17 boys and 13 girls from the high-SES schools and 12 boys and 18 girls from the low-SES schools. In the high-SES schools, eight parent consent forms reported other services the child received. One consent listed Special Education services, three listed visiting the Reading Specialist, one listed speech, and two listed multiple services (e.g., Reading Specialist and speech). The low-SES parent consent forms also listed eight children receiving services. Two listed Special Education services, one listed Title 1, two visited the Reading Specialist, one was an English as a second language (ESL) student, and two listed other services such as receiving speech.

Table 4

Maternal Education by Participants for High-and Low-SES Schools

School		8th Grade	High School	Associates Degree	Bachelor's/College Degree	Masters Degree	Doctoral Degree	Other	None Listed
High-SES	School M			2	9	3	3		
	School D				4	2	1		
	School B		2	1	2		1		
Low-SES	School F	3	3		1			1	
	School I	1	10	3					1
	School L		3	2	2				

Figure 1. Maternal education percentages for all participants

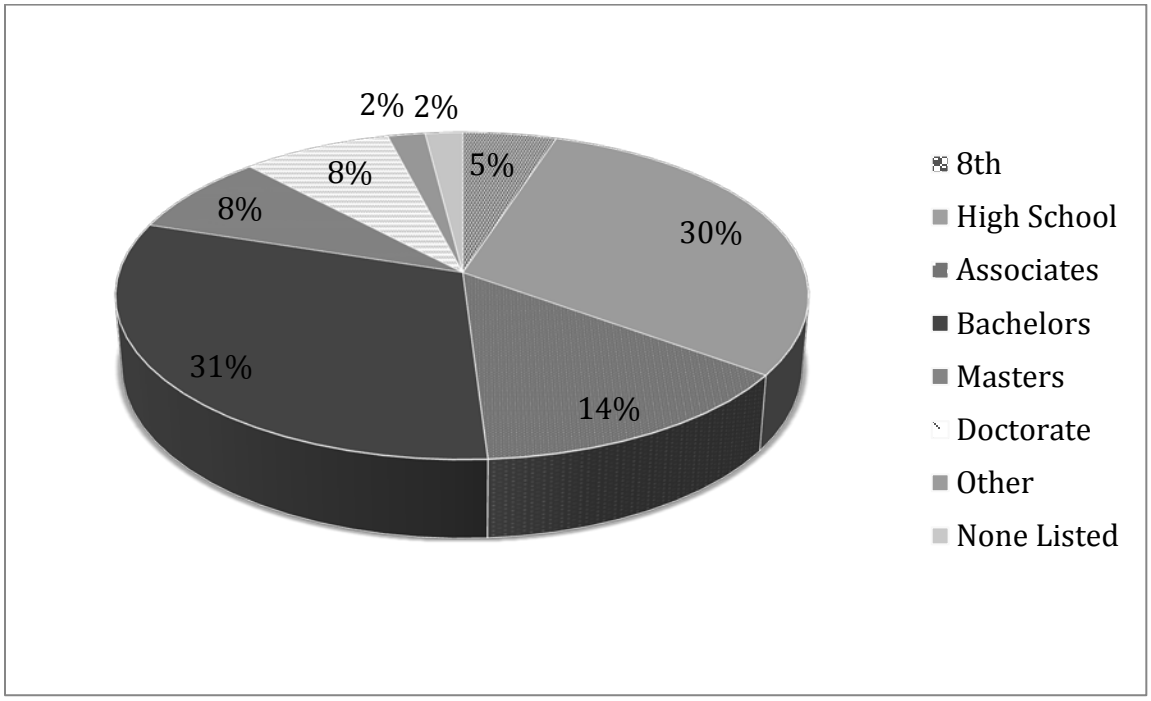


Figure 2. High-SES maternal education percentages

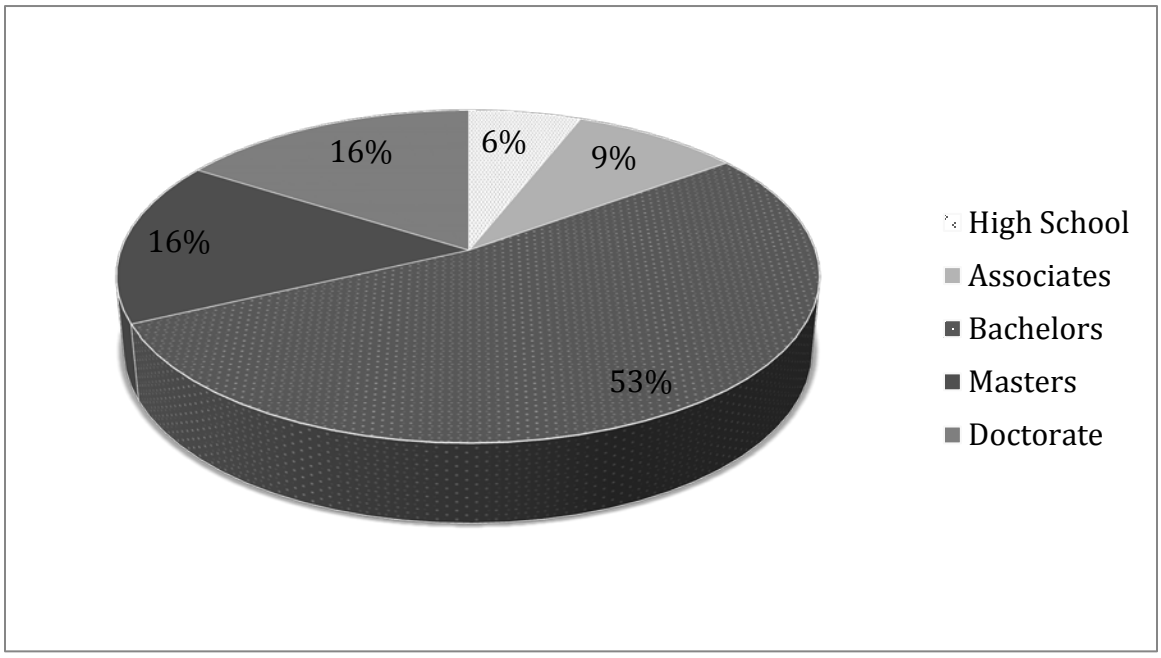
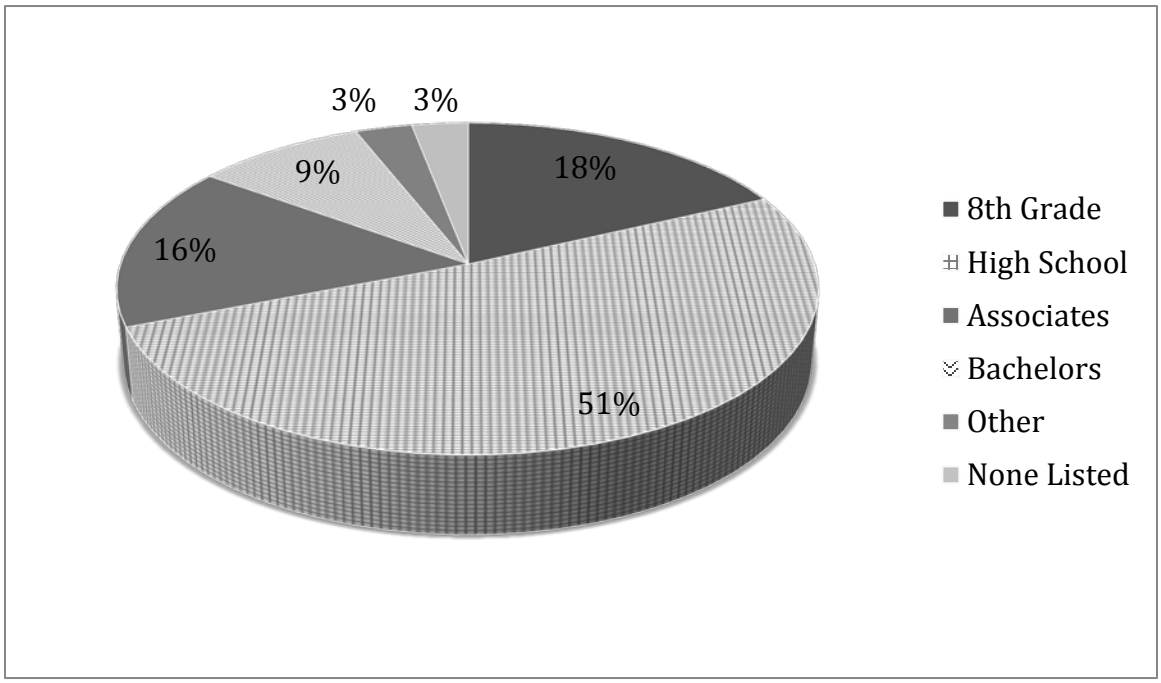


Figure 3. Low-SES maternal education percentages



Interview Protocol

The questions students were asked were based on the key concepts and terms important for comprehension in selections from three major CRPs and not easily inferred from the selection as written. A CRP is often the primary reading program used in elementary classrooms to teach children to read. The CRP is designed to meet the instructional needs of a majority of the students in schools. I decided to utilize CRPs as my texts due to the popularity and extensive use (74% of schools reported following closely or using sections selectively [Educational Market Report, 2010]) in elementary classrooms in the United States (Apple, 1989; Dewitz et al., 2009; Educational Market Research, 2012; Hiebert & Martin, 2001; Hitchcock & Tompkins, 1987; Walsh, 2003). Their prevalent use in U. S. classrooms comes as no surprise due to the fact that they have served as a prominent instructional component for reading in the United States since the introduction of the McGuffey readers in the 1830s (Chall, 1987; Dewitz et al., 2009).

To determine current CRPs widely used in schools, I obtained a copy of the market report published by Education Market Research (Educational Market Research, 2012) naming the major publishers of CRPs, Pearson Scott Foresman, MacMillan/McGraw-Hill, and Houghton Mifflin Harcourt. I selected Pearson Scott Foresman's *Reading Street* (Afflerbach et al., 2011), Houghton Mifflin Harcourt's *Storytown* (Beck et al., 2009), and MacMillian/McGraw-Hill's *Imagine It* (Bereiter et al., 2008) as my focal CRPs. I realize these CRP editions are not be the most recent available, but I utilized them to be consistent with my previous study that looked at low-SES students' background knowledge. I wanted to stay consistent with my materials to build closely on my previous research. I also spoke with representatives from each of the three publishers and found that, for two of the

programs, the latest versions available to schools did not change in main selections, but only teacher instructional materials. The third program, *Storytown,* has been replaced by an entirely new CRP called *Journeys* and therefore is no longer the main CRP for Houghton Mifflin Harcourt.

The key concepts and terms for each selection were determined by first randomly selecting three selections (18 total) from the first and last units of each CRP. By utilizing the first and last unit from each program, to represent the earlier and more difficult selections from the programs. Second, each selection was read with the purpose of determining what was important for comprehension, but not easily inferred from the title, text, or illustrations. For example, in order to understand the selection *A Birthday Basket for Tia,* from the *Reading Street* CRP (Afflerbach, et al., 2011), the reader needs to know a great deal about surprise parties and preparing for the surprise. The text does not go into detail about the surprise party, only stating Mama is cooking for one. It reads, "Mama is cooking for the surprise party, I smell beans bubbling on the stove. Mama is cutting fruit—pineapple, watermelon, mangoes. I sit in the backyard and watch Chica chase butterflies. I hear bees bzzzz" (pp. 436-437). The illustrations show Mama cooking in the kitchen and the cat chasing butterflies. If the reader does not know what a surprise party is or what needs to happen to prepare for one, it makes understanding the text more difficult. The author of the selection assumes the reader is able to fill in many of the gaps with higher-level inferences. Unless the reader has had personal experience with this type of party, it is likely to be very difficult to fully get the overall gist of the selection.

To determine the concepts and terms integral to comprehension of the passages, but not easily inferred, I independently read and identified key concepts for all the selections.

For inter-rater reliability, I randomly selected six selections and identified not only the key concepts, but also non-key concepts. As an example, for the selection "*Red, White, and Blue: The Story of the American Flag",* I identified colonies and the nickname 'The Stars and Stripes' for the flag as key concepts and flag, war, and Abraham Lincoln as non-key concepts. Each key and non-key concept was listed, with the mean of key and non-key concepts per passage being three, with a range of two to four across selections. Next, using one selection that would not be used in the study, I trained a literacy doctoral student with classroom experience in primary grades (I will refer to this person as the research assistant from this point forward) to identify key concepts central to comprehension but not easily inferred. The research assistant was then asked to identify from a list of key and non-key concepts the 2-3 that were central to understanding and 3-4 non-key concepts for each of six passages. For this task, the inter-rater reliability (IRR), computed with a Cohen's Kappa, was .88. Finally, a series of questions that asked students to identify what they knew about each key concept was developed for each concept. The same two questioning formats were used across all questions: "What do you know about . . . ? " and "Tell me what _____means."

Data Collection Procedures

Two assistants and I interviewed each participant in two 20-minute sessions. Students were asked questions for half of the selections (9) in the first interview and the questions for the remaining selections (9) in the second interview. In order to prepare students for the interviews, each student was shown the title page from a selection not included in the sample of selections—*A Picture Book of Martin Luther King, Jr*—and the interviewer modeled the types of questions that were going to be asked, and possible answers for each. See Appendix C for the protocol and questions modeled. Following that

model, for each selection's questions, participants were told the title of a selection and shown a colored copy of the title page. This was done to provide all children access to the title page spread and to potentially trigger relevant background knowledge. Then students were asked about key concepts and terms important to comprehension for the selection to elicit their background knowledge on the topics using the question formats "What do you know about . . . ? " and "Tell me what _____means." (see Appendix D) followed by a prompt of, "anything else?" or "can you tell me more about that?" to make sure that all students had a chance to share all they knew on the topic. All participants were asked the same set of questions, but the order was counterbalanced within and across question sets to account for difficulty of topics and question fatigue. Each interview was administered individually to participants with a scripted protocol, and each interview session was audio recorded.

Data Analysis

Scoring. To score student responses, I used a coding manual, with instructions, that was developed in a previous study (Knight, 2012). Utilizing 25% of the students' responses from the initial study, a 5-point rubric was developed with a coding scale from zero to four. The rubric was general for the entire manual, but more detail was added to the rubrics for each question to specify the knowledge needed for each specific selection. The following is the basis for the general rubric; the more detailed rubrics can be found in Appendix E.

- A scoring of 0 means the student responds with only misconceptions about the topic.
- A scoring of 1 means the student responds with one of the following: I don't know, a shrug of some kind, or no response at all.

- Scorings between 2 and 4 were related to the topic. In general terms, a 2 was some knowledge of the topic without misconceptions, a 3 was considerable knowledge with no misconceptions (generally with certain necessary concepts known or included in the response), and a 4 was having extensive knowledge of the topic without misconceptions (generally with certain necessary concepts included that help the student have a deeper knowledge of the topic). For example, a student who received a 4 when answering about a diary included 'can't show it to people, you write about feelings, what you did in school (learned), and what you do everyday", whereas another student who received a 3 for the same question responded with "what you write in, secrets," and a third student who received a 2 for simply stating "write in". Therefore, you can see that the student who received the 4 had extensive knowledge on the topic of diaries and was able to articulate that knowledge, as opposed to her peers, who seemed to have some to considerable knowledge.

After development of the rubrics, a literacy focused doctoral student familiar with scoring with rubrics independently piloted the rubrics at the same time that I did using the same set of student responses. Revisions were made based on our discussion. Once this was complete, an assistant researcher, who had not been part of the original development of the rubrics, was trained to use the coding manual and independently coded a random sample of 25% of the remaining students' responses. Computing a Cohen's Kappa, our IRR was .92.

In the present study, prior to scoring, all identifying information pertaining to the student and school location were removed. Students were assigned a student ID number

through random number generation. I kept a key linking the ID number to the student, school, and SES status in a locked filing cabinet. The students' responses were transcribed into a Microsoft Word document and then shared with the assistant researcher with only the ID number present as an identifier. Thus, the assistant researcher who scored student responses did not know the student's school name or SES status. This enabled the researcher to score blind to participant and SES status. Because IRR was .92 on the initial scoring from the previous study and the same assistant researcher for the present study carried out the scoring of this data, no new IRR was conducted. The assistant researcher independently scored all student responses following the rubrics and, when needed, I answered questions or provided feedback on scoring a difficult response.

Statistical Analysis. Once the data was coded and scored, I used statistical software SPSS (2012) to analyze and test for differences between questions, selections, publishers, and SES of low-SES and high-SES second-grade students' background knowledge important to comprehension (but not easily inferred) from selections in three CRPs.

