

A STUDY ABOUT THE LEVEL OF A TEACHER'S CONTENT KNOWLEDGE,
PEDAGOGICAL CONTENT KNOWLEDGE, INSTRUCTIONAL PRACTICES, AND
DEMOGRAPHICS AND THEIR EFFECTS ON STUDENTS' LITERACY ACHIEVEMENT

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ABSTRACT

It might be assumed that teachers' content and pedagogical content knowledge affect student learning. However, most studies do not include observations of actual classroom instruction.

This study provides empirical evidence that illustrates the significance of a teacher's content knowledge; a teacher's pedagogical content knowledge; instructional methods; a teacher's demographic background; and what, if any, effects they have on students' literacy achievement. This study was important because at this point in time, there was not any research that could be located that incorporated all these five areas.

Teachers' content knowledge, teachers' pedagogical content knowledge, and teachers' demographic data were obtained from a survey instrument that was validated and conducted through the Reading Research Center that houses Path to Reading Excellence in School Sites (PRESS) with which the researcher was collaborating during this project. An observation instrument for the participating teachers was developed to obtain pedagogical content knowledge in the teachers' natural setting. Oral Reading Fluency (ORF) and Measures of Academic Progress (MAP) scores were used to analyze students' achievement scores.

Evaluating data from students or teachers is always difficult. The researcher cannot tie a particular class data set to a teacher's pedagogical content knowledge or content knowledge level because the make-up of that particular class might be one that is not motivated to succeed. Therefore, for this study, the researcher took the students as an entire grade level and also used their spring scores so that the students had the entire year to improve. The findings indicated that pedagogical content knowledge and content knowledge were related to student achievement and

not instructional practices. This finding was definitely due to some outside variable that needs further research.

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CHAPTER I. INTRODUCTION

Background and Nature of the Problem

Teachers' knowledge about reading can be difficult to measure because the domains outlined in literacy, such as phonics and vocabulary, are not as clearly defined as theories in science and math (A. E. Cunningham, Stanovich & Stanovich, 2004; Phelps & Schilling, 2004; Reutzel et al., 2007). Increased attention has been given to clarifying the knowledge that elementary teachers need to have to effectively teach literacy to a wide range of student needs (Goldhaber & Anthony, 2004; Moats, 1994; Moats & Foorman, 2003; Phelps, Johnson, & Carlisle, 2009). However, there is a lack of research deciphering how to measure teachers' content knowledge about literacy and teachers' pedagogical content knowledge about literacy. There is an increased interest in checking teacher credentials to evaluate teacher quality but not enough examination assessing how a teacher executes a lesson in the classroom (Goldhaber & Anthony, 2004; Phelps et al., 2009). Teachers' content knowledge, teachers' pedagogical content knowledge, teachers' instructional practice, and teachers' demographic backgrounds need to be investigated in relation to student achievement to provide teachers with beneficial tools for assessing their effectiveness with literacy instruction. Piasta, McDonald-Conner, Fishman, and Morrison (2009) shared:

Finally, although we might assume that teachers' knowledge affects student learning to the extent that the knowledge shapes and improves literacy instruction, most studies did not include observations of actual classroom instruction. Instead, they regarded the classroom as a "black box."

Ignoring the role of classroom instruction and its effect on student outcomes is particularly troubling, given accumulating evidence demonstrating the impact of

instructional practices on student learning (Connor et al., 2007; Connor, Piasta, et al., National Reading Panel, 2000; Roberts & Meiring, 2006; Torgesen et al., 2001). In descriptive and correlation studies (e.g., Foorman & Moats, 2004; Foorman & Schatschneider, 2003), results indicate that students whose teachers used evidence-based teaching techniques in their classrooms had generally stronger reading skills than did students whose teachers used teaching techniques that were not evidence-based. (p. 227)

Teachers' own beliefs about literacy affect their instructional philosophies and have an impact on their pedagogical content knowledge, as do their background experiences, additional training, and content knowledge. "Teacher's beliefs about literacy include what they assume, think, and know about how children develop literacy skills" (Hindman & Wasik, 2008, p. 480). These beliefs are developed from teachers' own observations, experiences in school, and what they obtained during their college years. Yoo (2005) found that changing a teacher's deep-rooted ideas of teaching and how individuals learn language is often difficult because teachers tend to teach the same way they learned language during their youth through their college years.

To change perspective and instructional practice, teachers not only need time to reflect, but also effective training about how to use proven methods of instruction that will improve student achievement. These methods need to be research-based instructional tools that have been determined to be effective methods of instruction and will enhance students' literacy achievement.

Learning Point Associates (2004) examined five components identified by the National Reading Panel (NRP) as effective teaching methods for literacy through in-depth analysis and determined how and why the components resulted in effective literary methods in the classroom:

The NRP has identified effective teaching methods in literacy. To what extent a teacher utilizes these areas of instruction should be measured. The NRP identified phonemic awareness, phonics, fluency, vocabulary, and comprehension as five crucial areas of effective instruction. This was after several decades of research conducted by the National Reading Panel on the topic of effective practices that showed the evidence of the above effective instructional components. (p. 1)

Teachers' content knowledge and pedagogical content knowledge, their demographic background, and teachers' instruction of the five teaching methods identified by the NRP (phonemic awareness, phonics, fluency, vocabulary, and comprehension) all have an impact on students' literacy achievement. However, more research is needed to determine the extent of that effect. For example, which variable carries the most weight in determining students' literacy success? Does a teacher's educational background really affect the student's literacy assessment scores?

The present study was undertaken within the context of a much larger study through the University of Minnesota's Center for Reading Research. The researcher worked directly with research professionals from the University of Minnesota who were conducting literacy research at elementary schools in the metropolitan area. The literacy instruction model utilized was Path to Reading Excellence in School Sites (PRESS). The University of Minnesota and the Minnesota Reading Corps (MRC) developed PRESS, a statewide initiative to help every Minnesota child become a successful reader. The four components of PRESS are as follows:

1. Quality Core Instruction: PRESS staff will support teachers in accelerated literacy outcomes for students. Quality core instruction is systematic, explicit and based on components researched by the National Reading Panel.

2. Data-based Decision Making: Monitoring student progress and adjusting instruction based on data are critical. PRESS includes universal screening with the youngest students so teachers can identify at-risk students as early as possible.
3. Tiered Interventions: PRESS involves tiered interventions and support for students who are not making adequate progress toward reading proficiency with the quality core instruction offered in the classroom.
4. Professional Development: PRESS requires that each school site create time each week at each grade level for powerful staff development by allowing teachers to continuously improve and share their learning as well as monitor the progress of each student. (Helman, para. # 2, 3, 4, 5, 2012)

Quality core instruction is based on the five core elements of literacy as identified by the NRP. They are phonemic awareness, phonics, fluency, vocabulary, and oral language and comprehension. The University of Minnesota's Center for Reading Research (CRR) identified key components of quality core instruction that included the NRP's core elements of literacy embedded in 90 minutes of core teaching and 30 minutes of supplemental literacy instruction each day. Instruction was delivered at the student's literacy developmental level based on formal and informal assessments. Quality core instruction provided tailored instruction for English-learning students. Teachers looked for opportunities for connected and/or meaningful reading and writing, and instruction was systematic and explicit in quality core instruction.

The CRR identified databased decision-making methods for schools. The methods included a universal screening to identify at-risk students, frequent progress monitoring, prescriptive literacy assessments, systematic access to student learning data, and a systematic process to analyze data and make instructional decisions. Also mentioned was the ability to

identify systematic concerns in classrooms and school-wide, building or district support for implementing database decision making, and resources allocated based on data.

Another component of PRESS, and identified by the CRR is layered interventions and support for both students and teachers. This support includes core classroom instruction for all students and contains the quality core instruction principles previously stated. Ongoing assessment within the core program is necessary to provide targeted supplemental intervention for at-risk students. Intensive individualized interventions are offered based on professional monitoring within the supplemental intervention. Collaborative structures among teachers and specialists produce cohesion for the students, and based on ongoing assessments, English learners are provided with targeted intervention based on their literacy needs.

The final key component identified by the CRR is professional development, which is embedded and ongoing. It includes a culture of database planning, instruction, and committed and consistent leadership. It also includes a collaborative teacher approach, shared commitment to the model, and coordinated efforts.

Statement of the Problem

Some research has been conducted on elementary teachers' content knowledge, teachers' pedagogical content knowledge, effective instructional practices, teachers' demographic backgrounds, and students' literacy achievement, but the researcher located no data that integrate all five areas. Combining all components is a crucial part in researching the effects on instructional practices because the teacher might have personal bias about the literacy instructional method being used which, in turn, may lead to an impure application of the method. This research was conducted through teacher surveys, observations, and an analysis of students'

literacy assessments that include scores from Oral Reading Fluency (ORF) and Measures of Academic Progress (MAP) assessments.

Purpose of the Study

The purpose of this study was to determine if a relationship exists between teachers' content knowledge, teachers' pedagogical content knowledge, instructional practices, teachers' demographic backgrounds, and students' literacy achievement. The following research questions were designed to accomplish this purpose:

1. What is the relative relationship of teachers' content knowledge and teachers' pedagogical content knowledge on students' literacy achievement?
2. To what extent do a teacher's demographic characteristics predict content knowledge and pedagogical content knowledge about literacy?
3. To what extent does content knowledge and pedagogical content knowledge predict instructional practice in literacy?

Importance of the Study

This study provided empirical evidence that illustrates the significance of teachers' content knowledge; teachers' pedagogical content knowledge; instructional methods; teachers' demographic backgrounds; and what, if any, effects they have on students' literacy achievement. The study was important because the data collected benefited the six metropolitan schools examined in this study by giving them information to reveal areas that need improvement, such as improving classroom teachers' instructional methods or offering additional instruction courses about literacy concepts that cover the NRP panel's core elements of literacy. According to Multicultural Life (2011), the metropolitan area this research was focused on contains approximately 6,000, K-3 students, in both district and charter schools, who currently are not on

track to be reading proficiently by the end of third grade. “Reading by the end of third grade is critical for future success” (Path to Reading Excellence in School Sites, 2012, para. 1). The high population of English Language Learners (ELL) in the geographic area being studied was taken into consideration. The utilized research design focused on quality instructional practices, data collection, researching the level of the teachers’ content knowledge and pedagogical content knowledge, and examining teachers’ demographic backgrounds in relation to students’ literacy outcomes.

Definition of Terms

Many educational terms are used throughout this study. According to Creswell (2005), providing operational definitions for the terms used is an important component of designing a study. The terms below are defined based upon the literature reviewed. Although experts define the terms in many different ways, the chosen definitions are the most congruent to the purpose of this study.

Balanced Literacy: As Routman (2000) found, “some teachers use a balanced literacy or comprehensive literacy approach. Formerly, this was referred to as a ‘whole language’ approach. In current research, the word comprehensive is used because of the misinterpretation of the word, ‘balanced’” (p. 23).

Comprehension: “Involves constructing meaning that is reasonable and accurate by connecting what has been read to what the reader already knows and thinking about all of this information until it is understood” (Learning Point Associates, 2004, p. 30).

Curriculum: “A curriculum is not just content but a theory or interpretation of the educative potential of content” (Doyle & Carter, 2003, p. 132).

Content Knowledge: “This refers to the amount and organization of knowledge present in the mind of the teacher” (Shulman, 1986, p. 9).

Demographic Data of Teachers: “Variables such as gender, grade level, years of experience, and degree” (Scrivner, 2009, p. 6).

English Language Learner (ELL): “Indicates a person who is in the process of acquiring English and has a first language other than English” (Brown University, para. 1, 2012).

Fluency: “Is recognizing the words in a text rapidly and accurately and using phrasing and emphasis in a way that makes what is read sound like a spoken language” (Learning Point Associates, 2004, p. 17).

Free and Reduced Lunch: “Is a federally assisted meal program operating in public and nonprofit private schools and residential child care institutions. It provides nutritionally balanced, low-cost or free lunches to children each school day. The program was established under the National School Lunch Act, signed by President Harry Truman in 1946” (United States Department of Agriculture Food and Nutrition Service, 2012, para. 1).

Guided Reading: “Guided reading is a context in which a teacher supports each reader’s development of effective strategies for processing novel texts at increasingly challenging levels of difficulty” (Fountas & Pinnell, 1996a, p. 2).

Instructional Practice: “Teaching practices will refer to the methods and strategies supported by research that teachers use to instruct students in an inclusive educational setting” (Dixon, 1999, p. 4).

Measures of Academic Progress (MAP): “Created by educators for educators, MAP assessments provide detailed, actionable data about where each child is on their [sic] unique learning path” (Northwest Evaluation Association, 2011, para. 1).

Oral Reading Fluency: “A standardized, individually administered test of accuracy and fluency with connected text” (University of Oregon, 2011, para. 1).

Pedagogical Content Knowledge: "In Shulman’s view, pedagogical content knowledge is a form of practical knowledge that is used by teachers to guide their actions in highly contextualized classroom settings. This form of practical knowledge entails, among other things: (a) knowledge of how to structure and represent academic content for direct teaching to students; (b) knowledge of the common conceptions, misconceptions, and difficulties that students encounter when learning particular content; and (c) knowledge of the specific teaching strategies that can be used to address students’ learning needs in particular classroom circumstances. In the view of Shulman (and others), pedagogical content knowledge builds on other forms of professional knowledge, and is therefore a critical—and perhaps even the paramount—constitutive element in the knowledge base of teaching (Rowan et al., 2001. p. 2)."

Phonemic Awareness: “The understanding that spoken words are made up of separate units of sound that are blended together when words are pronounced” (Learning Point Associates, 2004, p. 4).

