9-2020

Teacher Knowledge, Beliefs, and Instructional Practices in Early Literacy: A Comparison Study

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TEACHER KNOWLEDGE, BELIEFS AND INSTRUCTIONAL PRACTICES IN EARLY LITERACY: A COMPARISON STUDY

By

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A DISSERTATION

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Education

Major: Educational Administration

Under the Supervision of Dr. C. Elliott Ostler

Omaha, Nebraska

September, 2020

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ABSTRACT

TEACHER KNOWLEDGE, BELIEFS AND INSTRUCTIONAL PRACTICES IN EARLY LITERACY: A COMPARISON STUDY

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This comparison study examined differences in knowledge, beliefs and instructional practices regarding early literacy instruction between first grade teachers (n = 17) who received extensive content specific professional development (n = 13) and teachers who did not (n = 4). Participants were from 14 elementary ethnically and socioeconomically diverse schools in a large, urban school district in the Midwest United States. By using a comparison research design, this study was able to determine that significant differences in teachers' concept and skill knowledge (p = .000) can be explained by the provision of content specific professional development, with differences in teacher contextual early literacy knowledge approaching significance (p = .06).

The use of a contextual knowledge survey in this study allowed for comparisons between teacher belief ratings and self-report of practices that teachers would elect to use in given situations. Similar to other research studies, this study found that overall teachers have positive beliefs regarding code-based instructional practices. However, teacher self-report on the contextual teacher knowledge survey surfaced inconsistencies between belief ratings for code-based items and the instructional practices of teachers who did not receive content specific professional development. First grade teachers who received content specific professional development generally demonstrated the most consistency

in their concept and skill knowledge, belief ratings and self-report of practices on the contextual knowledge survey. In general, first grade teachers in this study reported negative beliefs regarding the use of meaning-based instructional practices with the exception of a few meaning-based items, indicating that their beliefs regarding meaning-based instructional practices may or may not be related to knowledge. If improving reading achievement is a primary goal for a school district, it is important for district leadership to consider how to provide content specific professional development such as the one from this study for their teachers. Results from this study indicate a knowing-doing gap between teachers who have not received extensive content-specific professional development. In general, teachers possess positive beliefs regarding code-based instruction, they lack the knowledge necessary to execute that instruction effectively without extensive professional development.

DEDICATION

Liam, everything I do is to set an example for you. I would not have been able to complete my “dissercaden” without the inspiration you brought me every single day. I hope this accomplishment shows you that no one in this word defines who or what you can become except for you. Dream big little man and know that I will always be your number one fan. I love more than words could ever express.

Dad, thank you for loving me unconditionally and instilling in me a no quit attitude. Because of you, I’ve always believed that I was capable of achieving anything I set my mind to. I wouldn’t have made it where I am today without the love, support, and encouragement you have given me all of my life. I love you.

Mom, thank you being such an incredible model for work ethic. Throughout my life you demonstrated to me that moms really can do it all. They can be great mothers, work hard, and love all that life has to offer. Thank you for all of your love, support and encouragement. I love you.

Finally, my biggest thanks and gratitude goes to my husband, Glenn. This journey was difficult and full of sacrifices. I can’t thank you enough for your unwavering support. For picking me up when I was down and for being there through all of the highs and lows. I never could have achieved this without you. Thank you and I love you.

ACKNOWLEDGEMENTS

Dr. Williams, Dr. Keiser, Dr. Surface and Dr. McGlamery, thank you for serving on my committee. I know it involves a lot of time, effort and dedication on your end. I am grateful for the guidance and input you have given me in this process.

I particularly want to thank Dr. Ostler for serving as my committee chair. The conversations and guidance you provided me well before my dissertation journey ever even started were imperative to the successful completion of my study. Your straightforward approach in providing me with feedback and guidance was just what I needed in order to complete my dissertation with the timeline that I had in mind. Thank you for always being available when I needed your guidance the most, despite everything else you had going on. I know serving as a chair is a significant time commitment on your part and I can't thank you enough for the time that you put in to support my dissertation.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

The scientific community has come to a research consensus regarding what type of instruction is necessary for students to receive in grades K - 3 in order to become skilled readers. The fact that they require code-based instruction and that meaning-based reading instruction fails to adequately prepare a high percentage of students for reading is considered settled science (Moats, 2016). However, there has been no real improvement in student reading achievement over the last two decades (U.S. Department of Education, 2019). As a result, researchers began investigating the content and skill knowledge that teachers possess in regard to code-based early literacy instruction (Bos, Mather, Dickson, Pdhajski, & Chard, 2001; Cheesman, McGuire, Shankweiler, & Coyne, 2009; Mather, Bos, & Babur, 2001; Moats & Foorman, 2003; Spear-Swerling, Brucker & Alfano, 2005), finding that a gulf exists between what scientists have discovered about how children learn to read and what teachers know (Kilpatrick, 2015).

Knowledge is not the only factor that might be contributing to disparities between research and practice. The reading wars that have waged on for the last 40+ years are evidence enough that beliefs play a role in the decisions that we make. Transitioning from what one believes to what research has found to be true is not always easy, and when beliefs are deeply rooted, resistance can be strong (Moats, 2007). Prior beliefs acquired through personal life and learning experiences are thought to play a role in the acquisition of new knowledge (Richardson, 1996). In investigating teacher beliefs about reading, researchers have found that teachers tend to favor meaning-based reading instruction and activities over code-based instruction (Cunningham, Zibulsky, Stanovich,

& Stanovich, 2009; Mather, Bos. & Barbur, 2001). Recognizing this, researchers have explored if changes in knowledge and beliefs about code-based instruction follow when teachers are provided with content-specific professional development. The focus, duration, and mode of professional development varies greatly from study to study. However, it should be considered that teacher beliefs regarding code- and meaning-based instruction may or may not be the result of their level of knowledge of language structures and research-based instructional practices. Therefore, the relationship between knowledge and beliefs should continue to be explored (Cunningham et al., 2009), providing the context with which this study is framed.

The research problem addressed in this study is to understand if knowledge plays a causal role in the underlying beliefs teachers have regarding early literacy instruction, the practices they elect to use in their classrooms and the opportunities that they would provide beginning readers.

Conceptual Framework

The Knowing-Doing Gap is a model developed by Pfeffer and Sutton (2000) and serves as the conceptual foundation for this study. This theory provides a strong basis for the relationship between teachers' knowledge and beliefs about reading as they relate to the implementation of research-based early literacy instruction in their classrooms.

According to Pfeffer and Sutton (2000), the Knowing-Doing Gap occurs when knowledge of what needs to be done or should be done according to research does not translate into actions that are consistent with that knowledge. The authors acknowledge that gaps in performance may exist as a result of organizations having insufficient knowledge of research practices evidenced to improve performance rather than the ability

to translate that knowledge into action. Similarly, differences in practices might also be a result of differences in beliefs regarding what ought to be done rather than gaps in knowledge regarding best practice. The Knowing-Doing Gap has applications to research-based early literacy instructional practices. Consistent with this theory, some researchers assert that teachers do not have access to research regarding effective instructional practices for teaching reading as these articles are highly technical and often require teachers to purchase the publications to consume them (Kilpatrick, 2015).

Other researchers have examined teachers' beliefs of implicit (i.e., meaning-based) and explicit (i.e., code-based) instructional strategies for teaching reading and have found differences in beliefs regarding the effectiveness of these strategies for teaching reading (Mather et al., 2001). To assess underlying pedagogical beliefs, Cunningham et al. (2009) surveyed teachers to find how they would spend time teaching language arts, provided the choice. Their findings indicate a mismatch between self-reports and best practices, with teachers preferring considerably more time spent with child-managed, meaning-based activities than current research and policy suggest are necessary. These studies are consistent with the theory that knowledge in and of itself may not explain differences in practices concerning teaching reading. Rather, the belief regarding the importance of the practice itself may be contributing to knowledge not being translated into practice. The appropriate approach toward teaching reading has been disputed now for over forty years. The Knowing Doing Gap serves as a logical conceptual framework for this study as differences in teacher knowledge and beliefs will be examined between groups of first teachers who received content specific professional development in early literacy and those who did not.

Teacher Knowledge

Studies indicate that teachers' knowledge of the skills and concepts regarding the sub-skills deemed essential for the development of skilled word recognition are limited (Bos, Mather, Dickson, Podhajski, & Chard, 2001; Carlisle, Kelcey, Rowman, & Phelps, 2011; Cheesman, McGuire, Shankweiler, & Coyne, 2009; Cohen, Mather, Schneider, & White, 2017; Moats & Foorman, 2003; Martinussen, Ferrari, Aitken, & Willows, 2014; McMahan, Oslund, & Odegard, 2019; Spear-Swerling & Brucker, 2004; Spear-Swerling, Brucker, & Alfano, 2005). Furthermore, some studies have found that there are no significant differences in teacher knowledge of these skills and concepts when accounting for specialty degrees (Cheesman et al., 2009; Moats & Foorman, 2003; Spear-Swerling et al., 2005). Current studies of teacher knowledge regarding the skills and concepts for teaching early literacy are limited primarily to multiple choice surveys (Cheesman et al., 2009; Martinussen et al., 2014; Moats & Foorman, 2003) with the exception of a few studies that ask teachers to define terms (Cohen et al., 2017; McMahan, 2019; Spear-Swerling & Brucker, 2004; Spear-Swerling et al., 2005) and an additional few that include application questions but still provide multiple choice options for responses (Carlisle et al., 2011; Folsom, Smith, Burk, & Oakley, 2017). Additionally, these measures are either broad, encompassing items that teachers in kindergarten through third grade would need to be knowledgeable about (Folsom et al., 2017; Carlisle et al., 2011; Spear-Swerling & Brucker, 2004; Moats & Foorman, 2003) or narrow, focusing on a specific aspect of English such as phonological awareness (Cheesman et al., 2009; Alghazo & Hilawani, 2010; Martinussen et al., 2014). Knowledge measures used in the current body of research also do not include items that require teachers to apply their

knowledge to the selection of instructional resources, which is a decision that teachers make every day.

Arguably, teachers would need to know that the word freight contains four phonemes in order to correctly model segmentation of that word for their students or to provide students with specific corrective feedback when they make errors. However, it is possible (and problematic) that a teacher could demonstrate "knowledge" by answering questions like these correctly and still not be knowledgeable about how to effectively teach students who are struggling with phonemic awareness. In several studies, researchers have highlighted a need for a more meaningful measure of teacher knowledge (Carlisle et al., 2011; Martinussen et al., 2014; Moats & Foorman, 2003; Spear-Swerling et al., 2005). The ability to integrate content knowledge with evidence-based methodologies for effective instruction is an essential skill for teachers to have (Snow, Burns, & Griffin, 1998). Therefore, studies investigating not only teachers' concept and skill knowledge related to language structures but also their ability to apply that knowledge along with knowledge of research-based practices specific to the student population that they teach is warranted and motivated the development of the Teacher Knowledge and Practices Survey (TKaPS) for this study.

Teacher Beliefs

Knowledge in and of itself may not be sufficient to change human behavior. Beyond knowledge, beliefs may shape the instructional decisions that teachers make. In *The Knowledge Gap*, Wexler recounts an encounter she had with a kindergarten teacher who told her that she didn't believe in systematic phonics and instead was relying on her

own approach, that was, as far as she could tell "working beautifully" (2019). Therefore, researchers have examined teacher beliefs related to reading instruction.

In an attempt to measure teachers' underlying pedagogical beliefs, researchers gave teachers the opportunity to hypothetically design their own two-hour literacy block using a language arts activity grid. They found that teachers appropriated the largest amount of time to teacher-managed reading activities (19.1%), followed by independent reading (16.4%) and writing (14.3%), and just 11.5% of the time to phonics (Cunningham,et al., 2009). These time allotments are not in line with what the research would recommend is necessary for beginning readers to develop proficiency in reading (National Reading Panel, 2008; Moats & Tolman, 2019). Research suggests that anywhere from 40% to 50% of the time allocated for English Language Arts in first grade, should be dedicated to instruction in the foundational literacy skills necessary for students to become proficient readers (Moats & Tolman, 2009; Student Achievement Partners, 2018). Furthermore, Cunningham et al., (2009) noted that it appears that philosophical orientation toward code-based instruction was associated with a relatively balanced collection of literature- (meaning-based) and skill- based (code-based) instructional experiences, whereas a philosophical orientation toward literature- based instruction tended to be more exclusive of other types of approaches.

When examining teacher perceptions of code-based and meaning-based instruction using Likert scale surveys, studies have found that more experienced teachers demonstrate a more positive perception of code-based instruction than teachers with three years teaching experience or less. Bos et al., (2001) and Mather et al. (2001) also found that both groups of teachers demonstrated positive perceptions of meaning-based

instruction. Mather (2001) noted in her study that most teachers agreed that guessing strategies were good strategies for students to use when they encounter unknown words in text, contrary to findings that indicate that content words can be predicted anywhere from 10% to 20% of the time and the primary strategy used by good readers is decoding (Lyon, 1999; Moats & Tolman, 2019). This positive perception of guessing strategies is also at odds with the Institute of Education Sciences panel's discouragement of the use of guessing strategies (Foorman et al., 2016). Ehri and Flugman (2018), found that teachers' already positive perceptions toward code-based instruction increased following extensive professional development; however, there was virtually no change in perceptions on meaning-based items that the researchers expected teachers to disagree with following the professional development. These persistent positive beliefs regarding meaning-based reading strategies that have been refuted by reading research warrant further study of teacher beliefs about reading instruction and the conditions necessary for the revision of those beliefs to take place.

In his study, Cunningham et al. (2009) discusses an important paradox that warrants further investigation within the reading research. He hypothesizes that if teachers lack sufficient knowledge of research-based best practices, then their beliefs likely will not reflect current research or policy recommendations. Furthermore, if teachers' beliefs are such that they do not welcome new approaches to literacy instruction, then it will be difficult for them to acquire knowledge of the English language that is essential for working with beginning readers. Although Cunningham et al., (2009) did not find significant differences in how teachers would allocate their time based upon their phonics knowledge, he did discover some noteworthy associations

between code-based knowledge and beliefs. Specifically, teachers who were more knowledgeable about phonics allocated almost three times as much time on code-based activities than those who were less knowledgeable. This difference between knowledge and self-reported practices suggests that the relationship between knowledge and beliefs should continue to be studied.

In all of these studies, teachers were involved in some type of reading project where they were provided with professional development. Even though teachers demonstrated positive perceptions towards code-based instruction overall, a surprising positive perception toward meaning-based instructional practices that have been refuted by the research persists among teachers. As Cunningham et al. (2009) noted in their study, a shortcoming of many of these studies is that they did not take into account the role that knowledge plays in shaping beliefs or the conditions that lead to the revision of such beliefs, both of which motivated the primary investigation for this research.

Content Specific Professional Development

In an effort to better understand the relationship between content-specific professional development and teacher knowledge of language structures deemed essential for teaching early literacy and beliefs about reading instruction, researchers have employed a variety of methods for providing content-specific professional development to teachers. Many of the professional development studies to date (Bos et al., 2001; Mather et al., 2001; Ehri & Flugman, 2017; Folsom et al., 2019; Brady et al., 2009) employed recommended best practice in providing professional development (Desimone, 2009); including a content focus (e.g., language structures, phonics instruction, etc.), active learning (e.g., observation, feedback, discussion, etc.), coherence (e.g., consistent

with school, district, or state reforms) and duration (e.g., spanned over at least a semester and included at least 20 hours of contact time).

A consistent finding among the professional development research in reading is that providing teachers with content-specific professional development is associated with increases in teacher knowledge of language structures (Martinussen et al., 2015; Folsom et al., 2017; McMahan et al., 2019; Brady et al., 2009). However, when investigating the relationship between professional development and teachers' beliefs, the provision of professional development has not been found to be associated with differences in beliefs regarding meaning-based reading instruction in comparison studies (Bos et al., 2001; Mather et al., 2001) or changes in beliefs regarding meaning-based reading instruction (Ehri & Flugman, 2017). Following these studies, teachers continue to express positive views of meaning-based reading instruction, despite observed differences in teacher knowledge (Bos et al., 2001; Mather, et al., 2001) and increases in teacher knowledge (Ehri & Flugman, 2017). A possible explanation for these findings is that the professional development in these studies focused on knowledge of language structure and the use of research-based practices (Bos et al., 2001; Mather et al., 2001) or the professional development was focused on a particular approach to teaching phonics (Ehri & Flugman, 2017). The professional development may not have spent enough time and attention devoted to developing knowledge around the research that informs those practices and discourages the use of other practices. Cunningham et al. (2009) suggests that future research needs to focus on the conditions that make the revision of beliefs most likely in addition to the relationship between knowledge and beliefs. An additional limitation of this body of research is that many studies did not employ a research design

that allows for the examination of causal relationships, limiting the researchers' abilities to draw conclusions about the effect of content-specific professional development on teacher knowledge, beliefs and instructional practices (Folsom et al., 2017; Martinussen et al., 2015; Ehri & Flugman, 2017).

This causal comparative study attempts to add to this body of research by comparing first grade teachers who were provided the Third Edition of Language Essentials for Teachers of Reading and Spelling (LETRS) professional development with first grade teachers who did not. The LETRS professional development connects research to practice, while embedding practical research-based methods for instructing early literacy. Through this professional development, teachers learn about the brain basis for reading, why learning to read and write are not natural processes, research-based instructional strategies, and how their instruction influences and changes the reading brain.

Problem Statement

There is a problem that exists in elementary classrooms across the country. Specifically, that problem is that classrooms rarely incorporate the science of reading into literacy instruction. According to a recent report by the Education Advisory Board (EAB), 95% of classrooms do not spend sufficient time teaching English phonemes and 80% of teachers encourage early readers to use context clues to identify unknown words in text (EAB, 2019). Researchers have found that guessing strategies become increasingly ineffective as students progress in their education and neuroimaging studies have concluded that strong readers decode printed words, even as adults (EAB, 2019; Moats & Tolman, 2019). Teachers are expected to stay current with reading research and

have sufficient knowledge in teaching reading. Nevertheless, the Educational Advisory Board (2019) also reported that sixty percent of elementary teachers have never received training in effective strategies for teaching phonemic awareness and phonics. Knowledge is not the only factor that could be contributing to disparities between research and practice. Beliefs about reading instruction might also play a role as researchers have found that teachers tend to favor meaning-based reading instruction and activities over code-based instruction (Cunningham et al., 2009; Mather et al., 2001). However, teacher beliefs regarding code- and meaning-based instruction may or may not be the result of their level of knowledge of language structures and research-based instructional practices. Therefore, the relationship between knowledge and beliefs should continue to be explored (Cunningham, et al., 2009), providing the context with which this study is framed.

Purpose of the Study

The purpose of this causal comparative mixed data analysis study is to test the theory that specialized knowledge of language structures (i.e., concept and skill knowledge related to phonology, orthography, and morphology) and research-based instructional practices, provided to teachers via yearlong content-specific professional development in early literacy, precede beliefs about early literacy instruction and the instructional practices that first grade teachers employ in their classrooms. Additionally, the qualitative data collected from this study will be complementary to the quantitative data allowing for the researcher to corroborate, elaborate upon, or provide clarity of the results (Onwuegbuzie & Leech, 2005). This mixed data analysis design will develop a complete understanding of teachers' early literacy knowledge and the role it plays in the

beliefs that teachers possess about early literacy instruction (Tashakkori & Teddlie, 2010). This study employs a between-subjects research design in which the knowledge and beliefs of first grade teachers who received year-long content specific professional development in the research and effective practices for teaching early literacy (i.e., LETRS group) will be compared with first grade teachers who did not receive the professional development (i.e., Non-LETRS group). This study will investigate if the specialized knowledge first grade teachers gain through the LETRS professional development can explain any differences in the beliefs that first grade teachers have in regard to teaching early literacy and difference in the concept and skill knowledge and instructional practice knowledge that they have as well. Specifically, the following questions will be investigated in this study:

Research Questions

1. Does specialized knowledge of language structures and research-based methods specific to early literacy relate to the beliefs (TBS) first grade teachers have about early literacy instruction?
2. What are the correlations between concept and skill knowledge (TKaPS - 1) and beliefs (TBS) of the LETRS group vs. the Non-LETRS group?
3. What are the correlations between instructional practice knowledge (TKaPS - 2) and beliefs (TBS) of the LETRS group vs. the Non-LETRS group?
4. What are the differences between concept and skill knowledge (TKaPS -1) of the LETRS group vs. the Non-LETRS group?
5. What are the differences between instructional practice knowledge (TKaPS-2) of the LETRS group vs. the Non-LETRS group?

6. What is the nature of the relationship between knowledge and beliefs of the LETRS group and the Non-LETRS group?

Definition of Terms

Content Specific Professional Development: Language Essentials for Teachers of Reading and Spelling (LETRS) is a blended learning professional development that connects research to practice by providing teachers with in-depth knowledge of the most current research. This includes research conducted in neuroscience, cognitive development psychology and linguistics and connecting that knowledge to research-based strategies to employ in their classrooms. Teachers learn about the language skills that need to be taught to students, why they need to teach them, as well as when and the best way to teach them (Folsom, et al., 2017; Moats & Tolman, 2019).