To start, I checked for internal consistency and reliability of the scoring rubrics using both the previous study's results and the results from this study. Using Cronbach's alpha, I examined the reliability of the student responses to the rubrics from my previous study and the current study to determine whether they were consistently measuring students' background knowledge. The reliability analysis of the rubrics for both studies was high $\alpha = .82$ for the previous study and $\alpha = .83$ for the current study. A Cronbach's alpha value of .7 to .8 is an acceptable value, indicating that the rubrics are considered a reliable measure (Field, 2009).

Once rubric reliability was established, I ran descriptive statistics to calculate mean scores for background knowledge and range of scores for each student by questions, selections, and SES. Next, independent *t* tests were calculated to determine whether there was a statistically significant difference in high-SES versus low-SES students' scores for each selection question and across selection questions within a selection, across selections within a program, and across all selections regardless of programs for a total background knowledge score. In my results, homogeneity of variance was violated by Levene's Test of Equality of Variance for multiple variances, so I used separate variances and the Welch-Satterthwaite correction. Finally, I ran mixed ANOVAs to test the relationship between students' SES and CRPs to analyze the difference in background knowledge, where the publishers were within effect variables and SES was the between subject effect variable. Background knowledge was treated as the dependent variable. There are four underlying assumptions of ANOVA that must be satisfied: absence of outliers, normality, homogeneity of variance, and independence of observations. There were no outliers based on visual inspection of boxplots for the values. The data was normally distributed as assessed by Shapiro-Wilk's test, and there was homogeneity of variances as assessed by Box's test of equality of covariance matrices (p=.002). In addition, I analyzed the data using Bonferroni's corrections for multiple comparisons, but I did not use *post hoc* tests due to SES only having two levels. An alpha level of .05 was used for all statistical analyses.

Chapter 4 provides the results of the statistical tests. The chapter begins with descriptive statistics for all students and then examines independent t-tests comparing each selection question and across selection questions within a selection, across selections within a program, and across all selections regardless of programs for a total background

knowledge score for high- and low-SES students. The chapter concludes with results from the mixed ANOVAs to determine relationships between SES and CRP publishers.

CHAPTER 4

RESULTS

This chapter presents the findings from the data analyses. Bear in mind that the research questions guiding this study were: (1) To what degree do low-SES and high-SES second-grade students demonstrate background knowledge needed for comprehension, but not easily inferred, from selections in three core reading programs? (2) Does the background knowledge of low-SES and high-SES second-grade students differ and if so, in what ways and to what extent?

The Extent of Students' Background Knowledge

First, I calculated descriptive statistics to look at the demonstrated background knowledge of second-grade students. The calculated means and standard deviations for all students for each question are reported in Table 5.

Table 5

Means and Standard Deviation for Students at the Question Level

Question	Mean	Std. Deviation	Std. Error of the Mean
Reading Street Program			
Tell me about the election process.	2.27	1.351	.174
What do you know about democracy?	1.00	0.736	.095
Tell me what you know about colonies.	0.90	1.069	.138
Tell me what you know about The Stars and Stripes.	1.52	1.359	.175
Tell me what you know about baseball.	2.48	1.214	.157
Tell me what you know about boys and girls playing sports together.	1.83	1.486	.192
Who is Josh Gibson?	1.97	1.262	.163
Tell me what you know about celebrations.	2.60	1.224	.158
What do you know about surprise parties?	2.80	1.190	.154
Tell me what you know about piñatas.	3.12	0.885	.114

Table 5 (cont'd)

Tell me what you know about twins.	2.90	0.877	.113
What is email?	2.48	1.578	.158
What do you know about clubs?	2.37	1.221	.204
Tell me what you know about space shuttles.	1.77	1.226	.158
What are experiments?	2.58	1.154	.149
What is a telescope?	2.98	1.396	.180
Tell me what you know about ants being strong.	2.40	1.689	.218
Imagine It! Program			
Tell me what you know about elves.	2.52	1.142	.147
What do you know about showing kindness to others?	2.45	0.872	.113
Tell me what you know about making shoes.	2.07	1.177	.152
What is an axel?	0.72	0.715	.092
Tell me what you know about life on the frontier.	0.70	0.530	.068
What are settlements?	0.62	0.783	.101
What are jingles?	2.08	1.154	.149
Tell me what you know about powwows.	0.97	0.991	.128
What do you know about Jingle Dancers?	1.62	0.958	.124
What is calligraphy?	0.88	0.715	.092
Tell me what you know about Chinese Americans.	1.37	1.104	.143
What is pollution?	1.70	1.418	.183
What does it mean to take care of the Earth?	2.53	0,892	.115
Tell me how we take care of the Earth.	2.92	0.889	.115
What is a department store?	1.52	1.420	.183
Tell me about watchmen or security guards.	2.95	1.346	.174
Storytown Program			
What is a bagel?	2.32	0.983	.127
Tell me about recipes.	2.87	1.081	.140
What do you know about Korea?	1.10	0.896	.116
Who is Gabriela Mistral?	0.60	0.807	.104
Tell me what you know about Chile.	0.33	0.572	.074
Tell me about the Nobel Prize.	1.20	0.917	.118
What do you know about awards?	2.65	1.176	.152
What does it mean for something to be 'as easy as pie'?	2.48	1.214	.157
What is a litter of puppies?	1.98	1.513	.195
Tell me what you know about diaries.	2.82	1.081	.140
What do you know about vacations?	2.98	0.948	.122
Tell me what you know about museums.	2.67	1.217	.157

The results indicate that mean scores for 8 of the 45 questions (18%) were below the 1.0 level, showing that, on average, students mostly misconceptions on the topics. The lowest mean scores resulted when the students were asked to tell what do you know about Chile (.33), who is Gabriela Mistral (.60), what are settlements (.62), tell me about life on the frontier (.70) and what is an axel (.72). The remaining three questions whose mean scores were below 1.0 were much closer to the 1.0. These three questions asked what is calligraphy (.88), tell me what you know about colonies (.90), and tell me what you know about powwows (.97). The students' responses for these questions most often contained information and ideas that were off target and misconceptions about the topic. Such responses included the following: when asked, what do you know about Chile?, "It's hot. You could put spicy stuff in it, like hot peppers." In response to, who is Gabriella Mistral?, children made comments such as, "she's a girl that goes in the forest and sees a bird and she might like them and she might be kind." When asked to tell me what you know about powwows, "Are they a kind of dog? I think they are a kind of dog." Finally, in response to the question tell me what you know about colonies, a child answered, "They're on the map. And they are part of states."

Mean scores for 12 of the 45 questions (27%) were between 1.0 and 1.9, representative of no knowledge to some knowledge of the topics. The scores closer to 1.0 included questions that asked students to tell what do you know about democracy (1.0), what do you know about Korea (1.10), tell me about the Nobel Prize (1.20), and tell me what you know about Chinese Americans (1.37). The remaining questions were closer to 2.0. These latter questions covered the following concepts and terms: what is a department

store (1.52), tell me what you know about The Stars and Stripes (1.52), what do you know about jingle dancers (1.62), what is pollution (1.70), space shuttles (1.77), what do you know about girls and boys playing sports together (1.83), who is Josh Gibson (1.97), and what is a littler of puppies (1.98). Most often, students' responses for these questions included some form of "I don't know" or a nonverbal shrug of the shoulders in response. Students who did score above average on these items often included key, but not always extensive, information on the topic, as in the following: when asked to tell who Josh Gibson was, "a really good baseball player." In response to the question what is pollution, "It is some kind of smoke that can make the world. That can make the world not a better place." When answering tell me what you know about Chinese Americans, "They write in different letters and their words can be shorter than our words." Finally, in response to the question tell me what you know about space shuttles, "space shuttles are big and maybe have a lot of gas in them so they can blast off from Earth to the Moon or wherever they are going." While many of the students' responses to these questions contained relevant information, the answers were not extensive enough to contain all the information about the topic that the selection seems to assume readers possess.

For 24 of the 45 questions (53%), students' mean scores were between 2.0 and 3.0, indicating that the students had some to considerable knowledge of the topics. The questions that fall under this category ranged from scores of 2.07 to 2.98. Included are a few of the questions and their mean scores: tell me what you know about making shoes (2.07), what are jingles (2.08), tell me about the election process (2.27), what does it mean for something to be as easy as pie (2.48), what do you know about baseball (2.48), what is email (2.48), what do you know about awards (2.65), tell me what you know about

museums (2.67), what do you know about vacations (2.98), and what is a telescope (2.98). On average, student answers were recorded substantially higher on the scoring rubric, thus demonstrating that they had considerable knowledge about the topics.

Many of the students' responses contained a great deal of knowledge and details about these topics. A few examples of such responses include: when asked tell me what you know about museums, "Museums can have dinosaur bones. Like history museums, they can have sea creatures, robots, sometimes they have like different parts of the museum with different titles. Museums can be really really big, or medium, or small. They can have metal or glass to keep the things safe." In response to the question, tell me about the election process, "That first they run for president. Then the election starts and you get to vote. To vote you go to a place and wait in line. And with a piece of paper, you write down who you want to be president and then you put it in a little mailbox. And then at the end of the election, they count it and see who has the most votes and that is how they declare who is president." Finally, in response to the question what is a telescope, "A telescope is a machine that makes you be able to look farther into space than a human eye can do. It's pretty much at-home space travel. You get to see the moon up close. You get to see stars up close. You get to see Mars up close."

Mean scores for 1 of the 45 questions (2%) were above 3.0, indicating that the students had considerable to extensive knowledge of the topic. Students were asked to tell what they knew about piñatas (3.12). Again, students had extensive knowledge of the topic and many responses contained several detailed explanations and examples of a piñata. Following are a few examples of student responses: "It's like a paper maché thing with candy in it. At birthday parties they usually have them and they are hanging somewhere.

And then they blindfold someone and they have a stick and they try to hit the piñata open to get the candy." "Piñatas are things made, are animals shapes made out of paper maché. They have toys or candy in them. And you use a bat or a stick to a…, and sometimes you can blindfold the person, and they hit it and when it breaks open everyone runs out to get candy and toys." As is evident from these example responses, students had extensive knowledge about the topics and were able to include important details in their explanations, knowledge of which was assumed by CRP selections.

Table 6 provides the overall mean scores for each selection, organized by CRP, for all students. Mean scores ranged from (0.67) to (2.83), with the lowest mean score selection, *New Hope*, from the *Imagine It* (Bereiter et al., 2008) CRP, and the highest mean score selection, *A Birthday Basket for Tia* from the *Reading Street* (Afflerbach et al., 2011) CRP. Overall, *Reading Street* had the highest mean score (2.21) with a range in selection mean scores of 1.20 to 2.83. The *Storytown* (Beck et al., 2009) CRP had the next highest mean score (2.00) with a spread of scores ranging from 1.19 to 2.78. *Imagine It* had the lowest mean score (1.83) and a spread of 0.67 to 2.37, meaning the students had the least knowledge assumed by *Imagine It*'s selections. For each CRP, the lowest mean scores were from selections that focused on historical or biographical information from a historical time. The highest mean scored selections were narratives about every day situations that children very likely might encounter.

Table 6

Mean and Standard Deviation for Students by Entire Selection and Publisher

Selection Title	Mean	Std. Deviation	Std. Error of the Mean
Reading Street Program			
Grace for President	1.67	0.832	.108
Red, White, and Blue: The Story of the American Flag	1.20	0.926	.119
Just Like Josh Gibson	2.08	0.877	.113
A Birthday Basket for Tia	2.83	0.813	.106
The Twin Club	2.61	0.879	.115
Exploring Space with an Astronaut	2.48	0.886	.117
The Strongest One	2.40	1.689	.218
Imagine It! Program			
The Elves and the Shoemaker	2.34	0.696	.089
New Hope	0.68	0.471	.062
Jingle Dancer	1.56	0.657	.086
April and Her Family	1.12	0.649	.084
For the Love of the Earth	2.37	0.742	.096
Corduroy	2.23	1.039	.137
Storytown Selections			
Where on Earth is My Bagel?	2.09	0.617	.080
My Name is Gabriela	1.19	0.532	.069
Arthur's Reading Race	2.53	1.171	.157
Dogs	2.05	1.512	.195
Cross-Country Vacation	2.78	0.783	.094

Students' Background Knowledge by SES

Scores for students on an individual level varied greatly, yet high-SES students, on average, had higher scores on many of the questions and selections. For example, the student with the highest overall background score of 137 (out of 164 if all answers were scored at a 4) was a high-SES student. When looking at this student's scores, he consistently scored a 2 or higher on all selections except for *New Hope* and *April and Her Family* where his scores were a 0 and a 1. Yet this does not come as a surprise, because those were the two lowest mean scores for all students despite SES. In contrast, the student with the lowest overall background score of 59 was a low-SES student. He never scored over a 2 on his answers and the majority of his responses scored a 1 or 0. Many of the responses the high-SES student had for selections that scored as 4s were the same selections the low-SES had a score of 2. A few of those selections include *For the Love of Our Earth* and *Corduroy*. This pattern for both students was consistent for the majority of their similar SES peers, with one exception coming from a low-SES student who had the second highest overall score of 134. This student had a great deal of knowledge that was not consistent with his peers who scores ranged from 59-119 without his 134 score. The high-SES students overall background knowledge scores ranged from 95-137.

An independent-samples t-test was run to determine if there was a difference in background knowledge for questions and selections between high- and low-SES students. There were no outliers, and scores were normally distributed, as assessed by Shapiro-Wilks test ($p>.05$). However, homogeneity of variance was violated, as assessed by Leven's Test for Equality of Variances ($p=.002$), so separate variances and the Welch-Saccerthwaite correction were used. First, the difference between students at the question level will be

discussed; then the difference between students at the selection level will be addressed.

The results in Table 7 indicate there were statistically significant differences between high-SES (*N*=30) and low-SES (*N*=30) students at the question level for 18 of the 45 questions, while the remaining 27 questions showed no statistically significant differences between high- and low-SES students. High-SES students scored, on average, higher than low-SES students for 17 of the questions, while low-SES students scored higher than high-SES students on one question. The following are a few of the questions that were statistically significantly higher for high-SES students: tell me about the election process, M=2.73, *t* (2, 58)=2.829, p=.006; tell me what you know about celebrations, M=3.07, *t* (2, 58)=3.172, p=.003; tell me what you know about elves, M=2.87, *t* (2, 58)=2.472, p=.016; tell me about recipes, M=3.23, *t* (2, 58)=2.772, p=.008; and tell me what you know about museums, M=3.37, *t* (2, 58)=5.425, p=.000. Low-SES students scored statistically significantly higher than high-SES students on the question what do you know about jingle dancers, M=1.87, *t* (2, 58)=-2.077, p=.042. For 40% of the questions asked, SES does have an effect on student background knowledge.