Phonics: “A set of rules that specify the relationship between letters in the spelling words and the sounds of spoken language” (Learning Point Associates, 2004, p. 12).

Student Outcomes: “Learning outcomes are statements of what a learner is expected to know, understand and/or be able to demonstrate after completion of a process of learning (Kennedy, Hyland, & Ryan, 2006, p. 5).

Vocabulary: “Words we need to know to communicate with others” (Learning Point Associates, 2004, p. 22).

Delimitations

A delimitation to consider was that the study is limited to schools in a midwestern inner-city school system. This limited the number of 2nd and 3rd grade classrooms. Another delimitation was that poverty level, nutrition, and outside resources, which are, factors in the success of students' school achievement were excluded from the study because they were beyond the scope of the research.

Organization of Remaining Chapters

The study focuses on investigating the content knowledge, pedagogical content knowledge, instructional practices, teacher demographics, and students' literacy achievement. Rationale for the study, the specific research questions for investigation in the study, terms and their definitions, and delimitations are presented in Chapter I.

A review of literature on the philosophies of literacy education, National Reading Panel recommendations, effective instruction methods, content knowledge, pedagogical content knowledge, teacher demographics, and English Language Learners is presented in Chapter II. The missing link among these topics of study, as identified in the review of literature, establishes the need for further investigation on the study's topic.

The research methodology and the details of the study's implementation are described in Chapter III. The links among teacher content knowledge, pedagogical content knowledge, effective instructional practices, teacher demographics, and students' literacy achievement are investigated using teacher surveys; teacher observations; and analyses of students' literacy assessments, such as their ORF and MAP scores. The research design follows a correlational research method because the researcher is determining if two or more variables relate to and influence each other. "In many correlation studies, researchers predict outcomes based on more

than one predictor variable. Thus, they need to account for the impact of each variable. Two multiple variable analysis approaches are partial correlations and multiple regression” (Creswell, 2005, p. 334).

The analysis of data, that shows which data were ascertained from the research, is presented in Chapter IV. The results of each research question are reported along with a summary of the findings that follow the scope of the study’s purpose that was outlined in Chapter I.

The researcher’s interpretations of the results from the findings are shared in Chapter V. Implications and meanings of the findings are concluded along with recommendations regarding how they can be utilized in the future. Also, recommendations for further research are stated.

CHAPTER II. LITERATURE REVIEW

Purpose

The literature review will provide a review of literature to determine what, if any, correlation exists among teachers' content knowledge, pedagogical content knowledge, instructional practices, demographics, and students' literacy achievement. The first section of this chapter pertains to philosophies of literacy education and methods of instruction. The second section of this chapter investigates the importance of content knowledge and pedagogical content knowledge for teaching. The third section discusses how much teachers' background can influence their literacy beliefs. The final section examines the best teaching practices when working with English Language Learners because this area often warrants clarification.

Philosophies and Theories of Literacy Education

There are inconsistencies in how literacy education is taught in classrooms throughout the United States. Teachers' philosophies of literacy education are affected by outside factors, such as the philosophies of the institution for which they are teaching, background experiences, knowledge, and even how their educators taught them literacy.

Hindman and Wasik (2008) suggested that there is great variability in the language and literacy environments that teachers and programs provide. Some teachers provide a curriculum that is rich in vocabulary, concentrating on language development; other teachers use an approach that references literacy as they teach every subject. There are differences among teachers in how they work with children on letters and sounds, use language with children, read books with young children, and integrate writing into the classroom. The differences come through teaching experience, the teacher's background, and the method the teacher's institution endorses.

Lack of consistency with literacy instruction in classrooms throughout the United States has led to inadequate educational experiences for students. Hindman and Wasik (2008) stated that there is a lot of inconsistency in the literacy education that teachers and institutions provide. In the individual classroom, there are many inconsistencies in the use of language with students, the frequency of books shared and read, the work with letters and sounds, and the quality of teacher instruction. The teacher's understanding about how to execute effective teaching strategies is also different from classroom to classroom.

The teacher's pedagogical content knowledge makes a difference in how students learn literacy components, but the method of instruction or curriculum that is chosen by the institution as a district or school program is also crucial. Selecting a curriculum that embodies research-based, effective literacy components is necessary for strong student outcomes. According to Brabham, Murray, and Bowden (2006), "A considerable body of research indicates that children's awareness of phonemes at the onset of formal reading instruction is the single most important predictor of later reading achievement" (p. 220).

A method that merits attention and is widely used is the whole language, or balanced, approach. Some people consider whole language or the balance approach to be two separate entities as they were originally, but in educational research today, they are one in the same. Different researchers and authors tend to use whichever term with which they are most familiar. Frey, Lee, Tollefson, Pass, and Massengill (2005) shared that balanced literacy originated in California in 1996. The state earned national low reading scores and implemented balanced-reading instruction to improve students' reading scores. Originally, balanced literacy focused on teaching skills and meaning in separate literacy blocks. After trial and error, the new format was

systematic and had clear teaching points, which included phonics as a foundation for comprehension as well as incorporating literature.

This method of instruction encourages the teacher to model the objective being taught and then work together with the student in a shared demonstration. Next, the students attempt the objective on their own, but the teacher is there to give guided instruction. Finally, the students work independently (p. 272 & 273).

Yoo (2005) shared that advocates of the literacy-education movement have argued against the traditional approach that emphasizes methods such as phonics, the basal program, and skill practice and have argued, instead, for the whole-language approach which is based on a holistic approach. The whole-language philosophy changes a teacher's beliefs and practices about teaching literacy. In the whole-language paradigm, teachers become facilitators, learners, observers, and partners for children in education, rather than using control and authority.

The whole-language approach does not take one letter as its focus for the day but, instead, uses every opportunity as a learning opportunity. The method combines reading and writing to create a more balanced literacy approach. For example, if a teacher had been working on digraphs during literacy instruction and there was a vocabulary word in science that contained a digraph, the teacher would make sure to point that fact out during the science lesson and would probably include it again in the literacy lesson the next day. Frey et al. (2005) shared:

Well-implemented balanced literacy programs must include elements of community, authenticity, integration, optimism, modeling, and student control and connectedness. To best achieve that goal, researchers suggest that teachers should (a) emphasize reading, writing, and literature by providing long, uninterrupted periods of successful reading every day; (b) create a positive, reinforcing, cooperative environment in the classroom;

(c) set high but realistic expectations for all students; and (d) integrate reading and writing thoroughly across the curriculum. (p. 273)

A whole-language classroom often uses Guided Reading components for literacy instruction. Guided Reading supports a balanced literacy program that meets students' individual needs. Fountas and Pinnell (1996b) gave meaning to the term "Guided Reading" by explaining that, during Guided Reading, teachers give support to the students by using increasingly difficult reading levels. Children are placed in a group with classmates at the same reading level. Each lesson involves the teacher introducing the text, working with the students on vocabulary words, and then either reading the story with the students following along or assisting the students in reading the text themselves. The teacher may also discuss one or two teaching points from the story or may have an extended lesson from the story. Text chosen for each reading group is easy enough for the students to read using the reading strategies taught but difficult enough for them to learn a minimum of new concepts. Because there are a wide variety of instructional methods, it is often difficult to determine which method offers the most effective form of literacy instruction. Researchers and scholars at the Center for the Improvement of Early Reading Achievement (CIERA) have conducted studies that focused on effective literacy development. Pressley (2002) commented on research done by Taylor, Pearson, Clark and Walpole:

Taylor, Pearson, Clark, and Walpole (2000) studied 14 schools across the United States, with each having a high proportion of students living in poverty. In each of these schools, two teachers at each grade level (kindergarten through grade 3) were observed, with achievement in classrooms carefully analyzed. In particular, word-level measures (word recognition accuracy and fluency) and comprehension measures were taken at both the beginning and end of the school year. Based on improvements in reading performance

over the school year, the researchers classified the schools as most, moderately, or least effective in promoting student literacy. The most effective schools included more small group instruction, more coaching (i.e., scaffolding) by teachers, more teaching of phonics with an emphasis on application during real reading, more higher-order questioning (i.e., questions requiring inferences and integration), greater outreach to parents, and more independent reading. There was greater balancing of skills and holistic instruction (e.g., reading complete texts, composition writing) in effective schools and greater student engagement (i.e., students spent more time productively reading and writing). In summary, Taylor et al. (2000) used classroom data to develop an understanding of schools with high literacy achievement. (p. 175 & 176)

It is important to determine the factors that contribute to success when observing literacy instruction methods and to use techniques that are research based and data driven. The National Reading Panel report summarizes several decades of scientific research that clearly shows how effective instruction addresses five critical areas: (a) Phonemic Awareness (b) Phonics (c) Fluency (d) Vocabulary and, (c) Comprehension. (Learning Point Associates, 2004, p. 1)

The National Reading Panel (NRP) conclusions were drawn from an experimental design to be defined as scientifically based. The premise for the study was driven by a long history of inaccuracies in teaching literacy. The NRP was developed to give direction and focus to teaching literacy as well as to give teachers critical research-based areas that need to be included in effective literacy instruction. J. W. Cunningham (2001) described how the NRP was developed:

At the behest of the United States Congress in 1997, the Director of the National Institute of Child Health and Human Development (NICHD) and the U.S. Secretary of Education selected 14 persons to serve as a National Reading Panel (NRP). Most Panel members

were reading researchers in various fields. All but two members held a doctorate. The Panel was charged to review and assess the research on teaching reading, with implications for both classroom practice and further research. The report of the National Reading Panel was issued in two volumes. The first volume (00-4769) is a succinct summary of how the Panel came to be, the topics it chose to investigate, its procedures and methods, and its findings. The second volume (00-4754) contains the same introductory and methodological information, but presents at great length the work of each of the topical subgroups within the Panel. It is the second volume that one must read to fully understand the findings and recommendations for classroom practice and future research. (p. 326)

Since the NRP's findings, many researchers have studied the five critical areas identified by its research (Cantrell, 1998/1999; Juel & Minden-Cupp, 2000; Miller & Veatch, 2010; Moats & Foorman, 2003). Through data-driven research, the NRP findings have been proven to be effective for student success.

The first area to discuss is phonemic awareness which helps children learn how to read by teaching them to learn the connection among how the word is written, how it is pronounced, and its meaning. "This connection is what enables the reader to access information about the word stored in the brain when the word is encountered in print. Faster, stronger connections help produce more proficient reading" (Learning Point Associates, 2004, p. 7). Snider (1995) defined phonemic awareness as having the knowledge that words are made up of sounds. Snider (1995) believed that this awareness is not necessary to speak and understand speech, but children need to be aware of the sounds that make up words to read and spell.

The effectiveness of phonics has been debated for many years, along with how much time should be devoted to it in the classroom. The National Reading Panel Report (NRP, 2000) identified the importance of using systematic phonics along with a strong reading program. The report, as shared by the Learning Point Associates (2004), stated the following:

Phonics instruction is never a total reading program. In first grade, teachers can provide controlled vocabulary texts that allow students to practice decoding, and they can also read quality literature to students to build a sense of story and to develop vocabulary and comprehension. Phonics should not become the dominant component in a reading program, neither in the amount of time devoted to it nor in the significance attached. It is important to evaluate children's reading competence in many ways, not only by their phonics skills but also by their interest in books and their ability to understand information that is read to them. By emphasizing all of the processes that contribute to growth in reading, teachers will have the best chance of making every child a reader. (p. 13)

Opinions differ about the pros and cons of teaching phonics. Research has been conducted on both sides of the argument. The NRP revealed that there is a significant benefit in teaching phonics when it is embedded in a strong literacy program but not when it stands alone. Regularly taught phonic instruction has been proven to have benefits for students in kindergarten through grade 6. Kindergarteners who were taught phonics had an enhanced ability to read and spell words while students in grade 1 were able to decode and spell text, which aided in their comprehension skills.

There are many benefits to being a fluent reader. Fluent readers are better able to comprehend what they are reading because they can focus on content rather than decoding words

(Learning Point Associates, 2004; Miller & Veatch, 2010). Focusing on the text instead of taking time to sound out words or to use decoding skills allows the reader to understand the text better and to follow the story line without interruptions. Francis et al. (2007) shared that a student falling behind in reading focuses on decoding words in the text while a fluent reader does not spend time decoding words which allows the student to concentrate on what the text is saying.

The NRP (2005) concluded that fluency could be improved through the correct techniques and teaching methods:

Fluent readers are able to read orally with speed, accuracy, and proper expression.

Fluency is one of several critical factors necessary for reading comprehension. Despite its importance as a component of skilled reading, fluency is often neglected in the classroom. This is unfortunate. If text is read in a laborious and inefficient manner, it will be difficult for the child to remember what has been read and to relate the ideas expressed in the text to his or her background knowledge. Recent research on the efficacy of certain approaches to teaching fluency has led to increased recognition of its importance in the classroom and to changes in instructional practices. (p. 11)

Vocabulary and comprehension are closely intertwined. An understanding of the vocabulary that the reader is encountering is crucial to improving or attaining good comprehension of the written text. “If the word is in the reader’s oral vocabulary, the reader will be able to understand it. If the word is not in the reader’s oral vocabulary, the reader will have to determine the meaning by other means, if possible” (National Reading Panel, 2005, p. 13). A classroom rich in vocabulary, for example having vocabulary words hanging on the wall or labeling items throughout the room, can increase students’ vocabulary knowledge. Learning Point Associates (2004) stated that vocabulary is crucial in reading for the following reasons:

1. Word recognition
2. Comprehension
3. Aids in reading to learn. (p. 22)

Children who are at the beginning stages of learning to read use the knowledge they have about words to help them decipher new meanings for unknown words. When learning new words and adding to their existing schema, children broaden not only their understanding of word recognition, but they also gain confidence in their reading abilities by increasing their fluency rate and comprehension strategies.