Concept and Skill Knowledge: Refers to both the conceptual and skill knowledge teachers possess regarding the structure of English language. Specifically, knowledge related to the development of word recognition skills; including phonological, orthographic, and morphological layers of language typically found in first grade classrooms as measured by multidimensional knowledge items on the *Teacher Knowledge and Practices Survey* (TKaPS - 1).

Teacher Beliefs: Is defined as the beliefs teachers have about the knowledge and skills they should possess to teach early literacy, the beliefs they have regarding the instructional practices that should be employed and beliefs about the concepts and skills students should be taught. Teacher beliefs will be measured by teachers indicating their extent of agreement related to given statements regarding code-based and meaning-based reading instruction as measured by the *Teacher Beliefs Survey* (TBS).

Instructional Practice Knowledge: Is defined as the level of knowledge teachers have regarding effective instructional practices they report that they would use when provided specific classroom scenarios related to assessment, instructional materials and presentation of early literacy content as measured by the *Teacher Knowledge and Practices Survey* (TKaPS - 2).

Significance of the Study

Contribution to research. This study is significant because it contributes to the current body of research a number of ways. First, using a causal comparative research design, it seeks to understand the role that knowledge of early literacy plays in the beliefs that teachers possess about teaching early literacy and the instructional practices they employ in their classrooms. Exploring differences in teachers' perceptions of reading instruction, teacher knowledge, and instructional practices is important because students' reading development is not solely dependent upon a teacher's ability to provide effective instruction. Teachers must also be willing to employ effective instructional practices in the classroom. Such knowledge and beliefs correspond to teachers critically consuming instructional resources, effectively responding to student needs, and identifying research-based instructional practices to employ in their classrooms. Studies that examine the impact that knowledge has on beliefs about early literacy instruction and the instructional practices that teachers employ while controlling for content-specific professional development are few or have yet to be developed.

Second, this research design also contributes to the current body of research in professional development. Current studies included all teachers in professional development and used multiple choice pre- and post-tests to measure changes in

knowledge (Folsom, et al., 2017). The need for a causal research design has been cited in several studies (Foorman et al., 2017; Martinussen et al., 2015) because researchers have not been able to conclude that changes observed are a result of the professional development itself.

Third, this study adds to the existing body of research on teacher knowledge. The current body of research measures teacher knowledge via means of multiple choice surveys (Cheesman et al., 2009; Martinussen et al., 2014; Moats & Foorman, 2003), with some studies requiring teachers to define terms (Cohen et al., 2017; McMahan, 2019; Spear-Swerling & Brucker, 2004; Spear-Swerling et al., 2005) and a few studies requiring teachers to apply their knowledge to classroom situations given multiple choice options (Carlisle et al., 2011; Foorman et al., 2017). Limited research studies have investigated teachers' ability to apply their knowledge of teaching early literacy contextually (Carlisle et al., 2011) and no study to date uses open-ended teacher response items as a means to measure knowledge and instructional practices. The TKaPS used in this study not only requires teachers to provide qualitative descriptive responses to classroom scenarios, but it also addresses instructional decisions that teachers make daily (i.e., selecting instructional materials). Finally, studies on teacher knowledge generally measure one or two specific skills (e.g., phonological awareness; Cheesman et al., 2009; Martinussen et al., 2014) or they measure a broad range of skills (i.e., early phonological awareness skills, Greek affixes, etc.) and are not sensitive to the grade level of students to whom teachers are providing instruction (Folsom, et al., 2017). The TKaPS was specifically designed to be sensitive to the early literacy knowledge that would be expected of a first grade teacher.

Contribution to Professional Development Practitioners. This study is significant because it could be beneficial for professional development practitioners or researchers who might consider the use of the research tools developed in this study to measure the effectiveness of their professional development offerings. Additionally, this study serves as a potential model for how districts might conduct research on their own professional development.

CHAPTER 2

REVIEW OF LITERATURE

The Current State of Literacy

Learning to read is arguably one of the most critical skills for children to attain. There are stakes associated with reading skillfully or poorly (Willingham, 2017). Reading adds to our knowledge of the world and our understanding of human relationships (Henry, 2010). Children who read successfully from the beginning are more likely to enjoy reading, develop strong working knowledge of words and language patterns, and attain knowledge of the world through reading (Moats, 2010). Children who struggle to read in first grade are 88% more likely to struggle in the fourth grade and those who struggle in fourth grade are four times more likely to drop out of school. Literacy and crime are closely related, some prisons now base part of their future planning on third and fourth-grade literacy rates. Across the U.S., 85% of juveniles who interact with the court system are functionally illiterate, and 60% of the nation's inmates are illiterate (Zoukis, 2017). According to Zoukis (2017), inmates who have received literacy help, have a 16% chance of returning to prison compared to 70% who receive no help, equating to taxpayer costs of $25,000 per year per inmate. The Department of Justice states, "Reviews -of the research literature provide ample evidence of the link between academic failure and delinquency. It can also be shown this link is welded to reading failure." (Brunner, 1993).

Reading researchers estimate that 95% of students possess the cognitive ability to read on grade level by the end of 1st Grade (Torgesen, 2000; Mathes et al., 2005). Yet, the National Adult Literacy Survey and 2015 national report card in reading paint a

different picture. In 2003, the rate of functional illiteracy in Washington, D.C., was the highest in the nation at 37% (National Adult Literacy Survey). Similarly, just 36% of fourth-grade students were proficient in reading, according to the 2015 national report card (U.S. Department of Education) and over half of children have scored at basic or below basic levels every time the National Assessment of Educational Progress in reading has been administered (Seidenberg, 2017). The disparity between the percentage of students who should be reading on grade-level in comparison to our current state of reading achievement has caused researchers to begin examining teacher knowledge and beliefs about reading instruction (Cohen et al., 2016; Cheesman et al., 2009; Ehri & Flugan, 2018; Moats & Foorman, 2003; Spear-Swerling et al., 2005).

The direct (taxpayer dollars) and indirect costs (blocks in acquiring knowledge) of illiteracy has been a matter of political and public interest and has served as the catalyst for a multi decade argument regarding how children best learn to read, often characterized as "The Reading Wars" (Castles, Rastle, & Nation, 2018).

The Reading Wars

Reading scientists, teachers, and the public agree that the primary goal of reading is to understand and make meaning from text. They know that in order for children to be successful readers, they must be able to recognize words effortlessly and translate their meanings rapidly. The fact that word reading requires more than just alphabetic decoding is represented in all major theories of skilled reading (Castles et al., 2018). Nearly every important synthesis on reading has rejected the simplistic division between phonics and whole language and has encouraged instruction that focuses both on aiding children with mastering the code and acquiring meaning from text (Kim, 2008). Yet, for far too long

the pendulum has swung between arguments favoring a phonics (code-based) approach (Chall, 1967; Flesch, 1955) to teaching reading and a whole-language (meaning-based) approach (Goodman, 1967; F. Smith, 1971). What proponents for these two approaches disagree on is the route that is necessary to get children to access text (Wexler, 2019), with proponents for a code-based approach arguing that developing skills in recognizing written words should be the emphasis of instruction with beginning readers and proponents for a meaning-based approach arguing that because the ultimate goal of reading is comprehension, that comprehension should be the emphasis from the start (Adams, 1990).

Meaning-based instruction assumes that with exposure to rich literature and provided opportunities to read and write, children will pick up the code and make their own phonic generalizations (Henry, 2010). Goodman (1967) characterized reading as a "psycholinguistic guessing game" in which readers use their graphic (visual), semantic (meaning) and syntactic (structural) knowledge to guess the meaning of a printed word. More recently, in the widely influential Three-Cueing Systems Model students are encouraged to use semantic, syntactic, and "graphophonic" (letter-sound) cues simultaneously to guess words that they do not know in text (Castles et al., 2018). In this model, teachers are taught to appeal to meaning and context instead of or in preference to phonic decoding strategies when words are unknown by encouraging students to look at pictures to guess words and use context think of a word that would make sense in the context of a sentence (Moats & Tolman, 2019). From the teacher's perspective, it might appear that young children are learning to read despite not being provided explicit phonics instruction. Even though they are often guessing from illustrations, relying on

their memory of repeated reading from the same text, or using background knowledge to figure out words that they can't decode (Wexler, 2019). These word reading strategies become increasingly ineffective as students progress through school and reach higher grade levels where texts aren't predictable and vocabulary is more sophisticated with an accuracy rate of one out of four to one out of ten, depending upon the text (Moats & Tolman, 2019; Wexler, 2019). Meaning-based approaches for teaching reading have held on since 1953 despite evidence that they produce an effect size of 0.06 and approaches such as direct phonics instruction yield an effect size of 0.54 (Fischer, Frey & Hattie, 2016). Proponents for meaning-based approaches suggest that reading is a natural process; however, reading is less than 6,000 years old, which is far too little time for any sort of reading-specific process to have evolved within the brain and there is not sufficient evidence that any have (Willingham, 2017).

A rich and diverse body of research in psychological science that spans several decades including more than 42,000 children, 300 schools and described in more than 2,600 peer-reviewed journals has provided answers to many of the most important questions about reading and the cognitive processes that serve skilled reading (Castles et al., 2018). This body of research has determined that the fundamental insight that graphemes (letters) represent phonemes (sounds) in our alphabetic writing system does not come naturally to children. Most children require explicit instruction in order to make adequate reading progress and all children benefit from it (Moats & Tolman, 2019; Castles et al., 2018; Wexler, 2019). Wexler states that one researcher observed that the mounting evidence that phonics is the most effective way of teaching reading is "one of the most well established conclusions in all of behavioral science" (2019). The process by

which children acquire a “sight” vocabulary is a highly complex developmental process that affords even skilled reading adults to continue to utilize alphabetic decoding and phonological processes routinely and subconsciously (Castles et al., 2018).

The quality and scope of the scientific evidence today means that the reading wars should be over (Moats, 2016). Understanding the process by which children progress to an advanced form of word recognition, why it works and how instructional practices support it, is imperative for teachers to be knowledgeable about (Castles et al., 2018). The lack of attentiveness to basic science as a source of evidence within the culture of education has had deleterious effects on reading education (Seidenberg, 2017). In order to increase the likelihood that teachers will embrace scientific consensus, then it is important to understand why they sometimes resists findings that are evidenced by research and data (Wexler, 2019).

The Science of Word Recognition

Every major theory of skilled reading reflects that word reading involves more than just alphabetic decoding (Castles et al., 2018) while emphasizing the necessity of alphabetic principle to link phonological, orthographic, and semantic knowledge, especially in beginning reading (Piasta, Connor, Fishman, & Morrison, 2009). According to Gough and Tunmer (1986) reading comprehension is the product of printed word recognition and language comprehension. In other words, print cannot be comprehended if it cannot be decoded (Henry, 2010). The interweaving of the sub skills necessary for skilled reading are modeled further by Scarborough’s Reading Rope (2001). Each of these sub skills are definable, measurable and somewhat independent; however, the complex mental activities involved in reading occur recursively through reciprocal

exchanges of bytes of information (Moats & Tolman, 2019). According to Hollis Scarborough, the sub skills necessary for students to develop sufficient word recognition include; phonological awareness, decoding, and sight recognition (2001). Phonological awareness is an umbrella term described as having an awareness of sounds in spoken words whether syllables, onsets, rimes, or individual phonemes (Kilpatrick, 2015). Decoding is described as the process of sounding out unfamiliar words (or nonsense words) via a letter-sound conversion process combined with phonological blending (Kilpatrick, 2015). Sight recognition is referred to the ability to recognize any word, regardless of its regularity as if by sight (Kilpatrick, 2015). Sight recognition is now known to be achieved through a process referred to as orthographic mapping. Orthographic mapping is the mental process used to store words for immediate effortless retrieval and it requires good phoneme awareness, letter-sound knowledge, and the alphabetic principle (Kilpatrick, 2015). Contrary to the widely influential Three-Cueing Systems Model, Seidenberg & McClelland's Four-Part Processing Model (1989) distinguishes the phonological and orthographic systems from one another, yet they work in concert with one another "mapping" speech sounds with print in order to develop "sight" recognition of words. In the popular Three-Cueing Systems Model, these processors are lumped together and are characterized as "visual" processes rather than linguistic processes. In this model, phonology is not explicitly taught nor is phonic decoding prioritized. This is troubling as phonological deficits are the most common source of word reading difficulty in children (Kilpatrick, 2016; Moats & Tolman, 2019) and phonemic awareness contributes to skilled reading not only in English but in other languages as well (Joshi et al., 2009; Kilpatrick, 2016).

Provided sufficient explicit instruction, word reading develops over time and progresses through a series of distinct phases that are characteristic of certain types of reading behaviors and skills. Ehri's (1996) phases of word reading development outlines the characteristics that typical children exhibit as they develop their word recognition skills. Through multiple experiments conducted over several years, Ehri has established that the ability to recognize words "by sight" while reading is dependent upon phonemic awareness and the ability to map phonemes to graphemes. A distinct feature of Ehri's model is that these characteristics can overlap (as they often do) and there are no distinct boundaries between them (Moats & Tolman, 2019). In the Prealphabetic phase of word recognition, children use incidental visual cues, rote memorization and guessing to read a few whole words (Moats & Tolman, 2019; Castles et al., 2018; Henry, 2010). In the Early Alphabetic phase children are beginning to use insights of the alphabetic principle (i.e., how we use graphemes to represent phonemes) and are developing early phonological awareness skills. This stage is characterized by children partially using their knowledge of sound-symbol correspondences to read words and are able to represent some sounds in their invented spellings for words (Moats & Tolman, 2019; Castles et al., 2018; Henry, 2010). In the Later Alphabetic phase, provided further instruction and experience reading and spelling, children are able to demonstrate complete knowledge of phoneme-grapheme relationships and can apply their knowledge in both reading and spelling. This stage is characterized by complete word reading, rapid reading of whole familiar words, phonetically accurate spelling and complete understanding of basic phonemic awareness. In this phase, children have cracked the alphabetic code (Moats & Tolman, 2019; Castles et al., 2018; Henry, 2010). In Ehri's final stage, the Consolidated

Alphabetic phase, children increasingly gain automatic sight word recognition through what Share (1995) refers to as the self-teaching hypothesis. With knowledge of the code, children are equipped to seek out patterns that they are knowledgeable about and through their own reading, apply that knowledge (i.e., self-teach) to other unknown words with similar patterns with increasing efficiency (Moats & Tolman, 2019; Castles et al., 2018; Henry, 2010). As stated before, this is not a process that comes naturally for children.

In order for children to develop skilled reading, they must acquire sufficient knowledge of the alphabetic code (Castles et al., 2018). This includes direct, explicit instruction in phonology, orthography, and morphology and sufficient, cumulative opportunities to practice both in and out of connected text. It would appear that knowledge of the link between phonology, orthography, and semantics and mappings between language and print, coupled with knowledge of relevant instruction practices are essential for teachers to provide effective early literacy instruction (Piasta, et. al, 2009). Learning to read is a complex linguistic process and teaching children how to read is the job of an expert (Moats, 2004).

The Importance of Teacher Knowledge

Teacher preparation accounts for as much as 60% of the total variance in achievement when demographics are accounted for and is a stronger correlate of student achievement than class size, overall spending, or teacher salaries (Darling-Hammond, 2000). A study of over 1,000 school districts found that every additional dollar spent on more highly qualified teachers netted greater increases in student achievement than did any other use of school resources (Ferguson, 1991). However, there is disagreement regarding the definition of a “highly qualified” teacher. There is a growing body of

evidence that demonstrates teaching reading effectively requires a specialized body of knowledge and that it is not as intuitive as it was once believed to be (Piasta et al., 2009). In order for teachers to effectively design and deliver lessons that follow a research-based sequence for developing skilled reading, they must have a deep understanding of speech sounds, phoneme-grapheme correspondences, spelling patterns, and word structure themselves (Cohen et al., 2017). Sufficient knowledge is also necessary for the assessment of student learning and to correctly identify, respond to and provide corrective feedback when students make errors (Cohen et al., 2017). The correlation between content expertise and improved student reading outcomes have been replicated across multiple studies (McCutchen et al., 2002; McCutchen et al., 2009; Piasta et al., 2009). These findings illuminate the importance of knowledgeable teachers providing reading instruction (Cohen et al., 2017; Piasta et al., 2009). Positive effects on student achievement in reading were found when teachers were provided with content-related professional development that teachers could connect to their curriculum, and offered practical classroom application. (Paige, et al., 2018; Porche, Pallante, & Snow. 2012; Smith, Baker, & Oudeans, 2001; Taylor, Pearson, Peterson, & Rodriguez, 2004). It has been found that as teachers deepen their conceptual understanding, they are better equipped to refine instructional practices and in turn, increase student learning. (Gerstein, Chard, & Baker, 2000). A deepening of content knowledge of early literacy instruction has been found to result in increased use of explicit instruction as well as improved student reading outcomes (McCutchen et al., 2002). It could be argued that in order for teachers to effectively teach early literacy to beginning readers, they need not only

understand the importance of explicit instruction but also have a deep understanding of the concepts being taught (Piasta, et. al, 2009).

Teacher Preparation

Teacher effectiveness is the most important factor in the growth of student achievement (Lyon & Weiser, 2009). Teachers are estimated to have two to three times the impact on student performance in reading compared to any other factor (Opper, 2019) and teaching reading and writing requires considerable expertise (Moats, 2010). According to Moats (2010), students of teachers with high levels of content knowledge and practical skill knowledge are more likely to progress than students of teachers with low knowledge. Teachers who possess a wide range of experience and a strong foundation of knowledge grounded by scientifically-based reading research from which to make decisions, ensure successful outcomes for students, especially those who are at-risk of failing to learn to read or who have fallen behind (Birsch, 2005). Nevertheless, content knowledge and depth of training continue to lack in even the most basic preparation areas for instructing reading (Birsch, 2005), something that teachers express disappointment about once they reach the classroom (Myracle, Kingsley, & McClellan, 2019). The typical pre-service course of study dedicates very little time preparing teachers to teach reading and in some cases reading is embedded in a course for teaching English Language Arts which dilutes the focus on reading. The amount of time dedicated to teaching reading is not sufficient for beginning teachers to acquire the knowledge and skills necessary to enable them to assist all children in becoming successful readers (Snow et al., 1998). Textbooks on reading and literacy methods often exclude the particulars of language structure and impart misinformation about speech and print,

especially phonology and the nature of English orthography. In addition, typical courses for teaching reading may cover none or only some of the critical components of effective instruction (Moats, 2010).

A 2018 examination of teacher preparation programs found that just 23% of graduate elementary programs teach scientifically based methods of early reading instruction which was an improvement from 17% in 2014 (Rickenbrode, Drake, Pomerance, & Walsh, 2018). The least adequately addressed areas of reading in teacher preparation programs are phonemic awareness (32%) and fluency (31%). Comprehension (63%) and vocabulary (53%) instruction continue to be the most adequately addressed components of reading and phonics had a slight increase in 2018 (44%) from 2014 (40%). Although there were slight increases across the board, these findings have not changed much in the last four years and the foundational skills that are fundamental to skilled reading continue to be inadequately addressed in well over half of preparation programs (Rickenbrode et al., 2018). In the 2013 Teacher Prep Review, Greenburg, et al., found that just 29% of elementary and special education preparation programs were found to adequately address reading instruction. In 2013, three out of four elementary teacher preparation programs were still not teaching the methods of reading instruction that could substantially lower the number of children who never become proficient readers, from 30 percent to under 10 percent (Greenburg, et al., 2013). Instead, teacher candidates are all too often told that the science behind reading acquisition is simply one of several perspectives (Seidenberg, 2017; Walsh, 2019 and that teachers need to develop his or her “own unique approach” to teaching reading (Seidenberg, 2017; Walsh, Glaser & Wilcox, 2006). In their preparation, teachers continue to learn that the process of

becoming a reader is natural and organic, even though these assertions are unsupported by scientific evidence (Walsh et al., 2006).

Seidenberg (2017) suggests that learning more about the values and beliefs of those who prepare teachers, design curricula, and create instructional practices could be a powerful motivation for change. Some argue that the disparity between teacher knowledge and science exists because faculty have ignored the scientific knowledge that informs reading acquisition (Hanford, 2018) because it isn't very highly valued in schools of education (Seidenberg, 2017) and their belief systems run deep (Hanford, 2018). Results from the 2018 Teacher Prep review corroborate this assertion, with over half (54%) ignoring much of the scientific evidence on how children best learn to read (Rickenbrode et al., 2018). Joshi et al. (2009) stated that explicit knowledge or critical reading strategies are necessary for teaching others those skills. They found that faculty members from 30 different universities and community colleges lack knowledge about basic linguistic constructs necessary for reading development. In another study, researchers found that teacher educators' knowledge of basic language constructs positively associated with their teacher candidates' knowledge of basic language constructs (Binks-Cantrell, Washburn, Joshi & Hougen, 2012). It stands to reason that their lack of knowledge regarding the structures of English might be another factor contributing to the inadequate preparation of teachers in teacher preparation programs as they cannot give what they themselves do not have (Binks-Cantrell et al., 2012). In order for the teaching profession to thrive, its members must be knowledgeable about the research-base regarding what works to better educate children (Rickenbrode & Walsh, 2013).