Table 7

Mean Scores, Standard Deviations and t-test Results for High-SES Versus Low-SES Students for Each Question

Question	High-SES		Low-SES		t	df	Sig. (2-tailed)	Difference		95% Confidence Interval of the Difference	
	Mean	SD	Mean	SD				Mean	Std. Error	Lower	Upper
Reading Street											
Election process	2.73	1.34	1.80	1.22	2.829	58	.006**	0.93	0.33	0.273	1.594
Democracy	1.13	0.82	0.87	0.63	1.414	54	.163	0.27	0.19	-0.111	0.645
Colonies	0.93	1.05	0.87	1.11	0.240	58	.811	0.07	0.28	-0.490	0.624
The Stars and Stripes	1.67	1.42	1.37	1.30	0.853	58	.000***	0.30	0.35	-0.404	1.004
Baseball	3.07	1.08	1.90	1.06	4.218	58	.492	1.17	0.28	0.613	1.720
Girls and boys playing sports together	1.97	1.54	1.70	1.44	0.692	58	.492	0.27	0.39	-0.505	1.038
Josh Gibson	2.23	1.10	1.70	1.37	1.661	56	.102	0.53	0.32	-0.110	1.177
Celebrations	3.07	0.91	2.13	1.33	3.172	51	.003**	0.93	0.29	0.343	1.524
Surprise parties	3.33	1.03	2.27	1.11	3.857	58	.000***	1.07	0.28	0.513	1.620
Piñatas	3.40	0.86	2.83	0.83	2.599	58	.012**	0.57	0.22	0.130	1.003
Twins	3.10	0.89	2.70	0.84	1.799	58	.077	0.40	0.22	-0.045	0.845
Email	3.13	1.28	1.83	1.60	3.477	55	.001***	1.30	0.37	0.551	2.049
Clubs	2.83	1.09	1.90	1.19	3.182	58	.002**	0.93	0.29	0.346	1.521
Space shuttles	2.17	1.21	1.37	1.13	2.653	58	.010**	0.80	0.30	0.196	1.404
Experiments	3.17	0.53	2.00	1.31	4.512	58	.000***	1.17	0.26	0.643	1.690
Telescope	3.13	1.31	2.83	1.49	0.830	57	.410	0.30	0.36	-0.424	1.024

Table 7 (cont'd)

Ants being strong	2.77	1.59	2.03	1.73	1.708	58	.093	0.73	0.43	-0.126	1.593
Imagine It! Program											
Elves	2.87	1.07	2.17	1.12	1.117	58	.016*	0.70	0.28	0.134	1.266
Showing kindness to others	2.73	0.74	2.17	0.91	0.913	56	.011**	0.57	0.22	0.137	0.996
Making shoes	2.23	1.17	1.90	1.19	1.185	58	.276	0.33	0.30	-0.274	0.941
Axle	0.77	0.63	0.67	0.80	0.802	55	.593	0.10	0.19	-0.272	0.472
Life on the frontier	0.67	0.61	0.73	0.45	0.450	54	.631	-0.07	0.14	-0.343	0.210
Settlements	0.57	0.63	0.67	0.92	0.922	51	.625	-1.00	0.20	-0.509	0.309
Jingles	2.00	1.20	2.17	1.12	1.117	58	.580	-0.17	0.30	-0.767	0.433
Powwows	1.07	1.08	0.87	0.90	0.900	56	.439	0.20	0.26	-0.314	0.714
Jingle Dancers	1.37	0.85	1.87	1.01	1.008	56	.042*	-0.50	0.24	-0.982	-0.018
Calligraphy	0.83	0.46	0.93	0.92	0.907	43	.593	-0.10	0.19	-0.475	0.275
Chinese Americans	1.53	1.14	1.20	1.06	1.064	58	.246	0.33	0.28	-0.236	0.902
Pollution	2.37	1.40	1.03	1.10	1.098	55	.000***	1.33	0.33	0.682	1.985
Take care of the Earth	2.83	0.70	2.23	0.97	0.971	53	.008**	0.60	0.22	0.162	1.038
How we take care of the Earth	3.33	0.66	2.50	0.90	0.900	53	.000***	0.83	0.20	0.424	1.242
Department store	1.30	1.32	1.73	1.51	1.507	57	.241	-0.43	0.37	-1.165	0.298
Watchmen	3.27	1.17	2.63	1.45	1.450	56	.068	0.63	0.34	-0.049	1.315
Storytown Program											
Bagel	2.50	0.94	2.13	1.01	1.459	58	.150	0.37	0.25	-0.137	0.870
Recipes	3.23	0.73	2.50	1.25	2.772	47	.008**	0.73	0.27	0.201	1.266
Korea	1.37	0.89	0.83	0.83	2.395	58	.020*	0.53	0.22	0.088	0.979
Gabriela Mistral	0.70	0.84	0.50	0.78	0.959	58	.341	0.20	0.21	-0.217	0.617

Table 7 (cont'd)

Chile	0.53	0.63	0.13	0.43	2.867	52	.006**	0.40	0.14	0.120	0.680
Nobel Prize	1.27	0.87	1.13	0.97	0.560	57	.578	0.13	0.24	-0.343	0.610
Awards	3.13	0.78	2.17	1.32	3.467	47	.001***	0.97	0.28	0.406	1.528
'As easy as pie'	2.70	0.95	2.27	1.41	1.393	51	.170	0.43	0.31	-0.191	1.058
Litter of puppies	2.30	1.37	1.67	1.61	1.645	57	.106	0.63	0.39	-0.138	1.404
Diaries	3.20	0.85	2.43	1.17	2.915	53	.005**	0.77	0.26	0.239	1.294
Vacations	3.30	0.88	2.67	0.92	2.726	58	.008**	0.63	0.23	0.168	1.098
Museums	3.37	0.67	1.97	1.25	5.425	44	.000***	1.40	0.26	0.880	1.920

*p<.05, **p<.01, ***p<.00

(high-SES N=30, low-SES N=30)

Table 8 depicts the results of the differences between students from high-SES homes and those from low-SES homes for each selection. As indicated, there is a statistically significant difference between high-SES (*N*=30) and low-SES (*N*=30) students for the selections as a whole. For a majority of the selections (10 out of 18), high-SES students had statistically higher scores than low-SES students. Figure 4 provides information about student mean scores at the selection level for SES as well as overall scores. Again, this information shows that high-SES students, on average, had higher mean scores than low-SES students, excluding the selection *Jingle Dancer*, where low-SES students had higher mean scores.

Table 8

Mean Scores, Standard Deviations and t-test Results for High-SES Versus Low-SES Students for Entire Selection

Selection	High-SES		Low-SES		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Mean	SD	Mean	SD						Lower	Upper
Reading Street											
Grace for President	1.93	.817	1.33	.758	2.948	58	.005**	.600	.204	.193	1.007
Red, White, and Blue: The Story of the American Flag	1.30	.867	1.12	.980	.767	57	.446	.183	.239	-.195	.662
Just Like Josh Gibson	2.42	.769	1.77	.862	3.089	57	.003**	.651	.211	.229	1.073
A Birthday Basket for Tia	3.27	.652	2.41	.746	4.733	57	.000***	.856	.181	.494	1.22
The Twin Club	3.02	.753	2.14	.809	4.350	58	.000***	.878	.202	.474	1.282
Exploring Space with an Astronaut	2.82	.791	2.07	.860	3.543	58	.001***	.756	.213	.329	1.183
The Strongest One	2.77	1.591	2.03	1.732	1.708	58	.093	.733	.429		

Table 8 (cont'd)										-.126	1.593
Imagine It! Program											
The Elves and the Shoemaker	2.61	.661	2.08	.623	3.214	58	.002**	.533	.166	.201	.865
New Hope	0.67	.391	0.69	.561	-.174	52	.863	-.022	.125	-.272	.229
Jingle Dancer	1.50	.700	1.61	.626	-.674	56	.504	-.116	.173	-.463	.230
April and Her Family	1.17	.577	1.07	.716	.595	56	.554	.100	.168	-.237	.436
For the Love of the Earth	2.84	.586	1.92	.592	6.065	58	.000***	.922	.152	.618	1.226
Corduroy	2.32	.914	2.22	1.208	.361	54	.719	.100	.277	-.455	.655
Storytown Program											
Where on Earth is My Bagel?	2.37	.528	1.82	.586	3.783	57	.000***	.545	.144	.256	.833
My Name is Gabriela	1.41	.402	0.98	.576	3.315	57	.002**	.425	.128	.168	.682
Arthur's Reading Race	2.70	.952	2.27	1.413	1.393	51	.170	.433	.311	-.191	1.058
Dogs	2.30	1.368	1.67	1.605	1.645	57	.106	.633	.385	-.138	1.404
Cross-Country Vacation	3.19	.516	2.36	.677	5.364	54	.000***	.834	.155	.522	1.15

*p<.05, **p<.01, ***p<.001
(High-SES N=30, Low-SES N=30)

Figure 4: Mean Scores by SES and Overall by Selections

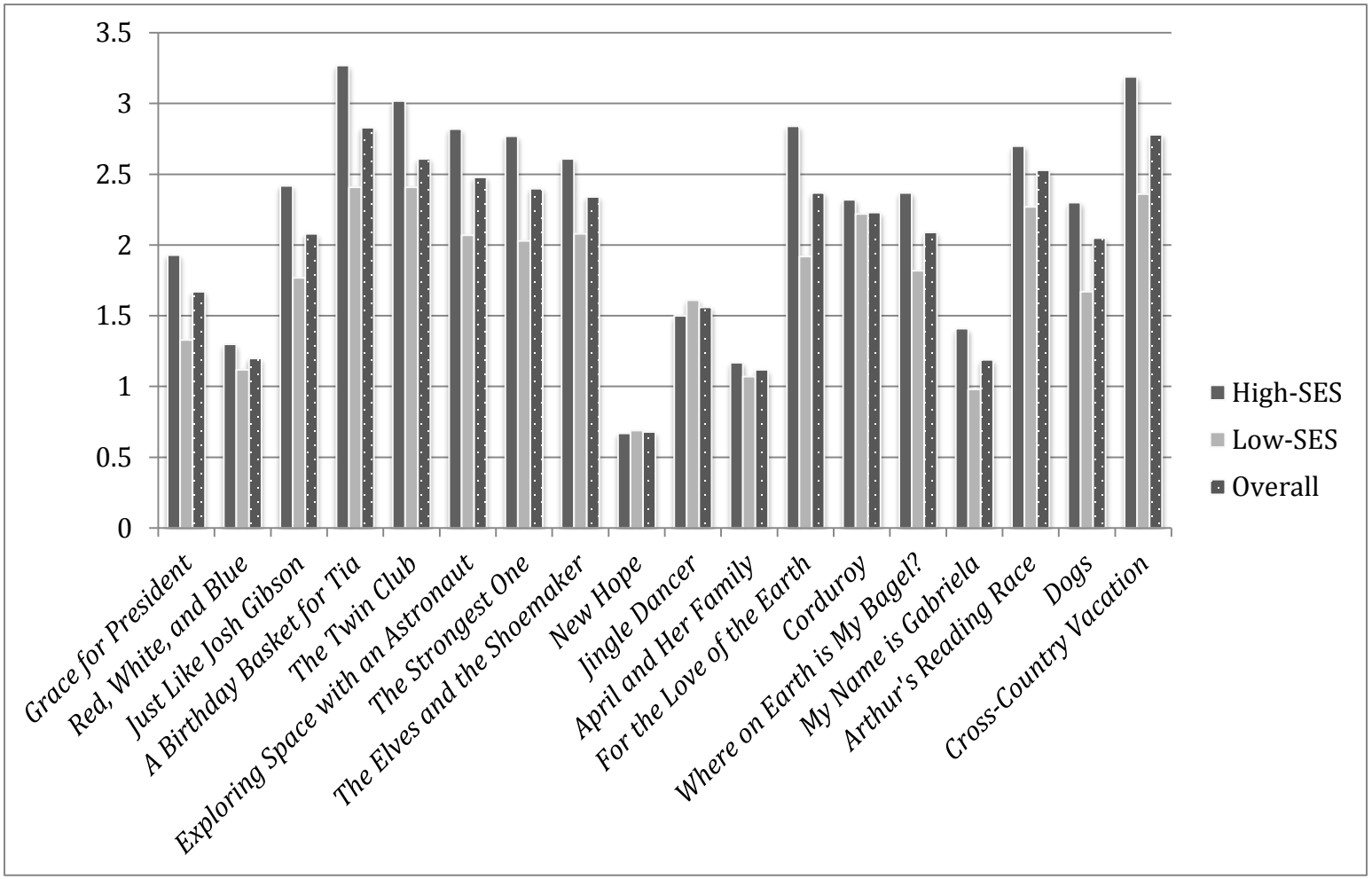


Table 9 displays the mean scores and independent-sample t test for high- and low-SES students for each publisher and for total background knowledge. This study found that there is a statistically significant difference between the two groups, with high-SES students scoring on average higher than their low-SES peers for each CRP and across CRPs (i.e., overall total background knowledge; see detail later in this section). High-SES students also had the greatest mean *for Reading Street* (M=2.48) followed *by Storytown* (M=2.23) and finally *Imagine It* (M=1.97). This ordering was the same for the low-SES students: *Reading Street* (M=1.93), then *Storytown* (M=1.77), and finally *Imagine It* (M=1.70).

I used a mixed design to examine differences in background knowledge for second-grade students between students of low-SES and high-SES with respect to CRP publishers. Data were analyzed using a 2 (SES) by 3 (publisher) mixed design ANOVA. There was a significant main effect of SES $F(2, 58)=32.40$, $p<.001$. There was also a significant main effect of publishers $F(2,58)=52.82$, $p<.001$, and a significant interaction of SES and publishers $F(2,58)=6.37$, $p<.005$.

The main effect of publishers showed a statistically significant difference between publishers $F(2,58)=52.82$, $p<.001$, with a significant mean difference between R*eading Street* (M = 2.21) and *Imagine It* (M = 1.83), M = .700, SE = .083, p = .000 and *Reading Street* (M = 2.21) and *Storytown* (M = 2.00), M = .645, SE = .070, p = .000, but was not statistically different between *Imagine It* (M = 1.83) and *Storytown* (M = 2.00), M = .055, SE = .074, p = 1.00. Overall, students demonstrated more background knowledge of topics from *Reading Street* selections in comparison to *Imagine It* and *Storytown*.

The effect of publisher for the high-SES group, $F(2,58)=9.48$, $p<.001$ was statistically significant. The mean difference was not statistically significant for high-SES students

between *Reading Street* (M = 2.48) and *Storytown* (M = 2.23), M = .248, SE = .149, p = .107, but was significantly different between *Reading Street* (M = 2.48) and *Imagine It* (M = 1.97), M = .514, SE = .114, p = .000 and between *Storytown* (M = 2.23) and *Imagine It* (M = 1.97) , M = .267, SE = .082, p = .003. High-SES students had higher levels of background knowledge for selections in *Reading Street* and *Storytown* in comparison to *Imagine It*. The effect of publisher for the low-SES group, F(2,58)=2.97, p = .06 was not statistically significant.

An independent *t* test was run to determine whether there was a difference in overall background knowledge between high- and low-SES students. As noted earlier, the overall background knowledge was higher for high-SES students (M=2.17) than low-SES students (M=1.73), a statistically significant difference, M=.433, 95% CI [.197, .669], *t*(53)=3.685, p<.001. The mean scores for the high-SES students ranged from 2-3. The low-SES students' mean scores ranged from 1-3. The total overall score a student could receive for answering all questions with a 4 was 164. Overall background knowledge for all students showed a mean score of 104.05 with a range of 59-137. The mean scores for the high-SES students was 114.37 while the mean scores for the low-SES students was 93.73. Twenty-six of the high-SES students scored above 100 while the remaining four scored in the high 90s for their overall background knowledge. Fourteen of the low-SES students scored in the 100s, while the remaining sixteen scored below 100, with again the lowest score being a 59. Figure 5 provides information on students' overall mean scores for publishers and total background knowledge by SES.

Student background knowledge of key concepts and terms found in CRPs varies greatly, including by SES. Students from high-SES, on average, have more background knowledge of the key concepts and terms important (but not easily inferred) for

comprehension. It appears that this difference is not only at the question level, by selections, by CRPs, but overall as well.

Table 9

Mean Scores, Standard Deviations, and t-test Results for High-SES Versus Low-SES Students for Publishers and Total Background Knowledge

Selection	High-SES		Low-SES		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Mean	SD	Mean	SD						Lower	Upper
Reading Street	2.48	.623	1.93	.583	3.517	58	.001***	.548	.156	.236	.860
Imagine It!	1.97	.183	1.70	.535	2.584	36	.014**	.267	.103	.057	.476
Storytown	2.23	.430	1.77	.568	3.586	54	.001***	.467	.130	.206	.728
Total Background Knowledge	2.17	.379	1.73	.521	3.685	53	.001***	.433	.118	.197	.669

*p<.05, **p<.01, ***p<.001
(High-SES N=30, Low-SES N=30)

Figure 5: Overall Total Background Knowledge for Second-Grade Students by SES.