Good vocabulary instruction includes, at its base, a great deal of time spent in reading and in rich conversations about text. Good vocabulary instruction focuses on important words and usually involves teaching conceptually related words rather than unrelated individual words.

Students make connections with what they already know and add the connection to their existing schema about the item. Exposing them to the vocabulary word, several times, in a meaningful way is very important. Bringing in real-life examples also aids in their understanding.

Comprehension is a skill that teachers should strive for in their students. There are teaching strategies that help children comprehend what they are reading. Some of these strategies include connecting what the students are learning to prior knowledge and asking questions (Carlisle, Kelcey, Berebitsky, & Phelps, 2011; Learning Point Associates, 2004; McKown, Beck, & Blake, 2009; Miller & Veatch, 2010).

Strong comprehension skills lead to better understanding of the text. Therefore, students with such skills do better in testing situations because they comprehend what they are reading.

Practicing and learning skills to help students comprehend is vital to students' success.

The NRP (2005) report said that, "in carrying out its analysis of the extant research in reading comprehension, the NRP noted three predominant themes in the research on the development of reading comprehension skills" (p. 13). The three predominant themes are as follows:

1. Reading comprehension is a complex cognitive process that cannot be understood without a clear description of the role that vocabulary development and vocabulary instruction play in the understanding of what has been read.
2. Comprehension is an active process that requires an intentional and thoughtful interaction between the reader and the text.
3. The preparation of teachers to better equip students to develop and apply reading comprehension strategies to enhance understanding is intimately linked to students' achievement in this area. (National Reading Panel, 2005, p. 13)

The themes stated above were recognized by the NRP as vital in serving teachers with a base on how to effectively teach comprehension to their students.

Taylor, Pearson, Peterson, and Rodriguez (2003) shared the following:

Effective reading instructions that emerged from our work encompasses teachers who challenge students with higher-level thinking and the application of reading strategies to their reading and writing. Effective teachers' questioning for texts is purposeful, and they assess students' learning through their answers to challenging questions. They actively involve students in literacy activities, often giving them responsibility for holding their own discussions about text, and help students learn as well as to help them assume responsibility for their own learning. A challenge that remains is to help teachers translate

research on effective reading instructions into practice through ongoing, quality professional development within their schools. We hope that schools in our reform in reading will improve both the “what” (the curricular elements) and the “how” (the teaching processes) of their classroom reading instruction with the end result of enhanced reading growth for all students. (p. 24)

Through Taylor et al. research, it was concluded that both content knowledge and pedagogical content knowledge need to intertwine to create an effective learning environment for all students. Not only is curriculum important, or what teachers teach, but also how teachers present the information to the students.

Teacher Knowledge

Assessing teachers’ content knowledge about literacy has proven to be more difficult than testing teachers’ content knowledge for other disciplines such as math and science. This difficulty is due to the complexities of reading and writing, which do not have defined domains like math and science (A. E. Cunningham et al., 2004; Phelps & Schilling, 2004; Reutzel et al., 2007). Obtaining research about teachers’ content knowledge for literacy is essential to the students’ success. If the teacher does not have background knowledge in literacy, then the possibility of challenging the students and effectively teaching literacy is lowered. Pedagogical content knowledge was central to Shulman’s (1987) model of teaching. He discussed how pedagogical knowledge represents the capacity of a teacher to convert content knowledge into areas that are pedagogically commanding and, yet, adaptive to the learners’ ability differences. The idea that teachers should be knowledgeable in their content area and capable of teaching it effectively seems rather obvious. However, Reutzel et al. (2007) shared the 2000 *National Reading Panel Report*, which concluded that researching teacher knowledge needed further investigation. It was

clear that teachers use both content knowledge and pedagogical content knowledge when they are teaching. Content knowledge provides a foundation for the skills and ideas that teachers are presenting, and pedagogical content knowledge aids in the teacher's decision making during the lesson.

There has been a shift from examining teachers to examining teaching, which involves measuring teachers' content knowledge and pedagogical content knowledge. A teacher might understand the concepts of literacy but not be able to effectively teach the material to the students, or a teacher might have a great understanding of how to deliver the content to students so that they understand but might not have a strong literacy content-knowledge background. Teachers' content knowledge was defined by Phelps and Schilling (2004) as how teachers need to know a subject to teach it to others. Phelps and Schilling also shared that researchers have often characterized teachers' content knowledge by using proxy measures, such as counting the number of college courses taken, or administering mathematics or other subject-matter tests. These approaches only consider common knowledge, not knowledge specific to teaching.

In a recent, published report, "Studying Teacher Education: The Report of the AERA Panel on Research and Teacher Education", Cochran-Smith and Zeichner (2005) identified teacher knowledge as an area in which considerable theoretical and research work is urgently needed. Teachers need to know and understand the principles behind literacy to pinpoint problems their students are having. For example, if students are struggling with sounding out words and recognizing word components, a teacher should be able to detect if they are having problems with phonics or phonemics.

Evidence is mounting that teaching a subject requires content knowledge that goes substantially beyond what is typically taught and learned in college and university

classes. This special form of content knowledge is most commonly referred to as pedagogical content knowledge. (Goldschmidt & Phelps, 2010, p. 433)

Direct measures of teachers' content knowledge have been related to significant positive effects on student learning. Therefore, providing teacher-development training in areas that are lacking in content knowledge is something that must be done. Teachers' knowledge is associated with student gains, particularly for low-performing students (A. Cunningham & Zibulsky, 2009; Goldschmidt & Phelps, 2010).

Content knowledge and pedagogical content knowledge need to be intertwined for effective teaching to occur. The concept of pedagogical content knowledge was popularized by Shulman (1986) in the 1980s and is defined as follows:

The most useful forms of representation . . . , the most powerful analogies, illustrations, examples, explanations, and demonstrations- in a word, the most useful ways of representing and formulating the subject that make it comprehensible to others. . . . Pedagogical content knowledge also includes an understanding of what makes the learning of specific topics easy or difficult. (p. 7)

Teaching a subject like literacy goes beyond just being a good reader (Goldschmidt & Phelps, 2010; Shulman, 1986). A teacher must have an understanding of not only how to read, but also how to teach literacy in a way that is easy for students to comprehend. In order for a teacher to have an understanding of how to read and how to effectively teach reading, content knowledge and pedagogical content knowledge must come together (Segall, 2004; Shulman, 1987).

The responsibility for teacher's content knowledge and pedagogical content knowledge lies with the teacher, the degree-granting institution, and the teacher's employer. If the school

superintendent recognizes a teacher's lack of content knowledge in a subject or a lack of pedagogical content knowledge, it should be the responsibility of the superintendent or principal to bring in experts for teacher-development training. "It is the solemn responsibility of any profession to monitor the professional knowledge of its members" (Reutzel et al., 2011, p. 184).

Shulman (1987) defined instruction as transforming the teacher's knowledge of the subject area into pedagogical representations and actions. He stated, "there are ways of talking, showing, enacting, or otherwise representing ideas so that the unknowing can come to know, those without understanding can comprehend and discern, the unskilled can become adept" (p. 7).

As stated earlier, direct measures of teachers' content knowledge have been related to significant positive effects on student learning. Therefore, it is essential for schools to examine both degrees of knowledge in their teaching staff.

Teachers' Belief Systems

Although there is research available on different methods of teaching literacy, a teacher also draws from a unique belief system, past experiences, and educational background. Scharlach (2008) stated that, as human beings, we have beliefs about everything, whether they are implicit or explicit beliefs. These beliefs are the basis for all choices that we make as individuals.

Teachers, like all human beings, make decisions based on their beliefs. These decisions and actions have a significant impact on the learning experiences provided for students. Teachers' actions are influenced by their attitudes and beliefs, which then influence student learning and behavior.

The word belief can take on many meanings for different people. For this study, "the term belief will be defined as knowledge or ideas accepted by an individual as true or a

probable” (Evans, Fox, Cremasa & McKinnon, 2004, p. 131. Teaching beliefs, and more specifically beliefs about literacy, can come from the teacher’s deep-rooted experiences.

Hindman and Wasik (2008) state that the teachers’ belief system about literacy could include what the teacher assumes and thinks about how children develop literacy skills. Also, what the teacher thinks their role should be in learning literacy and how to include their role in the classroom.

Because teachers bring these beliefs into the classroom, it is sometimes difficult to change the way teachers conduct their methods of teaching. D. M. Early indicated:

In general, I think past experience and practice have a huge effect on literacy beliefs, but I don’t think we have good ways of measuring those associations, so they tend to end being small or null in our research. They may have more to do with how individual teachers were taught, whether or not they found those strategies effective, and how difficult and/or enjoyable they find reading now. Also, it is always hard to change practice, even when a practice does not seem to be effective, because it involves extra work and preparation. (personal communication, January 29, 2010)

Although bringing in past experiences can seem like a negative method of teaching, it can be a positive method as well. Yoo (2005) said that the value of teaching language is that it stimulates teachers to reflect on their experiences, what they know, what they are about, and what they should be about to help children develop literacy. Thus, when children become literate, they can change their view of the world because they can explain their perspectives in their own voices.

Teachers typically want to develop a love of reading and writing in their students and will often model these behaviors as ways to instill this love in students. Teachers want to convey that

reading or writing is not just something done for pleasure, but also has a purpose. Yoo (2005) dictated:

Teachers believe that once children observe adults placing value on reading books and writing stories and enjoying sharing these with them as a special time, they also learn to enjoy books and become interested in learning to read and write. Teachers with these beliefs appear to want to read to children because the teachers themselves enjoy reading and are also good readers. These teachers experience pleasure and satisfaction from reading books and seem to share their own positive attitude towards reading with the children they teach. They are not just reading books in order to teach children to read but to share their own love of reading. In a sense, they do not read to children for the purpose of teaching them to read but to share the desire to learn to read from enjoyment of books and stories and to share the satisfaction of reading between teacher and children. This type of teacher believes that they [*sic*] are avid readers who enjoy reading to children more for pleasure as opposed to having to read to children as a requirement to teach them to learn to read and write. (p. 143)

Teachers' beliefs about appropriate practices and classroom instructional content become especially important considerations as programs increase their academic focus and expand enrollments with diverse populations of children (National Center for Early Development and Learning, 2005).

Besides teachers' own belief systems affecting the way they teach, their demographic backgrounds also play into their teaching beliefs. Poulson, Avramidis, Fox, Medwell, and Wray (2001) illustrated share that contextual factors also play a role in shaping teachers' beliefs. These include the time when a teacher trains and enters the profession, the dominant values of that

time, the particular stage of the teacher's career, and the degree of personal confidence the teacher possesses. "It is quite possible that improvements in higher education programs could lead to changes in instruction, especially if they were coupled with appropriate mentoring and support for teachers" (D. M. Early, personal communication, January 29, 2010).

English Language Learners

Across the United States, there has been an influx of English Language Learners (ELL). ELL, "Indicates a person who is in the process of acquiring English and has a first language other than English" (Brown University, para. 1, 2012). "To teach all students effectively, well-prepared professionals must understand the strengths, challenges, and learning paths of students who are becoming proficient in English at the same time they are learning to read and write it" (Helman, Bear, Templeton, Invernizzi, & Johnston, 2012, p. 1). The geographical area where this research took place has a population of ELL students. Because of the ELL population, an examination of the best practices for working with ELL students is necessary.

The NRP suggested specific skills that students need to learn to become proficient. The five components of effective literacy instruction for ELL students are phonemic awareness, phonics, vocabulary, comprehension, and fluency, the same as what was stated earlier for English-speaking students (NRP, 2000).

The NRP suggested that teachers working with ELL students must be sensitive to the fact that the sounds of English and other phonetic languages are not exactly the same and that these differences may constitute an area of difficulty for students who are learning English word structures. Additionally, challenges with vocabulary proficiencies affect fluency and comprehension (Kamps et al., 2007).

To help ELL students learn to read and understand what they read, it is beneficial for the teacher to try to make as many connections as possible to what the students might already know about the subject in the reading material. McCall (2005) said:

English language learners encounter many challenges when faced with new, unfamiliar text. To help ensure that the text is comprehensible, it is important learners are given scaffolds before reading to help them set a purpose for reading, to spend time accessing and building background knowledge, to make connections from the known to the new and to emphasize key vocabulary. (p. 444)

Emphasizing key vocabulary is important, because without knowing what the words the ELL students are reading mean, they are missing the entire purpose of the lesson. Helman et al., (2012) share that focusing on useful words is important. The students have so much to take-in and comprehend that putting the focus on words the students will rarely encounter is not productive. ELL need to practice saying the word, using the words in writing and orally, and seeing the words in different written forms.

Pullout models are often used for ELL students. Even though the pullout method is utilized frequently, it is not the most beneficial for ELL students. Although pullout programs give students the one-on-one help they need, once they return to their home classroom, they do not understand what is going on due to missing an hour or two of classroom time. Many times, a teacher has to repeat what has been taught, which wastes time for the students and the teacher (Fu, Houser, & Huang, 2007; Rennie, 1993).

There are so many positives for including ELL students in the classroom. They bring a wealth of information from their home country and their travels. “The strengths that English language learners bring to the classroom, including, knowledge and life experiences from other

cultural contexts, as well as a native speaker's knowledge of another language, and can be used as resource for learning, as essential building blocks" (Seaman, 2000, p. 6).

Teachers can benefit greatly from ELL students' cultural experiences, such as food, clothing, and traditions, and should use these benefits as building blocks for the ELL students in their lessons. Teachers need to use "the cultural characteristics, experiences, and perspectives of ethnically diverse students as conduits for teaching them more effectively" (Gay, 2006, p. 106). "Two areas of cultural differences are particularly important for ELLs who have been schooled in their home country: classroom participation structures and the role of students' prior learning experiences" (de Jong & Harper, 2005, p. 111).