Current State of Reading Instruction

The National Reading Panel (2000) identified five essential components of quality reading instruction. These include training in phonemic awareness, phonics, fluency, vocabulary and comprehension. Effective instruction in all five components and mastery of phonemic awareness, phonics and fluency by third grade is critical for long-term student outcomes (Rickenbrode & Walsh, 2013). Following the National Reading Panel's report, proponents of whole language could no longer deny the importance of phonics. However, their core beliefs about reading never changed and neither did the programs that they sell. Instead they advocated for doing both, a balance (Hanford, 2018) and there continues to be a profound difference between the science of reading and educational practice (Seidenberg, 2017). Nearly everything that districts currently do to teach reading is disconnected from the science of reading (Education Advisory Board, 2019).

Most districts claim to use a 'balanced literacy' approach to teaching reading, which was an effort to retain the best practices of whole-language while injecting more emphasis on decoding (Hanford, 2018). Moats (2007) explains that it is far too easy for educators to endorse a 'balanced approach' to teaching reading and continue teaching whole-language. The methods that are commonly used in classrooms to teach children to read make learning to read more difficult than it should be (Seidenberg, 2017). Studies investigating how teachers do or would spend their instructional time corroborate Moats' assertion (Education Advisory Board, 2019; Cunningham, et al., 2009). Studies indicate that 95% of elementary classrooms spend insufficient time providing direct instruction of all English Phonemes (Education Advisory Board, 2019) and that teachers have expressed fear that phonics instruction comes at the expense of rich texts (Myracle et al.,

2019). When asked how teachers would spend their time teaching language arts, teachers planned to spend 25% of their block providing 1st grade students explicit and systematic instruction necessary for decoding fluency (Cunningham, et al., 2009). Balanced literacy has proven to be a way to defuse the reading wars and keep the science of reading at bay. In balanced literacy, code-based instruction has been said to be treated like salt on a meal: a little bit here and there, but not too much, because it could be bad for you (Hanford, 2019).

Balanced literacy has come to be defined by two approaches to teaching reading that were foreign to whole-language: leveled reading and reading comprehension instruction (Wexler, 2019). The Three-Cueing Model accompanies leveled reading and a study found that 80% of teachers encourage students to use picture or context clues to identify unfamiliar words (Education Advisory Board, 2019). There are a number of problems with both the use of leveled text with beginning readers and the use of guessing strategies. First, it is recommended that beginning readers be provided with decodable text, not leveled texts (Foorman et al., 2016; Wexler, 2019; Moats & Tolman, 2019; Castles et al., 2019; Student Achievement Partners, 2018). This is because decodable text is controlled for the phonic patterns that students have been introduced in reading instruction and require children to rely on their knowledge of the alphabetic code instead of guesswork, picture cues and rote memorization promoted by leveled literacy Moats & Tolman, 2019; Student Achievement Partners, 2018; Foorman et al., 2016). The use of guessing strategies is discouraged because they are not effective with more advanced texts (Foorman et al., 2016) and these techniques hinder word reading development by diverting students' attention away from the internal features of words (Kilpatrick, 2016).

Additionally, research has confirmed that poor readers rely on these strategies as compensatory strategies and strong readers decode (Moats & Tolman, 2019). Rather than encouraging guessing, teachers should be using prompts such such as, “Look for parts you know,” “Sound it out,” and “Check it! Does it make sense?” with their students (Foorman et al., 2016). The continued use of these refuted practices is in part due to the fact that many schools continue to select whole-language reading programs that claim to be aligned to the science of reading (Moats, 2007) and they have learned to adopt their own approach to teaching reading anyway, so teachers are oftentimes simply using the instructional materials that are provided to them by their school district. However, there are many high quality reading curricula available that incorporate effective early literacy instruction and rich texts (Myracle, et al., 2019). It is important to note that you must be knowledgeable about the science of reading to select high quality materials that will support teachers in improving student reading achievement. Myracle, et al., (2019) claim it is time to declare a “No Shame Zone” around the unfinished learning in literacy that educators need to commit to.

CHAPTER 3

METHODS

Research Design

This was a causal comparative mixed data analysis study in which quantitative data from the TKaPS and TBS, and qualitative data from the TKaPS -2 were collected at the same time and triangulated for the overall interpretation of results. This method provided a more complete understanding of the research problem than quantitative or qualitative data could provide alone, as it allowed for inferences to be drawn across both the quantitative and qualitative data sets (Creswell, 2014; Oswuegbuzie & Leech 2006). Quantitative data from both surveys were used to test hypotheses, while qualitative data from the TKaPS were used to corroborate, elaborate upon, or provide clarity for the responses that teachers provided.

This study was considered to be a causal comparative design because it compared two non-equal groups of first grade teachers that were selected through nonrandom assignment (Gravetter, Wallnau, Forzano & Witnauer, 2018). This study is also rooted in a mixed analysis model that is drawn from a Convergent Parallel Mixed Methods approach in which both quantitative and qualitative data were collected simultaneously (Creswell, 2003) and the qualitative data were used to elaborate upon the quantitative findings (Oswuegbuzie & Leech 2006) following hypothesis testing and analysis. The LETRS group consisted of 13 first grade teachers who elected to begin receiving LETRS training in August of 2019 through May of 2020. They received approximately 68 hours of content-specific professional development in research-based early literacy instruction.

Participants in the Non-LETRS group included 4 first grade teachers who elected not to participate in the LETRS training.

Participants

The participants included in this study were a convenience sample of 17 first-grade teachers from 14 elementary ethnically and socioeconomically diverse schools in a large, urban school district in the Midwest United States. Teachers provided background information including but not limited to; if they are completing the Language Essentials for Teachers of Reading and Spelling (LETRS) professional development, the number of years they have been teaching, their highest level of degree, and the student population that they serve (i.e., general education, special education, English Language, etc.) See Table 3.

LETRS Professional Development

The LETRS Professional Development served as the treatment for this study. The district was in its first year implementing a four-year plan to provide LETRS 3rd Edition Volume 1 professional development to teachers. It includes 68 hours of content that is organized into four units containing eight sessions per unit (see Table 1). LETRS is a self-paced, blended learning professional development; including online learning modules, a content book, and face-to-face professional development that is provided over the course of one year. It connects research to practice using understandable language, interactive exercises and videos of teachers modeling instructional strategies (Folsom et al., 2017). Participants were given a year-long pacing guide that laid out the sessions to be completed on a weekly basis beginning in August 2019 through May 2020.

Table 1

LETRS Professional Development Description

Unit 1: The Challenge of Learning to Read. • The connection between language and literacy • What the brain does when a person is reading • The skills that support proficient reading • How children learn to read and spell • How to use assessment for prevention and early intervention • Using assessment to differentiate instruction	Unit 2: The Speech Sounds of English • Phonology related to reading and spelling • How phonological skills develop • The importance of phonemic awareness • The consonant and vowel phonemes of the English language • Recognize how allophonic variation in speech affects student's spelling • How phonological skills should be taught and which ones should be assessed
Unit 3: Teaching Beginning Phonics, Word Recognition, and Spelling • The role of the strands of the Reading Rope in word recognition • The role of phonics in reading instruction • Compare code-emphasis instruction with meaning-emphasis instruction • Understand some basic patterns of position-based spelling in English • Word practice and word meaning routines • How to teach spelling using dictation • Decodable text and when it is important to use	Unit 4: Advanced Decoding, Spelling and Word Recognition • Position-based spelling correspondences and other orthographic conventions • The six-syllable types and how they should be taught • Distinguish syllables from morphemes • Phoneme-Grapheme mapping • Suffix rules • Interpret phonological, phonics, spelling and fluency data Aligning practices with scientific evidence

Note. A brief overview of the components of the LETRS professional development, especially as they relate to items of the surveys used within this study. Adapted from "Language Essentials for Teachers of Reading and Spelling Professional Development Overview," by Voyager Sopris Learning, p. 8 - 9. Copyright 2019 by Voyager Sopris Learning.

Teachers were assigned to one of 11 facilitators whose primary goal was to monitor the progress and understanding of teachers through the online platform. Facilitators were assigned no more than 10 teachers. Monitoring included, regularly tracking the extent to which teachers were following the pacing guide and monitoring their understanding of the professional development by reviewing their unit assessment scores and session check for understanding scores. Facilitators also provided additional face-to-face professional development during district early out days, at staff meetings, and in PLCs.

The professional development was free to teachers, 100% voluntary and was offered to 80 kindergarten and 1st grade teachers in all 14 elementary schools. A total of thirty first grade teachers elected to participate in professional development. Incentives offered to teachers for participating in the professional development included earning hours that could be banked and used to cover any snow days that teachers would need to make up at the end of the school year. Additionally, when every teacher in a grade-level participated in the training, they were allowed to use PLC time to work on the professional learning. Finally, the district set up the opportunity for teachers to earn college credit through a local campus.

Instrumentation

Background questionnaire. The survey opened with a background questionnaire that asked teachers to indicate if they participated in the LETRS professional development, if they did not participate in the LETRS professional development or if they completed LETRS for college credit. The survey then asked teachers to provide information about the student population they primarily serve (i.e., general education,

ELL, Special Education, etc.), their years of experience, highest level of degree earned, age, and gender. Additionally, the survey asked for teachers to indicate on a scale of one to four (i.e., 1 - *not prepared*, 2 - *somewhat prepared*, 3 - *adequately prepared*, 4 - *well prepared*) their level of preparedness upon completion of their preparation program for teaching phonological awareness, phonics, and guided reading (see Appendix A for full Background Questionnaire).

Teacher Beliefs Survey (TBS). The underlying pedagogical beliefs that teachers hold regarding instruction in reading will be assessed by asking teachers to indicate on a Likert scale (1 - *Strongly Disagree*, 2 - *Disagree*, 3 - *Mildly Disagree*, 4 - *Mildly Agree*, 5 - *Strongly Agree*) the extent to which they agreed with a series of statements. The *TBS* was an electronically administered survey that included 18 items. The TBS was developed utilizing statements that had been used on three previous research tools (Bos, et al., 2001; Ehri & Flugman, 2018; Mather et al., 2001) with the assistance of a focus group. The TBS contained 10 items from the 25 item *Teacher Perceptions Toward Early Reading and Spelling* (Mather et al., 2001) yielding an overall reliability of .74 (Chronbach's coefficient alpha) and 9 items from the 12 item *Teacher Perceptions About Early Reading and Spelling* survey which yielded an overall reliability .70 for the category of explicit code instruction and .50 (Chronbach's coefficient alpha) for the category of implicit code instruction (Bos, et al., 2001). Provided the purpose of this study was to describe and compare groups, the researcher deemed that the combination of items selected for this survey would not greatly impact the overall reliability. Two additional items were added that relate specifically to the content-specific professional development that teachers received. Researchers suggest that professional development is

most effective when it is grounded in the theoretical underpinnings for the methods that teachers are employing and they have a strong sense for how the practices will lead to increased achievement for their students (Kuijpers, et al., 2010; Smith, et al., 2001). The intention behind adding these items was to gauge if any differences existed between teachers in the degree to which they value understanding the theoretical underpinnings for the practices that are recommended with early readers. Teachers in the district are aware that the professional development the district is providing emphasizes explicit code-based instruction. To ensure that the intent of the survey was not apparent and to prevent skewing of responses towards a code-based philosophy and from teachers providing "correct" responses, the items on the survey were mixed and included an equal number of meaning-based and code-based items, along with several neutral items that are not strongly representative of any particular theoretical approach. Survey items were organized into one of three categories (i.e., code-based, meaning-based, and neutral) and each item was given a range of ratings that would be expected (with the exception of neutral items), reflecting the research and learning that is provided in the LETRS professional development. There were seven code-based items (e.g., Poor phonemic awareness contributes to early reading failure), six meaning-based items (e.g., Teachers should not be concerned about addressing early reader's miscues (text reading errors) when meaning is not affected) and five neutral items (e.g., Time spent reading directly contributes to reading development) on the survey.

Due to the already established reliability of this survey, two focus group meetings were held in its development. All focus group meetings were held with instructional coaches from the district who completed LETRS professional development and were

trained in the facilitation of the professional development. Therefore, the focus group had extensive knowledge of the training, historical knowledge regarding the instructional practices and professional learning within the district and a shared perspective of our teachers. The goal for the first focus group meeting was to finalize the eighteen items to be included on the TBS. The researcher had already identified some items to include and tasked the focus group to consider that the survey needed to include an equal mixture of code-based and meaning-based items and be sensitive to the goals of the LETRS professional development. The focus group began with an overview of the study including research questions and methodology and then began reviewing the TBS and items from the other three surveys referenced in the development of the TBS. The group discussed essential learning from LETRS that needed to be measured; including but not limited to, the use of guessing strategies, the critical importance of phonemic awareness and the predictability of the English language.

A second focus group meeting was held to confirm internal consistency of categorized items (i.e., code-based (CB), meaning-based (MB) and professional development (PD) and to determine a range of expected ratings for each item on the survey for both the first grade teachers who are participating in LETRS professional development and teachers who are not. Prior to the focus group meeting, the researcher coded each item and indicated an expected range of ratings based on findings and procedures from previous studies (Bos et al., 2001; Ehri & Flugman, 2018; Mather et al., 2001). The focus group was instructed to go through each item and code it as a code-based (CB), meaning-based (MB), or professional-development (PD) item. Focus group members were told that items could contain more than one code. On average, the focus

group indicated that 72% of the items from the survey relate to learning in the LETRS professional development. Focus group coding for code-based items matched the researcher's code 100% of the time for five out of seven items and 75% of the time on the other two. Focus group coding for meaning-based items matched the researchers code 100% of the time for four out of six items, 75% of the time for one out of six, and 50% of the time for one out of six items. Next, focus group members were asked to indicate a range of expected ratings for each item for both the LETRS group and the Non-LETRS group. For the LETRS group, on code-based items where the researcher would expect an agreement rating of 4 - 6, consistent with the LETRS professional development, 100% of focus group members indicated an agreement rating that fell within the same range for every item (i.e., seven out of seven). On meaning-based items where the researcher would expect a disagreement rating of 1 - 3, consistent with the LETRS professional development, 100% of focus group members indicated a disagreement rating that fell within the same range on four out of six items and 75% of focus group members indicated a disagreement rating that fell within the same range for the final two items. For the Non-LETRS group, on code-based items the focus group members indicated that consistent with the current body of research (Bos et al., 2001; Mather et al., 2001; Ehri & Flugman, 2009) that the Non-LETRS participants would likely indicate positive perceptions toward code-based instruction providing a range of ratings between 3 - 6 and positive perceptions toward meaning-based items providing a range of ratings between 4 - 6. Following the coding process, the researcher engaged in item by item discussion with the focus group members to address any significant differences in ratings and to address any confusion around the way that the items were worded. Following this

focus group meeting, three items on the survey were revised for clarity. Finally, a one week pilot (n=30) of the survey was conducted from March 22, 2020 - March 29, 2020 using a social media reading group. Overall feedback from the pilot was very positive, with many respondents reporting that the survey was very good. Following feedback, negatively stated items (e.g., It is **not** important…) were bolded and pilot data were analyzed to support the final expected responses ranges for each group on the TBS (see Appendix B for full Teacher Beliefs Survey).

Teacher Knowledge and Practices (TKaPS). The TKaPS was an electronically administered measure that was split into two sections. Teachers' knowledge of the concepts and skills regarding structures of English was measured by the TKaPS - 1 and teachers' instructional practice knowledge will be measured by the TKaPS - 2. The TKaPS was developed for reasons consistent with Carslile, et al. (2011) who argue that the current body of research measures teachers' knowledge of the academic body of work of linguistics and are not sensitive to how teachers would effectively use that knowledge in their practice. Therefore, the TKaPS was a multidimensional survey that was developed to not only measure teachers' knowledge of skills and concepts related specifically to word recognition that would typically be taught in first grade, but to also measure how teachers would utilize that knowledge to respond to student learning. For example, teachers were given the scenario "You have been analyzing a student's spelling from various writing activities and have also made observations of the student's oral language skills. You have identified that the student consistently confuses the /f/ /v/ and /th/ sounds. For example, the student has said and written the word "free" for *three,* "van" for *fan,* and "fink" for *think.* What types of activities would you develop to address this

student's difficulties and why?" This item would require teachers to call upon their knowledge of phonology and recognize that the student is making common phonological errors in speech that are generalizing into their writing and would in turn explain a research-based method they would use to address the student's learning needs. Additionally, some of the survey items were designed to provide information regarding the participants underlying pedagogical orientation to teaching reading. For example, teachers were given the item "Name as many research-based prompting strategies as you can that are recommended to be used when a student encounters an unknown word in text." A response of "Look at the picture and guess the word," or "What would make sense here," could be an indication of a meaning-based orientation to reading instruction that could be further corroborated with ratings on the TBS.

The TKaPS-1 was adapted and developed using items from other measures of teacher knowledge; including the *Comprehensive Survey of Language Knowledge* (Henry, 2010) and the *Teacher Knowledge of Reading and Reading Practices* (Carlisle et al., 2011) with the assistance of a focus group. It contained 9 concept and skill items all of which have multiple items for a total of 41 items. The survey contained three sections that measure teachers' knowledge of the phonological (e.g., Sort each of the following sounds under the appropriate category for voicing), orthographic (e.g., List all of the ways you know how to spell the long a sound), and morphological (e.g., Mark with an (X) all of the words that are in the Anglo - Saxon layer of language) structure of the English language using concepts and skills related to first grade. Items were carefully selected to be representative of concepts and skills that first grade students would learn and therefore, one would expect first grade teachers to be knowledgeable about.

With the assistance of a focus group, the TKaPS - 2 was a novel survey that was developed containing all qualitative items that intended to measure teachers' knowledge and use of research-based instructional practices. The purpose of this survey was to provide teachers with items that would require them to call upon their knowledge of effective instructional practices and indicate how they would respond in a given scenario. For example a scenario a teacher received was; "You are working in PLCs to design some phoneme blending activities. A suggested strategy to use is having students write the words on whiteboards after the sounds are dictated by the teacher and then asking students to blend the sounds they wrote together to tell you the word. What would you recommend doing?" This item calls upon teachers to recognize that there is a misconception between phonics and phonemic awareness on the part of their teaching partner and recommend at least incorporating a phonemic awareness component where sounds are represented without using print before doing the print activity with the whiteboard. The TKaPS -2 contained 10 items and each item was worth up to two points for a total of 20 points. The rubric for scoring each item was also developed with the assistance of a focus group and was tested using a one week pilot of the survey (n = 30). Overall feedback from the pilot was very positive, with many respondents reporting that the survey was very good. Feedback from the pilot informed making an item that asked respondents to identify the number of morphemes and syllables of given words into two separate items. Additionally, some respondents reported that the survey was lengthy, so two items were removed from the original TKaPS survey due to redundancy.

A focus group with four reading specialists who are trained facilitators of LETRS was held to confirm the face validity of the TKaPS. Focus group members were provided

with a brief description of the study and purpose for the development of the survey. Then they were provided with a set of directions to follow as they reviewed the survey and provided feedback. Focus group members were given the operational definitions for concept & skill knowledge and instructional practice knowledge. For both sections of the survey (i.e., TKaPS - 1 & TKaPS - 2), they were asked to review the items and indicate on a Likert scale (1 - *Strongly Disagree*, 2 - *Disagree*, 3 - *Mildly Disagree*, 4 - *Mildly Agree*, 5 - *Agree*, 6 - *Strongly Agree*) the extent with which they agreed that the respective items were representative of the concept & skill knowledge and instructional practice knowledge that would be expected of a first grade teacher. They were then asked if there was anything unclear about the items within each section and if they had any recommendations for improving the items within each section. One hundred percent of focus group members agreed that the items were representative of the concept & skill knowledge and instructional practice knowledge that would be expected of a first grade teacher. Following focus group feedback, the word 'cough' was removed as an example of a word containing a digraph. Finally, they were asked about the scoring rubric for items 10 - 19 on the TKaPS - 2. They were asked to indicate on the same Likert scale the extent to which they agreed that the rubric scales clearly defined the scoring criteria for each item. They were also asked if there was anything unclear about the rubric scales and if they had any recommendations for improving them. One hundred percent of focus group members agreed that the rubric scales clearly defined the scoring criteria for each item and none had recommendations for improving the rubric scales. Following the pilot of the survey, scores from the TKaPS -1 were correlated with scores from the TKaPS - 2 using a Pearson Correlation ($r=0.79$) indicating that scores on the TKaPS -1 are

predictive of scores on the TKaPS -2 (see Appendix C for full Teacher Knowledge and Practices Survey).