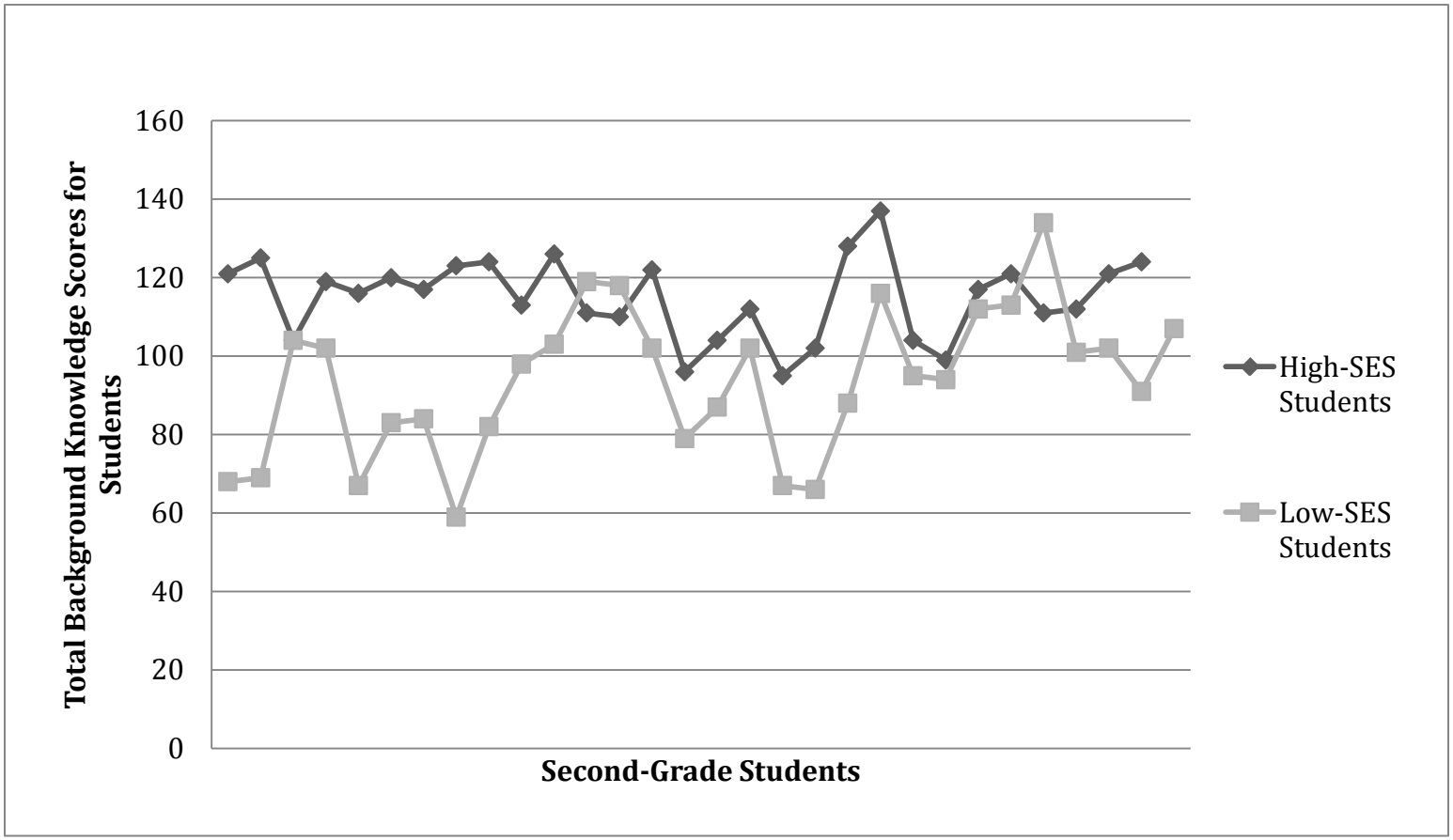
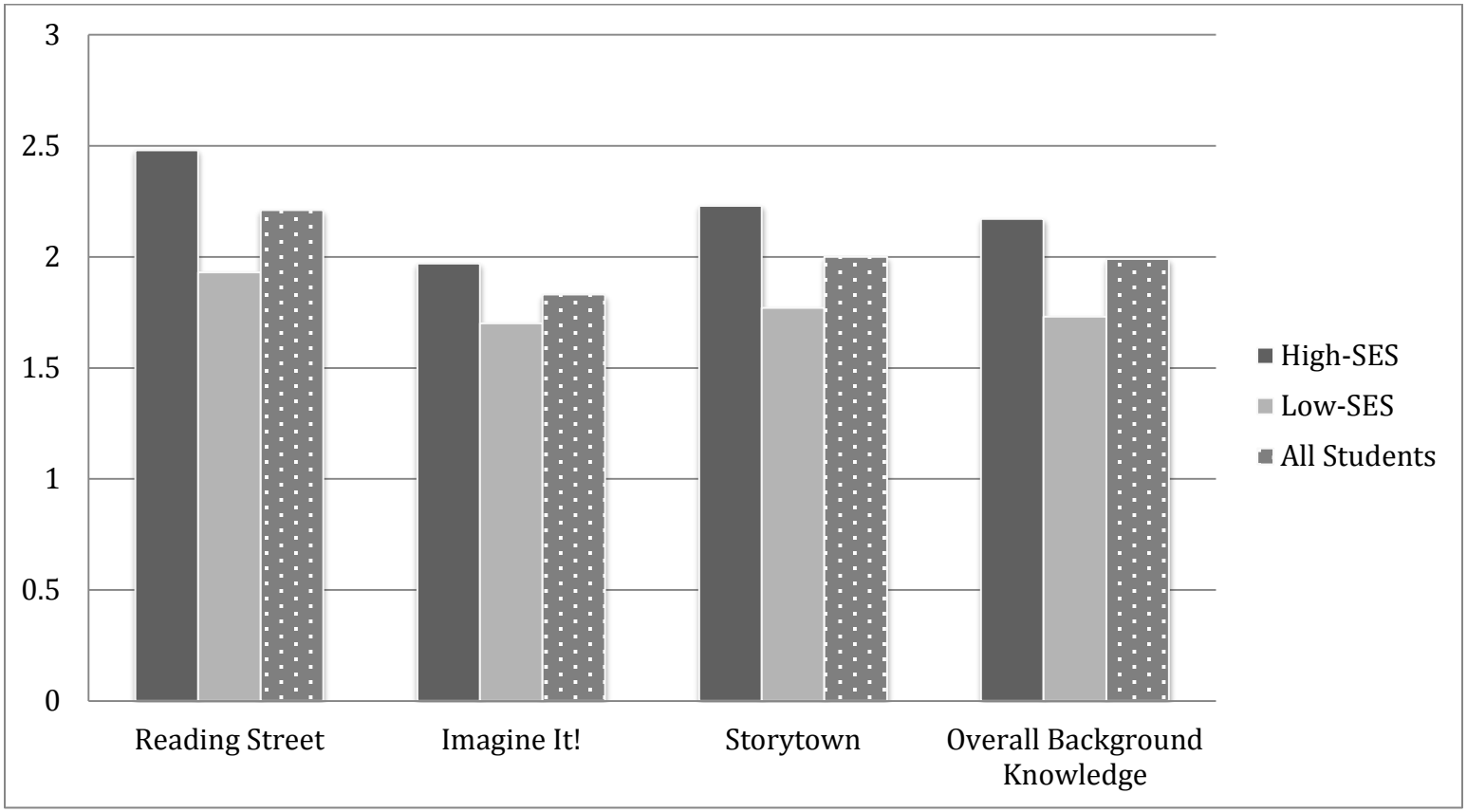


Figure 6: Student Mean Scores for Publishers and Overall Background Knowledge for All Students and by SES.



CHAPTER 5

DISCUSSION

Key Findings

A large body of research has shown that prior knowledge is an important contributor to successful reading (e.g., Afflerbach, 1990; Lipson, 1983; Pearson & Duke, 2002; Pearson, et al., 1979; Stahl, et al., 1989; Walsh, 2003). This study investigated the prior knowledge that students from high- and low-SES backgrounds had already acquired about certain key concepts and terms that appear to be assumed by selections in core reading programs. These core reading programs are used extensively in a wide variety of settings and with diverse populations of students. In this chapter I discuss key findings in regards to background knowledge, curriculum, and SES and then address instructional implications, research implications, and limitations of the study.

A key finding of this study is that all students had some knowledge of key concepts and terms important to comprehension that could not easily be inferred from selections in CRPs. That is, no student received a score of 0 across all questions. As indicated in Chapter 4 the lowest mean score for an individual student across items was 59 (1.3). The highest mean score was 137 (3.0), and the mean total score across all students was 104.05 (2.3). This score indicates that all students had some knowledge of the key concepts and terms from core reading program selections.

Another key finding from this study is that students have very little background knowledge related to many topics and selections in CRPs. That is, while second-grade students typically showed some knowledge of the topics necessary for understanding the selections, many of the key concepts had very low overall means. As stated earlier, both

high- and low-SES had mean scores below 2.0 for 20 of the questions, meaning their answers showed little knowledge about the topic and therefore scored low on the rubric. It was not surprising that the students did not, for the most part, have knowledge about the illusive concepts of democracy, colonies, calligraphy, powwows, what settlements were, or what an axel is. Many of these topics are difficult to explain if you do not have some inkling of their meaning or experiences with them. Many adults could have difficulty explaining democracy, let alone eight year olds. It was also not surprising that the students did not know who Gabriela Mistral was or how to describe the countries of Korea and Chile. Again, these are places that are far away from the center of most second graders' lives. Second-grade students are learning about their communities and states in relation to their lives, and therefore, explain why they would have difficulty talking about far away places like Korea or Chile clearly. The fact that I and many adults I know did not know who Gabriela Mistral was prior to this study also makes it unsurprising that students had little background knowledge about her. In order to demonstrate background knowledge related to these topics, they would have to have some sort of experience with the topic (e.g., previous readings, TV or movie exposure, or a personal experience). Clearly, for a number of the topics examined in this study, students did not have such experience.

At the same time, this study found that students had, on average, some to extensive knowledge about a number of topics, including the election process, surprise parties, taking care of the earth, baseball, twins, awards, museums, vacations, diaries, recipes, and watchmen or security guards. Much of the information they shared was connected to personal experiences they had with the topics or information they had learned from reading another book on the topic. They provided details about parties they had been to,

how they played baseball or a time they had been to a museum and experienced many interesting things there. For example, when asked to tell what they know about museums, a child replied "Usually they have history in them. Sometimes there is art museums and dinosaur museums. They are usually pretty big because there is a ton of people in there. Sometimes they are expensive to go in and sometimes they are not at all." Another child responded, "Museums tell about history and it has fossils and they show really fragile stuff that is really important. They have art and things from a long time ago. Museums are a really good thing that got made because there is all sorts of new things you can learn from the museum." Both of these student examples demonstrate the detail and information provided. You can tell that these students have had multiple exposures to trips or conversations about museums.

The students also shared information from other texts they had read or conversations they had at home or in class. When asked to explain the election process, a child responded with "First, you have to run for it. Then people vote on who they want. There should be like two people for like vice president, president, and secretary. In our school it's usually two. People vote and the person counts all the votes and whoever wins for each, one person for each one will win. They will be president, secretary, or whatever they were running for." This example shows very personal connections with the election process, as it is something that happens in the child's school and follows a pattern in which the students would share conversation they had with their parents about voting during the election.

Periodically, students demonstrated background knowledge that was related to the selection, but could actually undermine comprehension. For example, in the selection *The*

Elves and the Shoemaker, students may possess a great deal of background knowledge about elves (e.g., mischievous, naughty, live in the North Pole, only work for Santa) that are all correct ideas, but not for this particular selection. If students assumed the elves in the story were naughty and mischievous, it could potentially confuse them when they read about the helpfulness of the elves in the story. When this happens, students are likely to struggle to fully understand what they are reading. Stahl et al. (1989) and Stevens (1982) both found that teaching students accurate information prior to reading supported student learning, and helped students have higher comprehension.

Perhaps the most important finding from this study, which addresses research question 2, is that the amount of background knowledge students possessed related to selections in Core Reading Programs was not distributed equally across SES. In looking at the mean scores of high-SES students in comparison to low-SES students by question, there is a difference in the background knowledge of topics. High-SES students' mean scores were statistically significantly higher on 17 of the questions, while low-SES students' mean scores were statistically significantly higher on one question.

On average, the low-SES students' answers were more likely to include insufficient background knowledge and less often contained the key details or information necessary for comprehension of the selection. Often the answers contained misconceptions or the students were unable to articulate an answer. For example, many students, when asked to talk about a topic they did not know anything about, would respond with, "I don't know" or "that's a hard one." Other times the responses were short and missed key details that would be helpful to understanding the selection, such as one student's response to the question tell me about vacation: "you can go on vacations for a long time." Often, student

responses contained misconceptions about the topic, such as when asked to tell what they know about Chile. Many of the students responded that it was a type of food that you ate, despite the interviewers providing the Spanish pronunciation followed up by "or sometimes known as" and using the English pronunciation. On average, low-SES students' responses were shorter and lacked detail in comparison to high-SES student responses. For example, when high-SES students provided information about vacations, they often included who they would visit and where. One student's response included those very ideas; "They can be really fun and sometimes really long. You can visit grandparents, cousins and aunts and uncles. You can go with just your mom if your dad has to work or just with your dad if your mom has to work. You could go by yourself if your mom and dad let you. For vacation, it can be really short. You might not like it as much as you like the first vacation." This type of response was indicative of that of most high-SES students. In contrast, low-SES students' responses often contained a list of ways you could travel, the length of time it would last, or the idea that vacations are fun. One student's response included many of those ideas; "You can go anywhere you want. You can see something you never saw before. You can look at art. You can look at people's decorations in they house. And you can get a job there. And you can live on top of the mountains. It's a long trip."

Low-SES students scored statistically significantly higher on the question asking students to tell what they knew about jingle dancers. Jingle dancers are Native American women and girls who dance in the woman's Jingle Dance at powwows. They wear a dress adorned with special jingles that are tied onto the dress with ribbons close enough together that they hit together making a distinct sound as the jingle dancer dances in circles. Many of the low-SES students' responses scored a 2 on the rubric and included concepts about

dancing and wearing some type of jingle or bell, which was what categorized it as a 2. One student's response shows this type of answer, "Hmm, maybe they got bells on their clothes and they dance. And maybe a jingle dancers, they make a ding, ding, ding with bells. And they just keep on dancing as they do it. Or maybe their parents are just doing this with the bell (shows hitting it together)." Many of the other students had similar responses. The high-SES students answers often contained responses such as, "I don't know" or had only misconceptions on the topic of jingle dancers.

SES differences were evident not just for individual questions but for entire selections and CRPs. High-SES students scored statistically significantly higher on 56% (10 out of 18) of the selections from the CRPs than low-SES students and there were selections in each of the three CRPs on which high-SES students scored higher. In the following paragraphs, I discuss each CRP and the selections within it with respect to high- and low-SES students' background knowledge.

The CRP *Reading Street* (Afflerbach, et al., 2011) had the highest mean scores for both high- and low-SES students, with high-SES students scoring statistically significantly higher mean scores than low-SES students on all but one selection. Many of the selections included topics that were familiar to all of the students, such as baseball, parties, celebrations, twins, space, and elections. Despite relatively high levels of familiarity, on average, for both low-SES and high-SES students, high-SES students scored statistically significantly higher on each of those topics and the corresponding selections. The only selection from *Reading Street* that all students demonstrated no knowledge to some knowledge on was *Red, White, and Blue: The Story of the American Flag*, a selection that was

historical and required a great deal of background on colonial America that second-grade students aren't likely to possess.

High-SES students had statistically significantly higher mean scores for the CRPs *Imagine It* (Bereiter, et al., 2008) and *Storytown* (Beck, et al., 2009) than low-SES students. Overall, high-SES students demonstrated some knoweldge to considerable knoweldge of the selections and topics, but not extensive knowledge. High-SES students showed statistically significantly higher scores than low-SES students for two selections from *Imagine It*. One selection, *The Elves and the Shoemaker*, was a fairy tale that was familiar to many of the high-SES students. Many of the responses contained ideas that showed the high-SES students had read or been told the story before, while on average, the low-SES students relied on clues from the title page to help them build a response. In this case many low-SES students relied heavily on illustrations to extend meaning, and thus, in this case, became somewhat confused and misled, as the illustrations did not match their background knowledge.

The other selection from *Imagine It* (Bereiter, et al., 2008), *For the Love of the Earth*, was a selection about recyling that many of the high-SES students had a great deal of first-hand experience with and shared in their responses. Again, the low-SES students knew about recycling, but their knowledge was, on average, limited in comparison to their high-SES peers. Two students, one from each SES group, were randomly selected from a group of students who scored at the mean score for this particular selection. The following is the response of a student of high-SES to the questions that corresponded with the selection *For the Love of the Earth:*

"What is pollution?"

"Pollution is like smog, fog, and smoke. It's in our air. Sometimes people can't breathe very well with the pollution."

"Anything else?"

"If you put chemicals in the river or ocean, it will pollute the ocean for animals that live in the sea or lake."

"What does it mean to take care of the Earth?"

"We save the Earth from pollution."

"Can you tell me more about that?"

"No."

"Tell me how we take care of the Earth."

"If somebody litters you might pick it up and throw it away in the trash can if it's like recyclable you can just plain recycle it. Then you can save all the other resources. You could compost the food you don't eat. You can plant trees for more paper or more forests for like endangered animals to live in. Recycle everything that you can recycle, like paper, tin cans, or a cookbook."

The following example is the responses to the same set of questions from a student of low-SES who had a mean score for low-SES students for the selection, *For the Love of the Earth*.