It is vital that educators keep the importance of meeting each student's individual needs in mind. Meeting the student's needs not only refers to students' educational needs, but it also means realizing that, like native-English students, ELL students are not all the same.

We do English language learners a disservice if we think of them as one-dimensional on the basis of their limited English proficiency. ELLs have diverse backgrounds, languages, and education profiles. Some read and write above grade level in their own language; others have had limited schooling. Some enter school highly motivated to learn because of family support or an innate drive to succeed; others have had negative school experiences that squelch their motivation. Many come from middle-class families with high levels of literacy; others live in poverty without books in their homes. Those whose native language is Latin-based can recognize English words with the same Latin derivations; those who have different language backgrounds, such as Mandarin or Arabic, lack that advantage. Some students' native language does not even have a written form. (Short & Echevarria, 2005, p. 8)

Having validated tools available for teachers along with methods of instruction that are proven to work with ELL students are crucial for success. Teachers must have training in how to teach ELL students. Coleman and Goldenberg (2012) share:

Effective teaching for ELLs is similar in many ways to effective teaching for English speakers. All learners benefit from clear goals and objectives, well-structured tasks, adequate practice, opportunities to interact with others, frequent assessment and reteaching as needed, and other elements of effective instruction identified in the professional and research literature. ELLs also need focused development of oral reading fluency, vocabulary, reading comprehension, and writing in addition to enriched literacy instruction that targets complex sets of skill and concepts (p.48).

Educators working with ELL students need to be proficient in the NRP's recommendations of effective literacy instruction. They are closely tied to effective ELL education strategies.

CHAPTER III. METHODOLOGY AND PROCEDURES

The purpose of this study was to determine what, if any, correlation exists among teachers' content knowledge, teachers' pedagogical content knowledge, instructional practices, teachers' demographics, and students' literacy outcomes. The purpose was broken down into three research questions.

Chapter I described this purpose in detail, along with a Statement of the Problem and the Importance of the Study. Chapter II reviewed the theoretical basis for the study in relation to the literature. This chapter describes the methods and procedures for the study.

A correlational approach was used to execute this research. The design of this study included data collected from a survey that was given to the teachers, an observation tool used to observe teachers in their classrooms, and an analysis of student-assessment outcome scores. Only second and third grade teachers and students were recruited for this study.

Research Questions

1. What is the relative relationship of teachers' content knowledge and teachers' pedagogical content knowledge on students' literacy achievement?
2. To what extent do a teacher's demographic characteristics predict content knowledge and pedagogical content knowledge about literacy?
3. To what extent do content knowledge and pedagogical content knowledge predict instructional practice for literacy?

Research Site Selection

This study encompassed six elementary school settings in a metropolitan area in the Minneapolis school district. Located in the same city, four schools were public settings, and two were charter schools, but not in the same district. Each school had a K-5 structure; all the schools

were located within an eight-mile radius of each other. The six schools were recruited because of their low achievement scores for literacy.

Population

The study investigated the teachers' content knowledge, teachers' pedagogical content knowledge, instructional practices, teachers' demographics, and students' literacy achievement of subjects in a metropolitan city in the Midwest. The participating teachers were selected because they and their principals agreed to participate in this research with at least an 80% approval rate from the school staff. They also agreed to the researchers study through a written consent form, which was separate from the PRESS project. The sample teacher population consisted of second- and third-grade elementary teachers ($n = 36$) from 6 schools. To obtain a stable result for regression equations, 6-10 participants per variable is acceptable (Creswell, 2005; Dodd & Whipple, 1976; Wilson VanVoorhis & Morgan, 2007).

The population of students in the schools studied was diverse in socio-economic status and ethnicity. Two of the schools (schools 1 and 2) had 99% to 100% of the same ethnicity as their population, while schools 3, 4, 5, and 6 had a much more diverse student body (see table 1).

ELL students varied from around 50% of the school population (school 2 and 5) to 0 in both 1 and 3. Free and reduced lunch had a high percentage in all 6 schools, with the lowest percentage being 44% in school 4 and the highest being 99% in school 1 (see table 1).

Five schools had 30% or more of their third graders reading below the state average, and one school had more than 70% of its third graders reading below the state average.

Table 1

Schools' Student Population

	Black/African American Students	American Indian or Alaska Native Students	White Students	Hispanic, Asian, Pacific Islanders, or Native Hawaiian Students	Free and Reduced Lunch	ELL Students
1	3%	94%	2%	1%	99%	0
2	100%	0	0	0	89%	49%
3	99%	0	0	1%	86%	0
4	27%	4%	52%	17%	44%	15%
5	45%	4%	18%	33%	83%	52%
6	55%	17%	13%	15%	87%	31%

Instrument Description

There were two instruments utilized in this study. The first instrument was a survey that was given to the second- and third-grade teachers ($n = 36$) at the six participating schools.

The second instrument for this research project involved teacher observations. The researcher observed teachers in their classroom settings so that data about pedagogical content knowledge could be obtained in a natural setting.

Survey Instrument

Teachers' content knowledge, teachers' pedagogical content knowledge, and teachers' demographic characteristics were obtained from a survey instrument that was validated and conducted through the Reading Research Center that houses Path to Reading Excellence in School Sites (PRESS) with which the researcher was collaborating during this project. The

researcher and experts in the field from the Reading Research Center developed the survey. The survey had not previously been used. It was developed specifically for this research project.

Appendix C contains the survey that was utilized during this research project.

The survey contained three parts, but only parts one and two were utilized. Part three obtained data for the individuals at the Reading Research Center with whom the researcher was working, and the data collected were not needed for this study (Appendix C). Part one measured teacher demographics that pertained to research question two. Part two of the survey contained questions that gave the researcher data about the teachers' content knowledge and pedagogical knowledge about literacy. Data were analyzed to answer research questions one, two, and three.

A pilot study for the survey was conducted with 20 literacy graduate students during the summer prior to starting the research. The pilot study was employed to ensure the survey's validity and reliability.

Construct validity ensures that the survey questions and subsequent scores are representative of the research questions. "Construct validity is the extent to which questions on the instrument and the scores from these questions are representative of all the possible questions that a researcher could ask about the content or skill" (Creswell, 2005, p. 164). Construct validity was obtained by having a panel of experts provide an evaluation and expert judgment of the survey. They consisted of committee members who had a vested interest in the research and also PRESS staff. For this research project, construct validity was established by determining if the scores from the survey were statistically significant, meaningful, and useful, in regard to accomplishing the purpose of the study questions. Spearman's Rho, Mann Whitney U, and simple regression were used for analyzing data collected from the survey. Spearman's Rho was utilized because some of the measured data were on a categorical scale; Mann Whitney U was

utilized because the data set was small; and simple regression was utilized to see what impact multiple variables had on the outcome. Data from the survey pertained to all three-research questions.

Out of the participating second- and third-grade classroom teachers, 34 of the 36 teachers completed the survey between September 2011 and November 2011. Not all teachers answered all the questions. The teachers completed demographic items, which included their gender, native language, race/ethnic group, level of education, grade level that they taught, years of teaching, and additional licenses obtained. There were 30 female teachers and 4 male teachers who completed the survey. Thirty-one of the teachers had a native language of English; one identified the native language as other; and one teacher's native language was unidentified. Of the 34 second- and third-grade teachers who completed the survey, 19 were second-grade teachers, and 15 were third-grade teachers. Four teachers were African American; 25 were white; two were Native American; two were other; and one was unidentified. Refer to Chapter IV for demographic tables.

It took an average of 15 minutes to complete the survey. Part one of the survey contained demographic characteristics. The data obtained from the survey gave the researcher information about the following characteristics:

1. The teachers' gender
2. Native language/other languages with which they are familiar
3. Ethnicity
4. If they were ever an ELL learner
5. Role in school
6. Grade level currently teaching

7. Highest educational level achieved
8. If they completed a Minnesota (MN) reading license/a MN ESL language license and/or a MN special education license
9. Total number of years taught.

The level of education, additional certificates obtained, total years taught, and grade level were the variables that were analyzed by the researcher to determine if they had an effect on a teacher's pedagogical content knowledge or a teacher's level of content knowledge about literacy. Other variables were included in the survey for data that were needed for the PRESS project.

Part two of the survey contained questions that consisted of the NRP's five effective methods of teaching: phonemic awareness, phonics, fluency, vocabulary, and comprehension. These were included to collect data on the teacher's content knowledge.

Observation Instrument

An observation instrument for the participating teachers was developed to obtain pedagogical content knowledge in the teacher's natural setting. The researcher observed the teacher for variables that demonstrated an understanding of pedagogical content knowledge about literacy. The method utilized was that of a nonparticipant observer, someone who is not directly involved in the situation being observed (Gay, Mills, & Airasian, 2006). The researcher was in the classroom environment but was not involved in teaching any of the lesson that was being observed. A ratio scale of measurement was used (Figure 2) due to a true 0 point and the order of data points. Simple regression was used for the data analysis.

The observations took place in September and October of the school year. Validity and reliability of the data from the observations were obtained through several steps. First, a rubric

(Appendix B) was utilized to ensure consistency within the observation recordings. Second, anyone involved in recording an observation for data-collection or inter-rater reliability purposes attended training sessions that included practice using the observation tool and explanations of any language questions on the rubric. Third, the observation tool was piloted for reliability and validity during a summer-school session. This pilot included 25 different observations of teachers in their classroom settings. Finally, inter-rater reliability of the coding scheme was ensured at each of the school sites by having more than one researcher observe each participating teacher.

The rubric (Appendix B) was developed with the PRESS staff and included statements from the researcher on teacher instructional practice. The rubric consisted of two parts, environmental data and instructional practices. The environmental data, part one, consisted of statements regarding the physical element of the classroom. Wolfersberger, Reutzel Sudweeks, and Fawson (2004) acknowledged that the environment of a classroom plays a central role in learning and behavior. The environment of the classroom included, but was not limited to, having access to different literacy tools; a print-rich room; and arrangement of the classroom itself, which included effective placement of the furnishings. This portion of the observation contained data that were collected for the Center for reading Research (CRR); the researcher did not need these data to analyze any research question.

Part two of the observation rubric (Appendix B) consisted of observing the teachers' instructional practices. Part two of the observation was analyzed for research question three which integrated the teachers' instructional practices. This portion of the observation included checking to make sure students were on task at different intervals of time, how the teacher was making connections for the students so that the lesson's meaning would be clearly understood,

the lesson's explicitness, observations about implementing the National Reading Panel's (NRP) core elements, if the lesson was executed at the students' level, and if the teacher tailored the lesson for an English Language Learner (ELL) student.

Through 3.5 years of elementary-classroom observations, the researcher obtained expertise in classroom observation. The observations involved scripting what was being observed and also using a checklist of specific criteria for each visit. The same procedure was used during the observations for this research.

Reliability for the instrument was assured through an observer agreement on the observation of 20%, which included second observation rates and was reported two ways. The correlation between the two observations was .52. There was an agreement of 64% based on instruction computed at a 95% confidence level. Cronbach's Coefficient Alpha was used to determine an internal reliability of .92. The items were tested on how they agree, and kappa was also utilized which was .24. Kappa score was described by Viera and Garrett (2005) as follows:

Studies that measure the agreement between two or more observers should include a statistic that takes into account the fact that observers will sometimes agree or disagree simply by chance. The kappa statistic (or kappa coefficient) is the most commonly used statistic for this purpose. A kappa of 1 indicates perfect agreement, whereas a kappa of 0 indicates agreement equivalent to chance. A limitation of kappa is that it is affected by the prevalence of the finding under observation. (p. 360)

Student Assessments

Student test scores were obtained from the Measures of Academic Progress (MAP) scores and Oral Reading Fluency (ORF) scores, two standard tests that are given both in second and third grade. MAP ($n = 761$) was administered to students in the fall, winter, and spring while

ORF ($n = 777$) was administered to students in the fall, winter, and spring, and as needed throughout the year.

MAP is a computerized assessment that provides teachers with detailed data for each child. MAP tests have been administered for many years, allowing ample opportunities to establish reliability for the tests. The Northwest Evaluation Association (NWEA, 2011), which gathers and validates the data for schools, indicated:

Test and re-test studies have consistently yielded statistically valid correlations between multiple test events for the same student. Most such studies rely on the methodology of having students re-test within several days. NWEA test and re-test studies have typically looked at scores from the same students after a lapse of several months. Despite this methodology (which would have the expected result of lowering the correlation figures) the reliability indices have consistently been above what is considered statistically significant.

Internal reliability (reliability between test items) has also been impressive. This is all the more remarkable in view of the volume and breadth of the item bank, and the fact that MAP is an adaptive test. MAP users can be confident of the reliability of their tests. The rigor that has been applied to the reliability studies has left no doubt that the MAP assessment system has been constructed, and continues to be maintained, in a manner that assures more than adequate reliability. (NWEA, 2001, para. 1- 2)

ORF is a standardized measure and is individually administered to the student. It aids in identifying students who need additional help and monitors their progress towards literacy goals. ORF focuses on the rate and accuracy of a student's reading ability. The ORF score is accomplished by listening to a student read aloud from an unpracticed passage for one minute.