Both surveys were combined together into one survey and formatted following survey guidelines from Dillman, Smyth & Christian (2014). The survey contained code-based items, meaning-based items, and items that are neutral. The survey opened with more salient items such as "Time spent reading directly contributes to reading development" and closed with the more sensitive items at the end, such as "It is more important for students to learn context clues…" This survey design was best in line with the research design of this study. All of the Likert scale items were grouped with neutral items appearing throughout the survey breaking up the code-based and meaning-based items to avoid unintended question order effects. Knowledge items were grouped logically together so that participants were able to answer questions related to a topic before moving to a new one (Dillman et al., 2014).

I utilized a method recommended by Dillman et al. (2014) for encouraging a high response rate in addition to providing teachers with a small incentive for responding to the survey. Respondents received an initial email with a participant ID number asking them to participate in the survey over the web to the link provided. Participant ID numbers were used to follow through with an incentive offered for completing the survey and to confirm that teachers in the LETRS group had completed the professional development (see Appendix E for Survey Introduction). Teachers were assured that their responses would remain confidential. The researcher followed up with participants four days later with an email that built upon the information contained within the initial invitation and provided a link to the survey again. Ten and 18 days from the initial

request, respondents received another email. A final invitation was sent 22 days following the initial invitation and the survey closed in 30 days.

Data Collection and Analysis

Survey data was collected by means of an electronically administered questionnaire via Qualtrics containing 37 items following the completion of LETRS training in May of 2020. This method for data collection attempted to control for equal sample sizes of the qualitative and quantitative data (Creswell, 2014). Survey response data was kept secure and confidential. This study employed both side-by-side and transformation data analysis methods to compare teacher knowledge, beliefs, and instructional practices between the LETRS and the Non-LETRS group (Creswell, 2014). Survey responses were extracted into an excel spreadsheet and imported into MAXqda Analytics Pro for coding, analysis, and interpretation.

The quantitative results from the TKaPS and TBS were merged into one database and the statistical results from the two surveys are reported first. Then, the qualitative findings that emerge from items 10 - 19 of the TKaPS - 2 were used to corroborate, elaborate upon, or clarify results from the TBS and TKaPS (Creswell, 2014). All of the items were coded with a participant number, group code (i.e., LETRS & NonLETRS) and question number. The results of the data analyses have been made available to the school board, superintendent, principals, and teachers.

Data analysis begins with descriptive analyses of teacher demographics from the background questionnaire, conceptual and skill knowledge (TKaPS - 1) survey items, beliefs (TBS) survey items and instructional practice knowledge (TKaPS - 2) survey items where overall means, standard deviations and ranges of scores are provided for

each survey and survey item across both the LETRS group and the Non-LETRS group. Following descriptive analysis, this study investigated the following questions and hypotheses:

Research Questions

1. Does specialized knowledge of language structures and research-based methods specific to early literacy relate to the beliefs (TBS) first grade teachers have about early literacy instruction.

Alternative Hypothesis: There will be significant differences in beliefs scores between the LETRS group and the Non-LETRS group on the TBS.

Null Hypothesis: There will not be significant differences in beliefs scores between the LETRS group and the Non-LETRS group on the TBS.

To address the first research question, items 5, 7, 8, 13, 15, 16, and 18 from the TBS will be extracted and coded as code-based items. Items 2, 6, 10, 12, 14, and 17 from the TBS will be extracted and coded as meaning-based items. Items 1, 3, 4, 9, and 11 from the TBS were neutral items and will not be a primary source of data collection and analysis. A Chi-Squared Test of Independence will then be used to test the null hypothesis that specialized knowledge of language structures and research-based methods for teaching early literacy are not significantly related to beliefs by comparing the frequency of observed with the expected ratings for each code-based item and meaning based item on the TBS between the LETRS group and the Non-LETRS group (see Table 1).

Table 2

Chi-Square Test of Independence

Q.__ Basic early literacy skills should never be taught in isolation.

		Strongly Disagree	Disagree	Mildly Disagree	Mildly Agree	Agree	Strongly Agree
Group	LETRS						
	Non-LETRS						

A Chi-Squared Test of Independence was selected to measure the significance of the relationship between knowledge and beliefs because it can be used to provide not only the significance of any observed differences found, but can also provide detailed information on exactly which categories account for any differences found for nominal and/or ordinal data sources (McHugh, 2013).

2. What are the correlations between concept and skill knowledge (TKaPS - 1) and beliefs (TBS) of the LETRS group vs. the Non-LETRS group?

Alternative Hypothesis: There is a significant relationship between concept and skill knowledge scores (TKaPS - 1) and belief scores (TBS) of the LETRS group vs. the Non-LETRS group.

Null Hypothesis: There is no significant relationship between concept and skill knowledge scores (TKaPS - 1) and belief scores (TBS) of the LETRS group vs. the Non-LETRS group.

To address this research question a Spearman Correlation will first be conducted with the sum of scores on the teacher concept and skill knowledge (TKaPS - 1) survey for X and mean teacher belief ratings (TBS) for Y. A Pearson Correlation was selected because this test is used to describe the relationship between two variables in data sets that contain non-parametric data (Gravetter et al., 2018). A t -test will then be used to test differences in the strength of the relationship of concept and skill knowledge (TKaPS - 1) and teacher beliefs (TBS) of the LETRS group vs. the Non-LETRS group. A t-test was selected because they are commonly used to test the significance of a correlation (Gravetter et al., 2018).

3. What are the correlations between instructional practice knowledge (TKaPS - 2) and beliefs (TBS) of the LETRS group vs. the Non-LETRS group?

Alternative Hypothesis: There is a significant relationship between instructional practice knowledge scores (TKaPS - 2) and belief scores (TBS) of the LETRS group vs. the Non-LETRS group.

Null Hypothesis: There is no significant relationship between instructional practice knowledge scores (TKaPS - 2) and belief scores (TBS) of the LETRS group vs. the Non-LETRS group.

To address this research question a Spearman Correlation will first be conducted with the sum of scores on the teacher instructional practice knowledge (TKaPS - 2) survey for X and mean teacher belief ratings (TBS) for Y. A Spearman Correlation was selected because this test is used to describe the relationship between two variables in data sets that contain non-parametric data (Gravetter, 2018). A t -test will then be used to test differences in the strength of the relationship of concept and skill knowledge (TKaPS

- 1) and teacher beliefs (TBS) of the LETRS group vs. the Non-LETRS group. A t-test was selected because they are commonly used to test the significance of a correlation (Gravetter et al., 2018).

4. What are the differences between concept and skill knowledge (TKaPS -1) of the LETRS group vs. the Non-LETRS group?

Alternative Hypothesis: There are significant differences in concept and skill knowledge scores (TKaPS - 1) between the LETRS group and the Non-LETRS group.

Null Hypothesis: There are no significant differences in concept and skill knowledge scores (TKaPS - 1) between the LETRS group and the Non-LETRS group.

To address this research question an Independent Measures t-test will be used to measure the differences in mean scores on the concept and skills knowledge (TKaPS - 1) survey between the LETRS group and the Non-LETRS group. Mean scores will be derived from items one through nine on the TKaPS - 1. An Independent Measures t test was selected because it is commonly used with parametric data in research designs that have separate groups of participants (Gravetter et al., 2018).

5. What are the differences between instructional practice knowledge scores (TKaPS-2) of the LETRS group vs. the Non-LETRS group?

Alternative Hypothesis: There are significant differences in instructional practice knowledge scores (TKaPS - 2) between the LETRS group and the Non-LETRS group.

Null Hypothesis: There are no significant differences in instructional practice knowledge (TKaPS - 2) between the LETRS group and the Non-LETRS group.

To address this research question an Independent Measures t test will be used to measure the differences in mean scores on the concept and skills knowledge (TKaPS - 2)

survey between the LETRS group and the Non-LETRS group. Mean scores will be derived from items 10 - 18 on the TKaPS - 2. An Independent Measures t test was selected because it is commonly used with parametric data in research designs that have separate groups of participants (Gravetter et al., 2018).

6. What is the nature of the relationship between knowledge and beliefs of the LETRS group and the Non-LETRS group?

To address this research question, items from the TBS, TKaPS - 1 (when applicable) and the TKaPS - 2 will be grouped thematically into predetermined categories that are related to components of effective early literacy instruction (see Table 3) for triangulation of data sources. The data will be further analyzed for themes and patterns in responses, in an attempt to better understand the nature of the relationship between knowledge and beliefs of the LETRS group and the Non-LETRS group. This process was selected for data analysis because it allows for the researcher to determine the extent to which the qualitative data from this study corroborates, elaborates upon, or provides clarity around the quantitative findings of the study (Onwuegbuzie & Leech, 2006). The triangulation of these multiple data sources adds to the validity of this study (Creswell, 2004).

Table 3

Survey Item Alignment for Data Triangulation

Predetermined Theme	***Teacher Beliefs Survey (TBS) Items***	***Teacher Knowledge and Practices Survey Part 1 (TKaPS - 1) Items***	***Teacher Knowledge and Practices Survey Part 2 (TKaPS - 2) Items***
Phonological Awareness Assessment & Instruction	Items 1, 8 & 10	Items 1, 2, & 3	Items 10, 11, & 12
Phonics Assessment & Instruction	Items 2, 5, 6, & 15	Items 4, 5, 6, 7, 8, 9	Items 10, 13, 14, 15 & 16
Prompting Strategies & Addressing Reading Errors	Items 7, 9, 11, 12, & 18	Not Applicable	Item 18
Texts for Early Readers	Item 14	Not Applicable	Item 17

Ancillary Data Analysis

If patterns emerge following descriptive analysis of the demographic data provided by first grade teachers, then additional inferential statistics addressing the research questions above may be conducted between any of those groups as well.

CHAPTER 4

RESULTS

Descriptive Statistics

As stated in Chapter three, Chapter four begins with a descriptive overview of the data for the study followed by analysis of the data collected by research questions. Descriptive data that are reported out in Chapter four include an overview of the demographics of the population, perceived level of preparedness for different approaches to teaching reading and descriptive analysis of the measures used in this study.

Demographics. This study included 17 first grade teachers who were primarily Caucasian female general education teachers who hold Master's Degrees. Thirteen teachers who participated in this study completed the LETRS professional development. The remaining four teachers did not participate in the LETRS professional development. All of the teachers in this study were 25 years of age or older with the majority of teachers ranging in age from 31 - 40 years of age (31%) and 51+ (31%) years of age. Most teachers had more than ten years teaching experience with 39% ranging from 11 - 20 years of teaching experience and 23% with 21 years or more teaching experience and hold degrees and/or endorsements beyond a Bachelor's level. Complete demographic information for the participants in this study are located in Table 4.

Table 4

Demographics for the LETRS and Non-LETRS Groups.

Demographics	LETRS		Non-LETRS	
	n = 13	**%**	**n = 4**	**%**
Gender				
Female	13	100	3	75
Male	0	0	1	25
Age				
24 or under	0	0	0	0
25 - 30	2	15	2	50
31 - 40	4	31	2	50
41 - 50	3	23	0	0
51+	4	31	0	0
Ethnicity				
Caucasian	13	100	4	100
Primary role				
General Education	10	77	4	100
Special Education	1	8	0	0
English Language Learner	2	15	0	0
Teaching experience				
1 - 5 years	3	23	2	50
6 - 10 years	2	15	1	25
11 - 20 years	5	39	1	25
21+ years	3	23	0	0
Certification				
Bachelor's Degree	2	15	1	25
Bachelor's + Endorsement	1	8	1	25
Master's Degree	9	69	2	50
Education Specialist Degree	1	8	0	0

Perceived level of preparedness. As part of the background information teachers provided, they were asked to rate their level of preparedness for teaching reading using the following approaches; phonological awareness, phonics, and guided reading. Overall, teachers in both the LETRS Group and Non-LETRS group indicated that they felt somewhat prepared to teach phonological awareness and phonics with mean ratings by LETRS and Non-LETRS teachers ranging from 2.15 to 2.75 respectively on a scale of 1 (not prepared) to 4 (well prepared) with all ratings reported in Table 5. Teachers in the Non-LETRS group indicated that they felt adequately prepared (M=3) to teach guided reading, while teachers in the LETRS teachers indicated that they felt somewhat prepared to teach guided reading (M=2.23).

Table 5

Perceived Level of Preparedness to Teaching Approaches to Reading

Area	**LETRS n = 13**		**Non-LETRS n = 14**	
	M	**SD**	**M**	**SD**
Phonological Awareness	2.15	0.99	2.50	0.58
Phonics	2.23	0.93	2.75	0.50
Guided Reading	2.23	0.93	3.00	1.00

Ratings: 1 = not prepared, 2 = somewhat prepared, 3 = adequately prepared, 4 = well prepared

Measures. Data were collected on two measures: a beliefs survey and a knowledge survey. The Teacher Beliefs Survey was modeled after three previously used surveys (Bos, et al., 2001; Ehri & Flugman, 2018; Mather et al., 2001). The purpose of this survey was to determine if any differences emerged between LETRS and Non-LETRS teachers in regard to beliefs about the methods used to effectively teach early literacy to beginning readers. Teachers were asked to rate each of the 17 items on a six-

point Likert scale ranging from strongly disagree (1) to strongly agree (6). Table 5 presents the items for each factor with the mean ratings for LETRS and Non-LETRS teachers. Overall, teachers in both the LETRS and the Non-LETRS Group expressed positive beliefs regarding the importance and role of code-based instruction in early literacy with mean ratings for items ranging from 4.77 to 5.75. Responses to meaning-based items ranged greatly for both the LETRS and the Non-LETRS Groups with mean ratings for items ranging from 1.5 - 5.25. In general, both groups expressed negative beliefs regarding the importance and role of meaning-based approaches in early literacy with the exception of two items.

Table 6

Mean Item Ratings on the Beliefs Survey for LETRS & Non-LETRS teachers.

Items	LETRS n = 13 M (SD)	Non-LETRS n = 4 M (SD)
Code-based Instruction		
Poor phonemic awareness contributes to early reading failure.	5.30 (0.50)	5.00 (0.80)
It is important for teachers to know how to assess and teach phonological awareness, i.e., knowing that spoken language can be broken down into smaller units (words, syllables, phonemes).	5.54 (0.52)	5.75 (0.50)
When beginning readers encounter an unknown word, a good strategy is to prompt them to sound it out.	4.77 (0.60)	5.25 (0.50)
Teachers should be knowledgeable about the predictable structure of the English Language.	5.31 (0.48)	5.25 (0.50)

(continued)

Table 6 continued

Mean Item Ratings on the Beliefs Survey for LETRS & Non-LETRS teachers.

Items	LETRS n = 13 M (SD)	Non - LETRS n = 4 M (SD)
Code-based Instruction		
It is important for teachers to know how to effectively assess and teach phonics.	5.62 (0.51)	5.75 (0.50)
Beginning readers should learn predictable patterns in English.	5.15 (0.55)	5.25 (0.50)
Teachers should model how to segment words into phonemes when reading and spelling.	5.46 (0.52)	5.75 (0.50)
Meaning-based Instruction		
Teachers should know how to collect a running record on students and analyze miscues (text reading errors) for meaning, structural, and visual errors.	4.92 (0.49)	5.25 (0.96)
When beginning readers encounter an unknown word a good strategy to suggest is to use pictures to figure the word out.	2.70 (1.40)	3.75 (2.50)
All children can learn to read using literature-based, authentic texts.	3.00 (1.30)	4.50 (0.58)
Teachers do not need to be concerned when beginning readers' errors do not change meaning.	2.85 (0.99)	2.00 (0.82)
When beginning readers encounter an unknown word, the most beneficial strategy to suggest is to use the context to figure out the word.	2.90 (1.40)	3.75 (1.50)
It is not important for beginning readers to look at all of the letters in words while reading (i.e., when a student reads "house" for the word "home," it does not need to be corrected).	1.80 (0.40)	1.50 (0.58)
Neutral		
Time spent reading contributes directly to reading development.	4.31 (0.86)	5.50 (0.58)
Basic early literacy skills should never be taught in isolation.	3.20 (1.50)	3.75 (2.06)

(continued)

Table 6 continued

Mean Item Ratings on the Beliefs Survey for LETRS & Non-LETRS teachers.

Items	LETRS n = 13 M (SD)	Non - LETRS n = 4 M (SD)
Neutral		
It is important for teachers to understand reading models, such as; The Three-Cueing System, The Simple View of Reading, Scarborough's Reading Rope, and The Four-Part Processing Model.	5.3 (0.60)	4 (1.40)
Beginning readers need to encounter a new word a number of times to ensure it will become a word they can recognize as if by sight.	4.92 (1.12)	5.5 (0.60)
It is important for teachers to understand the sounds in English, including their articulatory features (i.e., the placement and actions of our lips, teeth and tongue when we make speech sounds).	5.54 (0.52)	5.5 (1.00)

Ratings: 1 = strongly disagree, 2 = disagree, 3 = mildly disagree, 4 = mildly agree, 5 = agree, 6 = strongly agree

The Teacher Knowledge and Practices Survey was a multidimensional survey modeled after Henry, 2010 and Carlisle et al., 2011. The purpose of this survey was to determine if any differences emerged between LETRS and Non-LETRS teachers in regard to both concept and skill knowledge related to effective early literacy instruction with beginning readers. Additionally, the second section of the knowledge survey attempted to gain a deeper understanding of how teachers would employ concept knowledge in the classroom to deliver effective early literacy instruction. Table 5 presents the mean scores for the Teacher Knowledge and Practices Survey; including, a total knowledge score and scores for section one and two of the knowledge survey. The mean total knowledge survey score for the LETRS group (M=45.15) was greater than the total mean for the Non-LETRS group (M=34.00) as were the scores on the first section of the knowledge survey for the LETRS group (M=32.62) and the Non-LETRS group

(M=25.25) and the second section of the survey for the LETRS group (M=12.54) and the Non-LETRS group (8.75).

Some notable differences in performance on the first section of the knowledge survey between the LETRS group and the Non-LETRS group include the LETRS group's (M=12.08) knowledge of phonology in comparison to the Non-LETRS group (M=8.75); including the skills that make up advanced phonemic awareness for the LETRS group (M=2.31) in comparison to the Non-LETRS group (M=0.5). Twenty five percent of the teachers in the Non-LETRS group were able to recall that deletion and substitution are skills that make up advanced phonemic awareness, while the other 75% were not able to recall any of the skills that make up advanced phonemic awareness. The remaining participants thought that these skills included letter sound and blending knowledge, segmentation and rhyming. Of the three skills that make up advanced phonemic awareness, 77% of LETRS participants recalled deletion, 92% recalled substitution as a skill and 62% recalled that reversal are skills that make up advanced phonemic awareness.

Another considerable differences emerged in regard to knowledge of morphology between the LETRS group (M=12.85) in comparison to the Non-LETRS group (M=8.75). One of the most notable being knowledge of the number of morphemes in given words between the LETRS group (M=2.62) and the Non-LETRS group (M=1.75). When asked how many morphemes are in the word "waits," 25% of the Non-LETRS participants were able to identify that there are two compared to 85% of LETRS participants.

Table 7

Mean Scores on the Knowledge Survey for the LETRS and Non-LETRS Groups

Item	**LETRS** **n = 13** **M (SD)**	**Non-LETRS** **n = 4** **M (SD)**
Total Knowledge Score	**45.15 (4.78)**	**34.00 (4.76)**
TKaPS - 1 Score	**32.62 (3.18)**	**25.25 (2.06)**
Phonology	**12.08 (1.61)**	**8.75 (2.06)**
How many phonemes (speech sounds) are in each word?	3.92 (0.95)	3.00 (0.82)
Sort the following Sounds under the appropriate category for voicing.	5.85 (0.83)	5.25 (1.26)
What Skills make up advanced phonemic awareness?	2.31 (1.03)	0.50 (1)
Orthography	**13.15 (1.57)**	**11.50 (1)**
Mark with an (X) all of the words that contain consonant digraphs.	2.62 (0.51)	2.00 (0)
List all of the ways you know how to spell the long /ae/ sound.	4.69 (1.44)	4.75 (0.96)
List the six syllable types.	5.85 (0.38)	4.75 (1.89)
Morphology	**7.39 (0.87)**	**5.00 (1.83)**
Mark with an (X) all of the words that are in the Anglo - Saxon layer of language.	2.15 (0.38)	1.25 (0.50)
For each word in the following list, determine the number of syllables.	2.62 (0.51)	2.00 (0.82)
For each word in the following list, determine the number of morphemes.	2.62 (0.51)	1.75 (0.96)
TKaPS - 2 Score	**12.85 (2.64)**	**8.75 (2.99)**

Inferential Statistics

The results of this study will be presented by research question using the statistical tests identified in Chapter three to answer each of the research questions presented in this study.