"What is pollution?"

"I don't know"

"What does it mean to take care of the Earth?"

"You taking care of where you live, and that's good. 'Cause if you just throw things on the ground, then if you don't pick it back up, then it will be a lot of trash on the ground. And sometimes when you recycle, you, when you recycle, you're helping the

Earth. Because sometimes when you throw stuff on the ground, it's just going to get piles and piles and piles."

"Tell me how we take care of the Earth."

"By planting things, recycling. When you see trash on the ground, you pick it up and throw it away or recycle it."

The difference in these two examples shows a common difference in the way students responded. As you can see, the student of high-SES used key words such as *pollution and pollute, recycling* and *resources*, whereas the student of low-SES did not use as many of those terms. The student of high-SES was also able to talk specifically about what pollution is and how we can pollute the Earth. The student of low-SES understood the idea of recycling and littering, but did not expand extensively on other topics related to pollution and taking care of the Earth. This student was typical of students of low-SES responses in that less detail was provided. Many of the students of low-SES did mention the words *recycle* and *littering*, but less often and rarely with examples of what each word meant.

All of the other selections from *Imagine It* were not statistically significantly different between high- and low-SES students. For those selections, all students had no knowledge to some knoweldge of the key concepts and topics. Interestingly, the selection *New Hope* was the only selection in which low-SES students' mean scores were slightly higher than high-SES students, though again not at a level of statistical significance, but for both groups they were very low.

Low-SES students had the lowest mean scores for the CRP *Storytown* (Beck, et al., 2009). Overall, their scores indicate that they had no knowledge to some knowledge of

topics important to overall comprehension that could not easily be inferred. Two of the three selections on which low-SES students scored statistically signficantly lower than high-SES students contained information about countries and people unfamiliar to the children, including many of the high-SES students. Often, the low-SES students either did not have relevant background knowledge or had only misunderstandings of the topic, such as when they would tell what they knew about the country Chile by responding that is was some type of food you ate or that it was when you were cold outside (despite the interviewers providing the Spanish pronunciation followed up by "or sometimes known as" and using the English pronunciation). The remaining selection contained information the students had more knowledge about, but, again, the high-SES students had statisitically significantly higher scores. On average, the high-SES students had considerable to extensive knowledge while the low-SES students had some to considerable knowledge.

Findings from this study suggest that one contributor to the literacy achievement gap may be differences in background knowledge between high- and low-SES students. High-SES students have considerably more background knowledge of some key concepts and terms found in texts that are widely used to teach children to read. Research has shown that when a reader has less relevant background knowledge of the topic, he will struggle to connect the known with the new (Neuman, 2001), recall information and answer questions (Afflerbach, 1990; Anderson & Pearson, 1984), and infer meaning (Cain et al., 2001), thus hindering his understanding. It is important to note that this study does not indicate that high-SES students have more background knowledge in general, simply that they have more background knowledge, on average, for some of the texts they encounter in schools. There may be a mismatch between what low-SES students know and

bring to school and what some school-based texts assume about their knowledge base. Continuing to use CRPs for which high-SES students have more relevant background knowledge may increase the SES achievement gap.

Instructional Implications

Given the fact that children come to school with very different knowledge bases and experiences (e.g., Levin, 2007; Pearson, 2013; Reardon, 2011; Reardon & Bischoff, 2011), and that those may help or hinder their comprehension of the selections they read in class, it becomes vital that students are exposed to many different experiences in and out of school. There are many different approaches for supporting students' learning in school, which are not mutually exclusive of one another. These approaches include: increasing low-SES students' background knowledge, better activation of existing background knowledge for students, and changing the texts students read in school to better align with students' existing background knowledge and refute inaccurate knowledge.

The findings from this study suggest that, on average, low-SES students come to school with very different backgrounds and experiences of topics that don't always align with the selections they are asked to read during instructional times. Realizing this difference exists, publishers can adjust the selections in their CRPs and teachers can adjust instruction and help students to be better able to "draw from, compare, and *integrate their prior knowledge* with the materials in the text" (Duke, Pearson, Strachan, & Billman, 2011, p. 56), thus building stronger comprehension. Providing multiple varied texts and in-school experiences for children who may not have extensive knowledge of the topics they read about in school may be a great support. For example, when reading the selection *New Hope* from *Imagine It*, it would be beneficial to provide different texts that show about life on the

frontier or settling new areas, thereby better supporting students' understanding of the topics. Providing pictures or videos of different types of axels would also build that missing background necessary for understanding of the selection. Low-SES students are provided with less social studies and science instruction in school than their higher-SES counterparts (Griffith & Scharmann, 2008; VanFossen, 2005), yet this study suggests that need to be more intensive in building low-SES students' content knowledge related to texts in CRPs. The benefit of helping students become familiar with the topics they are lacking background on prior to and during reading will be a great support to their overall comprehension. A great deal of research supports the notion that when students read topics that are familiar to them, they experience less confusion and stronger overall comprehension (e.g., Afflerbach, 1990; Alptekin, 2006; Lipson, 1983; Miller & Keenan, 2009; Nusca, 1999; Pearson, Hansen, & Gordon, 1979; Pritchard, 1990).

Focusing the curriculum on the needs of the students and providing support for teachers in doing so would greatly benefit all students, but especially those with limited background knowledge. Allington and McGill-Franzen (2013), as well as Teale, Paciga, and Hoffman (2007), explain that without this need-based instruction, the literacy achievement gap will continue to exist and quite possibly widen between high- and low-SES students. If authors, publishers, and teachers were more aware of the assumptions they make about students' background knowledge and the instructional methods they utilize in activating and building background knowledge for students, it would greatly benefit all students to activate their schemata of the topic or begin to build one, but especially those who have limited background knowledge.

Given the relationship between comprehension and background knowledge, and the fact that this study found that high-SES students have statistically significantly higher background knowledge scores than low-SES students, there is a need for instruction for low-SES students that is designed specifically to tap into the topic of the selection, thereby supporting students' activation and building of relevant background knowledge. If the teacher resources and instruction were to focus more directly on the overall topic of the text while not drawing students off topic, it would be very beneficial for all students, but especially those who don't have the background knowledge necessary to fully comprehend. When reading *Exploring Space* from *Reading Street* (Afflerbach et al., 2011) about astronauts in space, instead of activating and building students' background knowledge of space or even something somewhat related, such as spaceships, it would be much more beneficial to narrow the topic to astronauts and what they do in space. Not only would this benefit students with limited background on astronauts, it would help those students with a great deal of knowledge of space, astronauts, and spaceships to focus in on the key topic and not get lost in all they know. Beck et al. (1982) determined that focusing on background knowledge that was important for comprehension was very beneficial for the readers, and resulted in higher comprehension of the selection.

Aligning curriculum across the entire school day would greatly benefit all, but especially low-SES students. If students were reading selections from CRPs that aligned with their social studies and science content, the activation and building of background knowledge would be that much stronger. Students would be able to pull important information from their CRP selections to help them comprehend their social studies and science content and vice versa. There would be a clear connection for the students between

what they are learning in the content areas and what they are reading about in their CRP selections, thus helping to build stronger comprehension. This is supported by research that finds that when a student is taught content related to the topic, he will have stronger comprehension (e.g., Bransford & Johnson, 1972; Stahl, Jacobson, Davis, & Davis, 1989; Stevens, 1982) and the more a student knows about a topic, the stronger her comprehension will be overall (e.g., Afflerbach, 1990; Lipson, 1983; Miller & Keenan, 2009; Nusca, 1999; Pearson et al., 1979; Pritchard, 1990). Having the opportunity to read across a wide selection of texts would also help students gain more knowledge and improve their comprehension. When you read, you learn more, thus allowing you to read more. It is as Duke el al., (2011) describe, a virtuous cycle where "knowledge begets comprehension, which begets knowledge" (p. 53).

Selecting or revising texts for CRPs so that they make fewer assumptions about students' background knowledge is also advised. Looking closely at the texts used in schools and whether and how they interact with students' likely background knowledge would be beneficial for students, but especially low-SES students. Selecting texts that supported students' existing knowledge would be very helpful for supporting deeper understanding, which supports a great deal of research on students having better comprehension with familiar topics (e.g., Afflerbach, 1990; Alptekin, 2006; Lipson, 1983; Miller & Keenan, 2009; Nusca, 1999; Pearson, Hansen, & Gordon, 1979; Pritchard, 1990). Not only that, but it would give low-SES students the potential advantage to apply their relevant background knowledge to the texts they are reading in school.

It is very likely that students will, at times, read texts about which they have very little knowledge or for which the knowledge they do have is erroneous or inaccurate. When

this happens, the use of refutational texts or sections within texts that help students learn accurate information would be of great assistance to struggling readers. For example, many of the students, when explaining what they knew about elves, provided information that was possible and true about elves, but would in fact hinder their comprehension of the selection *The Elves and the Shoemaker*. In this selection, the elves are not naughty and mischeiveous, as many of the children described elves, but extremely kind and helpful. If the publishers were to provide a small refutational text within the larger text, helping students understand the types of elves in the selection, it would be a great help to all readers, but especially those with inaccurate or erroneous knowledge that could undermine comprehenison.

Again, the results from this study demonstrate that the selections used in the CRPs require a great deal of background knowledge that, on average, all students, especially low-SES students, are lacking. This lack of background is potentially hindering overall comprehension for many of the students. Many of the suggestions I make are for supplementing the existing CRPs through varied texts or needs-based instruction, all of which are beneficial for student success. Yet, there is a great need for publishers to look at the selections they are using and determine whether those selections are the best for the students' literacy development, and if not, to find ones that would be better for overall reading and comprehension development.

Another potential implication for publishers is to consider rewriting existing texts to assume less background knowledge. For example, in the CRP *Storytown*, the selection *My Name is Gabriela Mistral: The life of Gabriela Mistral* is written in a way that assumes students know a great deal about Gabriela Mistral and the Nobel Prize in literature. Instead

of having these large gaps that students need to fill in, rewriting the texts so that it does not assume this knowledge could be beneficial to many readers, but especially to those who lack the background knowledge. Also, background activation and building prior to and during reading that decreases the likelihood that students will get lost in all the new terms and concepts is greatly needed. Too often, background knowledge activation and building is only done prior to reading, and is general in nature. Specific activation and building supports embedded in the texts could benefit many students, but especially those struggling with a mismatch in the known and new information. Without this change, many students, especially low-SES students, may continue to unduly struggle with comprehension during a critical time in their literacy development.

As Pearson (2013) stated in a recent webinar, "If we don't attempt to connect prior knowledge for those students whose experiences and backgrounds don't match the expectations and intellectual challenges of school-based texts—I'm thinking mainly of children living in poverty; [if we don't] help them figure out what ideas in their repertoires of knowledge and experiences to connect to for any text; if we don't do this, it will continue to widen the gap."

Implications for Further Research

This study sheds light on the importance of background knowledge and the gap that exists between high- and low-SES students' knowledge of key concepts important to comprehension, but not easily inferred, from core reading program selections. Future research in background knowledge should further examine what knowledge children possess, how that knowledge relates to the demands of schooling, how teachers and

students can activate and build that knowledge, and how curricula might change in response to group differences in background knowledge.

It is essential to extend this line of research to other grades and specific text genres. As children continue in school and are exposed to more and more information, does the gap between high- and low-SES background knowledge increase, decrease, or stay the same? And what are the reasons for the potential gap increasing or narrowing? Much of the research on the literacy achievement gap looks at the effects poverty has on students' success (e.g., Alexander & Entwisle, 1996; Brooks-Gunn & Duncan, 1997; Chatterji, 2006) and various standardized test studies of students' academic achievements (e.g., Barton, 2003; NAEP, 2009, 2012), yet it does not delve into specifics about student success in decreasing the gap. Research shows that reading different text genres requires different skills and strategies (Duke & Roberts, 2010), yet less is known about the extent that background knowledge effects overall comprehension of the different genres. A more detailed look at young students' knowledge of topics and concepts important for comprehension of informational and narrative texts, as well as online texts, would be beneficial to researchers and educators.

This study looked at the background knowledge important, but not easily inferred, for comprehension in CRP selections. A study that looks at the impact of students' background knowledge on their reading comprehension of these CRP selections would be beneficial to the field. Is that a point where the students reach a threshold for background knowledge and don't need more to help with comprehension? Does having too much background on a topic actually hinder comprehension or does it still benefit students? Looking at students' background knowledge prior to reading, then reading, and assessing

comprehension beyond background knowledge questions would be beneficial and help not only publishers be thoughtful of background knowledge activation, but teachers' instructional practices as well.

A study that looks at the classroom teacher's knowledge and pedagogy of teaching background knowledge, especially with CRPs, to see the impact that has on student comprehension is greatly needed. There have been studies looking at the teaching of vocabulary (Wright, 2012) and informational texts (Duke, 2000a) available and used in the classroom, as well as classroom observation of teachers use of certain literacy skills and strategies in high poverty schools (Donaldson, 2011), but little research has focused on the teacher's pedagogical practices related to background knowledge. A study that examines teacher knowledge and practices would greatly benefit the field, as would a study that looks specifically at how students use the teacher's instruction and their own background knowledge to comprehend.

Finally, a discourse analysis of students' responses to parse out nuances in the ways the students talked about or explained their thinking would be a great benefit to the research that looks at how young children articulate their own ideas. While listening to student audio files, I became aware of the vast differences in the ways students explained their thinking, which lead me to question whether students know more than they are able to articulate. Often times, high-SES students would provide a personal example to explain and extend their understanding of the concept. High-SES students were also quick to admit they did not know anything about the topic and also would tell you that was all they knew when pressed to add more. Low-SES students on the other hand, tended to provide brief explanations of the topics and rarely provided personal examples. When they did not know

the answer, they would sit without responding until you prompted them that it was okay to say, "I don't know." Low-SES students also tended to add information that did not always support their initial response. We know that children know a great deal about a lot of different topics, but how they explain and talk about those ideas is not always clear. This research would help us understand the different discourses children use and how to support their explanations.

Limitations

There are some limitations to this study. For one, although none of the schools used the core reading programs as their reading curriculum that the selections and questions were drawn from, many of the students had read or heard about several of the selections. It was an election year, so many of the classrooms read *Grace for President* and other election-focused texts. *Corduroy* is a very popular children's book that many of the children listed as owning themselves or reading it in school. *April and her Family* and *Just Like Josh Gibson* are not necessarily popular texts, but many of the students commented on having them in their classroom and while not having read them fully, were somewhat familiar with each text.

The students were shown a title page spread and told the title of the selection prior to any questions related to that title. While at times this was helpful to many students, it may have heavily influenced some student responses. At times, the students would rely a great deal on the illustration to help them respond to the question. This caused some of the responses to be full of inaccuracies and erroneous information as the students were trying to come up with some plausible explanation of the concept. In the future, a modified approach of sharing the title with the students but not the title page may be beneficial. It

may also help to have students read certain selections in which the title page spread does not match the important concepts or terms.

Another limitation is related to the school curriculum. One of the low-SES schools was a public charter school that promoted a balanced curriculum between all content; therefore, they put a great deal of emphasis not only on reading, writing, and math but science and social studies as well. Each day, the students were instructed in all content areas. On the days that collection was taking place, I overheard two classrooms talking specifically about the American Flag and the 13 original colonies. When I approached the teacher and asked her what the students were learning in social studies, she stated it was the time in the term when they learned about colonial America and the organization of the United States of America. It was sheer coincidence that I was there on those days, and underscored that particular curricular moves in social studies. Many of the students from that school were able to articulate with great detail what a colony was and explained what they knew about The Stars and Stripes, when it is not known if they did not have this instruction before hand if they would have been able with such clarity to explain the concepts. Yet, this did not have a substantial impact on the overall results of the study.

The students' oral language proficiency, perhaps limiting their ability to articulate what they know, is a limitation of this study. Young children, such as the second-grade students in the study, are still developing oral proficiency in explaining their own ideas, and therefore may know more than they are able to articulate. The students gave answers such as, "I don't know" in response to many questions. At times this may have been due to not having background knowledge of the topic, but in some cases, it may have been that the students were unsure how to respond due to fear, confusion, or the inability to explain

what they were knew about the topic. To alleviate some of this, open-ended questions and follow-up prompts were utilized, leading to a final limitation of this study.

Also, the interviews were done entirely orally, with the exception of showing the title page spread. At times, the students struggled to understand the intended meaning of words in a question. One way to help students understand the intended word or the intended meaning of a multiple-meaning word would be the accompaniment of a written presentation. Students might recognize a word in print that they had not heard before. Providing a written word for them to look at may have helped students activate more information. For example, providing a written word might have been helpful when students were asked to tell what they knew about Chile (pronounced CHEE-leh). The written word might have triggered children's knowledge of Chile the country rather than chili a type of food.