After the minute has expired, each error that the student made during the timed session is subtracted from the total number of words read to calculate the score of correct words per minute. The reliability of the ORF is stated as follows:

A series of studies has confirmed the technical adequacy of ORF reading. Test-retest reliabilities for elementary students ranged from .92 to .97; alternate form reliability of different reading passages drawn from the same level ranged from .89 to .94 (Tindal, Marston, & Deno, 1983). Criterion-related validity studied in eight separate studies in the 1980s report coefficients ranging from .52 to .91 (Good & Jefferson, 1998). (University of Oregon, 2011, para. 3)

The researcher collected the data and analyzed them for improvements in students' literacy achievement. A mean score for the specified grade level was calculated to obtain a data set for each grade level. Research question one was analyzed using these data. The data were used to compare teachers' content knowledge and teachers' pedagogical knowledge to identify if there was a relationship between content knowledge and students' test scores or if there was a relationship between pedagogical knowledge and students' test scores.

Institutional Review Board

The North Dakota State University Institutional Review Board (IRB) approved the survey and observation tool. A copy of this IRB approval is in Appendix A.

Data-Collection Procedures

The data-collection methods utilized were observations, a survey, and analysis of student data from the recorded MAP and ORF scores. The observations and survey were data collected from the teachers and the MAP and ORF were data scored collected from the students.

The observations took place in October and November of the school year, and 32 teachers were observed at 6 different schools. The observation tool obtained information regarding the classroom environment and the teachers' instructional practices in the classroom. The observations were conducted at each teacher's classroom and lasted approximately 30 minutes at varied hours of the day, but always during the literacy-block period.

The observation checklist was tabulated for common themes that emerged in each classroom (Gay et al., 2006). A mean score was then calculated for the second and third grades.

Signed consent forms were obtained for the observations. The teachers were assured, in writing, of their right to cease participation in the study at any time or to have any information they shared removed from the records.

Of the 36 second- and third-grade teachers at the 6 urban schools participating in the study, 34 teachers completed the survey. The data for the quantitative study included teachers' content knowledge, teachers' pedagogical content knowledge, and teachers' demographics. The data were collected through a confidential survey that was administered to all participants during a fall all-staff meeting. The teachers were selected because they and their principals agreed to participate in this research with at least an 80% approval rate. The survey questions were then coded, and a mean score was obtained from each teacher, for pedagogical content knowledge and content knowledge.

The student-outcome scores were ascertained through the administration of the MAP and ORF assessments given in the fall, winter, and spring of the school year. The ORF was also given as needed to students throughout the year. For this study, only the spring scores were used in the analysis. The teachers reported scores, and the researcher had an agreement with the

participating schools to obtain data as needed for the research. A mean score was obtained for both MAP and ORF from 2nd and 3rd grade student assessment scores.

Collected data were analyzed, and results were utilized, to determine subsequent data desired for the research questions being studied. Data collection and analysis continued until a saturation of categories was obtained by running all possible statistical tests that pertained to the research question being analyzed.

Statistical Analysis

This research followed a correlational research design, which gave the researcher the opportunity to explain the relationship among teachers' content knowledge, teachers' pedagogical content knowledge, instructional practices, teachers' demographics, and students' literacy outcomes. "In correlational research designs, investigators use the correlation statistical test to describe and measure the degree of association (or relationship) between two or more variables or sets of scores" (Creswell, 2005, p. 325). The design is explanatory in nature because the researcher was examining if two or more of the variables have an association. Because more than one independent variable was studied to explain the variability in a dependent variable, multiple regression, a statistical procedure used in correlational designs where outcomes are predicted by the researcher, was utilized. "Multiple regression is a statistical procedure for examining the combined relationship of multiple independent variables with a single dependent variable" (Creswell, 2005, p. 336).

Table 2 dictates each research questions and states what statistical procedure was used to analyze each research question. The independent and dependent variables for each research question are also included in the table. Because of the multiple independent variables present, multiple regression was utilized. Before analysis was run, the categories were recorded

to dichotomous variables. Cronbach’s Coefficient Alpha was used to test internal consistency for scores on the instruments.

Table 2

Research Questions with Attached Variables and Statistical Procedure

Research Questions	Independent Variable	Dependent Variable	Statistical Procedure
Research Question One: What is the relative relationship of teachers’ content knowledge and teachers’ pedagogical content knowledge on student achievement?	Demographics	MAP and ORF	Mann-Whitney U
Research Question Two: To what extent do a teacher’s demographic characteristics predict content knowledge and pedagogical content knowledge about literacy?	Highest education level, additional certificates, grade level, and years taught	Content knowledge and pedagogical content knowledge	Spearman’s Rho
Research Question Three: To what extent do content knowledge and pedagogical content knowledge predict instructional practices for literacy?	Content and pedagogical content knowledge	Observation data	Simple Regression

Conceptual Framework

The conceptual framework constitutes the framework for this study by establishing a set of inquiry methods and procedures in the next chapter. Below is a listing of integrated themes from the readings.

Research question one asks, “What is the relative relationship of teachers’ content knowledge and teachers’ pedagogical content knowledge on students’ literacy achievement? The

predominant criteria found in the literature, constituting the second section of this conceptual framework, are as follows:

1. In the National Reading Panel Report (2000), it was concluded that researching teacher knowledge needed further investigation.
2. In a recent published report, *Studying Teacher Education: The Report of AERA Panel on Research and Teacher Education*, Cochran-Smith and Zeichner (2005) identified teacher knowledge as an area where considerable theoretical and research work is urgently needed. “It is the solemn responsibility of any profession to monitor the professional knowledge of its members” (Reutzel et al., 2011, p. 184).
3. Phelps and Schilling (2004) stated that researchers have often characterized teacher content knowledge by using proxy measures, such as counts for the number of college courses taken, or by administering mathematics or other subject-matter tests. The problem was that these approaches only consider common knowledge, not knowledge specific to teaching.
4. Evidence is mounting that teaching a subject requires content knowledge that goes substantially beyond what is typically taught and learned in college and university classes. This special form of content knowledge is most commonly referred to as pedagogical content knowledge (Goldschmidt & Phelps, 2010).
5. A teacher must grasp an understanding of not only how to read, but also how to teach literacy in a way that is easy for students to comprehend. In order for understanding of how to read and how to teach literacy to happen, content knowledge and pedagogical content knowledge must come together (Segall, 2004; Shulman, 1987).

Research question two asks, “To what extent do a teacher’s demographic characteristics predict content knowledge and pedagogical content knowledge about literacy?” The predominant criteria found in the literature, constituting the fourth section of this conceptual framework, are as follows:

1. D. M. Early (personal communication, January 29, 2010) shared, “In general, I think past experience and practice have a huge effect on literacy beliefs, but I don't think we have good ways of measuring those associations so they tend to end being small or null in our research. They may have more to do with how individual teachers were taught, whether or not they found those strategies effective, and how difficult and/or enjoyable they find reading now. Also, it is always hard to change practice, even when a practice does not seem to be effective, because it involves extra work and preparation.”
2. Poulson et al. (2001) stated that contextual factors also play a role in shaping a teacher’s beliefs. Contextual factors include the time when a teacher trains and enters the profession, the dominant values of that time; the particular stage of the teacher’s career, and the degree of personal confidence the teacher possesses.

Research question three asks, “To what extent do content knowledge and pedagogical content knowledge predict instructional practice for literacy?” The predominant criteria found in the literature, constituting the third section of this conceptual framework, are as follows:

1. Research has uncovered significant differences among teachers in how they work with children on letters and sounds, use language with children, read books with children, and integrate writing into the classroom. Notably, the frequency and quality

of teachers' instruction on one component of emergent literacy, such as oral language, may differ from their instruction on another element, such as code-related skills (Hindman & Wasik, 2008, p. 480).

2. Direct measures of teachers' content knowledge have been related to significant, positive effects on student learning. Teacher knowledge is associated with student gains, particularly for low-performing students (A. Cunningham & Zibulsky, 2009; Goldschmidt & Phelps, 2010).

Table 3

Conceptual Framework

Literature	Research Questions	Data	Analysis	Survey Questions	Observation	Student Assessment
<ol style="list-style-type: none"> 1. Yoo (2005) 2. Taylor, Pearson, Clark, & Walpole (2000) 3. A. Cunningham & Zibulsky (2009) 4. Goldschmidt & Phelps (2010) 5. National Reading Panel Report (2000) 6. Reutzel et al. (2011) 7. Cochran-Smith & Zeichner (2005) 8. Phelps & Schilling (2004) 9. Segall (2004) 10. Shulman (1987) 	<ol style="list-style-type: none"> 1. What is the relative relationship of teachers' content knowledge and teachers' pedagogical content knowledge on students' literacy achievement? 	Ratio	Mann Whitney U	<p>Part 2 of Survey: Multiple Choice and Fill-in-the-Blank Questions Content Knowledge Questions: 1, 2, 4, 5, 6, & 9</p> <p>Pedagogical Knowledge Questions: 3, 7, 8, 10, & 11</p>		<p>Measures of Academic Progress (MAP)</p> <p>Oral Reading Fluency (ORF)</p>
<ol style="list-style-type: none"> 1. Early (personal communication, 2010) 2. Poulson, Avramidis, Fox, Medwell, & Wray (2001) 3. National Center for Early Development and Learning (2005) 4. Stipek & Byler (1997) 5. Yoo (2005) 6. Hindman & Wasik (2008) 7. Evans, Fox, Cremasa & McKinnon (2004) 	<ol style="list-style-type: none"> 2. To what extent do a teacher's demographic characteristics predict content knowledge and pedagogical content knowledge about literacy? 	Nominal	Spearman Rho	<p>Part 1 of Survey: Information About You</p>		
<ol style="list-style-type: none"> 1. Fountas & Pinnell (1996b) 2. National Reading Panel (2005) 3. Snider (1995) 4. Leaning Point Associates (2004) 5. Carlisle, Kelcey, Berebitsky, & Phelps (2011) 6. McKeown, Beck, & Blake (2009) 7. Miller & Veatch (2010) 8. Taylor, Pearson, Peterson, & Rodriguez (2003) 9. Shulman (1987) 10. Reutzel et al. (2011) 11. Hindman & Wasik (2008) 12. A. Cunningham & Zibulsky (2009) 	<ol style="list-style-type: none"> 3. To what extent do content knowledge and pedagogical content knowledge predict instructional practice for literacy? 	Ratio	Simple Regression	<p>Part 2 of Survey: Multiple Choice and Fill-in-the-Blank Questions Content Knowledge Questions: 1, 2, 4, 5, 6, & 9</p> <p>Pedagogical Knowledge Questions: 3, 7, 8, 10, & 11</p>	Part 2: Instructional Practices	

CHAPTER IV. FINDINGS

The purpose of this correlational study was to determine if a relationship exists among teachers' content knowledge, teachers' pedagogical content knowledge, instructional practices, teachers' demographic backgrounds, and students' literacy achievement. The examined criteria were ascertained from the research questions. A correlational design was appropriate for this study because it allowed the variables to show if they have a positive or negative relationship. "Correlational studies provide a numerical estimate of how related two variables are. Clearly, the higher the correlation, the closer the relationship between the two variables and the more accurate are predications based on the relationship" (Gay et al., 2006, p. 192).

This correlational study involved quantitative methods of research that included surveys of teachers, MAP and ORF data from students' literacy test scores, and observations of teachers in their classroom settings. The following research questions were designed to accomplish this purpose:

1. What is the relative relationship of teachers' content knowledge and teachers' pedagogical content knowledge on students' literacy achievement?
2. To what extent do a teacher's demographic characteristics predict content knowledge and pedagogical content knowledge about literacy?
3. To what extent do content knowledge and pedagogical content knowledge predict instructional practice for literacy?

Data from Demographic Analysis

The teacher demographic data were collected through a survey completed in the fall of 2011. Thirty-four of the 36 teachers in study completed the survey. The demographic data for the

respondents are presented in Tables 4, 5, and 6. These include years of teaching experience, level of education, and additional teaching license.

Table 4

Years of Teaching Experience (n = 34)

Years of Teaching	Number of Teachers
1. 0-2 years	7
2. 3-5 years	3
3. 6-10 years	1
4. 10-15 years	5
5. 15+ years	17
6. Unidentified amount of years	1

Table 5

Level of Education for Second and Third-Grade Teachers (n = 34)

Levels of Education	Number of Teachers
1. B.A./B.S.	7
2. B.A./B.S. +30	7
3. M.A./M.Ed.	3
4. M.A./M.Ed. +30	16
5. Ph.D./Ed.D.	0
6. Unidentified	1

Table 6

Additional Teaching Licenses (n = 34)

Type of License	Number of Teachers
Reading	4
English as a Second Language	1
Special Education	1

Results of Quantitative Analysis

Student test scores were obtained from the Measures of Academic Progress (MAP) scores and Oral Reading Fluency (ORF) scores, two standard tests that are given both in the second and third grades. MAP ($n = 761$) was administered to the students in the fall, winter, and spring. ORF ($n = 777$) was administered to students in the fall, winter, and spring as well as when needed throughout the year. The classroom sizes averaged about 28 students per class.

MAP is a computerized assessment that provides teachers with detailed data for each child. MAP tests have been administered for many years, allowing ample opportunities to establish reliability for the tests.

ORF is a standardized measure and is individually administered to the student. It aids in identifying students who need additional help and monitors their progress towards literacy goals. ORF focuses on the rate and accuracy of a student's reading ability. The ORF score is accomplished by listening to a student read aloud from an unpracticed passage for one minute. After the minute has expired, each error that the student had during the timed session is subtracted from the total number of words read to calculate the score of correct words per minute.

Preliminary Analysis

Student achievement was measured using the MAP and ORF scores obtained in the spring of 2012. The dependent variables for research question one were mean MAP and ORF scores by classroom. The independent variable was demographics, which included race, ESL, gender, and free and reduced lunch. Because the data set was small ($n = 36$ teachers), a Mann-Whitney U, rather than a parametric test, was utilized to test for significance. As shown in Table 7, the differences in classroom mean scores were compared and resulted in a non-significant finding, $z = -.09$, $p > .05$ for ORF, and $z = -.93$, $p < .05$ for MAP. ORF had a mean rank of 17.16 for 2nd grade and 16.85 for 3rd grade, and MAP had a mean rank of 14.43 for second grade and 17.47 for third grade. Therefore, the data were collapsed across the two grades.