1. Does specialized knowledge of language structures and research-based methods specific to early literacy relate to the beliefs (TBS) first grade teachers have about early literacy instruction.

This question originally was intended to be answered using a Chi-square test of Independence. However, due to the small unequal sample size of this study and the limited variation in responses, that statistical test and others were disqualified as options. Alternatively, I will answer this question by comparing and contrasting the mean belief ratings of the LETRS group and Non-LETRS groups on the TBS. I will first examine any differences in means for code-based instruction and then will examine any differences in means for meaning-based instruction (See Table 6 for Teacher Belief Item Mean Scores).

Code-based instruction. There were no real differences between the LETRS and Non-LETRS groups in regards to their belief ratings for code-based instruction (see Figure 1). Both groups' mean ratings indicated that they agreed with every code-based item, with the exception of one item. The LETRS Group reported that they mildly agreed (M=4.77) that sounding out words is a good strategy to prompt beginning readers to use when they encounter an unknown word in text while the Non-LETRS group reported that they agreed (M=5.25). The limited variation in response to code-based belief items between the LETRS Group and the Non-LETRS Group suggests that specialized

knowledge in early literacy does not appear to be related to the beliefs that teachers have regarding code-based instruction in early literacy.

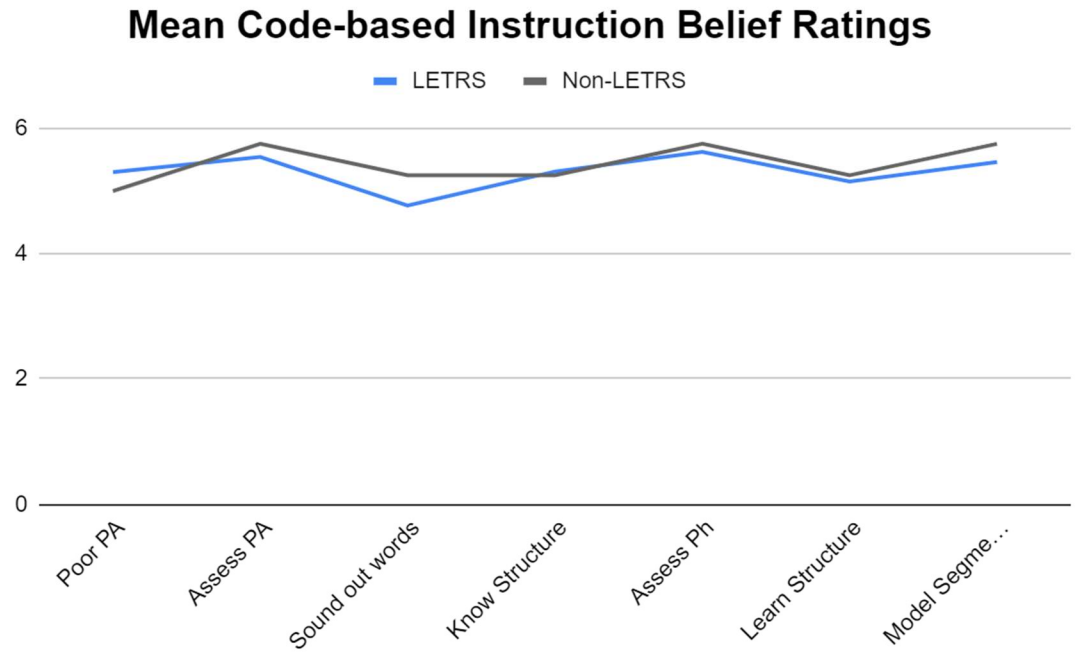


Figure 1. Mean Code-based Instruction Belief Ratings

Meaning-based instruction. Responses to the meaning-based items on the TBS varied between both the LETRS and the Non-LETRS Groups. Both the LETRS Group (M=4.92) and the Non-LETRS Group (M=5.25) expressed positive beliefs about giving and analyzing running records and generally expressed negative beliefs regarding other meaning-based approaches. Differences in beliefs emerged in response to two meaning-based items. Teachers from the LETRS group disagreed (M=2.70) that using pictures was a good strategy to identify words in comparison to the Non-LETRS group (M=3.75) who mildly disagreed. Additionally, teachers from the LETRS group (M=3.00) mildly disagreed that all children learn to read using literature-based authentic texts in comparison to the Non-LETRS group (M=4.5) who mildly agreed. While both groups

generally reported negative beliefs regarding meaning-based instruction, the variance in response patterns between the two groups indicate that specialized knowledge in early literacy may or may not be related to some of the beliefs that teachers have regarding meaning-based instruction in early literacy (see Figure 2).

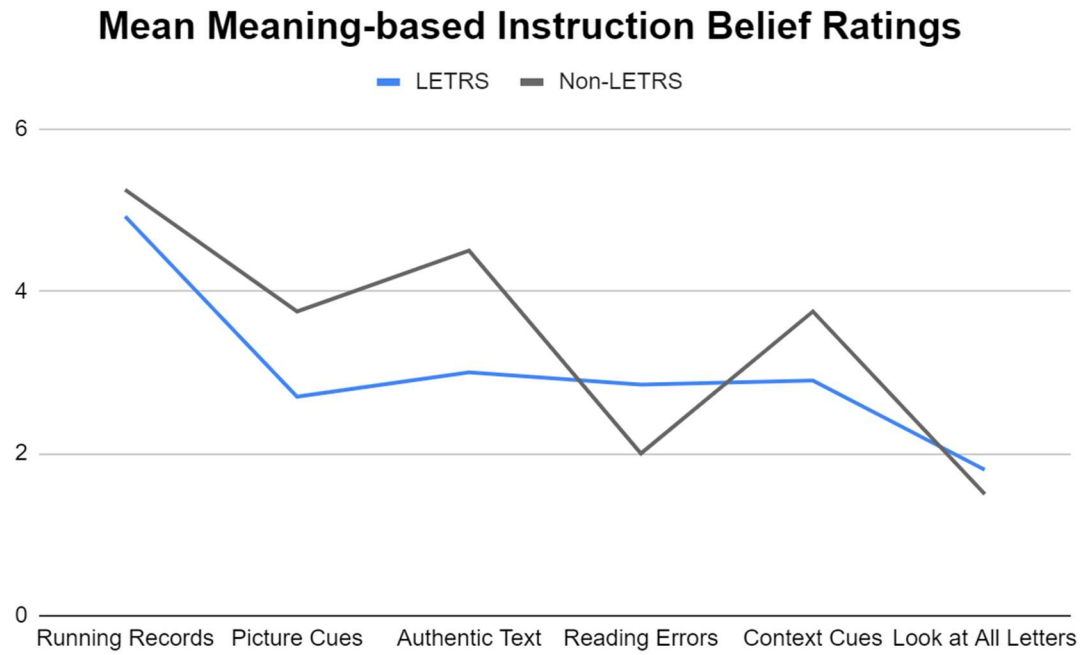


Figure 2. Mean Meaning-based Instruction Belief Ratings

2. What are the correlations between concept and skill knowledge (TKaPS - 1) and beliefs (TBS) of the LETRS group vs. the Non-LETRS group?

This question originally was intended to be answered using a Spearman Correlation. However, due to the small unequal sample size of this study and the limited variation in responses, that statistical test and others were disqualified as options. Alternatively, to address this research question, items from the TBS and TKaPS-1 will be grouped according to the layers of the English language (see Table 8). Once all of the items are aligned the data will be graphed for comparison.

Table 8

Mean TBS Item Ratings and Corresponding Mean TKaPS - 1 Item Scores by Group for Phonology, Orthography, & Morphology

Teacher Beliefs Items	**LETRS n = 13**	**Non LETRS n=4**	**Teacher Knowledge and Practices Items (TKaPS-1)**	**LETRS n = 13**	**Non LETRS n=4**
Phonology					
It is important for teachers to know how to assess and teach phonological awareness, i.e., knowing that spoken language can be broken down into smaller units (words, syllables, phonemes).	5.54	5.75	What skills make up advanced phonemic awareness?	2.31	0.50
			Sort the following Sounds under the appropriate category for voicing.	5.85	5.25
Teachers should model how to segment words into phonemes when reading and spelling.	5.46	5.75	How many phonemes (speech sounds) are in each word?	3.92	3.00
			Total Phonology Score	12.08	8.75
Orthography					
It is important for teachers to know how to effectively assess and teach phonics.	5.62	5.75	Mark with an (X) all of the words that contain consonant digraphs.	2.62	2.00

(continued)

Table 8 continued

Mean TBS Item Ratings and Corresponding Mean TKaPS - 1 Item Scores by Group for Phonology, Orthography, & Morphology

Teacher Belief Items	**LETRS n = 13**	**Non LETRS n=4**	**Teacher Knowledge and Practices Items (TKaPS-1)**	**LETRS n = 13**	**Non LETRS n=4**
Orthography					
Teachers should be knowledgeable about the predictable structure of the English Language.	5.31	5.25	List the six syllable types.	5.85	4.75
			List all of the ways you know how to spell the long /ae/ sound.	4.69	4.75
			Total Orthography Score	13.15	11.50
Morphology					
It is important for teachers to know how to effectively assess and teach phonics.	5.62	5.75	For each word in the following list, determine the number of morphemes.	2.62	1.75
			For each word in the following list, determine the number of syllables.	2.62	2.00
Teachers should be knowledgeable about the predictable structure of the English Language.	5.31	5.25	Mark with an (X) all of the words that are in the Anglo - Saxon layer of language.	2.15	1.25
			Total Morphology Score	7.39	5.00

Participants from both the LETRS Group and the Non-LETRS Group agree that teachers should know how to teach and assess phonological awareness (M=5.54 & M=5.75) and that teachers should model how to segment words into phonemes when reading and spelling (M=5.54 & M=5.75). Overall, the LETRS teachers' knowledge (M = 12.08) of phonological awareness concepts and skills was greater than the Non-LETRS group (M = 8.75) with teachers in the LETRS Group demonstrating higher levels of knowledge on all items related to phonology. The Non-LETRS Group reported high levels of beliefs regarding the assessment and instruction of phonological awareness (M = 5.75); however, they were not as knowledgeable (M = 0.50) as teachers in the LETRS Group (M = 2.31) about the skills that make up advanced phonemic awareness or about identifying when sounds are voiced or unvoiced. Additionally, teachers from the Non-LETRS Group believe it is important to be able to model segmentation of words into sounds (M = 5.75); however, they were not as knowledgeable about identifying the number of phonemes in words (M = 3.00) in comparison to the LETRS Group (M = 3.92)

For the LETRS Group, levels of knowledge were consistent high ratings on the belief items for phonology; however, the same was not true for the Non-LETRS Group. Results for the Non-LETRS Group represents a gap between what they believe to be important related to English phonology and the knowledge that they possess in assessing and teaching phonological awareness (see Figure 3).

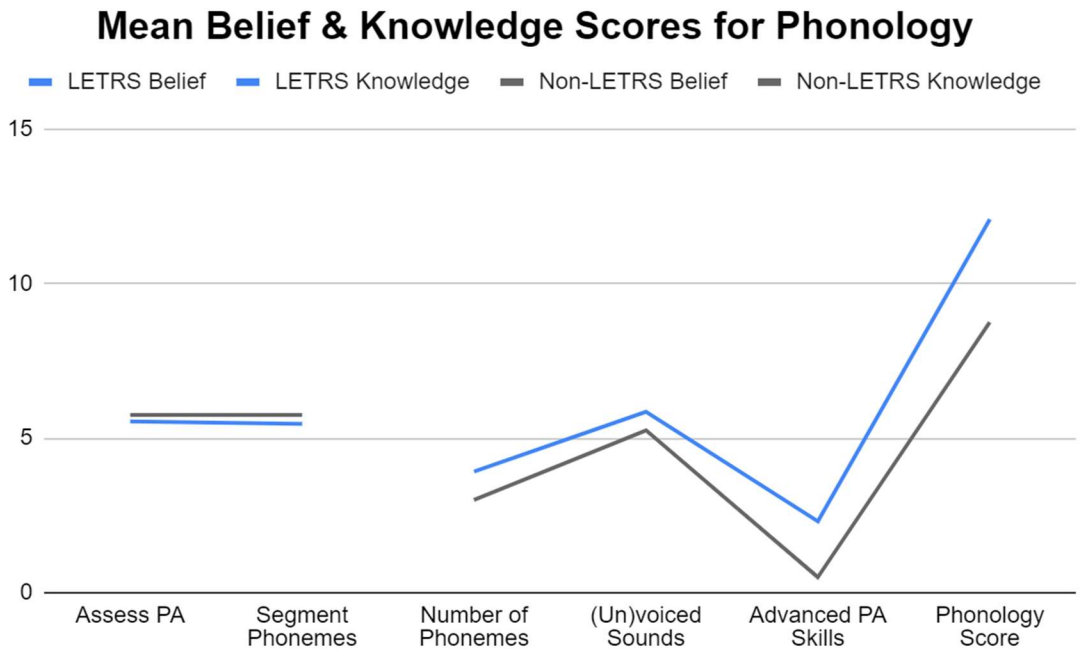


Figure 3. Mean Belief & Knowledge Scores for Phonology

The mean Teacher Beliefs Survey ratings and the corresponding mean Teacher Knowledge and Practices Survey (TKaPS - 1) item responses for orthography are outlined in Table 9. Participants form both the LETRS Group and the Non-LETRS Group agree that teachers should know how to teach and assess phonics (M=5.62 & M=5.75) and that teachers should be knowledgeable about the predictable structure of English (M=5.31 & M=5.25). Overall, the LETRS teachers' knowledge (M=13.15) of orthographic concepts and skills was greater than the Non-LETRS group (M=11.50) with teachers in the LETRS Group demonstrating higher levels of knowledge two of the three items related to orthography. The Non-LETRS teachers believe it is important to know how to assess and teach phonics; however, they were not as knowledgeable (M=2.00) as teachers in the LETRS Group (M=2.62) at identifying words with consonant digraphs. The Non-LETRS teachers also believe that they should be knowledgeable about the predictable structure of English;

however, they were not as knowledgeable (M = 4.75) as teachers in the LETRS Group (M = 5.85) at recalling the six syllable types in English.

For the LETRS Group, levels of knowledge were consistent with high ratings on the belief items for orthography; however, the same was not true for the Non-LETRS Group. Results for the Non-LETRS Group represents a gap between what they believe to be important related to English orthography and the knowledge that they possess in assessing and teaching phonics (see Figure 4).

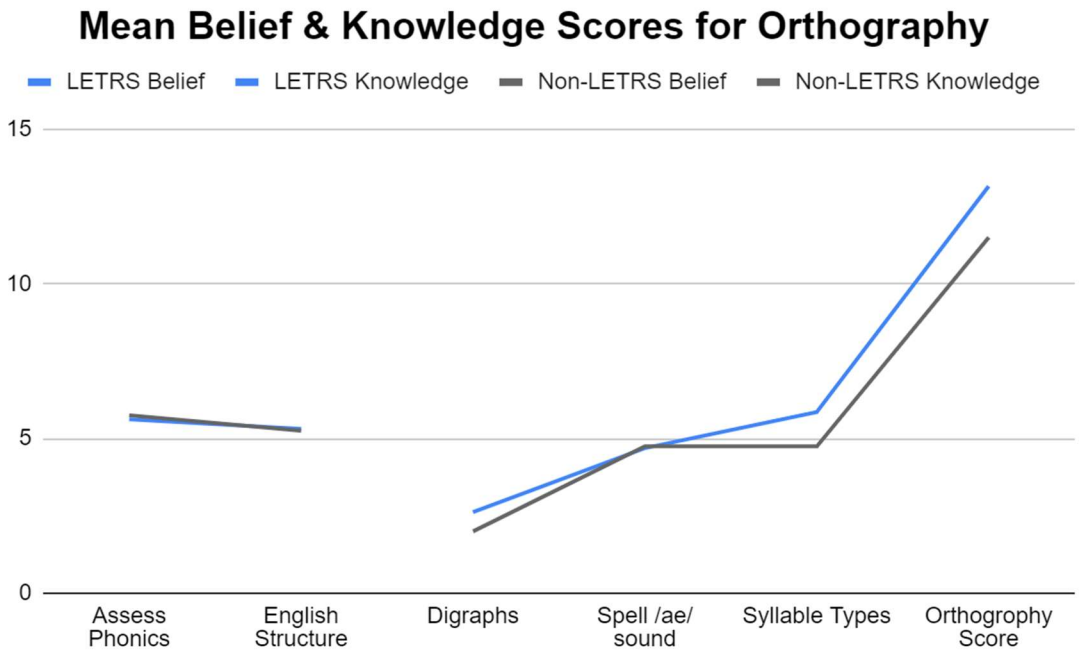


Figure 4 Mean Belief and Knowledge Scores for Orthography

Participants from both the LETRS Group and the Non-LETRS Group agree that teachers should know how to teach and assess phonics (M=5.62 & M=5.75) and that teachers should be knowledgeable about the predictable structure of English (M=5.31 & M=5.25). Overall, the LETRS teachers' knowledge (7.39) of morphological concepts and skills was greater than the Non-LETRS group (M = 5.00) with teachers in the LETRS Group demonstrating higher levels of knowledge on all of the items related to morphology. The Non-LETRS teachers believe it is important to know how to assess and teach phonics; however, they were not as knowledgeable (M = 2.00) as teachers in the LETRS Group (M = 2.62) at the number of syllables contained within words nor were they as knowledgeable (M = 1.75) as the teachers in the LETRS Group (M = 2.62) at identifying the number of morphemes in words. The Non-LETRS teachers also believe that they should be knowledgeable about the predictable structure of English; however, they were not as knowledgeable (M = 1.25) as teachers in the LETRS Group (M = 2.15) at identifying words that derived from the Anglo-Saxon layer of the English language.

For the LETRS Group, levels of knowledge were consistent with high ratings on the belief items for orthography; however, the same was not true for the Non-LETRS Group. Results for the Non-LETRS Group represents a gap between what they believe to be important related to English morphology and the knowledge that they possess in assessing and teaching word study (see Figure 5).

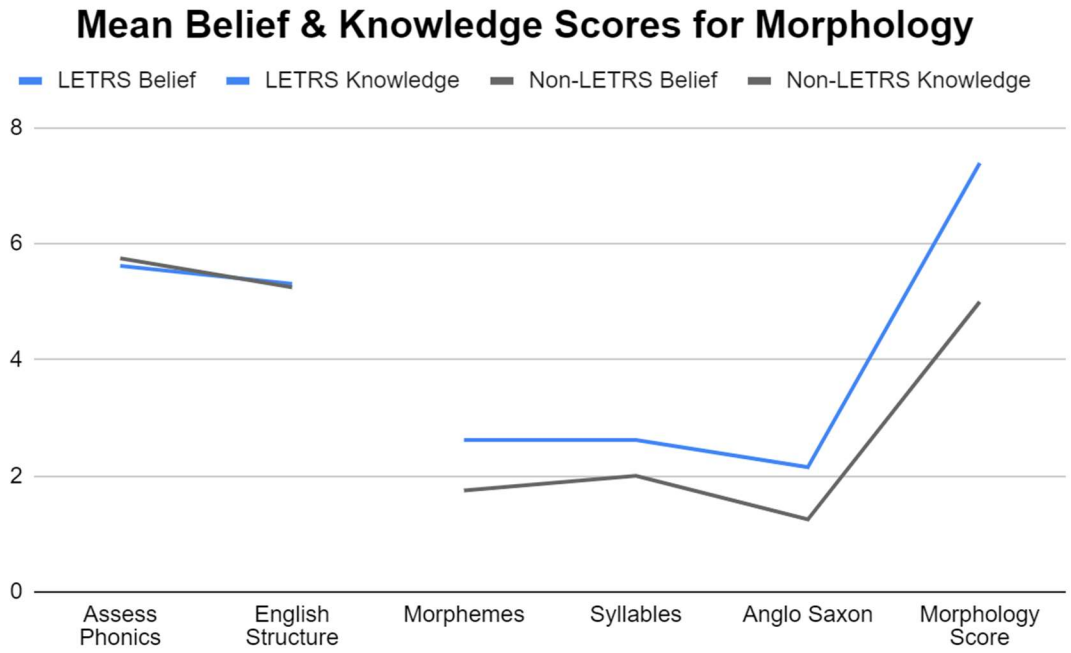


Figure 5. Mean Belief and Knowledge for Morphology

3. What are the correlations between instructional practice knowledge (TKaPS - 2) and beliefs (TBS) of the LETRS group vs. the Non-LETRS group?

This question originally was intended to be answered using a Spearman Correlation. However, due to the small unequal sample size of this study and the limited variation in responses, that statistical test and others were disqualified as options. Alternatively, I will answer this question by comparing and contrasting the belief ratings of the LETRS group and Non-LETRS groups on the Teacher Beliefs Surveys with the qualitative response items that align with those belief statements from the second section of the Teacher Knowledge and Practices Survey (TKaPS - 2). This will be done using the same procedures outlined in Chapter 3 to answer question six.