Finally, a critical limitation of the study pertains to the nature of the questioning and follow-up prompt. The questions were designed to be very open-ended to allow for a variety of answers, yet in some cases the wording may have confused some children or rendered some of them unsure of how to respond, thus resulting in "I don't know" or very short sparse responses. Again, this may have been due to lack of knowledge, but for many it may have been due to confusion about the question or difficulty in explaining what they knew. To help alleviate some of that, a follow-up prompt of "can you tell me more" or "anything else" was asked after each question. For many of the students, both high- and low-SES, this was a helpful prompt to allow them to expand on what they had trouble explaining with their initial response. For others, the prompts seemed to make them feel as though the answer they had provided was not adequate. In that case, students often

seemed to ramble, getting lost in their ramblings and not being able to extend their original answer, but in fact adding many more misconceptions and inaccuracies. In the future, a refinement of the follow-up prompting may alleviate this issue.

Conclusion

This study was an expansion of a previous study looking at second-grade students' background knowledge in low-SES schools (Knight, 2012). Previous studies have looked at students' comprehension based on their background knowledge of the topic, both with young children (e.g., Pearson et. al., 1979), expert readers (e.g., Pritchard, 1990), and English learners (e.g., Alptekin, 2006). All of those studies focused on high- and low-knowledge readers without exploring factors that may contribute to their differential levels of knowledge. This study examined the effect SES may have on students' background knowledge of key concepts or terms important to comprehension of book selections in core reading programs, but not easily. This study shows that high-SES students, on average, possess greater content knowledge related to some key concept questions and overall selections, though on one selection is was low-SES students who had the advantage.. This difference may be one potential contributor to the literacy achievement gap. Researchers, CRP publishers, and classroom teachers may work to decrease this gap through focused instruction and activation and building of background knowledge as well as by considering changes in the assumptions of the texts themselves.

Children are unique. They have vastly different life experiences and background knowledge of diverse topics. School is a place where all of those differences should be equalized so that all children can be successful. For many children, this does not happen. School becomes the place where what they know about life and different topics doesn't

help them succeed, but instead hinders their success. Helping students connect what they know and what school texts assume they should know is a struggle for many, but in the end is vitally important for decreasing the literacy achievement gap between high- and low-SES students. Based on the results of this study, we are aware of one contributor to this gap and can begin to look explicitly at what can be done to decrease it.

APPENDICES

Appendix A

Consent and Permission Letters

Informed Consent for Background Knowledge Study—
Parent/Guardian Consent

Dear Parent/Guardian,

My name is Jennifer Knight. I am a doctoral candidate at Michigan State University. I am conducting my dissertation research study that looks at children's background knowledge related to key concepts and ideas from children's books found in schools. I believe the findings of this study will help inform what and how teachers teach about background knowledge while reading with young children. This letter is to request your permission for your child to be a part of this study by responding to a series of questions related to background knowledge.

Each child will participate in the interviews individually, outside of the classroom, at a time the teacher deems appropriate, with a researcher who has experience working with young children. Your child will be interviewed in two 20-minute sessions. The questions are related to how much your child knows about topics related to key concepts or ideas they might find in texts found in schools. For example, your child may be asked to tell how much they know about the topic of camping or violins.

Each session will be audiotaped, and written notes on each child's responses would be recorded. Also, from you, I would like to collect the information on the attached information form. Identification codes will be used on all records. Your child's name and your name will not be used. The data from this study and the master list of names and identification codes will be kept in separate locked filing cabinets. Only Michigan State University's Institutional Review Board (in the case of an audit), my faculty mentor (Nell K. Duke), and myself will have access to the information. You and your child's confidentiality will be protected to the maximum extent allowable by law. The research data will be retained for a period of 10 years after the close of the research study.

You can indicate your permission for your child to participate in this study by signing one copy of the attached letter and returning it to me. Your participation is entirely voluntary. There is no penalty for refusing to participate, and you may choose to stop participating at any time. If, after you sign and return the letter, you change your mind, simply let the researcher (Jen Knight, contact information is provided below) know, and your students will not be asked to participate. Regardless of whether you choose to allow your child to participate in the study, he or she and all children in the class will receive small tokens (for example pencils and stickers) after each study session. There are no known risks associated with participating in this study. In fact, in a similar, previous study I found that children seem to enjoy the individual attention and the opportunity to talk about what they know one-on-one with an interested adult.

If you have concerns or questions about this study, such as scientific issues or how to do any part of it, please contact the researcher (Jen Knight, information provided below) or

her advisor, the responsible primary investigator (Nell K. Duke, on leave from Michigan State University, currently at: University of Michigan, School of Education, Rm. 4109, Ann Arbor, MI 48109; 734-615-0586). If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 408 Circle Drive, 207 Olds Hall, MSU, East Lansing, MI 48824.

Thank you,

Jen Knight
Doctoral Candidate
Curriculum, Instruction, and Teacher Education
640 Farm Lane
118J Erickson Hall
Michigan State University
East Lansing, MI 48824
Knight32@msu.edu
517-388-4889 (cell)

By signing this form, I voluntarily agree to let my child participate in the study as outlined above, including the use of audio recording.

_____
(Signature)

_____ (Printed Name) _____(Date)

Background information about your child (this information will never be reported with names or other identifying information):

Child's Name: _____

Address: _____

Child's gender: Female Male

Child's ethnicity:
☐ American Indian/Alaskan Native
☐ Asian
☐ Black or African American
☐ Native Hawaiian or Other Pacific Islander
☐ White (Not Hispanic or Latino)
☐ Hispanic or Latino
☐ Multiracial (Having parents of more than one race)
☐ Member of race not listed above: _____

Child's Primary Language:

_____

Are there any other languages spoken in the home? If so, what language(s)?

_____

Parent/Guardian Education (please check highest level completed):

Mother or Guardian A
☐ 8th Grade School Graduate
☐ High School Graduate
☐ Associates Degree
☐ Bachelors/College Degree
☐ Masters Degree
☐ Doctoral Degree

Father or Guardian B
☐ 8th Grade School Graduate
☐ High School Graduate
☐ Associates Degree
☐ Bachelors/College Degree
☐ Masters Degree
☐ Doctoral Degree

☐ Other ☐ Other

Does your child qualify for free or reduced lunch?
☐ Yes
☐ No

Place an “X” next to any special services that your child receives:
☐ Special Education
☐ Title I for Reading
☐ Visits the Reading Specialist
☐ Gifted/Talented Services
☐ English as a Second Language
☐ Other service not listed above: _____

Is there anything else you would like me to know about your child?

Permission for Background Knowledge Study—
Principal Permission

Dear Principal,

My name is Jennifer Knight. I am a doctoral candidate at Michigan State University. I am conducting my dissertation research study that looks at children's background knowledge related to key concepts and ideas from children's books found in schools. I believe the findings of this study will help inform what and how teachers teach about background knowledge while reading with young children.

I request your permission for the students in your school to participate in this study. For the study, each student will respond to a series of interview questions related to how much the student knows about topics related to key concepts or ideas they might find in texts found in schools. The interviews would be done individually, outside of the classroom, at a time the teacher deems appropriate, with a researcher who has experience working with young children. Your students will be interviewed in two 20-minute sessions.

Each session will be audiotaped. The overall time commitment for this study is small. Teachers would agree to visitation times and students would participate in the 2 pull-out sessions. The names of your school, your teachers, and your students will not be used. Identification codes will be used on all records. The data from this study and the master list of names and identification codes will be kept in separate locked filing cabinets. Only Michigan State University's Institutional Review Board (in the case of an audit), my faculty mentor (Nell K. Duke), and myself will have access to the information. You, your teachers' and your students' confidentiality will be protected to the maximum extent allowable by law. The research data will be retained for a period of 10 years after the close of the research study.

You can indicate your permission for the students in your school to participate in this study by signing one copy of this letter and returning it to me, sealed in the self- addressed envelope provided. Your participation is entirely voluntary. There is no penalty for refusing to participate, and you may choose not to answer any question or to stop participating at any time. If, after you sign and return the letter, you change your mind, simply let the researcher (Jen Knight, contact information is provided below) know, and your students will not be asked to participate. If, after you sign and return the letter, you change your mind, simply let the researcher (Jen Knight, contact information is provided below) know, and your students will not be asked to participate. There is no penalty for refusing to participate. Each teacher that participates will receive an Amazon.com gift card. All children in the class, regardless of whether they participate in the study, will receive small tokens (for example pencils and stickers) after each session. There are no known risks associated with participating in this study. In fact, the students are likely to enjoy the individual attention and have the opportunity to talk about what they know one-on-one with an interested adult. Finally, allowing students to participate will help us to improve the quality of reading comprehension instruction in the future.

If you have concerns or questions about this study, such as scientific issues or how to do any part of it, please contact the researcher (Jen Knight, College of Education, 640 Farm

Lane, 118J Erickson Hall, MSU, East Lansing, MI 48824; 517-388-4889; knight32@msu.edu) or her advisor, the responsible primary investigator (Nell K. Duke, on leave from Michigan State University, currently at: University of Michigan, School of Education, Rm. 4109, Ann Arbor, MI 48109; 734-615-0586, nkduke@umich.edu). If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 408 Circle Drive, 207 Olds Hall, MSU, East Lansing, MI 48824.

Thank you,

Jen Knight
Doctoral Candidate
Curriculum, Instruction, and Teacher Education
640 Farm Lane
118J Erickson Hall
Michigan State University
East Lansing, MI 48824
Knight32@msu.edu
517-388-4889 (cell)

By signing this form, I agree to let the students in my school participate in the study as outlined above.

_____ (Signature) _____(School)

_____ (Printed Name) _____ (Date)

Permission for Background Knowledge Study—
Teacher Permission

Dear Teacher,

My name is Jennifer Knight. I am a doctoral candidate at Michigan State University. I am conducting my dissertation research study that looks at children's background knowledge related to key concepts and ideas from children's books found in schools. I believe the findings of this study will help inform what and how teachers teach about background knowledge while reading with young children. It may also inform the writing of children's books in the future.

I request your permission for the students in your classroom to participate in this study. For the study, each student will respond to a series of interview questions related to how much the student knows about topics related to key concepts or ideas they might find in texts found in schools. The interviews would be done individually, outside of the classroom, at a time you deem appropriate, with a researcher who has experience working with young children. Your students will be interviewed in two 20-minute sessions. Each session will be audiotaped. Your overall time commitment for this study is small. You would agree to visitation times and students would participate in the 2 pull-out sessions. Your name and your students' names will not be used. Identification codes will be used on all records. The data from this study and the master list of names and identification codes will be kept in separate locked filing cabinets. Only Michigan State University's Institutional Review Board (during an audit), my faculty mentor (Nell K. Duke), and the research team will have access to the information. You and your students' confidentiality will be protected to the maximum extent allowable by law. The research data will be retained for a period of 10 years after the close of the research. The data will be stored in a locked filing cabinet.

You can indicate your permission for your students to participate in this study by signing one copy of this letter and returning it to me, sealed in the self-addressed envelope provided. Your participation is entirely voluntary. There is no penalty for refusing to participate, and you may choose to stop participating at any time. If, after you sign and return the letter, you change your mind, simply let the researcher (Jen Knight, contact information is provided below) know, and your students will not be asked to participate.

For your willingness to participate, you will receive a gift certificate from Amazon.com worth $20.00. All children in the class, regardless of whether they participate in the study, will receive small tokens (for example pencils and stickers) after each session. There are no known risks associated with participating in this study. In fact, your students are likely to enjoy the individual attention and having the opportunity to talk about what they know one-on-one with an interested adult. Finally, allowing students to participate will help us to improve the quality of reading comprehension instruction in the future.

If you have concerns or questions about this study, such as scientific issues or how to do any part of it, please contact the researcher (Jen Knight, College of Education, 640 Farm Lane, 118J Erickson Hall, MSU, East Lansing, MI 48824; 517-388-4889; knight32@msu.edu) or her advisor, the responsible primary investigator (Nell K. Duke, on leave from Michigan State University, currently at: University of Michigan, School of Education, Rm. 4109, Ann Arbor, MI 48109; 734-615-0586, nkduke@umich.edu).

If you have questions or concerns about your role and rights as a research participant, would like to obtain information or offer input, or would like to register a complaint about this study, you may contact, anonymously if you wish, the Michigan State University's Human Research Protection Program at 517-355-2180, Fax 517-432-4503, or e-mail irb@msu.edu or regular mail at 408 Circle Drive, 207 Olds Hall, MSU, East Lansing, MI 48824.

Thank you,

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By signing this form, I agree to let the students in my classroom participate in the study as outlined above.

_____ (Signature) _____ (Position)

_____ (Printed Name) _____ (Date)

Appendix B

Child Assent

Today I am going to ask you some questions about a lot of different topics or things you might know about and find in books. This will help me learn about what boys and girls know about different things and how they might use what they know to help them understand books. Some of the questions I ask you might seem really easy and some of the questions might seem a lot harder. You just need to try your best and tell me what you know. As we talk, I will record you so I can listen again later if I need to. You may stop at any time. Would you like to answer some questions with me? Do you have any questions about what we are going to do today?

Student Name: _____

Date: _____

Appendix C

Task Administration Introductory Example Questions

Table 10

Task Administration Introductory Example Questions

Example Selection Title	Script	**Materials**
A Picture Book of Martin Luther King, Jr.	**1.a. Say:** (show title page of selection while saying): The title of this selection is *A Picture Book of Martin Luther King, Jr*. **1.b. Say:** Tell me what you know about protests. **1.c. Say:** What do you know about treating people fairly?	**Colored copy of title page**

Because you are going to answer questions for me today, I want to show you an example of what it will be like. I am going to think aloud as I ask each of the questions to myself. That way you can see what types of questions you may be asked and what it looks like to give your answers.

(Show title page): The title of this selection is *A Picture Book of Martin Luther King, Jr*.

The first question is: Tell me what you know about protests.

My answer: A protest is an objection to something. Usually something you disagree with. You might be upset that the school lunches no longer have chocolate milk as a choice everyday so you protest by bringing your own lunch instead of buying a lunch. Protests are done to show that you don't like what is happening and you want it to change.

The second question is: What do you know about treating people fairly?

My answer: Treating people fairly means you show them kindness and allow them to do the same or similar things that you do. You do not stop people from participating because of the way they look, talk, or act. If you treat people fairly, everyone gets the chance to try and works together.

Appendix D

Task Administration Protocol

Table 11

Task Administration Protocol

Ask each question, then after the student has finished, prompt with "anything else" or "can you tell me more about…" to help clarify the response. Do this for each question asked.

Selection Title	Script	**Materials**
1. The Elves and the Shoemaker	**1.a. Say:** (show title page of selection while saying): The title of this selection is *The Elves and the Shoemaker*.	**Colored copy of title page**
	1.b. Say: Tell me what you know about elves.	
	1.c. Say: What do you know about showing kindness to others.	
	1.d. Say: Tell me what you know about making shoes.	
2. Cross-Country Vacation	**2.a. Say:** (show title page of selection while saying): The title of this selection is *Cross-Country Vacation*.	**Colored copy of title page**
	2.b. Say: Tell me what you know about diaries.	
	2.c. Say: What do you know about vacations.	
	2.d. Say: Tell me what you know about museums.	
3. Just Like Josh Gibson	**3.a. Say:** (show title page of selection while saying): The title of this selection is *Just Like Josh Gibson*.	**Colored copy of title page**
	3.b. Say: What do you know about baseball.	
	3.c. Say: Tell me what you know about girls and boys playing sports together.	

Table 11 (cont'd)

	3.d. Say: Who is Josh Gibson?	
4. A Birthday Basket for Tia	**4.a. Say:** (show title page of selection while saying): The title of this selection is *A Birthday Basket for Tia*.	**Colored copy of title page**
	4.b. Say: Tell me what you know about celebrations.	
	4.c. Say: What do you know about surprise parties?	
	4.d. Say: Tell me what you know about piñatas.	
5. The Twin Club	**5.a. Say:** (show title page of selection while saying): The title of this selection is *The Twin Club*.	**Colored copy of title page**
	5.b. Say: Tell me what you know about twins.	
	5.c. Say: What is email?	
	5.d. Say: What do you know about clubs?	
6. Exploring Space with an Astronaut	**6.a. Say:** (show title page of selection while saying): The title of this selection is *Exploring Space with an Astronaut*.	**Colored copy of title page**
	6.b. Say: Tell me what you know about space shuttles.	
	6.c. Say: What are experiments?	
	6.d. Say: What is a telescope?	
7. The Strongest One	**7.a. Say:** (show title page of selection while saying): The title of this selection is *The Strongest One*.	**Colored copy of title page**
	7.b. Say: Tell me what you know about ants being strong.	