Table 7

Mann Whitney-U Analysis of Oral Reading Fluency and Measures of Academic Progress

	Oral Reading Fluency	Measures of Academic Progress
U Value	133.5	96.5
W Value	286.5	216.5
Z	-.09	-.93
P Value	.93	.35

Table 8 presents the mean, standard deviation, and effect size for second- and third-grade MAP and ORF scores by grade level. The mean ORF scores show that the second-grade spring mean was at the 50% range compared to national scores and that the third-grade spring mean score was at the 25% range compared to national scores (*AIMSweb*, 2013). The mean score for the second-grade MAP was 184.93, which was 4.27 points below the national mean score for

reading (189.2). The third-grade score for MAP reading was 191, which was 8.2 points below the national mean score of 199.2 (Northwest Evaluation Association, 2011). Effect sizes were interpreted with Cohen’s criteria (Cohen, 1988) of .2 for a small effect size, .5 for a medium effect size, and .8 for a large effect size. The MAP effect size of .37 was small to moderate, and the effect size for ORF was less than .1, which was negligible.

Table 8

Standard Deviation, Mean, and Effect Size for Second and Third-Grade Assessments

	2 nd Grade			3 rd Grade			
	M	SD	<i>n</i>	M	SD	<i>n</i>	<i>d</i>
MAP	184.93	16.05	407	191	16.71	354	.37
ORF	108.44	35.09	414	111.82	53.45	363	.07

Table 9 shows the mean scores and standard deviation for the content, pedagogy, and instruction. The Standard Deviation for content and pedagogy were small, which did not allow for much variance.

Table 9

Standard Deviation and Mean for Content, Pedagogy, and Instruction

	Mean	Standard Deviation
Content	13.47	1.66
Pedagogy	3.65	1.25
Instruction	38.49	14.97

Results of Analysis for Research Question One: What is the Relative Relationship of Teachers’ Content Knowledge and Teachers’ Pedagogical Content Knowledge on Students’ Achievement?

Correlation coefficients were computed among the four variables: teacher content knowledge, teacher pedagogical content knowledge, student ORF scores and student MAP scores.

The results of the correlational analysis presented in Table 10 show that there was a strong correlation between ORF and MAP as well as a medium correlation between MAP and content knowledge, and between MAP and pedagogy content knowledge. There was also a medium correlation between ORF and pedagogy content knowledge. The medium correlations were not significant but did increase.

Table 10

Correlations Between Content, Pedagogy, Oral Reading Fluency, and Measures of Academic Progress

Variables	Content	Pedagogy	ORF	MAP
1. Content	1	.25	.06	.39
2. Pedagogy	.25	1	.18	.41
3. Oral Reading Fluency	.06	.18	1	.68
4. Measures of Academic Progress	.39	.41	.68	1

$p < .05$.

A regression analysis was conducted to evaluate the prediction that teachers’ pedagogy content knowledge and teachers’ content knowledge would be related. The r^2 is at .004, which would demonstrate a low explanatory power that means pedagogy and content were not closely

correlated. Cohen (1988) stated that a small effect size for r is .10, that a medium effect size for r is .30, and that a large effect size for r is .50. A small effect size for r^2 is .01; a medium effect size for r^2 is .09; and a large effect size for r^2 is .25. The content and pedagogy data in Table 11 were taken from survey questions that pertained to each variable.

Table 11

Regression of Teachers' Pedagogy Knowledge and Teachers' Content Knowledge (n = 34)

	r	r^2	B	t
Ped/Content	.06	.004	1.26	1.20

Results of Analysis for Research Question Two: To What Extent Do a Teacher's Demographic Characteristics Predict Content Knowledge and Pedagogical Content Knowledge About Literacy?

The dependent variables for the second research question were content knowledge and pedagogical content knowledge. The independent variables were highest education level, grade level, additional certificates, and years of teaching. Spearman's Rho was utilized because one of the variables was categorical. The following variables were used to report the findings:

1. Years of Teaching: What is the total number of years the teacher has taught?
2. Reading License: Did the teacher earn a reading license from the state of Minnesota?
3. Grade Level: What grade levels has the teacher taught?
4. Highest Level of Education: What is the highest level of education obtained by the teacher?

Table 12

Regression on Content Knowledge (n = 34)

	<i>r</i>	<i>r</i> ²	<i>B</i>	<i>t</i>	Sig.
Years, Reading Lic., Grade Level, Highest Ed. Level	.44	.19	11.35	9.13	.20

A linear regression analysis was conducted to evaluate the variables for years of teaching, reading license, grade-level taught, and highest level of education obtained to see if there was any relation to teachers' content knowledge. ESL license and special education license were removed because they only have a value of 1. Also, reading license had a small *n* of four. Table 12 demonstrates 19% towards content, indicating little change in the amount of variance.

Table 13

Variables for Content Knowledge (n = 34)

Variables	B	Standard Error	Beta	t	Sig	<i>r</i> ²
Grade	.78	.36	.39	2.16	.04	.10
Education	.48	.76	.15	.64	.53	.02
Read Lic.	-1.37	.85	-.29	-1.62	.12	.03
Years	-.01	.04	-.05	-.20	.84	.01

Table 13 shows the variables that were taken from the survey. Education was not significant, but grade was. Special education license and ESL license were removed from the analysis because the variable was only one.

Table 14

Correlation on Content Knowledge Compared to Highest Level of Education, Grade Level, Reading License, and Years Taught (n = 34)

	Content	Highest Ed.	Grade Level	Reading Lic.	Years Taught
1. Content	1	.01	.10	.06	-.08
2. Highest Ed.	.01	1	.19	.70	.77
3. Grade Level	.10	.19	1	.23	.34
4. Reading Lic.	.06	.70	.23	1	-.60
5. Years Taught	-.08	.77	.34	-.60	1

Table 14 contains the data for correlated points. Spearman Rho was run for the analysis. A large effect was identified if the correlation measured at .50, medium at .30, and low at .10. There was a medium correlation between grade-level taught and years taught. There was a high correlation between highest level of education and years taught. In education, the highest level of education and years taught would be expected to have a high correlation.

A linear regression analysis was conducted to evaluate the years of teaching, reading license, grade-level taught, and highest level of education obtained to see if there is any relationship to teachers' pedagogical content knowledge. Table 15 demonstrates 27% towards pedagogy, which indicates some change.

Table 15

Regression on Pedagogy Content Knowledge (n = 34)

	<i>r</i>	<i>r</i> ²	<i>B</i>	<i>t</i>	Sig.
Years, Reading Lic., Grade Level, Highest Ed.	.52	.27	6.13	6.38	.07

Table 16 shows the variables that were taken from the survey. The variables were analyzed with pedagogical content knowledge.

Table 16

Variables for Pedagogical Content Knowledge (n = 34)

Variables	B	Standard Error	Beta	t	Sig	<i>r</i> ²
Grade	-.73	.36	-.45	-2.63	.01	.14
Education	-.80	.76	-.31	-1.36	.19	.04
Reading Lic.	1.10	.85	.29	1.67	.11	.03
Years	.02	.04	.14	.63	.54	.01

Correlation coefficients were computed among the eight variables. Spearman Rho was run for the analysis. There was a high correlation between the highest level of education and pedagogy, years taught and pedagogy, and years taught and highest level of education. There was a medium correlation between grade level and years taught and between pedagogy and reading license. The results suggested that teachers with the highest level of education and who had taught the most years had the best understanding of pedagogical content knowledge.

Correlation coefficients were computed among the variables. Table 17 indicates that years taught and grade level have a high correlation, as do years taught and pedagogy. In general, teachers who had taught the most years, and at the same grade level, would have a higher understanding of pedagogical content knowledge in the classroom setting.

Table 17

Correlation on Pedagogy Compared to Highest Level of Education, Grade Level, Teacher's Reading License, and Years Taught (n = 34)

	Pedagogy	Highest Ed.	Grade Level	Reading Lic.	Years Taught
1. Pedagogy	1	.48	.14	.28	.52
2. Highest Ed.	.48	1	.20	-.70	.77
3. Grade Level	.14	.20	1	.23	.34
4. Reading Lic.	.28	-.70	.23	1	-.60
5. Years Taught	.52	.77	.34	-.60	1

Results of Analysis for Research Question Three: To What Extent Do Content Knowledge and Pedagogical Content Knowledge Predict Instructional Practice for literacy?

Table 18 contains the data for correlated points and shows no significance. For content, 3% of the variance could not be predicted based on the data. For pedagogy, 1% of the variance could not be predicted based on the data.

Table 18

Correlation Between Content Knowledge and Pedagogy Content Knowledge for Fall Instruction (n = 36)

	Content	Pedagogy	Fall Instruction
Content	1	.25	.18
Pedagogy	.25	1	.01
Fall Instruction	.18	.01	1

The dependent variable for Research Question three was the observation data. The independent variables were content knowledge and pedagogical content knowledge.

Chapter 4 reviewed the study’s findings and results from Mann Whitney U, Spearman Rho, and Simple Regression. Although the data was limited, the findings were still interesting. Chapter 5 will summarize this study’s important findings and provide recommendations for education, policy, practice, and future research. Limitations are discussed.

CHAPTER V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Discussion

Increased attention has been given to clarifying the content knowledge and pedagogical knowledge that elementary teachers need to know to effectively teach literacy to a wide range of student abilities (Goldhaber & Anthony, 2004; Moats, 1994; Moats & Foorman, 2003; Phelps et al., 2009). The interest in checking teacher credentials to evaluate teacher quality has surfaced in recent years, but there is not enough examination assessing how a teacher executes a lesson in the classroom (Goldhaber & Anthony, 2004; Phelps et al., 2009). Teachers' content knowledge, teachers' pedagogical content knowledge, instructional practice, and teachers' demographic background need to be included when assessing a successful teacher in order for student achievement to improve.

The present study was designed to address issues relating to teachers' pedagogical content knowledge, teachers' content knowledge, and the effects on students' achievement. This study was undertaken within the context of a much larger study through the University of Minnesota's Center for Reading Research. The researcher worked directly with professionals from the University of Minnesota who were conducting literacy research at elementary schools in the metropolitan area. The utilized literacy instruction model that was used was the Path to Reading Excellence in School Sites (PRESS). The University of Minnesota and the Minnesota Reading Corps (MRC) developed the model, a statewide initiative to help every Minnesota child become a successful reader.

The purpose of this study was to determine if a relationship exists among teachers' content knowledge, teachers' pedagogical content knowledge, instructional practices, teachers'

demographic backgrounds, and students' literacy achievement. The following research questions were designed to accomplish this purpose:

1. What is the relative relationship of teachers' content knowledge, teachers' pedagogical content knowledge on student literacy achievement?
2. To what extent do a teacher's demographic data predict content knowledge and pedagogical content knowledge about literacy?
3. To what extent do content knowledge and pedagogical content knowledge predict instructional practice for literacy?

The literature review encompassed four main sections: (a) Philosophies and Theories of Literacy Education, (b) teacher education, (c) Teachers' Belief Systems, and (d) English Language Learners. Factors that influence literacy in a classroom include, but are not limited to, the type of teaching techniques used during instruction, the teacher's literacy knowledge, and the teacher's own beliefs about literacy and how children learn. Teaching a subject like literacy goes beyond just being a good reader (Goldschmidt & Phelps, 2010; Shulman, 1986). A teacher must have an understanding of not only how to read, but also how to teach literacy in a way that is easy for students to comprehend. In order for a teacher to have an understanding of how to read and how to effectively teach reading, content knowledge and pedagogical content knowledge must come together (Segall, 2004; Shulman, 1987).

Teachers' own beliefs about literacy affect their instructional philosophies and have an impact on their pedagogical content knowledge, as do their background experiences, additional training, and content knowledge. "Teacher's beliefs about literacy include what they assume, think, and know about how children develop literacy skills" (Hindman & Wasik, 2008, p. 480).

The findings of this study presented in Chapter IV, through narratives and tables, are summarized and discussed in Chapter V. Implications about the findings and recommendations for future research are also discussed. Finally, Limitations of this study are reported.

Summary

The researcher and the Center for Reading Research at the University of Minnesota developed a survey design. The survey went through various development phases by a panel of experts. The final survey was given to 36 second- and third-grade teachers who had signed an informed consent at baseline and were willing to participate. Of the 36 surveys given to the teachers, 34 were completed. Nineteen teachers taught second grade, and 15 teachers taught third grade. The second- and third-grade teachers were also part of a larger study conducted by the University of Minnesota's Center for Reading Research. The survey included teachers' demographics about gender, native language, ethnicity, ever being an ELL learner, role in school, grade level currently teaching, highest level of education achieved, additional licenses, and total number of years taught.

An observation of the participating teachers was also conducted in the teacher's classroom setting. The researcher was in the classroom environment but was not involved in teaching any part of the lesson. The researcher and the experts at the Center for Reading Research at the University of Minnesota developed a rubric. More than one researcher observed each teacher to ensure inter-rater reliability of the coding scheme.

The following material identifies the research questions reported in Chapter I, followed by a discussion of the data presented in Chapter IV. After the review of the research questions, Implications and Recommendations for future research will be discussed in greater detail according to the theoretical framework.

Research Question One: Teachers' Content Knowledge, Teachers' Pedagogical Content Knowledge, and Students' Literacy Achievement

Research Question One was as follows: What is the relative relationship of teachers' content knowledge and teachers' pedagogical content knowledge on students' literacy achievement?