Both LETRS and Non-LETRS participants agreed that teachers should know how to assess and teach phonological awareness (M=5.54 & M=5.75) and phonics (M=5.62 & M=5.75) and that poor phonemic awareness contributes to early reading failure (M=5.3 & M=5.00). When asked what kinds of assessments they would administer to better understand the reading difficulties that a student of theirs was experiencing, 100% of the LETRS participants indicated that they would administer phonemic awareness and/or phonics assessments to diagnose their reading difficulties while 0% of Non-LETRS participants indicated that they would utilize assessments of that type (See Table 9). Alternatively, teachers in the Non-LETRS Group indicated that they would use measures of oral reading, vocabulary and comprehension to better understand their student's reading difficulties.

The response patterns from teachers in the LETRS Group indicate a consistent relationship between the beliefs they have about assessing and teaching phonological awareness and phonics and the practices that they would employ with a struggling reader. The response patterns from the teachers in the Non-LETRS Group indicate an inconsistent relationship between the beliefs they have about assessing and teaching phonological awareness and phonics and the practices that they would employ with a struggling reader.

Table 9

Mean TBS Items and Corresponding Qualitative TKaPS Item Responses by Group

Teacher Knowledge and Practices Survey Items (TKaPS -2)				
One of your students is scoring well-below expectations (15th%tile) on district wide assessments and the student is not able to comprehend text that they read. What types of assessments would you administer to better understand the student's reading difficulties? Where did you learn about these assessments?				
Teacher Beliefs Survey Items	**LETRS n = 13**	**LETRS n = 13**	**Non LETRS n=4**	**Non-LETRS n = 13**
It is important for teachers to know how to assess and teach phonological awareness, i.e., knowing that spoken language can be broken down into smaller units (words, syllables, phonemes).	5.54	"..use a spelling screener...administer the PAST." "PAST, phonics and word reading survey, spelling screeners…" "...test their phonological awareness skills…" "...diagnostic decoding survey...basic spelling screener…"	5.75	"...assessments mandated by the district...observation, formative assessment…" "DRA" "Reading fluency….applicable vocabulary knowledge…" "Running record."
It is important for teachers to know how to effectively assess and teach phonics.	5.62		5.75	
Poor phonemic awareness contributes to early reading failure.	5.30		5.00	

Both the LETRS and Non-LETRS participants agreed that teachers should be knowledgeable about the predictable patterns in English (M=5.31 & M=5.25) and that students should learn those predictable patterns (M=5.15 & M=5.25). When asked how they would explain the rules that govern the use of the -ck spelling for the /k/ sound to their students after they had already learned the spelling patterns c and k for the /k/ sound 54% of the LETRS participants were able to explain that the -ck spelling always comes at the end of words immediately after a short vowel sound while 0% of Non-LETRS participants were able to describe that rule (See Table 10). Non-LETRS participants were able to recall general rules about the –ck spelling; such as, -ck never comes at the beginning of words or that it is always at the end of words.

The response patterns from teachers in the LETRS Group indicate a consistent relationship between their beliefs about being knowledgeable and teaching the predictable structure of English. The response patterns from the teachers in the Non-LETRS Group indicate an inconsistent relationship between their beliefs about being knowledgeable and teaching the predictable structure of English.

Table 10

Mean TBS Items and Corresponding Qualitative TKaPS Item Responses by Group

Teacher Knowledge and Practices Survey Items (TKaPS -2)				
Your students have learned the spellings c and k for the /k/ sound. They are about to learn a new spelling (ck) for the /k/ sound. How would you explain the rules that govern the use of the c, k, and ck spellings used for the /k/ sound to your students?				
Teacher Beliefs Survey Items	**LETRS n = 13**	**LETRS n = 13**	**Non LETRS n=4**	**Non-LETRS n = 13**
Teachers should be knowledgeable about the predictable structure of the English Language.	5.31	"The letters ck are used for the /k/ sound at the end of a one syllable word that has a short vowel sound." "...ck only comes right after short vowels…" "-ck letters are only used right after an accented short vowel." "ck is used at the end of words…"	5.25	"…..ck is never at the beginning of a word." "ck is at the end of words." "ck only appears at the end of words…" "Using the vowels in the words and placement of the sounds."
Beginning readers should learn predictable patterns in English.	5.15		5.25	

Both LETRS and Non-LETRS participants agreed that sounding out words is a good strategy for beginning readers to use when they encounter an unknown word in text (M=4.77 & M=5.25). When asked how they would respond when a student they are reading with hesitates when they encounter the word “ship” in text, look at the picture in the text and say “boat”, 92% of the LETRS participants indicated that they would direct the student back to the word and encourage the student to use decoding strategies to read the word ship while 50% of Non-LETRS participants indicated that they would encourage the student to use decoding strategies (See Table 11). Alternatively, 50% of LETRS participants would either allow the student to read on or would direct their attention to the beginning sound after praising them for making a good guess.

The response patterns from teachers in the LETRS Group indicate a consistent relationship between their beliefs that sounding out words is a good strategy for beginning readers to use when they encounter an unknown word in text. The response patterns from the teachers in the Non-LETRS Group indicate an inconsistent relationship between their beliefs that sounding out words is a good strategy for beginning readers to use when they encounter an unknown word in text.

The LETRS participants' belief ratings were consistent with the practices that they report they would use in their classrooms indicating a positive relationship between their belief ratings and their instructional practices. The Non-LETRS participants' belief ratings were inconsistent with the practices that they report they would use in their classrooms indicating an inverse relationship between their belief ratings and their instructional practices.

Table 11

Mean TBS Items and Corresponding Qualitative TKaPS Item Responses by Group

Teacher Knowledge and Practices Survey Items (TKaPS -2)				
You are reading with a student who hesitates when they encounter the word "ship." The student refers to the picture in the book and replaces the word ship with boat and continues reading. What would you do and why?				
Teacher Beliefs Survey Items	**LETRS n = 13**	**LETRS n = 13**	**Non LETRS n=4**	**Non-LETRS n = 13**
When beginning readers encounter an unknown word, a good strategy is to sound it out.	4.77	"Stop the student and analyze the word ship with them." "...ask them to say the sounds they recognize in the word." "...look again and use strategies to sound it out." "Remind them not to guess based on the picture...segment the word and then blend it together…" "...go back and look at the letters in the word...tell me the sounds...blend the sounds."	5.25	"I would tell them to look at the word and see if the word they used matches…" "Tell them that is a great guess and it makes sense with the story and picture...look again at the beginning sound." "....I'd likely leave it alone...praise the student for using the picture to help...keep reading." "Prompt the student to go back and sound it out…"
When beginning readers encounter an unknown word a good strategy to use pictures to figure the word out.	2.70		3.75	
When beginning readers encounter an unknown word, the most beneficial strategy to use context to figure out the word.	2.9		3.75	
Teachers do not need to be concerned when beginning readers' errors do not change meaning.	2.85		2.00	
It is not important for beginning readers to look at all of the letters in words while reading.	1.80		1.50	

4. What are the differences between concept and skill knowledge (TKaPS -1) of the LETRS group vs. the Non-LETRS group?

A two-tailed Independent Measures t-test with unequal variances was conducted to determine if there were significant differences in code-based concept and skill knowledge between the LETRS group and the Non-LETRS group (See Table 12). According to the t-test, there was a significant difference (p = .000) between the mean knowledge scores of the LETRS group (M=32.62) and the Non-LETRS group (M=25.25). The two-tailed probability of .000 is less than .01 and, therefore, the LETRS professional development program likely contributed to the significant difference in code-based concept and skill knowledge of first grade teachers.

Table 12

Sum Scores of Teacher Concept and Skill Knowledge (TKaPS - 1) by Group

LETRS Group*		**Non-LETRS Group**
36	34	28
37	33	23
31	29	25
34	35	25
30	36	
26	31	
32		
n = 13		n = 4
M = 32.62		M = 25.25
SD = 3.18		SD = 2.06

***p < .01*

5. What are the differences between instructional practice knowledge (TKaPS-2) of the LETRS group vs. the Non-LETRS group?

A two-tailed Independent Measures t-test with unequal variances was conducted to determine if there were significant differences in instructional practice knowledge between the LETRS group and the Non-LETRS group (See Table 13). The difference between the mean knowledge scores of the LETRS group (M=12.54) and the Non-LETRS group (M=8.75) was approaching significance (p = .06). The two-tailed probability of .06 is greater than .05. Therefore, it cannot be determined that the LETRS professional development program contributed to the difference in instructional practice knowledge of first grade teachers.

Table 13

Sum Scores of Teacher Instructional Practice Knowledge (TKaPS - 2) by Group

LETRS Group		**Non-LETRS Group**
15	11	13
14	15	8
15	7	6
12	9	8
13	15	
11	12	
14		
n = 13		n = 4
M = 12.85		M = 8.75
SD = 2.64		SD = 2.99

$p > .05$

6. What is the nature of the relationship between knowledge and beliefs of the LETRS group and the Non-LETRS group?

Data were organized and grouped thematically into predetermined categories that are related to components of effective early literacy instruction (see Table 2) for triangulation and analysis of patterns and themes. Each predetermined theme will be analyzed individually and summarized in a table.

Phonological Awareness Assessment & Instruction. Both the LETRS Group (M = 5.30) and Non-LETRS Group (M = 5.00) agreed that poor phonemic awareness contributes to early reading failure. Yet, when given a scenario of a student who is reading well below grade-level (i.e., below the 15th percentile) LETRS participants (100%) indicated that they would administer phonemic awareness assessments to understand their students reading difficulties. Not one Non-LETRS participant indicated that they would give such an assessment. Instead, the Non-LETRS group indicated that they would administer running records or other measures of oral reading fluency, comprehension and vocabulary. These responses are more consistent with the Non-LETRS participants belief (M = 5.25) that teachers should be knowledgeable about how to collect a running record. Although both groups agree that poor phonemic awareness contributes to early reading failure, only LETRS participants reported that they would administer measures of phonemic awareness to determine if poor phonemic awareness was contributing to their reading difficulties. It appears that the Non-LETRS participants' beliefs that teachers should be knowledgeable about collecting running records (M= 5.25) overrides their beliefs that is important to know how to teach and assess phonological awareness (M = 5.75).

Both the LETRS Group (M = 5.54) and Non-LETRS Group (M = 5.75) agreed that teachers should know how to assess and teach phonological awareness. However, the LETRS participants were the only ones who could identify that phoneme deletion, substitution and reversal makeup advanced phonemic awareness. The Non-LETRS participants confused phonemic awareness with phonics, stating that knowledge of letter sounds and blending made up advanced phonemic awareness, provided no response, and stated that rhyming and word segmentation are advanced phonemic awareness skills. The Non-LETRS participants also demonstrated confusion between phonological awareness and phonics when asked to respond to a scenario where their teaching partner planned to use print for a phoneme blending activity. Most (75%) indicated that they would either leave the activity or simply build in more opportunity to have students manipulate with the print, compared to 65% of LETRS participants who indicated that the sounds should not be represented with print. Additionally, one hundred percent of LETRS participants and 75% of Non-LETRS participants indicated that they would teach mouth awareness when they had a student demonstrating confusions between sounds. Yet, the Non-LETRS participants demonstrated more difficulty categorizing voiced and unvoiced sounds than LETRS participants. Voicing is an articulatory feature that is attended to when teaching mouth awareness to students.

Both the LETRS Group (M = 5.46) and Non-LETRS Group (M = 5.75) agreed that teachers should know how to segment words into phonemes when reading and spelling. When asked how many phonemes were in given words, all of the participants were able to tell how many phonemes were in the words freight and ship. Phonemic knowledge broke down for both groups when given the words strips, nation and mix.

Ninety two percent of LETRS Group and 75% of Non-LETRS Group participants were able to determine that there are six phonemes in the word strips. For the word nation, 46% of LETRS Group and 25% of Non-LETRS Group participants were able to determine that there are five phonemes. Fifty four percent of LETRS Group participants and 0% of Non-LETRS Group participants were able to identify that there are four phonemes in the word mix.

The nature of the relationship between beliefs and knowledge between the LETRS and the Non-LETRS group in regard to phonological awareness assessment and instruction is complex. Both the LETRS and the Non-LETRS Group participants indicated that they agree with the importance of phonological awareness assessment and instruction. The practices that the LETRS Group report they would use are consistent with the beliefs that they report having. However, disparities exist between the practices that Non-LETRS participants' report they would use and their belief ratings. Given the differences in concept and skill knowledge between the LETRS and the Non-LETRS Group, it is plausible that the differences in reported practices and beliefs for the Non-LETRS Group is related to their insufficient concept and skill knowledge regarding phonological awareness.

Phonics Assessment & Instruction. Both the LETRS Group (M = 5.62) and Non-LETRS Group (M = 5.75) agreed that teachers should know how to assess and teach phonics. However, when given a scenario of a student who is reading well below grade-level (i.e., below the 15th percentile) 100% of LETRS participants indicated that they would administer phonics assessments to understand their students reading difficulties, while just one Non-LETRS participant indicated that they would give such an

assessment. Most participants (75%) in the Non-LETRS group indicated that they would administer running records or other measures of oral reading fluency, comprehension and vocabulary. These responses are more consistent with the Non-LETRS participants belief (M = 5.25) that teachers should be knowledgeable about how to collect a running record. It appears that the Non-LETRS participants' beliefs that teachers should be knowledgeable about collecting running records (M= 5.25) overrides their beliefs that it is important to know how to teach and assess phonics (M = 5.75). When given a scenario about discarding the dictation portion of a phonics lesson, all participants indicated that dictation is an important component of a phonics lesson and should be kept. Only some participants (both LETRS and Non-LETRS) could express that it should be kept due to the connection between spelling and reading. The same was not true; however, for letter formation. When given a scenario about moving letter formation to writing because it is "handwriting", 50% of Non-LETRS participants indicated that they would be fine moving this component of the lesson to their writing block, compared to 15% of LETRS participants who would be fine moving it. Sixty two percent of LETRS participants were able to describe the importance of keeping letter formation as a part of the phonics lesson to reinforce sound-symbol association compared to 25% of Non-LETRS participants.

Both LETRS (M = 5.31) and Non-LETRS (M = 5.25) Group participants agree that teachers should be knowledgeable about the predictable structure of the English Language and both the LETRS (M= 5.15) and Non-LETRS (M=5.25) agree that students should learn these patterns. Yet, LETRS participants (M = 2.62) were better able to identify the consonant digraphs (sh, ck, & ng) than Non-LETRS participants (M = 2.00). Both groups were similar in their knowledge of the spellings for the /ae/ sound. However,

their knowledge for the six syllable types differed quite a bit with the LETRS Group participants mean of 5.85 and the Non-LETRS Group participant mean of 4.75. Additionally, 46% of LETRS participants could explain the spelling -ck for /k/ always immediately follows a short vowel sound, compared with 25% of Non-LETRS participants.

The nature of the relationship between beliefs and knowledge between the LETRS and the Non-LETRS group in regard to phonics assessment and instruction is complex. Both the LETRS and the Non-LETRS Group participants indicated that they agree with the importance of phonics assessment and instruction, including knowledge and teaching of the predictable patterns of the English language. The knowledge and practices that the LETRS Group report are consistent with the beliefs that they report having. However, the knowledge and practices that Non-LETRS participants report they would use, sometimes contradict their belief ratings. Given the differences in concept and skill knowledge between the LETRS and the Non-LETRS Group, it is plausible that the differences in reported practices and beliefs for the Non-LETRS Group is related to their insufficient concept and skill knowledge regarding phonics.

Prompting Strategies and Addressing Reading Errors. LETRS Group participants (M = 4.77) mildly agreed and Non-LETRS Group participants (M = 5.25) agreed that when beginning readers encounter an unknown word, a good strategy is to prompt them to sound it. Additionally, LETRS Group participants (M = 2.70) disagree and Non-LETRS Group participants (M = 3.75) mildly disagree that suggesting that beginning readers use picture cues is a good strategy. Finally, LETRS Group participants (M = 2.90) disagree and Non-LETRS Group participants (M = 3.75) mildly disagree that

the most beneficial strategy for attacking unknown words is using context. However, when asked how they would respond to a student who used a picture to "read" the word ship as boat, 92% of LETRS participants indicated that they would prompt the student to go back to the word ship and use decoding strategies to read the word, in comparison to 50% of Non-LETRS participants. Additionally, LETRS Group participants (M = 2.85) and Non-LETRS Group participants (M = 2.00) disagreed that teachers need not be concerned when beginning readers' errors do not change meaning. However, 25% of Non-LETRS participants expressed that when the student made the word reading error, they would elect to leave it alone and allow the student to continue reading. Finally, both LETRS Group participants (M = 1.80) and Non-LETRS Group participants (M = 1.50) also both strongly disagreed that it is not important for beginning readers to look at all of the letters in words while reading and 25% of Non-LETRS participants indicated that they would prompt the student to refer only to the word's beginning sound.

The nature of the relationship between beliefs and knowledge of the Non-LETRS Group in regard to prompting strategies and addressing reading errors is paradoxical. Although the Non-LETRS Group agreed that sounding out words (M = 5.25) is a good strategy for beginning readers to use, it appears that their mild beliefs that picture cues (M = 3.75) and context (M = 3.75) are good strategies override their beliefs regarding the use of decoding skills. So much to the extent that 50% of the Non-LETRS participants indicated that they would praise the student for making a good guess and using the picture. Additionally, the Non-LETRS Group participants indicated that teachers should be concerned about reading errors for students, regardless if they change meaning. Yet, 25% of respondents indicated that they would leave a word reading error alone. Finally,

the Non-LETRS Group participants indicated that students should attend to all of the letters in words. Yet, 25% of respondents indicated that they would prompt students to attend to just the beginning sound. The LETRS Group participants response in the scenario was consistent with their belief that sounding out words is a good strategy to use (M = 4.77) over picture cues (M = 2.70) and context (2.90). Some of the LETRS participants even indicated that they would remind students they should not be using pictures or guessing at the words and they should keep their eyes on the print. The LETRS participants also indicated that they would have students attend to all of the sounds in the words and none of the LETRS participants would have ignored the reading error and allowed the student to read on.

Texts for Early Readers. LETRS participants mildly disagreed (M = 3.00) and Non-LETRS participants agreed (M = 4.50) that all children can learn to read using authentic literature-based texts and when asked which text they would select for students to read to help reinforce r-controlled vowels, 85% of LETRS Group participants and 100% of Non-LETRS Group participants selected a decodable reader over a leveled reader with a handful of r-controlled vowels. All of the participants who selected the decodable text explained that the reason they would have chosen it over the other text was because there were more r-controlled vowels within the text and a wider variety of r-controlled vowels. The nature of the relationship between beliefs and knowledge of the Non-LETRS Group in regard to texts for early readers is again inconsistent. Although the Non-LETRS participants agreed that all children can learn to read using authentic literature-based texts, when given the choice between a more authentic text and a decodable text, 100% selected a decodable text for their students to read. The belief

ratings of LETRS participants was once again consistent with the practice that they report they would use.

Summary

This study provided significant results for one of the six research questions with results for a second research question approaching significance ($p=.06$). Small, unequal sample sizes with limited variation precluded the use of significance tests to examine the relationship between beliefs and knowledge, resulting in the use of alternative comparison methods to interpret the findings from this study. The next chapter will present a discussion of the findings as they relate to the literature, implications of the findings, limitations and recommendations for future research.

CHAPTER 5

DISCUSSION

This study examined first grade teachers' beliefs and knowledge regarding research-based early literacy concepts, skills and instructional practices that are critical for developing skilled word recognition (Moats & Tolman, 2019; Kilpatrick, 2015; Castles et al., 2018). Specifically, this study examined teacher knowledge of skills and concepts related to structures of English language typically taught in first grade, as well as teachers' instructional practice knowledge. This study also sought to better understand the relationship between knowledge and beliefs when it comes to teaching early literacy. There is a longstanding body of research now regarding how all children best learn to read and reading researchers (Bos et al., 2001; Cheesman et al., 2009; Mather et al., 2001; Moats & Foorman, 2003; Spear-Swerling et al., 2005) are now seeking to understand why the gulf between reading research and instructional practices in classrooms persists (Kilpatrick, 2015).