Table 11 (cont'd)

8. New Hope	**8.a. Say:** (show title page of selection while saying): The title of this selection is *New Hope*.	**Colored copy of title page**
	8.b. Say: What is an axle?	
	8.c. Say: Tell me about life on the frontier.	
	8.d. Say: What are settlements?	
9. Jingle Dancer	**9.a. Say:** (show title page of selection while saying): The title of this selection is *Jingle Dancer*.	**Colored copy of title page**
	9.b. Say: What are jingles?	
	9.c. Say: Tell me what you know about powwows.	
	9.d. Say: What do you know about Jingle Dancers?	
STOP SESSION ONE—after a short break, finish the remaining questions.		
10. April and Her Family	**10.a. Say:** (show title page of selection while saying): The title of this selection is *April and Her Family*.	**Colored copy of title page**
	10.b. Say: What is calligraphy?	
	10.c. Say: Tell me what you know about Chinese Americans.	
11. For the Love of the Earth	**11.a. Say:** (show title page of selection while saying): The title of this selection is *For the Love of the Earth*.	**Colored copy of title page.**
	11.b. Say: What is pollution?	
	11.c. Say: What does it mean to take care of the Earth?	
	11.d. Say: Tell me how we take care of the Earth.	

Table 11 (cont'd)

12. Corduroy	**12.a. Say:** (show title page of selection while saying): The title of this selection is *Corduroy*.	**Colored copy of title page.**
	12.b. Say: What is a department store?	
	12.c. Say: Tell me about watchmen or security guards.	
13. Where on Earth is my Bagel	**13.a. Say:** (show title page of selection while saying): The title of this selection is *Where on Earth is my Bagel*?	**Colored copy of title page.**
	13.b. Say: What is a bagel?	
	13.c. Say: Tell me about recipes.	
	13.d. Say: What do you know about Korea.	
14. My Name is Gabriela	**14.a. Say:** (show title page of selection while saying): The title of this selection is *My Name is Gabriela*. *The Life of Gabriela Mistral.*	**Colored copy of title page**
	14.b. Say: Who is Gabriela Mistral?	
	14.c. Say: Tell me what you know about Chile.	
	14.d. Say: Tell me about the Nobel Prize.	
	14.e. Say: What do you know about awards.	
15. Arthur's Reading Race	**15.a. Say:** (show title page of selection while saying): The title of this selection is *Arthur's Reading Race*.	**Colored copy of title page**
	15.b. Say: What does it mean for something to be 'as easy as pie'.	
16. Dogs	**16.a. Say:** (show title page of selection while saying): The title of this selection is *Dogs*.	**Colored copy of title page**
	16.b. Say: What is a litter of puppies?	

Table 11 (cont'd)

17. Grace for President	**17.a. Say:** (show title page of selection while saying): The title of this selection is *Grace for President*.	**Colored copy of title page**
	17.b. Say: Tell me about the election process.	
	17.c. Say: What do you know about democracy.	
18. Red, White and Blue: The Story of the American Flag	**18.a. Say:** (show title page of selection while saying): The title of this selection is *Red, White, and Blue: The Story of the American Flag*.	**Colored copy of title page**
	18.b. Say: Tell me what you know about colonies.	
	18.c. Say: Tell me what you know about The Stars and Stripes.	

Appendix E

Coding Manual

Table 12

Coding Manual

Concept	Scoring	Examples
Elves Tell me what you know about elves.	Must haves: • Small • Help others May include: • Fictional creature • Human like/people Pointy ears • Curved shoes • Wear green • Hard workers • Magical • **To receive a 4 must include that elves help others and are small along with any of the other ideas in the list without any misconceptions present.** • **To receive a 3 must include that elves are either small or helpful but not both and any other items from the list without any misconceptions present.** • **To receive a 2 must include at least one item from the list without any misconceptions present.** • **To receive a 1 student answers with one of the following: I don't know, shrugs, or gives no response.**	0-elves help Santa makes shoes for people 20423 2-have pointy ears 20428 2-made up things, Santa elves but not real 20331 3-Santa's elves. Help people lots. Wear shoes with curves on tip, wear things around their neck (idea gotten from book cover), they are never mean 10206 4-people, magical, pointy ears, help people like Santa 10102

Table 12 (cont'd)

	• **To receive a 0 the only information given is a misconception.**	
Showing kindness to others What do you know about showing kindness to others?	• By listening • By helping in some way • Feeling for the other person • Treating others how you want to be treated • Giving of your time • By being nice to them • Being friendly to them • **To receive a 4 must include showing others that you care about them and at least 2 items from the list above without any misconceptions present.** • **To receive a 3 must include at least 2 ideas from the list above without any misconceptions present.** • **To receive a 2 must include 1 idea from the list above.** • **To receive a 1 student answers with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-If they hurt you you can help. If you are being bullied, can tell adults and they can stop the fight 10209 2-kind, say please and thank you, manners 10205 2-If I show kindness show kindness back 20423 3-be nice and not rude…be nice even if your friends be mean to you. Apologize if you are rude 10206 4-be nice and care for them, be a friend and be kind and be nice to them 10102

Making shoes
Tell me what you know about making shoes.
	• Made out of different ingredients
	  o Leather
	  o Plastic
	  o Rubber
	• Made with any designs or colors
		0-hard 10101
		2-make shoes got to picture in mind—leather, open toed, flip flops, Nikes, got to know what you want to make 10205

Table 12 (cont'd)

	• A cobbler/shoemaker makes them with a mold	
	• They usually have laces, sides, soles, and a tongue (get credit if they mention any of these items) • You sew and stitch shoes together • Discusses ways to make different shoes • Hard or difficult to make	3-laces or Velcro, lots of colors, can be high heels, flip flops, tennis shoes, sketchers. Can have silver things or any design on shoes 10206
	• **To receive a 4 must include that you stitch and sew shoes together and at least 2 ideas from the list above without any misconceptions present.** • **To receive a 3 must include at least 2 ideas from the list above without any misconceptions present.** • **To receive a 2 must include 1 idea form the list above without any misconceptions present.** • **To receive a 1 student answers with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	
Diaries Tell me what you know about diaries.	• A book/multi media where you keep record of events in your life or your thoughts • Usually private and have a lock and key • Sometimes called a journal • Girls usually have them • Something you write in	2-write in them 10101 2-private, different colors, write about secrets 20423 3-girls use to write all personal and secret things. Girls have diaries, boys have not a book—call it a journal 20424

Table 12 (cont'd)

	To receive a 4 must have that it is a book/ multi media where you keep record of events in your life or your thoughts plus any of the remaining ideas without any misconceptions present. • **To receive a 3 must have 2 ideas without any misconceptions present.** • **To receive a 2 must have 1 idea without any misconceptions present.** • **To receive a 1 student answers with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	4-things you write your feelings or what you did today, someone reads it, write secrets in and not let anyone see it 10102
Vacations What do you know about vacations?	• A trip or holiday away from home • Can be an extended/short period of time • Time off school or work • Go with family and friends • Associated with fun Lists a place you can go or visit • **To receive a 4 must know that a vacation is a trip you take with family/friends/by yourself away from home for an extended period of time plus any of the remaining items without any misconceptions present.** • **To receive a 3 must know that a vacation is time off of work/school and any other idea without any misconceptions present.**	2-long sometimes if they are your Grandma's house you can walk or ride your bike 20321 3-go somewhere when schools out, might catch a plance and go on vacation 10102 4-when people go on vacation and go to hot or cold or sunny or not sunny…go on plane and fly to places…some go by car (scared to fly) and go to different places 20424

Table 12 (cont'd)

	• **To receive a 2 must list 1 item without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	4-fun family thing you go to fun places like the beach. You do fun activities like crafts to do. It's fun spend time with your family and friends 10206
Museums Tell me what you know about museums.	• **To receive a 4 must have that a museum is a building or place where objects of historical, scientific, artistic, or cultural interest are stores and exhibited and list at least 1 item to be found at a museum, without any misconceptions present.** • **To receive a 3 students will say it is a place to go see stuff but not explain that it is historical, scientific, artistic, or cultural and list some things to see, without any misconceptions present. To receive a 2 student only lists things you can see at a museum.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	2-fossils of dinosaurs or bunch of stuff (reptiles) some have mummies 10209 3-keep special stuff like fossils and mummy, learn lot about museums 10102 4-they have lots of different stuff, valuable stuff (like Princess Di stuff), exciting things go on…may not have lot of stuff but its cool 10206

Table 12 (cont'd)

Baseball What do you know about baseball?	• **To receive a 4 must include: concept that baseball is a game/sport, concept of homeruns, batting, and catching balls without any misconceptions present.** • **To receive a 3 must include: concept that baseball is a game/sport and list at least one other idea about baseball, without any misconceptions present.** • **To receive a 2 must list at least one idea about baseball, without any misconceptions present. To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-really fun, hard 10101 2-pitcher throws ball someone who catches. Coach yells, "strike" 1-4. Strike 4 you are out of there. Hit ball 20321 3-game with ball and base thing. Got to run round 4 squares to get home 20331 3-sport…play…have to practice to get good. 3 kinds of sports—football, soccer, or basketball. Something that's a ball is made in a factory. Use wood of a tree to make bat or metal. Use leather to make glove. 20424
Girls and boys playing sports together Tell me what you know about girls and boys playing sports together.	• **To receive a 4 must say something about the fact that some people think girls and boys play sports together but other people think that they are on separate teams and list sports boys and girls can play together, without any misconceptions present.** • **To receive a 3 student says something about boys and girls play different sports and at lists at least one sport, without any misconceptions present.** • **To receive a 2 student lists sports boys and girls can play without any misconceptions.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.**	0-get along 10101 3-could be against each other, mostly girls play softball, mostly boys play baseball 10102 4-boys play football, girls to cheerleader for boys. Boys play baseball, bunch of girls play softball, boys and girls play soccer 10206 4-girl can play football or basketball. Do just like boys and play hard. Some girls don't like playing rough but boys do 20424

Table 12 (cont'd)

	• **To receive a 0 the only information given is a misconception.**	
Josh Gibson Who is Josh Gibson?	• **To receive a 4 must say Josh Gibson is a Negro League baseball player known for hitting homeruns, without any misconceptions present.** • **To receive a 3 must say Josh Gibson is a famous baseball player, without any misconceptions present.** • **To receive a 2 must say Josh Gibson is an important person, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-girls who played baseball 20423 3-famous baseball player 20331 4-famous baseball player like Babe Ruth, hits homeruns, knows Babe Ruth 10102
Celebrations Tell me what you know about celebrations.	• **To receive a 4 must include that a celebration is a special occasion or party and list at least 2 different celebrations, without any misconceptions present.** • **To receive a 3 must include that a celebration is a special occasion or party and list at least 1 celebration, without any misconceptions present.** • **To receive a 2 lists only different celebrations without any misconceptions present.** •	0-really fun 10101 2-birthday, Christmas, Halloween, almost every month has celebrations 10209 3-people celebrate Christmas, celebrate lots of stuff and being thankful, give presents cuz you were nice like Valentine's Day 10102

Table 12 (cont'd)

	• **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	4-Christmas celebrate it—I'm proud of Christmas, it's God's birthday. Valentine's Day. Celebration is like a party 10205 4-graduate or have parties. You have fun like Christmas and Halloween. Lots of things to do with family, helping together 10206
Surprise Party What do you know about surprise parties?	• **To receive a 4 must include that it is a party where the guest of honor does not know there is a party as well as one aspect of surprising (e.g., yelling surprise, hiding, preparing for surprise), without any misconceptions present.** • **To receive a 3 students will say it is a place to go see stuff but not explain that it is historical, scientific, artistic, or cultural and list some things to see, without any misconceptions present.** • **To receive a 2 student only lists things you can see at a museum.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	2-walk in door, get surprised 10101 3-when somebody birthday you surprise with gifts and toys and clothes. Turn out lights and then pop out 20428 4-had one for my friend—we got in the house and parked away from the house and he thought we were not there. Grandma came in and we jumped out and said 'happy birthday' 10205
Piñatas Tell me what you know about piñatas.	• **To receive a 4 must include the following: container filled with candy/toys that you hit with bat or stick while blindfolded during a celebration, candy falls out and you collect it,**	2-break open, candy falls out 10101

Table 12 (cont'd)

	without any misconceptions present. • **To receive a 3 must include the following: container filled with candy that you hit and candy falls out, without any misconceptions present.** • **To receive a 2 must include one of the following: container filled with candy, candy falls out, you are blindfolded, hit it with stick or bat, grab the candy that falls out, happens during party without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	3-animal you put candy in it and start to hit it until the candy falls out 20428 4-made out of newpaper, tie to stick, put candy inside, string pull it up and down, hit it with stick 20331 4-something you have at a birthday party. Get a bat and hit piñata and candy falls if you bust it 10205
Twins Tell me what you know about twins.	• Can be identical or fraternal • Like the same things • Siblings • Can both be girls or both be boys or one of each • Share the same birthday • Look alike (e.g.; hair, clothes, facial features) • **To receive a 4 must include that twins are siblings that were born at the same time and look alike, along with any other items listed above, without any misconceptions present.** • **To receive a 3 must include that twins look alike and include any other item listed, without any misconceptions present.**	2-have same hair, wear same clothes and shoes 20428 3-look same, dress same 20423 4-look alike, same age, born same time, born at actual same time taken out of mom's stomach at the same time, some done at separate time but the same day 10205

Table 12 (cont'd)

	• **To receive a 2 must include at least one item from the list above without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	
Email What is email?	• **To receive a 4 must include concept that email is a letter/message written and sent on the computer or phone to another person, without any misconceptions present.** • **To receive a 3 must include that email is a letter/message found on the computer, without any misconceptions present.** • **To receive a 2 must include that email is a letter/message, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-a number? 20428 3-when on computer typing can send email to somebody 20331 4-like an envelope except it comes in the computer, you send it and a person responds back 10102 4-type on computer and send to other computer 10209
Clubs What do you know about clubs?	• Names type of club • Membership into club • Members do things together • Certain requirements to be in club • Sometimes they are secret • Have clubhouses	0-people build and go in it 20321 2-people invite other people to be in it 10101

Table 12 (cont'd)

• **To receive a 4 must include that a club is a group of people who meet to do things they have in common and list at least 2 items from the list above, without any misconceptions present.** • **To receive a 3 must include that a club is a group of people who meet to do things in common and list at least 1 item from the list above, without any misconceptions present.** • **To receive a 2 must include at least 1 item from the list above, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	3-reading club—you bring a book every day. Lots of people have an activity want to do it and share what they brought 10206
• They have lots of buttons and controls • Launched into space • Lands like a glider • Makes many journeys into earth's orbit • Has boosters on the bottom • Astronauts fly in them • Rocket/spaceship • **To receive a 4 must include that it is a rocket/spaceship and 2 or more items from the list above, without any misconceptions present.** • **To receive a 3 must include that it is a**	0-big 10101 2-I think it's a ship—there is space food they have to eat, and shower and bathroom in there 10209 2-some kind of thing that blasts you up to space 20321 3-big ships that go up into space. At back on the bottom is a booster. Makes it go up into sky 20424

Table 12 (cont'd)

	rocket/spaceship and 1 item from the list above, without any misconceptions present. • **To receive a 2 must include any item from the list above, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	
Experiments What are experiments?	• **To receive a 4 must include that it is a scientific test or invention of some kind and one possible thing that may be tested or invented, without any misconceptions present.** • **To receive a 3 must include that it is a scientific test or something being made, without any misconceptions present.** • **To receive a 2 must include that it is about science, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-people find stuff never seen before 10101 2-things that scientists do—mix stuff, look at stuff, see what stuff is made of, even make stuff 10205 3-test something 10209 4-things you have in tubes. Test on people, animals, things, or people 20331
Telescope What is a telescope?	• **To receive a 4 must include that it is something you look through to help you see things far away (e.g., stars, moon, or planets). Includes the concept that it makes things bigger that are far away, without any misconceptions present.** • **To receive a 3 must include that it is something**	0-little thing. Mirror. Look in to see something little 20423 2-look through to see stars 20321