One finding was that there was a medium correlation between MAP and instruction, as well as between MAP and pedagogy, which showed that MAP has a close relationship with instruction. On the Northwest Evaluation Association website, that is the host of MAP, it states that MAP is, "Created by educators for educators....." (Northwest Evaluation Association, 2011, para. 1).

Oral Reading Fluency (ORF) focuses on the rate and accuracy of a student's reading ability during a timed minute. The student's errors during that minute are subtracted from the total number of words read to calculate the score of correct words per minute. The ORF test is a coded test.

Another finding was that there was a strong correlation between MAP and ORF, which shows the closeness in relation to teaching strategies. This strong correlation was followed closely by a medium correlation between ORF and pedagogy, showing that both MAP and ORF scores closely related to classroom instruction.

Research Question Two: Teachers' Demographic Data

Research Question Two was as follows: To what extent do a teacher's demographic characteristics predict content knowledge and pedagogical content knowledge about literacy?

This is a difficult concept to explain in one variable. It would not be expected that any one variable would account for much variance. The findings showed that years taught and years

of education had a high correlation to each other when correlated with content. In education, a high correlation between years taught and highest level of education would be expected because experience and additional knowledge about the subject should relate to each other.

This finding was not surprising or unexpected, and was supported by the literature (Goldschmidt & Phelps, 2010; Shulman, 1986). There was a high correlation between highest level of education and pedagogy, and between years of teaching and pedagogy, indicating that additional education and years in the classroom give teachers a better understanding of pedagogical knowledge. Also, teachers who had taught the most years and at the same grade level have a higher understanding of pedagogical content knowledge in the classroom setting.

Pedagogical content knowledge and reading license had a medium correlation. Although reading license had a small n ($n=4$), so an analysis was difficult. It would be expected that teachers who obtain a license in reading, would have not only a better content knowledge base for literacy, but also would gain a broader understanding of effective reading instruction.

Taylor, Pearson, Peterson, and Rodriguez (2003) shared the following:

Effective reading instructions that emerged from our work encompasses teachers who challenge students with higher-level thinking and the application of reading strategies to their reading and writing. Effective teachers' questioning for texts is purposeful, and they assess students' learning through their answers to challenging questions. They actively involve students in literacy activities, often giving them responsibility for holding their own discussions about text, and help students learn as well as to help them assume responsibility for their own learning. A challenge that remains is to help teachers translate research on effective reading instructions into practice through ongoing, quality professional

development within their schools. We hope that schools in our reform in reading will improve both the “what” (the curricular elements) and the “how” (the teaching processes) of their classroom reading instruction with the end result of enhanced reading growth for all students. (p. 24)

Grade level taught was significant, an unexpected finding. This finding could be because of the small n , or there must have been some other variable that would be the cause. This finding would be an area for further research.

Research Question Three: Instructional Practice

Research Question Three was as follows: To what extent do content knowledge and pedagogical content knowledge predict instructional practice for literacy?

There was no significance between content knowledge and pedagogical content knowledge for fall instruction. These data were taken from observations in the teachers’ classrooms that were conducted in the fall of the school year. The teacher was observed twice for inter-rater reliability, but the question would be as follows: did this one snapshot of the classroom setting really capture the teaching practices in the room?

A Summary of Findings Related to Theoretical Framework

Student-Achievement Findings

Measures of Academic Progress (MAP) and Oral Reading Fluency (ORF) assessments were closely related to each other. A notable finding was that MAP was closely linked to content knowledge and pedagogical content knowledge, showing that MAP is closely related to instruction. Shulman (1987) defined instruction as transforming the teacher’s knowledge of the subject area into pedagogical representations and actions. He stated, “there are ways of talking, showing, enacting, or otherwise representing ideas so that the unknowing can come to know,

those without understanding can comprehend and discern, the unskilled can become adept” (p. 7).

Oral Reading Fluency was also closely related to pedagogy, indicating that both MAP and ORF assessments are related to how a teacher is able to present the information given during the assessments. Direct measures of teachers’ content knowledge have been related to significant positive effects on student learning. Therefore, providing teacher-development training in areas that are lacking in content knowledge is something that must be done. Teachers’ knowledge is associated with student gains, particularly for low-performing students (A. Cunningham & Zibulsky, 2009; Goldschmidt & Phelps, 2010). So, whether the information is presented through a test designed like MAP or a coded test designed like ORF, presentation of the dictated information from the teacher to the students is important.

Data does not explain why these anomalies are happening. More research needs to be conducted.

Teachers’ Demographic Findings

Teachers who held additional reading licenses appeared to have a better understanding of pedagogical content knowledge. This finding is both encouraging and discouraging because it would be expected that teachers who have more education have a better understanding of pedagogical content knowledge, but it would also be expected that teachers who held an additional reading license would have had a high correlation with content knowledge. The literature also suggested that Poulson et al., (2001) contextual factors also play a role in shaping teachers’ beliefs. These include the time when a teacher trains and enters the profession, the dominant values of that time, the particular stage of the teacher’s career, and the degree of personal confidence the teacher possesses.

In general, the results suggested that teachers who had the highest level of education and who had taught the most years had the best understanding of pedagogical content knowledge. This would be expected due to the fact that through the additional education courses taken, a teacher should gain pedagogical content knowledge. Also, spending the time in the classroom teaching should naturally give a teacher a stronger pedagogical content knowledge base.

Instructional Practice Findings

The variance for instructional practice was very small. There was nothing significant to report concerning content knowledge and pedagogical content knowledge affecting instructional practice.

There was an unexpected finding in this study. It would be assumed that pedagogical content knowledge and content knowledge would drive instruction, which would also drive student achievement. However, in this study, pedagogical content knowledge and content knowledge had a correlation with student achievement, not instruction. This finding would indicate that there is something else going on in the classroom that was not measured in the observation. This cannot be explained through the research. Further investigation is needed.

Conclusion

The researcher cannot assign a particular class data set to a teacher's pedagogical or content knowledge level because the make-up of that particular class might be one that is not motivated to succeed. Therefore, this researcher took the students as an entire grade level and also used their spring scores so that students had the entire year to improve. The scores showed a need for improvement compared to national scores. The mean ORF scores illustrate that the second-grade spring mean was at the 50% range compared to national scores and that the third-grade spring mean score was at the 25% range compared to national scores (*AIMSweb*, 2013).

The mean score for the second-grade MAP was 184.93, which was 4.27 points below the national mean score for reading (189.2). The third-grade score for MAP reading was 191, which was 8.2 points below the national mean score of 199.2 (Northwest Evaluation Association, 2011). This finding along with the data result showing how MAP and content closely correlated, would be a discussion point. Teachers need to be better equipped with effective skills to teach the necessary literacy components so that their students can be successful on the assessments.

Also, teachers need to be supported in attaining additional licenses, degrees, and/or credits. This support includes, but is not limited to, tuition reimbursement, time allocated for taking classes, more classes offered in the summer months or evenings, and mentoring support within the school setting.

These findings have important implications for education, practice, policy, and future research. Implications and suggestions for future research follow.

Implications and Recommendations

The following topics were identified as important implications and opportunities for future research. Based on the literature, the unexpected lack of relationships in the study was not expected and would lend into further research. The recommendations have been organized according to variables from the research questions.

Student-Achievement Recommendations

The finding that MAP had a medium correlation to instruction deserves more research. The integrity of the MAP results would grant more research. Do the MAP results really show where the students are academically, and do the results give data that can help improve a school's literacy growth?

Also, it would be recommended for a school to increase teachers' knowledge about their teaching performance on assessments such as MAP and ORF because they were both connected to pedagogical knowledge. This would have positive implications for the school because with a better understanding of test pedagogical content knowledge, should come increased test scores.

Teachers' Demographic Recommendations

Additional education should be encouraged and possibly rewarded for teachers who attain additional licenses or who are willing to take additional credits. It would be interesting to research in greater detail why teachers with reading licenses had higher pedagogical understanding than content understanding. Could the teachers who achieved the reading license all have earned it from the same institution, and if so, what is the framework of that intuition? This topic needs further research.

Instructional Practice Recommendations

A question that came from this study was, if the teacher's had taught the five critical areas of literacy effectively, would the ORF scores have been higher? The five areas of literacy are as follows:

1. Phonemic Awareness
2. Phonics
3. Fluency
4. Vocabulary
5. Comprehension. (Learning Point Associates, 2004, p. 1)

A recommendation to schools would be to incorporate the NRP's findings in the curriculum, which would include these five areas of literacy. Conducting a study after teachers

had implemented the five literacy areas to see if content knowledge changed would be an area for further research.

Limitations

The study had limitations. Because of the nature of the study, only second- and third-grade teachers and students were researched. The study could have been opened up to second through fifth grades, which would have given more data points to analyze. Although the data set was small, the results were interesting, but limited.

A second limitation would be researcher bias due to the fact that the researcher was an elementary teacher who taught literacy. The researcher was immersed in literacy for 13 years.

Another limitation was that the chosen schools were all from an area that covered an eight-mile radius. Finally, the researcher was working within a larger research project and had to follow the protocol of that study.

A final limitation would be the number of teachers that received their reading license. Only four teachers out of the 36 studied had obtained an additional reading license. This was a small n to do an analysis on.

The purpose of this dissertation was to examine if a relationship exists among teachers' content knowledge, teachers' pedagogical content knowledge, instructional practices, teachers' demographic backgrounds, and students' literacy achievement. The findings showed the need for follow-up research and also gave ideas for improvement on existing literacy practices. These findings have important implications for education, practice, policy, and future research.

REFERENCES

- AIMSweb*. (2013). Retrieved on March 3, 2013, from <http://aimsweb.pearson.com>
- Brabham, E. G., Murray, B. A., & Bowden, S. H. (2006). Reading alphabet books in kindergarten: Effects of instructional emphasis and media practice. *Journal of Research in Childhood Education*, 20(3), 219-234.
- Brown University. (2012). *English Language Learner (ELL), Definition*. Retrieved from <http://www.alliance.brown.edu>
- Cantrell, S. C. (1998/1999). Effective teaching and literacy learning: A look inside primary classrooms. *The Reading Teacher*, 52(4), 370-378.
- Carlisle, J., Kelcey, B., Berebitsky, D., & Phelps, G. (2011). Embracing the complexity of instruction: A study of the effects of teachers' instruction on students' reading comprehension. *Scientific Studies of Reading*, 26, 1-27.
doi:10.1080/10888438.2010.497521
- Cochran-Smith, M., & Zeichner, K. M. (2005). *Studying teacher education: The report of AERA panel on research and teacher education*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Coleman, R. & Goldenberg, C. (2012) the common core challenge for ELLs. *Principal Leadership*, 46-51.
- Connor, C. M., Morrison, F. J., Fishman, B. J., Schatschneider, C., & Underwood, P. (2007). Algorithm-guided individualized reading instruction. *Science*, 315, 464-465.

- Connor, C. M., Piasta, S. B., Glasney, D., Schatschneider, C., Fishman, B., Underwood, P. (2009). Individualizing student instruction precisely: Effects of child by instruction interactions on first graders' literacy development. *Child Development*, 80, 77-100.
- Creswell, J. W. (2005). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (Rev. ed.). Upper Saddle River, NJ: Pearson Education.
- Cunningham, A. E., Stanovich, K. E., & Stanovich, P. J. (2004). Disciplinary knowledge of K-3 teachers and their knowledge calibration in the domain of early literacy. *Annals of Dyslexia*, 54(1), 139-167.
- Cunningham, A., & Zibulsky, J. (2009). Introduction to the special issue about perspectives on teachers' disciplinary knowledge of reading processes, development, and pedagogy. *Reading and Writing*, 22(4), 375-378.
doi:10.1007/s11145-009-9161-2
- Cunningham, J. W. (2001). Essay book review: The National Reading Panel Report. *Reading Research Quarterly*, 36(5), 326-345.
- de Jong, E. J. & Harper, C. A. (2005). Preparing mainstream teachers for English-Language Learners: Is being a good teacher good enough? *Teacher Education Quarterly*, 32(2), 101-124.
- Dixon, A., Jr. (1999). *A description of instructional practices in inclusive classroom settings* (Unpublished doctoral dissertation). Virginia Polytechnic Institute and State University, Blacksburg.
- Dodd, R. W. & Whipple, T. W. (1976). Item selection: A practical tool in attitude research. *The Journal of Marketing*, 40(3), 87-89.