Findings Related to the Literature

Perceived Level of Preparedness. Consistent with findings from previous studies, the participants in this study indicated that they felt somewhat prepared to teach phonological awareness, phonics and guided reading (Bos et al., 2001), with the Non-LETRS participants indicating that they felt adequately prepared to teach guided reading. This finding is not surprising given the current research on teacher preparation. Most teacher preparation programs fail to adequately prepare teachers to teach reading and phonological awareness and phonics are typically the most underrepresented elements of reading instruction addressed in teacher preparation programs (Rickenbrode

et al., 2018). Fifty percent of the Non-LETRS participants hold Master's Level degrees, while 25% more hold a Bachelor's degree and an endorsement. This further corroborates findings that, although getting better, teacher preparation programs continue to not adequately prepare teachers to teach these language structures in their classrooms (Rickenbrode et al., 2018). Although not significant, this study found that participants in the Non-LETRS group consistently rated their perceived levels of preparedness for teaching phonological awareness, phonics and guided reading higher than the participants in the LETRS group even though their actual knowledge of phonological awareness and phonics concepts and skills was significantly lower than the LETRS group. This finding is contrary to other studies that have examined the relationship between perceived levels of knowledge and actual knowledge (Spear-Swerling et al., 2005; Cohen et al., 2016). Teachers often lament that their teacher preparation programs lack effective reading training (Myracle et al., 2019) Therefore, a likely explanation for this is that after completing the LETRS professional development, teachers in the LETRS group was much more aware of what they didn't know exiting teacher preparation than the teachers in the Non-LETRS group.

Teacher Knowledge. Although the sample size is small, this study found that differences in teachers' concept and skill and instructional practice knowledge can be explained by extensive content specific professional development in early literacy. Participants from the LETRS Group demonstrated significantly higher levels of concept and skill knowledge related to structures of the English language as well as higher levels of instructional practice knowledge when compared to the Non-LETRS Group. These findings are consistent with studies that have examined differences in preservice and

inservice teacher knowledge (Bos et al., 2001; Mather et al., 2001), differences in knowledge between general education and special education teachers (Bos et al., 2001) and studies that have examined differences in teacher knowledge by perceived level of experience (Spear-Swerling et al., 2005). However, this study differs from those in that participants in the LETRS Group on average answered 78% of the concept and skill knowledge questions correctly, whereas in previous studies, even the most knowledgeable group of teachers scored well below where researchers would have expected (Bos et al., 2001; Mather et al., 2001; Moats & Foorman, 2003). The performance of the Non-LETRS Group (61% of concept & skill items correct) was consistent with the findings from previous studies of inservice teachers (Bos et al., 2001). Many of the studies investigating reading professional development to date focus heavily on how to effectively teach word recognition with likely very little to no attention paid to the other scientific fields that contribute to the science of reading that support why those practices are effective. Additionally, many of the studies investigating teacher knowledge use knowledge surveys that evaluate concept and skills knowledge below or beyond grades that some teachers teach (Folsom et al., 2017; Carlisle et al., 2011; Spear-Swerling & Brucker, 2004; Moats & Foorman, 2003). The LETRS teachers' performance on this knowledge survey was likely better than previous studies because it assessed concepts and skills relevant to their classrooms and that they likely applied to their teaching after learning about them through their professional development. Meaning, the measures of teacher knowledge in this study were more sensitive to the concept, skill and practice knowledge that one would expect to see from a teacher in first grade and did not measure concepts, skills or practices that first grade teachers wouldn't expose their students to.

There were some differences in teacher knowledge between the LETRS and the Non-LETRS group that are worth noting given the current state of teacher preparation and the current state of reading instruction in this country. The first difference that is worthwhile to note is the difference in knowledge of phonology. Participants in the Non-LETRS group demonstrated lower levels of knowledge on all concept and skills items in comparison to the LETRS group. This finding is not surprising given that Rickenbrode et al. (2018) found that phonological awareness is the least adequately addressed component of reading in teacher preparation programs. Additionally, participants in the Non-LETRS group also demonstrated confusion between phonological awareness and phonics as evidenced by responses where they would associate print with phonological awareness activities. Again, this finding is not surprising given that the Three-Cueing Model is one of the most widely used reading models in the nation and it does not distinguish between the phonological and orthographic processors. Non-LETRS participants also demonstrated more difficulty than their LETRS counterparts in identify words with consonant digraphs and recalling the six syllable types in English. Again, these results are not terribly surprising given the fact that teachers are often told that teaching these patterns are not worthwhile because English is highly unpredictable although 50% of English words can be spelled accurately by sound-symbol correspondence rules alone and an additional 36% can be spelled accurately with the exception of one speech sound, which is usually a vowel (Hanna, Hanna, Hodges & Rudof, 1966).

Concept and skill surveys are commonly used in research studies of teacher knowledge and the use of a more meaningful knowledge survey has been repeatedly cited as need for future research (Carlisle et al., 2011; Martinussen et al., 2014; Moats &

Foorman, 2003; Spear-Swerling et al., 2005). Consequently, this study aimed to examine teachers' instructional practice knowledge in addition to concept and skill knowledge. Approaching levels of significance, this study found that the LETRS Group had higher levels of instructional practice knowledge when compared to the Non-LETRS Group. The correlation between the concept and skill knowledge measure (TKaPS - 1) and instructional practice knowledge measure (TKaPS - 2) used in this study was r=0.69 indicating that there is a strong correlation between the two measures. Given the variance in performance of the LETRS group, it is evident that even with extensive content specific professional development, some teachers may lack the procedural knowledge required to apply the factual knowledge they have obtained through professional development (Cohen et al., 2016) indicating a need for professional development initiatives to include coaching and implementation supports for teachers. Additional studies with more equal sample sizes are needed in order to determine if significant differences indeed do or do not exist between similar groups of teachers and to determine if, in general, concept and skill knowledge translates to the ability to apply that knowledge contextually.

Teacher Beliefs. Consistent with findings from previous studies regarding teacher beliefs, both teachers in the LETRS and the Non-LETRS groups reported positive beliefs regarding code-based instruction for beginning readers (Bos et al., 2001; Mather et al., 2001; Ehri & Flugman, 2017). Even though participants from the Non-LETRS Group reported positive beliefs regarding code-based instructional knowledge and practices, when given the opportunity to describe the practices they would employ in their classrooms provided a specific scenario teachers from the Non-LETRS group reported

that they would use practices that contradict those beliefs. This study found that teachers from both the LETRS and the Non-LETRS groups agreed that poor phonemic awareness contributes to early reading failure. Yet, only LETRS participants would use measures of phonemic awareness to understand if that was contributing to their students reading difficulties. Poor phonemic awareness has been found to be the most common sources of reading difficulties (Kilpatrick, 2015) and reading research has found that phonics instruction is most effective when students have a solid phonological foundation with which to associate print (National Reading Panel, 2000). The Non-LETRS group recommended measures or oral reading fluency, vocabulary, and comprehension. There are a number of reasons why the teachers in the Non-LETRS group would consider these measures over phonological or phonics based measures. The first being that they aren't knowledgeable about these types of measures and therefore, would not be able to reference them as tools they would use, like the LETRS group did. Rather, they reported out measures that perhaps they learned about in their teacher preparation programs, which may not have included or emphasized assessments of phonological awareness and phonics. A second explanation could be that the Non-LETRS group isn't able to distinguish the difference between phonological awareness and phonics. There were several instances where teachers in the Non-LETRS group associated print with phonological awareness. For example, when given an example scenario of a teaching partner who wanted to do a phoneme blending activity using print, 75% of the Non-LETRS teachers did not pick up that their teaching partner was confusing the two and made other instructional recommendations that would have left them using print to represent the speech sounds rather than tokens, chips, felt, pictures, etc. The assessments

that they identified could be used to extract information through error analysis related to students' phonic knowledge. If the Non-LETRS teachers think the terms phonological/phonemic are synonymous with phonics, it is also plausible that they have mistaken these assessments as assessments that could be used to glean information related students' phonological and/or phonemic awareness.

A contradictory finding emerged when participants were given a scenario of reading with a student who uses a picture to guess an unknown word, providing the word "boat" for "ship." Although the Non-LETRS participants expressed positive beliefs about prompting students to sound out words and that it is important to attend to all of the letters in words when reading, only 50% of the respondents indicated that they would prompt the student to sound out the word, 50% would praise the student for making a good guess, 25% said that they wouldn't correct it all and another 25% indicated that they would direct the student to look at the beginning sound, compared to 92% of LETRS participants who reported that they would have prompted the student to go back and use decoding strategies to attack the unknown word. In the guided reading model, teachers learn that as students become more skilled in their reading they rely more heavily on cues from context and less from sounding them out, or they recognize many words as if they were pictures (Wexler, 2019). Guided reading is a very common balanced literacy approach that is taught in many teacher preparation programs and reinforced in practicum experiences as most schools continue to use this approach in teaching reading (Hanford, 2018). Provided that many teacher preparation programs and districts continue to use a guided reading approach in teaching reading, it appears that the Non-LETRS teachers reported mild beliefs that the use of picture cues and context are good strategies to use

override their belief that sounding out words is a good strategy. They might suggest that students sound out a word in text, but likely only after they have employed other meaning-based strategies that have failed them. Teachers in the LETRS group learned that the most recent advisory from the Institute of Education Sciences discourages the use of guessing strategies because they are not effective when students encounter more advanced texts (Foorman et al., 2016) and that research has confirmed that skilled readers actually have the ability to decode words effortlessly thanks to orthographic mapping (Kilatprick, 2015). This knowledge likely contributed to the LETRS group suggesting that the student in the scenario go back and sound out the word "boat." It also likely contributed to the consistent alignment of their ratings on the belief survey and the practices that they report they would use in their classrooms.

Other studies have found that teachers generally continue to report positive beliefs regarding meaning-based instruction even after extensive professional development in code-based instruction (Bos et al., 2001; Ehri & Flugman, 2017). Unlike Ehri & Flugman's study (2017), the LETRS Group participant mean belief responses to meaning-based items on the TBS fell within a disagreement range that would be expected (i.e., 1 - 3) provided the professional learning that teachers received with the exception of one item. The LETRS professional development not only focuses on how best to teach early literacy, it also focuses on why those methods are recommended, the research that supports them and the research that does not support meaning-based methods such as guessing. Knowledge of this research, likely resulted in the participants in this study gaining a deeper understanding of the differences between these two approaches to teaching reading to beginning readers. Additional comparison studies with larger, equal,

sample sizes are needed to determine if the differences in meaning-based belief ratings are significant between groups. Consistent with other studies (Bos et al., 2001; Mather et al., 2001), teachers in the Non-LETRS group reported positive beliefs related to code-based instruction; however, their knowledge of these concepts, skills and research-based practices that align with the research indicate a disparity between what teachers believe they should know about effectively teaching word recognition and what they actually know.

This study found that teachers from both groups generally agreed with code-based approaches and disagreed with meaning based approaches toward teaching reading. However, the Non-LETRS Group participants did not report that they would use instructional practices that are consistent with their belief ratings. In general, the LETRS Group participants were the most consistent in their belief ratings and reports of instructional practices that they would use in their classrooms. Cunningham et al. (2009) suggested that if teachers lack sufficient knowledge of research-based best practices, then their beliefs likely will not reflect current research or policy recommendations. This study provides evidence that although the teachers from the Non-LETRS Group reported beliefs that are consistent with current research and policy recommendations, their reported instructional practices are not. Indicating a disparity between what these teachers report they believe regarding early literacy instruction and the practices they would use. According to the findings of this research, that disparity is likely the result of a knowledge gap. The significant differences between concepts and skill knowledge of the LETRS Group and Non-LETRS Group suggest that the teachers from the Non-LETRS

group lack sufficient knowledge to successfully employ the early literacy practices they believe to be important.

Content Specific Professional Development. Previous studies on content specific professional development related to literacy instruction have found significant growth in teacher knowledge as a result of the professional development that they received (Martinussen et al., 2015; Folsom et al., 2017; McMahan et al., 2019; Brady et al., 2009). However, these researchers did not employ research designs that allowed for causal relationships in order to draw conclusions about the effect of their professional development on teacher knowledge, beliefs and instructional practices (Folsom et al., 2017; Martinussen et al., 2015; Ehri & Flugman, 2017). This study provides evidence that extensive content-specific professional development can explain significant differences in the concept and skill knowledge that teachers possess. This study did find differences in teachers' instructional practice knowledge; however, that difference was not found to be significant. There are a number of factors that could be contributing to this finding. First, although teachers in the LETRS group acquired factual knowledge related to the effective instruction of word recognition, some of the participants lacked the ability to translate their factual knowledge and apply it to the scenarios given indicating a potential need for coaching or implementation support to be available for teachers as a part of their professional development. Secondly, the sample size for the Non-LETRS group was very small, which did not allow for equal comparisons to be made between the two groups. This study provides evidence that a professional development model such as this one can be successful in providing teachers with concept, skill and instructional practice knowledge grounded by research that not only translates to

reported practices that are consistent with that knowledge but also the beliefs that teachers report having. Additional future research with larger, equal, sample sizes are needed in order to determine if content specific professional development can explain differences in instructional practice knowledge and the beliefs that teachers have.

Implications

There are two implications from investigating the relationship between teacher knowledge and beliefs related to early literacy instruction. Based on findings presented in the review of literature that indicated that teachers are exiting teacher preparation programs woefully unprepared to teach reading (Rickenbrode et al., 2018) and the findings of this study, school districts should consider how they can bring content specific professional development aligned with the most current body of research in the science of reading to their teachers. As Jared Myracle (2019) put it, “If your district isn’t having an ‘uh oh’ moment around reading instruction, it probably should be.” The findings from this study reflect the ideas embedded in the Knowing-Doing framework illustrating an example that although teachers in public education have positive beliefs regarding code-based instruction, they lack sufficient knowledge of the current body of research in order to translate it into action (Pfeffer & Sutton, 2000). This study serves as a model for how districts might go about providing professional development to their teachers and provides tools that districts can use to measure the impact of their implementation.

The second implication is the need for additional studies using similar methodologies with larger more equal sample sizes to further investigate the relationship between knowledge and beliefs as they relate to early literacy instruction. This study

investigated this research question; however, small, unequal sample sizes that resulted in limited variation in responses limited the ability to use significance tests to test hypotheses.

Limitations and Recommendations for Future Research

The small unequal sample size for this study is a limitation and therefore, the results from this study should be interpreted with caution. Future studies should be considered where the sample size allows for tests of significance to be conducted and interpreted alongside qualitative research information. The methods for conducting the surveys could be considered a limitation of this study as they were administered electronically and the researcher could not control for the use of any external source materials in providing responses to knowledge questions. Additionally, the length of the full survey was a deterrent in getting a larger sample of responses. Forty one percent of the total respondents to the survey quit answering questions about 60% of the way through. Future research should consider how the researcher might control the conditions for responding to the survey as well as ways to break up the surveys in order to achieve higher response rates. Multiple studies have been conducted measuring teacher knowledge with the use of concept and skill surveys similar to the one in this study (Bos, Mather, Dickson, Pdhajski, & Chard, 2001; Cheesman, McGuire, Shankweiler, & Coyne, 2009; Mather, Bos, & Babur, 2001; Moats & Foorman, 2003; Spear-Swerling, Brucker & Alfano, 2005), all of which have found that teachers lack sufficient knowledge of the structure of the English Language. Further studies are needed to validate contextualized surveys of teacher knowledge similar to the one used in this study. Provided that contextualized measures of teacher knowledge can be developed that are highly

correlated with concept and skill measures and that they provide a wealth of information beyond what can be gleaned from a concept and skill survey alone, it is recommended that researchers forgo the use of concept and skill surveys and use only a contextualized survey of teacher knowledge similar to the one in this study when investigating the relationship between beliefs and knowledge. Finally, future comparison studies would also benefit from the use of a pre and post survey method design to not only examine differences in knowledge and beliefs between two groups, but also change over time between the two groups.

Conclusion

This study strived to investigate the relationship between first grade teacher knowledge and beliefs related to early literacy instruction by comparing two groups of teachers. The results of this study show that differences in concept and skill knowledge between teachers who received content specific professional development and teachers who didn't can be explained by the extensive professional development teachers were provided, adding to the body of research for professional development. This study provides evidence that teachers greatly benefit from extensive content specific professional development that not only focuses on the most effective strategies to use in teaching but also the research and science behind those strategies. When provided with professional development that addresses both components, teachers demonstrated higher levels of knowledge in employing those concepts, skills and strategies in their classrooms when compared with teachers who did not receive content specific professional development. Additionally, when provided with content specific professional development, teachers reported beliefs more consistently aligned with the knowledge

they demonstrate and ultimately the practices that they report they would use. This study provides beginning evidence that teachers beliefs regarding code-based and meaning-based instructional may be representative of their level of knowledge of language structures and research-based instructional practices. However, additional research with larger, equal sample sizes that can utilize tests of significance are needed to determine that.

References

Adams, M.J. (1990). *Beginning to read: Thinking and learning about print.* Cambridge, MA: The MIT Press.

Alghazo, E.M., Al-Hilawani, Y.A. (2010). Knowledge, skills and practices concerning phonological awareness among early childhood education teachers. *Journal of Research in Childhood Education, 24, 172 - 185.* doi: 10.1080/02568541003635276

Binks-Cantrell, E., Washburn, E.K., Joshi, R.M., & Hougen, M. (2012). Peter effect in the preparation of reading teachers. *Scientific Studies of Reading, 16,* 526 - 536.

Birsch, J. (2005). Research and reading disability. Multisensory teaching of basic language skills. Second Edition. Paul H. Brookes Publishing Co: Baltimore

Bos, C., Mather, N., Dickson, S., Podhajski, B. & Chard, D. (2001). Perceptions and knowledge of preservice and inservice teachers about early reading instruction. *Annals of Dyslexia, 51*, 97 - 120.

Brady, S., Gillis, M., Smith, T., Lavalette, M., Liss-Bronstein, L, Lowe, E., North, W., Russo, E & Wilder, T.D. (2009). First grade teachers' knowledge of phonological awareness and code concepts: Examining gains from an intensive form of professional development and corresponding teacher attitudes. *Reading and Writing, 22,* 425 - 455. doi: 10.107/s11145-009-9166-x

Brunner, M. (1993). Reduced recidivism and increased employment opportunity through research-based reading instruction. *Office of Juvenile Justice and Delinquency*

Prevention. Retrieved from https://www.nchrs.gov/pdffiles1/Digitization/141324NCJRS.pdf

Carlisle, J.F., Kelcey, B., Rowan, B, & Phelps, G. (2011). Teachers' knowledge about reading: Effects on students' gains in reading achievement. *Journal of Research on Educational Effectiveness, 4,* 289 - 321. doi:10.1080/19345747.2010.539297.

Castles, A., Rastle, K., & Nation, K. (2018). Ending the reading wars: Reading acquisition from novice to expert. *Psychological Science in the Public Interest, 19,* 5 - 51. doi: 10.1177/15 29100618772271

Chall, J.S. (1967). *Learning to read: The great debate.* New York: McGraw Hill.

Cheesman, E.A., McGuire, J.M., Shankweiler, D. & Coyne, M. (2009). First-year teacher knowledge of phonemic awareness and its instruction. *Teacher Education and Special Education, 32* (3), 270 - 289. doi: 10.1177/0888406409339685

Cohen, R.A., Mather, N., Schneider, D.A., & White, J.M. (2017). A comparison of schools: teacher knowledge of explicit code-based reading instruction. *Reading and Writing, 30,* 653 - 690. doi:10.1007/s11145-016-9694-0

Creswell, J.W. (2014). *Research design: Qualitative, quantitative and mixed method approaches.* Los Angeles, CA: SAGE

Cunningham, A.E., Zibulsky, J. Stanovich, K.E., & Stanovich, P.J. (2009). How teachers would spend their time teaching language arts: The mismatch between self-reported and best practices. *Journal of Learning Disabilities, 42*(5), 418 - 430. doi:10.1177/0022219409339063

Darling - Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Educational Policy Analysis Archives, 8* (1), 1 - 44.

Desimone, L.M. (2009). Improving impact studies of teachers' professional development: Towards better conceptualizations and measures. *Educational Researcher, 38*(3), 181 - 199. doi: 10.3102/0013189X08331140

Dillman, D.A., Smyth, J.D., Christian, L.M. (2014). *Internet, phone, mail and mixed-mode surveys: The tailored design method.* Hoboken, NJ: WILEY

Education Advisory Board. (2019). *Narrowing the third grade reading gap: Embracing the science of reading* (Research Brief). Washington, DC: Talbot, P., Richards, R., Taylor, J. & Wahlstrom, M.

Ehri, L.C. (1996). Development of the ability to read words. In R. Barr, M. Kamil, P.B., Mosenthal, & P.D. Pearson (Eds.), *Handbook of Reading Research.* (Volume 2, pp. 383 - 418). Mahwah, NJ: Lawrence Erlbaum.

Ehri, L.C., & Flugman, B. (2018). Mentoring teachers in systematic phonics instruction: effectiveness of an intensive year-long program for kindergarten through 3rd grade teachers and their students. *Reading and Writing, 31,* 425 - 456. doi:10.1007/s11145-017-9792-7

Ferguson, R. (1991). Paying for public education: New evidence on how and why money matters. *Harvard Journal of Legislation, 28*, 465 - 498.

Fisher, D., Frey, N. & Hattie, J. (2016). *Visible learning for literacy: Implementing the practices that work best to accelerate student learning.* Thousand Oaks: Corwin.