Table 12 (cont'd)

	you look through but does not share what you look at, without any misconceptions present. • **To receive a 2 must only mention what you can see through it (e.g., stars, moon, or planets).** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	3-look through, makes stuff bigger 10101 4-something you use to look at moon, stars, or stuff far away so you can see it better. Looks like it is right next to you 10205
Ants being strong Tell me what you know about ants being strong.	• **To receive a 4 must include that strong ants can carry items that are bigger and heavier than they are and list one item they carry, without any misconceptions present.** • **To receive a 3 must include that strong ants can carry items that are bigger and heavier than they are without any misconceptions present.** • **To receive a 2 must include that strong ants are strong without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-they stand up for other people and watch out for themselves 20321 2-ants can be strong—be different—different kinds black, red, fire ants 20424 3-carry big things around 10101 4-lift like little rocks when they're heavy 20428
Life on the Frontier Tell me about life on the frontier.	• People lived far away from towns • People lived on farms • People raised food and animals to eat • People rode horses and wagons, there were no cars • **To receive a 4 must include that life on the**	0-life—when you live and you're crying 20331 4-long ago—was no houses or cars—had to ride horses—only thing to eat was animals, fruits, and veggies 20424

Table 12 (cont'd)

	frontier happened long ago and at least 2 other ideas from the list above, without any misconceptions present. • **To receive a 3 must include that life on the frontier happened long ago and at least one other idea from the list above, without any misconceptions present.** • **To receive a 2 must include that life on the frontier happened long ago, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	
Settlements What are settlements?	• **To receive a 4 must have that a settlement is a place where people who share common backgrounds organize a community, without any misconceptions present.** • **To receive a 3 must include that a settlement is a community, without any misconceptions present.** • **To receive a 2 must include that a community is a place you settle without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-if teacher tells you to settle down—you settle down, taking a nap if being too hyper 10205 0-something is wrong 20423 3-very hard. Make a civilization with other people 20422

Table 12 (cont'd)

Jingles What are jingles?	• **To receive a 4 must include that jingles are metal objects/bells that make a ringing sound when shaken or knocked together that are used in Native American dances, without any misconceptions present.** • **To receive a 3 must include that jingles are metal objects/bells that make a ringing sound when shaken or knocked together, without any misconceptions present.** • **To receive a 2 must include that jingles are bells, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	2-little bells 20321 3-bells that have tiny ball inside when shake them they go dink like a tink 20331 3-something in a bell when shake it around hits hard metal and when it makes noises. Sounds like jingles 20424 4-make sounds, clank together and make sound, dance with jingles, makes lots of sound 10102
Powwows Tell me what you know about powwows.	• **To receive a 4 must include that a powwow is a Native American dance where N.A. dance special dances (names different dances or activities), without any misconceptions present.** • **To receive a 3 must include that a powwow is a Native American dance, without any misconceptions present.** • **To receive a 2 must include that a powwow is a dance, without any misconceptions.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a**	0-dog? 20423 2-dance 20428 2-Jingle. Get all dressed up and make-up/face paint. Lots of people dance in circles and dance by themselves 10206

Table 12 (cont'd)

	misconception.	
Jingle Dancer What do you know about Jingle Dancers?	• Dance in the "Jingle Dance" • Dance at a powwow • They are girls • Dress is covered in jingles that make a tink sound when dancing • **To receive a 4 must include that jingle dancers are Native American dancers and at least 2 items from the list above, without any misconceptions present.** • **To receive a 3 must include that jingle dancers are Native American dancers and at least 1 item from the list above, without any misconceptions present.** • **To receive a 2 must include jingle dancers are dancers, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-call belly dancers. They dance and have thing attached to their fingers and every time they clink them they ding 20331 2-dancer who dances with jingle bells and do dances with bells 2424 2-they dance 20321
Calligraphy What is calligraphy?	• Use a brush to write with • Use black ink • Use special paper to write on • Used in Chinese writing to form characters • **To receive a 4 must include calligraphy is a special kind of writing and at least 2 items from the above list, without any misconceptions**	0-statue 10206

Table 12 (cont'd)

	present. • **To receive a 3 must include that calligraphy is a special kind of writing, without any misconceptions present.** • **To receive a 2 must include that it has something to do with writing of some sort, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	
Chinese Americans Tell me what you know about Chinese Americans.	• **To receive a 4 must include that Chinese Americans are born in America to Chinese parents, speak and do both English and/or Chinese things, without any misconceptions present.** • **To receive a 3 must include that Chinese Americans live in America and do Chinese things (e.g., write, speak Chinese) and do some American things (speak English), without any misconceptions present.** • **To receive a 2 must include that Chinese Americans speak English and/or Chinese.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-have Great Wall of China to protect them, have an emperor 10102 2-speak American or Chinese 20423 3-In America, speak Chinese and American. Born Chinese person, know how to write Chinese 20331 3-write in Chinese. Live in New York in a city called Chinatown 20424

Table 12 (cont'd)

Pollution What is pollution?	• **To receive a 4 must include that pollution is a harmful substance that hurts the earth and name one way to pollute, without any misconceptions present.** • **To receive a 3 must include that pollution is nasty or dirty to the earth, without any misconceptions present.** • **To receive a 2 must include that pollution impacts the earth.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-something that grows and if its winter and something dies it will grow again in the spring 20424 2-stuff you breathe 10206
Take care of the Earth What does it mean to take care of the Earth?	• People make sure the world is clean • Making sure people don't pollute or litter • Using the things in the world without wasting them (e.g., water, animals, plants and trees) • When you recycle and reuse things • Plant trees, flowers, and gardens • Keeping clean • Conserving energy • **To receive a 4 must have at least 3 items from the list above, without any misconceptions present.** • **To receive a 3 must have at least 2 items from the list above, without any misconceptions present.**	0-so that earth can look good 20428 2-pick up stuff and help the earth 20423 2-recycle things 10101

Table 12 (cont'd)

	• **To receive a 2 must have at least 1 item from the list above, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	3-when people throw garbage on the ground and in other people's yards so they have to pick it up. Reuse and recycle. Throw things away, make more landfills and takes up the earth 20424 4-don't litter, shouldn't smoke, shouldn't use electricity, should plant trees and take care of the earth 10102 4-recycling, planting trees, no buying things, not using all the water or lights, ride bikes or scooters so not using gas 10206 0-not be mean and stomp on ground and dig deep down to the center of the earth 10102
How we take care of the earth Tell me how we take care of the earth.	• People picking up trash and litter • Recycling things they don't want anymore • Using the things in the environment carefully so they don't get used up (e.g., water, forests, green areas) • Planting trees, flowers, and gardens • Use less energy/gas • Clean up the pollution (e.g., water, air, land) • Composting • **To receive a 4 must have at least 3 items from the list above, without any misconceptions present.** • **To receive a 3 must have at least 2 items from the list above, without any misconceptions**	2-help the earth so we can have a better one and if we don't clean up or earth, soon it be flooded in trash, so we have to pick it up 10205 2-by recycling 20423 3-recycle, not throw stuff away, if tree cut down, plant a new one, keep throwing stuff away makes the earth a world of garbage 20424

Table 12 (cont'd)

	present. • **To receive a 2 must have 1 item from the list above, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	
Department Store What is a department store?	• **To receive a 4 must include that it's a large store that sells a variety of items. Must list at least 2 things that are sold at the store, without any misconceptions present.** • **To receive a 3 must include that it's a store with lots of items for sale, list at least 1 things that is sold, without any misconceptions present.** • **To receive a 2 must include that it's a store or list something that is sold there, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-store that sells apartments to live in and all kinds of stuff 10205 2-store, you buy stuff and it don't cost that much 10102 2-sell stuff you need to eat, cover self with, sleep with, work on house with 20331
Watchmen or Security Guard Tell me about watchmen or security guards.	• **To receive a 4 must include guarding/watching stores to keep people from stealing, without any misconceptions present.** • **To receive a 3 must include guarding/watching things in a store, without any misconceptions present.**	0-someone who works at airport or very important building. They put stuff in scanning machine 20424 2-they watch things people want to steal 10101

Table 12 (cont'd)

	• **To receive a 2 must include guarding things, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	3-place closes (like McD's)—very important stores cops come and guard the door with cop dogs, they are trained very well 10205 4-protect things and make sure no one comes in to steal money—like at a bank 10102 0-something you eat, I think it's a beverage 10102 2-something you eat 20321
Bagel What is a bagel?	• **To receive a 4 must include that a bagel is bread boiled and then baked, shaped like a donut, and something you eat, without any misconceptions present.** • **To receive a 3 must include that a bagel is bread that is shaped like a donut that you eat, without any misconceptions present.** • **To receive a 2 must include that a bagel is bread/something you eat, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	3-breakfast things—usually eat it for breakfast, put cream cheese on it, all flavors (names 3 different bagel flavors) 10205 3-something you eat and put cream on it. It's made out of bread. The outside is hard and the inside is soft. You put strawberry cream on it 10206
Recipes Tell me about recipes	• **To receive a 4 must include that a recipe is a set of directions and ingredients for making something and one thing you can make, without any misconceptions present.** • **To receive a 3 must include that a recipe is something you make and one thing you can**	0-story about a girl who has big pot and dumps food/ingredients in it 20331 2-read 'um and make stuff with 'um 10101

Table 12 (cont'd)

	make, without any misconceptions present. • **To receive a 2 must include that a recipe is something you make, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	3-mom cooks—brings out recipe book to show you how to do it step by step 10205
Korea What do you know about Korea?	• **To receive a 4 must include that Korea is a country in eastern Asia divided into North and South Korea, without any misconceptions present.** • **To receive a 3 must include that Korea is a country in eastern Asia, without any misconceptions present.** • **To receive a 2 must include that Korea is a country, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-it looks like she's a nice girl 20321 2-kind of like a country 10206 4-state. Part of Asia, in between China. Korea place usually walk. Get long sticks, tie ropes and use buckets like bowls and walk to market with hats on and take stuff to families 20424
Gabriela Mistral Who is Gabriela Mistral?	• **To receive a 4 must include Gabriela is a Chilean woman who won the Nobel Prize, without any misconceptions present.** • **To receive a 3 must include that Gabriela is a famous woman, without any misconceptions present.**	0-girl who loves to read 10206 0-the author 20428

Table 12 (cont'd)

	• **To receive a 2 must say Gabriela is an important person, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	
Chile Tell me what you know about Chile	• **To receive a 4 must include that Chile is a country in southwestern South America, without any misconceptions present.** • **To receive a 3 must include that Chile is a country, without any misconceptions present.** • **To receive a 2 must include Chile is a place, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-it's good, it's a food 20321 0-something you do that is helpful to others 20423
Nobel Prize Tell me about the Nobel Prize	• **To receive a 4 must include that the Nobel Prize is an annual prize for (e.g., literature, physics, chemistry, medicine, economics, and peace), without any misconceptions present.** • **To receive a 3 must include that the Nobel Prize is an annual prize given to famous people, without any misconceptions present.** • **To receive a 2 must include that the Nobel Prize is a prize, without any misconceptions present.**	0-somebody wants to win something but they didn't other people did 20331 2-something you win in a competition, a contest to see if you are good at it 10206

Table 12 (cont'd)

	• **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	3-Martin Luther King was Nobel Peace Prize. Got a medal from a white man 20423
Awards What do you know about awards?	• **To receive a 4 must include that an award is a prize or other mark of recognition (e.g., medal, trophy, certificate) given in honor of an achievement, without any misconceptions present.** • **To receive a 3 must include that an award is a prize or other mark of recognition (e.g., medal, trophy, certificate), without any misconceptions present.** • **To receive a 2 must tell one way you earn an award, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	2-an art award if you are good at making art 10206 3-what you get if you earn it. If you are quiet in class, the teacher gives you a lollipop 10102 3-if win something get award. The thing you do best 20331
'as easy as pie' What does it mean for something to be 'as easy as pie'?	• **To receive a 4 must have something is done with little difficulty and use the term easy to describe it, without any misconceptions present.** • **To receive a 3 uses the word easy and lists at least one thing that is easy to do, without any misconceptions present.**	0-do cartwheel 10209 0-easy to bake a pie 20423 2-super duper easy 10102 3-say 2+2—you say easy as pie that's so easy 10205

Table 12 (cont'd)

	• **To receive a 2 uses word easy but does not list anything that is easy, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	4-done it a million times. Easy to do. Don't have to learn the basics 20331
Litter of puppies What is a litter of puppies?	• **To receive a 4 must include that a litter of puppies is a group of dog babies from the same birth, without any misconceptions present.** • **To receive a 3 must include that a litter of puppies is a group of dog babies, without any misconceptions present.** • **To receive a 2 must include a number for dog babies or lots of puppies. May include dogs to describe animal, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-destroyful and pee on grass 20331 2-whole bunch of dogs 10205 3-whole bunch of puppies 4-a girl dog had a litter. It means she is having lots of puppies 10206
Election process Tell me about the election process.	• Vote for someone to be the one in charge (e.g., class president, president of USA) • Candidate/person running makes campaign speeches, slogans, and promises • Representatives of the states are assigned electoral votes to vote for candidate	0-It's about how details come together. How an author/illustrator come together to make a book 10206 2-election, you can pick

Table 12 (cont'd)

• Winner of election receives the most votes • Voters use ballots to vote • **To receive a 4 must include the concept of voting for someone to be in charge and at least 1 other idea from the above list, without any misconceptions present.** • **To receive a 3 must the concept of voting for someone to be in charge, without any misconceptions present.** • **To receive a 2 must include that people vote, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	somebody by voting and they wind up with the most votes 102205 3-voting for person for president. Barack Obama voted for president 10209 4-one person and another are voted on cards and person has to pick. When President Obama was voted he got the most votes. Get more votes, elected president, and get to live in White House 20424 4-Um, well what you do is if you're 18 or older you can vote. And you take the ballot and you write if you want this president or the other president and you put it in the ballot box. And then after that day, you um count the ballots. The things they wrote the paper on who they want the president on. Whoever has the most, wins and they get to e president 101003

Table 12 (cont'd)

Democracy What do you know about democracy?	• A political system where the citizens elect people to represent them • Voting • Form of government • People having an equal voice in making decisions • **To receive a 4 must include that democracy is a form of government and people have an equal voice in making decisions about their lives, and any other items from the list above, without any misconceptions present.** • **To receive a 3 must include 2 items from the list above, without any misconceptions present.** • **To receive a 2 must include at least 1 item from the list above, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-someone who is really smart 10206 2-when somebody tries to rule or something 20423 3-Democracy can maybe be about voting or like how someone wants someone to vote but the other person doesn't. They can get in a little fight. And maybe be called democracy and it could be maybe like someone wants that persona and someone wants that person too so they both agree, but then another person doesn't so all three of them get in a fight and it doesn't get worked out maybe 102109 3-Democracy is if you are a democracy. If you live in a democracy country, you are living in a free country. Or if you are a democrat, you are somebody who stands for democracy 205105
Colonies	• **To receive a 4 must include that the colonies are the 13 original colonies/states of USA that were under the control of another country, without any misconceptions present.**	0-go to school every day 20423

Table 12 (cont'd)

Tell me what you know about colonies.	• **To receive a 3 must include that the colonies are the 13 original colonies/states of the USA, without any misconceptions present.** • **To receive a 2 must includes ideas that colonies are an area of the USA a long time ago or a group of people/animals that live together, without any misconceptions present.** • **To receive a 1 students answer with one of the following: I don't know, shrugs, or gives no response.** • **To receive a 0 the only information given is a misconception.**	0-separator or wall like Great Wall of China 20424 4-Well, colonies, back in the day we had 13 colonies. Those colonies were 13 stripes on each. It represents the 13 colonies that we had. Nut now they had war for independence and then they made the United States of America. They had the United States of the colonies. Then they fought for our war and they fought for independence and they won. Then they made the United States, but now we have 50 colonies but it was 13 so the stars represent 50 states. Colonies is like sections of people that fight. They didn't always fight, but they fight for things that they really love and really, really need like independence. And that they didn't want Great Britain king so they went to war over their things (I learned that in Social Studies) 205103 0-you can see them when outside and camping can see them 20428
The Stars and Stripes Tell me what you know	• Another name for the USA flag • 50 stars=states • 13 stripes=13 original colonies	

Table 12 (cont'd)

about The Stars and Stripes	• Stripes are red and white • Stars are white on a blue background	2-red, white, blue. Lots of stars on the blue part. Red, white, blue cuz red stripes and lots of white and a little blue. Red cuz its state color 10102 4-The stars and stripes on the American flag, there is 50 stars I think and the stripes are read and white. But the stars are white and the background of the stars are blue and that is the American flag. The American flag is really, you have to be really careful with it. Cuz if you are taking it down and it touches the ground you have to throw it away 102109

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