Flesch, R. (1955). *Why Johnny can't read - and what you can do about it.* New York: Harper & Brothers.

Folsom, J.S., Smith, KG., Burk, K., & Oakley, N. (2017). Educator outcomes associated with implementation of Mississippi's K - 3 early literacy professional development initiative. *Institute of Education Sciences,* 1 - 65.

Foorman, B., Beyler, N., Borradaile, K., Coyne, M., Denton, C. A., Dimino, J., Furgeson, J., Hayes, L., Henke, J., Justice, L., Keating, B., Lewis, W., Sattar, S., Streke, A., Wagner, R., & Wissel, S. (2016). *Foundational skills to support reading for understanding in kindergarten through 3rd grade* (NCEE 2016-4008). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from the NCEE website: http://whatworks.ed.gov.

Gersten, R., Chard, D., & Baker, S. (2000). Factors enhancing sustained use of research-based instructional practices. *Journal of Learning Disabilities, 33*(5), 445 - 457.

Goodman, K.S. (1967). Reading: A psycholinguistic guessing game. *Journal of the Reading Specialist, 6,* 126 - 135. doi: 10.1080/19388076709556976

Gough, P., & Tumner, W. (1986). Decoding, reading, and reading disability. *Remedial and Special Education, 7,* 6 - 10. doi: 10.1177/074193258600700104

Gravetter, F.J., Wallnau, L.B., Forzano, L-A.B., & Witnauer, J.E. (2018). *Essentials of statistics for the behavioral sciences.* Boston, Massachusetts: Cengage.

Greenburg, J., McKee, A., & Walsh, K. (2013). *Teacher prep review: A review of the nations' teacher preparation programs.* Retrieved from National Council on Teacher Quality website: https://www.nctq.org/dmsView/Teacher_Prep_Review_executive_summary

Hanna, P.R., Hanna, J.S., Hodges, R.E., & Rudorf, E.H. (1966). Phoneme-grapheme correspondences as cues to spelling improvement. Washington, DC: U.S. Department of Health, Education, and Welfare/National Institute of Education

Hanford, E. (2018, September 10). Hard words: Why aren't kids being taught to read? *APM Reports.* Retrieved from https://www.apmreports.org/files/hard-words-printable.pdf

Henry, M.K. (2010). *Unlocking literacy: Effective decoding and spelling instruction.* Baltimore: Paul H Brookes.

Joshi, R.M., Binks, E., Hougen, M., Dalgrehn, M.E., Ocker-Dean, E. & Smith, D.L. (2009). Why elementary teachers might be inadequately prepared to teach reading. *Journal of Learning Disabilities, 42*(5), 392 - 402. doi: 10.1177/0022219409338736

Kilpatrick, D. (2015). *Essentials of assessing, preventing, and overcoming reading difficulties.* Hoboken: Wiley

Kilpatrick, D. (2016). *Equipped for reading success: A comprehensive, step-by-step program for developing phonemic awareness and fluent word recognition.* Syracuse: Casey & Kirsch Publishers.

Kim, J.S. (2008). Research and the reading wars. *The Phi Delta Kappan, 89*(5), 372 - 375.

Kuijpers. J.M., Houtveen, A.A.M., & Wubbels, Th. (2010). An integrated professional development model for effective teaching. *Teaching and Teacher Education, 26,* 1687 - 1694. doi: 10/1016/j.tate.2010.06.021

Lyon, G.R. & Chhabra, V. (2004). The science of reading research. *Educational Leadership, 61* (6) 12 - 17.

Martinussen, R., Ferrari, J. Aitken, M. & Willows, D. (2015). Pre-service teachers' knowledge of phonemic awareness: relationship to perceived knowledge, self-efficacy beliefs, and exposure to a multimedia-enhanced lecture. *Annals of Dyslexia, 65* 142 - 158. doi: 10.1007/s11881-015-0104-0

Mather, N., Bos, C., & Barbur, N. (2001). Perceptions and knowledge of preservice and inservice teachers about early literacy instruction. *Journal of Learning Disabilities, 34*(5), 472 - 482.

Mathes, P.G., Denton, C.A., Flechter, J.M., Anthony, J.L., Francis, D.J. & Schatschneider, C. (2005). The effects of theoretically different instruction and student characteristics on the skills of struggling readers. *Reading Research Quarterly, 40* 148 - 182.

McCutchen, D., Abbot, R., Green, L., Beretvas, S., Cox, S., Potter, N., & Gray, A. (2002). Beginning literacy: links among teacher knowledge, teacher practice, and student learning. *Journal of Learning Disabilities, 35*(1), 69 - 86.

McCutchen, D., Green, L., Abbot, R., & Sanders, E. (2009). Further evidence for teacher knowledge: Supporting struggling readers in grades three through five. *Reading and Writing, 22,* 401 - 423. doi: 10.1007/s11145-009-9163-0.

McHugh, M. (2013). The chi-square test of independence. *Biochem Medica, 23*(2), 143 - 149. doi: 10.11613/BM.2013.018

McMahan, K.M., Oslund, E.L., & Odegard, T.N. (2019). Characterizing the knowledge of educators receiving training in systematic literacy instruction. *Annals of Dyslexia, 69,* 21 - 33. doi:10.1007/s11881-018-00174-2.

Moats, L.C. (2007). Whole-language high jinks: How to tell when "scientifically-based reading instruction" isn't. *Thomas B. Forman Institute,* 1 - 33.

Moats, L.C. (2010). *Speech to print: Language essentials for teachers.* Baltimore: Paul H. Brooks Publishing Co., Inc. - Second Edition

Moats, L.C. (2016). *Solving our nation's reading crisis.* [Audio Webinar]. Retrieved from:

Moats, L.C. & Foorman, B.R. (2003). Measuring teachers' content knowledge of language and reading. *Annals of Dyslexia, 53.*

Moats, L.C. & Tolman, C.A. (2019). *LETRS: Language essentials for teachers of reading and spelling.* Dallas: Voyager Sopris Learning, Inc.

National Adult Literacy Survey. (2003). Washington, DC: U.S. Department of Education Statistics.

National Reading Panel. (2000). *Report of the National Reading Panel: Teaching children to read: An evidence-based assessment of the scientific research literature and its implications for reading instruction: Reports of the subgroups*. Rockville, MD: NICHD Clearinghouse.

Onweugbuzie, A.J. & Leech, N.L. (2006). Linking research questions to mixed methods data analysis procedures 1. *The Qualitative Report, 11*(3), 474 - 498.

Opper, I.M. (2019). *Teachers matter: Understanding teachers' impact on student achievement.* (Research Report No. RR-4312) Retrieved from RAND Corporation website: https://www.rand.org/pubs/research_reports/RR4312.html

Paige, D.D., Smith, G.S., Rasinski, T.V., Rupley, W.H., Magpuri-Lavell, T. & Nichols, W.D. (2018). A path analytic model linking foundational skills to grade 3 state reading achievement. *The Journal of Educational Research.* doi:10.1080/0022067.2018.1445609

Pfeffer, J. & Sutton, R.I. (2000). *The knowing-doing gap: How smart companies turn knowledge into action.* Boston: Harvard Business Review Press

Piasta, S., Connor, C., Fishman, B., & Morrison, F. (2009). Teachers' knowledge of literacy concepts, classroom practices, and student reading growth. *Scientific Studies of Reading, 13,* 224-248. doi:10.1080/10888430902851364.

Porche, M.V., Pallante, D.H., & Snow, C.E. (2012). Professional development for reading achievement: Results from the collaborative language and literacy project. *The Elementary School Journal, 112*(4), 649 - 671.

Richardson, V. (1996). *The role of attitudes and beliefs in learning to teach.* In J. Sikula (Ed.), *Handbook of research on teacher education* (2nd ed., pp. 109 - 112). New York: Macmillan

Rickenbrode, R., Drake, G., Pomerance, L. & Walsh, K. (2018). *The 2018 teacher prep review.* Retrieved from National Council on Teacher Quality website: https://www.nctq.org/publications/2018-Teacher-Prep-Review

Rickenbrode, R. & Walsh, K. (2013). Lighting the way: The reading panel report ought to guide teacher preparation. *American Educator.* 30 - 35.

Scarborough, H. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory and practice. In S.B. Neuman & D.K. Dickinson (Eds.), *Handbook of early literacy research,* (Vol. 1, pp 97 - 110). New York: Guilford Press.

Sidenberb, M.S. (2017). *Language at the speed of sight.* New York: Basic Books.

Seidenberg, M.S. & McClelland, J.L. (1989). A distributed, developmental model of word recognition and naming. *Psychological Review, 96*(4), 331 - 360.

Share, D.L. (1995). Phonological recoding and self-teaching: Sine qua non of reading acquisition. *Cognition, 55,* 151 - 218. Doi: 10.1016/0010-0277(94)00645-2

Smith, S.A. (1971). *Understanding reading: A psycholinguistic analysis of reading and learning to read.* New York: Holt, Rinehart and Wilson.

Smith, S.B., Baker, S., & Oudeans, M.K. (2001). Making a difference in the classroom with early literacy instruction. *Teaching Exceptional Children, 33*(6), 8 - 14.

Snow, C.E., Burns, M.S., & Griffin, P. (Eds.). (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

Spear-Swerling, L. & Brucker, P.O. (2004). Preparing novice teachers to develop basic reading and spelling skills in children. *Annals of Dyslexia, 54*(2), 332 - 364.

Spear-Swerling, L., Brucker, P. O., & Alfano, M. (2005). Teachers' literacy-related knowledge and self-perceptions in relation to preparation and experience. *Annals of Dyslexia, 55* (2). 266 - 296.

Student Achievement Partners. (2018). Foundational skills guidance documents: Grades K - 2. *Achieve the Core,* 1 - 32.

Tashakkori, A. & Teddlie, C. (2010). *Mixed Methods in Social and Behavioral Research.* Los Angeles: SAGE.

Taylor, B.M., Pearson, P.D., Peterson, D.S., & Rodriguez, M.C. (2004). The CIERA school change framework: An evidence-based approach to professional development and school reading improvement. *Reading Research Quarterly, 40*(1), 40 - 69. doi: 10.1598/RRQ.40.1.3

Torgesen, J. (2000). Individual differences in response to early interventions in reading: The lingering problem of treatment resisters. *Learning Disabilities Research and Practice*, *15*(1), 55-64.

U.S. Department of Education. (2019). *The nation's report card: Reading 2019.* Washington, DC: Institute for Education Sciences, National Center for Educational Statistics.

Walsh, K. (2013). 21st-Century teacher education. *Education Next, 13*(3), 1 - 7. Retrieved from https://www.educationnext.org/21st-century-teacher-education/

Walsh, K., Glaser, D., & Wilcox, D.D. (2006). *What education schools aren't teaching about reading and what elementary teachers aren't learning.* Retrieved from National Council on Teacher Quality website: https://www.nctq.org/publications/What-Education-Schools-Aren't-Teaching-About-Reading----and-What-Elementary-Teachers-Aren't-Learning

Wexler, N. (2019). *The knowledge gap: The hidden cause of America's broken education system- and how to fix it.* New York: Avery.

Wexler, N. (2019, August 22). Why most beginning readers are taught to guess at words - and how that holds them back. *Forbes.* Retrieved from https://www.forbes.com/sites/nataliew

exler/2019/08/22/why-most-beginning-readers-are-taught-to-guess-at-wordsand-how-that

-holds-them-back/#4d0069cd60f4

Willingham, D.T. (2017). *The reading mind.* San Francisco: Jossey-Bass

Zoukis, C. (2017, May). Basic literacy a crucial tool to stem school to prison pipeline. *Huffpost.* Retrieved from https://www.huffpost.com/entry/basic-literacy-a-crucial-tool-to-stem-school-to-prison_b_59149393eb01ad573dac1dd

Appendices

Appendix A

Teacher Beliefs Survey

Item	CB MB N
It is important for teachers to know how to assess and teach phonological awareness, i.e., knowing that spoken language can be broken down into smaller units (words, syllables, phonemes).	CB
It is important for teachers to know how to effectively assess and teach phonics (i.e., phoneme (sound) - grapheme (letter/symbol) correspondences).	CB
It is important for teachers to understand the sounds in English, including their articulatory features (i.e., the placement and actions of our lips, teeth and tongue when we make speech sounds).	N
It is important for teachers to understand reading models, such as; The Three-Cueing System, The Simple View of Reading, Scarborough's Reading Rope, and The Four-Part Processing Model.	N
Teachers should be knowledgeable about the predictable structure of the English Language.	CB
Teachers should know how to collect a running record on students and analyze miscues (text reading errors) for meaning, structural and visual errors.	MB
When beginning readers encounter an unknown word, a good strategy is to prompt them to sound it out.	CB
Teachers should model how to segment words into phonemes when reading and spelling.	CB
When beginning readers encounter an unknown word, the most beneficial strategy to suggest is to use the context to figure out the word.	MB
Poor phonemic awareness contributes to early reading failure.	CB
When beginning readers encounter an unknown word a good strategy to suggest is to use pictures to figure out the word.	MB
Teachers do not need to be concerned when beginning readers' errors do not change meaning.	MB

Beginning readers need to encounter a new word a number of times to ensure it will become a word they can recognize as if by sight.	N
All children can learn to read using literature-based, authentic texts.	MB
Beginning readers should learn predictable patterns in English.	CB
Basic early literacy skills should never be taught in isolation.	N
Time spent just reading directly contributes to reading improvement.	N
It is not important for beginning readers to look at all of the letters in words while reading (i.e., when a student reads “house” for the word “home,” it does not need to be corrected).	MB

Appendix B

Teacher Knowledge and Practices Survey (TKaPS)

Concept & Skill Knowledge Items (TKaPS - 1)

1. How many phonemes (speech sounds) are in each word? (5pts)
    a. Freight - 4
    b. Ship - 3
    c. Strips - 6
    d. Nation - 5
    e. Mix - 4

2. Sort each of the following sounds under the appropriate category for voicing. (7 pts)

Voiced	**Unvoiced**
m	k
j	f
b	t
a	

3. What skills make up advanced phonemic awareness? Be as specific as you can. (3 pts)
a. phoneme deletion
b. phoneme substitution
c. reversal

4. Mark with an (X) all of the words that contain consonant digraphs. (4 pts)
a. Ship - X
b. Knot
c. Black - X
d. Stop
e. Sing - X
f. Cough - X

5. List all of the ways you know how to spell the long a sound. (7pts)
a_e, ay, eigh, a, ai, ea, ey

6. List the six syllable types. (6pts)
Closed, Open, VCe, R-Controlled, Schwa, Consonant - le, Vowel Team

7. Mark with an (X) all of the words that are in the Anglo - Saxon layer of language. (4pts)
a. Love - X

b. Menu
c. Character
d. Play - X
e. Animal
f. Earth - X
g. Water- X

8. Determine the number of syllables for each word in the list. (3pts)
a. Oranges - 3
b. Eating - 2
c. Moved - 1

9. Determine the number of morphemes for each word in the list. (3pts)
a. Waits - 2
b. Shifted - 2
c. Daylight - 2

Instructional Practice Knowledge Items (TKaPS - 2)

10. One of your students is scoring well-below expectations (15th%tile) on district wide assessments and the student is not able to comprehend text that they read. What types of assessments would you administer to better understand the student's reading difficulties?

0pts	1pt	2pts
Recommends a running record or other comprehension based assessments.	Recommends giving a phonemic awareness **or** phonics diagnostic. May provide a specific name.	Recommends giving both a phonemic awareness **and** phonics diagnostics. May provide a specific name.

11. You have been analyzing a student's spelling from various writing activities and have also made observations of the student's oral language skills. You have identified that the student consistently confuses the /f/ /v/ and /the/ sounds. For example, the student has said and written the word "free" for three, "van" for fan, and "fink" for think. What types of activities would you develop to address this student's difficulties and why?

0pts	1pt	2pts
Responds by saying that they would simply refer the student to the speech language pathologist or using phonics based activities.	Responds by recognizing that the student is making phonological errors and would provide a phonological intervention (e.g., phoneme blending, rhyming, etc.).	Responds by recommending minimal pairs activities and/or explicitly teaching mouth awareness.

12. You are working in PLCs to design some phoneme blending activities. A suggested strategy to use is having students write the words on whiteboards after the sounds are dictated by the teacher and then asking students to blend the sounds they wrote together to tell you the word. What would you recommend doing?

0pts	1pts	2pts
Response indicates that the activity is fine as is.	Response indicates that there is confusion between phonemic awareness and phonics but does not provide an alternative activity.	Response indicates that there is confusion between phonemic awareness and phonics and recommends use of phonemic awareness activities.

13. You are picking out key word cards for sounds to display in your classroom as a memory device for your students. You have two sets of key word cards to choose from. Would you select words cards from card deck 1 or card deck 2 (see image)? Explain your response.

0pts	1pts	2pts
Respondent selects the first set of cards.	Respondent selects the second set of cards, but does not provide justification related to the key word pictures used to represent the sounds.	Respondent selects the second set of cards and indicates that the first set does not have good key word pictures to represent the sounds (e.g., egg for e, x-ray for x, etc.)

14. Your students have learned the spellings c and k for the /k/ sound. They are about to learn a new spelling (ck) for the /k/ sound. How would you explain the rules that govern the use of the c, k, and ck spellings used for the /k/ sound to your students?

0pts	1pts	2pts
Response indicates that they do not know this rule.	Responds by saying that ck is always at the end.	Responds with complete rule, saying that ck is always in final position **immediately** after a short vowel (e.g., back, sick, etc.).

15. Your PLC is considering skipping the dictation portion of your phonics lesson because spelling is not tested. The dictation lesson is directly aligned to the sound-

spelling pattern(s) that you are teaching and contains a few irregularly spelled words that are also explicitly taught. What would you respond to your teaching partner? Why?

0pts	1pts	2pts
Response indicates that this practice is okay.	Responds by saying that this should be kept but does not include a justification related to the research support for this practice.	Responds by saying that this should be kept **and** provides justification that research suggests there is a strong connection between encoding and decoding. May indicate that this practice assists in mapping of words to the brain for automatic retrieval.

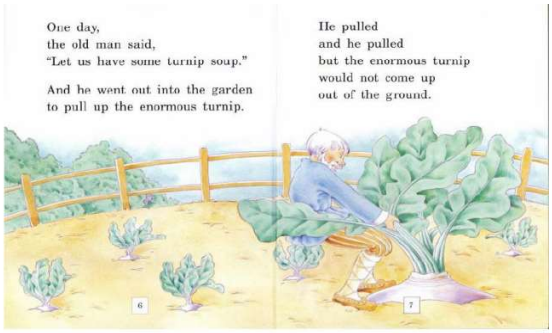
16. This is your first year implementing a new instructional resource for early literacy and your PLC is reviewing the upcoming unit. Your teaching partner notices that the lesson includes explicit instruction in forming the new spelling for the sound you are teaching and recommends moving that component of the lesson to writing time instead because it is a handwriting activity. How would you respond to your teaching partner? Why?

0pts	1pts	2pts
Response indicates that this practice is okay.	Responds by saying that this should be kept but does not include justification related to the research support for this practice.	Responds by saying that this should be kept **and** provides justification that research suggests this is necessary for mapping sound-symbol correspondence.

17. Your students have been learning r-controlled vowels and you are selecting between two texts for them to apply the skills they have been learning to. Which text would you select? Why?

This groundhog is named Pepper. We feed her grass, tree bark, and insects, but the food that she likes best is corn. We found out yesterday morning when she got out from her pen.

We found her in the petting zoo. She ate a lot of the corn that was there for the ducks and hens.



0pts	1pts	2pts
Respondent picks the first story.	Respondent selects the second story but does not explain why.	Respondent selects the second story **and** explains that it contains more examples of the r-controlled vowel pattern for students to practice.

18. You are reading with a student who hesitates when they encounter the word "ship." The student refers to the picture in the book and replaces the word ship with boat and continues reading. What would you do and why?

0pts	1pts	2pts
Respondents indicate that they would let the student read on because the error is not disruptive to the meaning of the text.	Respondent indicates that they would prompt the student to go back and look at the word again but does not explain why.	Respondent indicates that they would prompt the student to go back and look at the word again **and** explains that students must attend to all of the letters in words while reading in order map words to their brains for effortless retrieval.

Appendix C

Survey Introduction

Thank you for taking the time to complete this questionnaire. It is important that we learn more about our teachers' knowledge and practices and this study will better help to understand how we can best support our 1st grade teachers in teaching early literacy.

Your participation in this questionnaire is voluntary and your responses will be kept confidential. No personally identifiable information will be associated with your responses in any reports of the data. If you have any questions please feel free to contact Brittney Bills, the lead researcher, by email at britbill24@gmail.com.

The questionnaire should take approximately 20 minutes to complete. Following the completion of this survey, you will receive a thank you email containing a $5 gift card to Starbucks for your time.

Please enter the Participant ID Number Provided in your invitation email.