- Doyle, W., & Carter, K. (2003). Narrative and learning to teach: Implications for teacher-education curriculum. *Journal of Curriculum Studies*, 35(2), 129-137.
- Evans, M. A., Fox, M., Cremasa, L., & McKinnon, L. (2004). Beginning reading: The views of parents and teachers of young children. *Journal of Educational Psychology*, 96(1), 130-141.
- Foorman, B. R., & Moats, L. C. (2004). Conditions for sustaining research-based practices in early reading instruction. *Remedial & Special Education*, 25, 51-60.
- Foorman, B. R., & Schatschneider, C. (2003) Measurement of teaching practices during reading/language arts instruction and its relationship to student achievement. In S. Vaughn & K. L. Briggs (Eds.), *Reading in the classroom: Systems for the observation of teaching and learning* (p. 1-30). Baltimore: Brookes.
- Fountas, I. C., & Pinnell, G. S. (1996a). *Guided reading*. Retrieved from www.heinemann.com
- Fountas, I. C., & Pinnell, G. S. (1996b). *Guided reading: Good first teaching for all children*. Portsmouth, NH: Heinemann.
- Francis, D. J., Santi K. L., Barr, C., Fletcher, J. M., Varisco, A., & Foorman, B. R. (2007). Form effects on the estimation of students' oral reading fluency using DIBELS. *Journal of School Psychology*, 46(3), 315-342.
- Frey, B. B., Lee, S. W., Tollefson, N., Pass, L., & Massengill, D. (2005). Balanced literacy in an urban school district. *The Journal of Educational Research*, 98(5), 272-280.
- Fu, D., Houser, R., & Huang, A. (2007). A collaboration between ESL and regular

- classroom teachers for ELL students' literacy development. *Changing English*, 14(3), 325-342.
- Gay, L. R., Mills, G. E., & Airasian, P. (2006). *Educational research: Competencies for analysis and applications*. Upper Saddle River, NJ: Pearson Prentice Hall.
- Goldhaber, D., & Anthony, E. (2004). Can teacher quality be effectively assessed? Retrieved on May 13, 2011, from www.urban.org/uploadedpdf/410958_NBPTSOOutcomes.pdf
- Gay, G. (2002). Preparing for culturally responsive teaching. *Journal of Teacher Education*, 53, 106-116.
- Goldschmidt, P., & Phelps, G. (2010). Does teacher professional development affect content and pedagogical content knowledge: How much and for how long? *Economics of Education Review*, 29, 432-439.
- Helman, L. (2012). Quality core instruction observation tools. Handout presented at the Path to Reading Excellence in School Sites meeting for observation tool training, Minneapolis, MN.
- Helman, L., Bear, D. R., Templeton, S., Invernizzi, M., & Johnston, F. (2012). *Words their way with English learners: Word study for phonics, vocabulary, and spelling*. Upper Saddle River, NJ: Pearson Prentice Hall.
- Hindman, A. H., & Wasik, B. A. (2008). Head start teachers' beliefs about language and literacy instruction. *Early Childhood Research Quarterly*, 23, 479-492.
- Hoyt, L. (2005). *Spotlight on comprehension building: A literacy of thoughtfulness*. Portsmouth, NH: Heinemann.
- Juel, C., & Minden-Cupp, C. (2000). Learning to read words: Linguistic units and

- instructional strategies. *Reading Research Quarterly*, 35(4), 458-492.
- Kamps, D., Abbott, M., Greenwood, C., Arreaga-Mayer, C., Wills, H., Longstaff, J., Culpepper, & Walton, C. (2007). Use of evidence-based, small-group reading instruction for English Language Learners in elementary grades: Secondary-tier intervention. *Learning Disability Quarterly*, 30, 153-168.
- Kennedy, D., Hyland, A., & Ryan, N. (2006). *Implementing Bologna in your institution*. Retrieved from www.bologna.msmt.cz/files/learning-outcomes.pdf
- Learning Point Associates. (2004). *A closer look at the five essential components of effective reading instruction: A review of scientifically based reading research for teachers*. Retrieved from www.learningpt.org
- McCall, J. (2005). *Spotlight on comprehension: Building a literacy of thoughtfulness*. Portsmouth, NH: Heinemann.
- McKeown, M. G., Beck, I. L., & Blake, R. G. K. (2009). Rethinking reading comprehension instruction: A comparison of instruction for strategies and content approaches. *Reading Research Quarterly*, 44(3), 281-253.
- Miller, M., & Veatch, N. (2010). Teaching literacy in context: Choosing and using instructional strategies. *The Reading Teacher*, 64(3), 154-165.
- Moats, L. C. (1994). The missing foundation in teacher education: Knowledge of the structure of spoken and written language. *Annals of Dyslexia*, 44, 81-102.
- Moats, L. C., & Foorman, B. R. (2003). Measuring teachers' content knowledge of language and reading. *Annals of Dyslexia*, 53, 23-45.
- Multicultural Life. (2011). Six schools selected for Target-sponsored reading initiative. Retrieved from www.multiculturallife.org

- National Center for Early Development and Learning. (2005). Retrieved from <http://www.fpg.unc.edu/~ncedl>
- National Reading Panel. (2000). *Report of the National Reading Panel: Teaching children to read (No. 00-4769)*. Washington, DC: National Institute of Child Health and Human Development.
- National Reading Panel. (2005). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. Retrieved from www.nationalreadingpanel.org
- Northwest Evaluation Association. (2011). *2011 Normative data reference*. Retrieved from <http://www.nwea.org/products-services/computer-based-adaptive-assessments/map>
- Phelps, G., Johnson, D., & Carlisle, J. (2009). *Relating knowledge about reading to teaching practice: An exploratory validity study of a teacher knowledge assessment* [Society for Research on Educational Effectiveness conference abstract]. Retrieved from www.sree.org/conferences/2009/pages/abstracts/050_relating.doc
- Phelps, G., & Schilling, S. (2004). Developing measures of content knowledge for teaching reading. *Elementary School Journal, 105*(1), 31-48.
- Path to Reading Excellence in School Sites. (2012). PRESS. Handout, Minneapolis, MN.
- Piasta, S. B., McDonald-Connor, C., Fishman, B., & Morrison F. J. (2009). Teachers' knowledge of literacy concepts, classroom practices, and student reading growth. *Scientific Studies of Reading, 13*(3), 224-248.
- Pressley, M. (2002). Effective beginning reading instruction. *Journal of Literacy Research, 3*(2), 165-188.

- Poulson, L., Avramidis, E., Fox, R., Medwell, J., & Wray, D. (2001). The theoretical beliefs of effective teachers of literacy in primary schools: An exploratory study. *Research Papers in Education, 16*(3), 271-292.
- Rennie, J. (1993). *ESL and bilingual program models* (ERIC Digest No. ED362072).
- Reutzel, D. R., Dole, J. A., Read, S., Fawson, P., Herman, K., Jones, C. D., . . . Fargo, J. (2011). Conceptually and methodologically vexing issues in teacher knowledge assessment. *Reading & Writing Quarterly, 27*(3), 183-211.
- Reutzel, D. R., Dole, J. A., Sudweeks, R., Fawson, P. C., Read, S., Smith, J. A., . . . Herman, K. (2007). *Developing the Literacy Instruction Knowledge Scales (LIKS): A comprehension assessment of primary grade teachers' knowledge of reading and writing instruction*. Paper presented at the annual conference of the American Educational Research Association, Chicago, IL.
- Robers, T. A., & Meiring, A. (2006). Teaching phonics in the context of children's literature or spelling: Influences on first-grade reading, spelling, and writing and fifth-grade comprehension. *Journal of Educational Psychology, 98*, 690-713.
- Routman, R. (2000). *Conversations: Strategies for teaching, learning, and evaluating*. Portsmouth, NH: Heinemann.
- Rowan, B., Schukubgm S., Ball, D., Miller, Atkins-Burnett, S., Camburn, E., Harrison, D., & Phelps, G. (2001). *Measuring teachers' pedagogical content knowledge in surveys: An exploratory study*. (Unpublished doctoral dissertation or master's thesis).
- Scrivner, C. M. (2009). *The relationship between student achievement and teacher attitude: A correlational study* (Unpublished doctoral dissertation.) Northcentral University, Prescott Valley, AZ.

- Scharlach, T. D. (2008). These kids just aren't motivated to read: The influence of preservice teachers' beliefs on their expectations, instruction, and evaluation of struggling readers. *Literacy Research and Instruction, 47*(3), 158-173.
- Seaman, A. A. (2000). *Evaluating an innovative elementary ESL program*. Paper presented at the 2000 Teachers of English to Speakers of Other Languages convention, Vancouver, BC.
- Segall, A. (2004). Revisiting pedagogical content knowledge: The pedagogy of content/the content pedagogy. *Teaching and Teacher Education, 20*(5), 489-504.
- Short, D., & Echevarria, J. (2005). Teacher skills to support English Language Learners. *Educational Leadership, 62*(4), 8-13.
- Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher, 15*(2), 4-14.
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review, 57*, 1-21.
- Snider, V. A. (1995). A primer on phonemic awareness: What it is, why it's important, and how to teach it. *Psychology Review, 24*, 443-455.
- Stipek, D., & Byler, P. (1997). Early childhood education teachers: Do they practice what they preach. *Early Childhood Research Quarterly, 12*, 305-325.
- Taylor, B. M., Pearson, P. D., Clark, K., & Walpole, S. (2000). Effective schools and accomplished teachers: Lessons about primary-grade reading instruction in low-income schools. *Elementary School Journal, 101*, 121-165.
- Taylor, B. M., Pearson, P. D., Peterson, D. S., & Rodriguez, M. C. (2003). Reading growth in high-poverty classrooms: The influence of teacher practices that

- encourage cognitive engagement in literacy learning. *The Elementary School Journal*, 104, 2-28.
- Torgesen, J. K., Alexander, A. W., Wagner, R. K., Rashotte, C. A., Voelker, K. K. S., & Conway, T. (2001). Intensive remedial instruction for children with severe reading disabilities: Immediate and long-term outcomes from two instructional approaches. *Journal of Learning Disabilities*, 24, 33-58.
- United States Department of Agriculture Food and Nutrition Service. (2012). Retrieved from <http://www.fns.usda.gov/cnd/lunch/>
- University of Oregon. (2011). *Dibels oral reading fluency and retell fluency*. Retrieved from <https://dibels.uoregon.edu/measures/orf.php>
- Viera, A. J., & Garrett, J. M. (2005). Understanding inter-observer agreement: The kappa statistic. *Family Medicine*, 37(5), 360-363.
- Wilson VanVoorhis, C. R., & Morgan, B. L. (2007). Understanding power and rules of thumb for determining sample size. *Tutorials in Quantitative Methods for Psychology*, 3(2), 43-50.
- Wolfersberger, M. E., Reutzell, D. R., Sudweeks, R., & Fawson, P. C. (2004). Developing and validating the Classroom Literacy Environmental Profile (CLEP): A tool for examining “print richness” of early childhood and elementary classrooms. *Journal of Literacy Research*, 36, 211-272.
- Yoo, S. (2005). The study of early childhood teachers’ beliefs related to children’s literacy at South Korea. *Reading Improvement*, 42, 137-150.

APPENDIX A. IRB APPROVAL

NDSU

NORTH DAKOTA STATE UNIVERSITY

Institutional Review Board

Office of the Vice President for Research, Creative Activities and Technology Transfer

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Federalwide Assurance #FWA00002439

Monday, October 03, 2011

Dr. Myron Eighmy
School of Education

Re: IRB Certification of Human Research Project:

“A Study on the Level of a Teacher's Content Knowledge, Pedagogical Content Knowledge, Instructional Practices, Demographics, and their Effects on Student Outcomes”

Protocol #HE12050

Co-investigator(s) and research team: **Sue Brunberg**

Study site(s): **Minneapolis Public Schools**

Funding: **n/a**

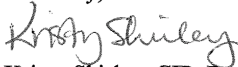
It has been determined that this human subjects research project qualifies for exempt status (category # 1, 2) in accordance with federal regulations (Code of Federal Regulations, Title 45, Part 46, *Protection of Human Subjects*). This determination is based on the protocol form received 9/29/2011 and consent/information sheet received 9/29/2011.

Please also note the following:

- This determination of exemption expires 3 years from this date. If you wish to continue the research after 10/2/2014, the IRB must re-certify the protocol prior to this date.
- The project must be conducted as described in the approved protocol. If you wish to make changes, pre-approval is to be obtained from the IRB, unless the changes are necessary to eliminate an apparent immediate hazard to subjects. A *Protocol Amendment Request Form* is available on the IRB website.
- Prompt, written notification must be made to the IRB of any adverse events, complaints, or unanticipated problems involving risks to subjects or others related to this project.
- Any significant new findings that may affect the risks and benefits to participation will be reported in writing to the participants and the IRB.
- Research records may be subject to a random or directed audit at any time to verify compliance with IRB policies.

Thank you for complying with NDSU IRB procedures; best wishes for success with your project.

Sincerely,



Kristy Shirley, CIP, Research Compliance Administrator

NDSU is an EO/AA university.

APPENDIX B. PRESS OBSERVATION TOOL

Teacher _____

Date _____

Room # & School _____

Observer _____

Part 1: Environmental Data (Collected prior to lesson observation)

Please code the extent to which each item below is present.

0=not evident, 1= a minimal presence, 2= some, 3=exemplary

Basic writing tools such as paper, pencils, crayons and markers	
Accessible writing center for students	
Materials available for students to publish	
Available writing surfaces such as paper, blank books, slates, white boards, etc.	
Technological resources for writing	
Extra consumable literacy tools (such as sharpened pencils)	
Classroom library consists of basic print materials such as books and magazines	
Classroom library is accessible to students	
Print materials vary in format, content, and genre	
Age-appropriate reference materials such as dictionaries, encyclopedias, and atlases	
Sets of related books	
Book sets at the varied reading levels of students	
A balance of fiction and non-fiction texts	
Student-authored books or journals	
Books on tape or computer	
Evidence of student independent use of classroom literacy tools	
Texts are displayed in the classroom (0=0-99, 1=100-199, 2=200-299, 3=more than 300)	
Adult-authored written communications are posted (including commercially produced charts)	
Student-authored written communications are posted	
An alphabet with clear icons or alphabet strips are accessible to students	
A word wall is in active use	
Expectations for student behavior are posted	
The print displayed shows signs of being updated with new learning	
Technological resources are available for students to use in reading and writing	
Furnishings support student reading, writing, listening and speaking	
Storage and display containers support literacy events	
Classroom areas and layout are adequate for working on, storing, and displaying literacy products	
Literacy tools and products replicate authentic settings	

Part 2: Instructional Practices (Collected during the 20 minute observed lesson)

Context of lesson:
Time of day:
of adults and tutors present: Description of adult roles:
Grouping arrangement: Whole group 10-15 students 5-9 students 1-4 students
Parts of lesson observed: Mini-lesson Small group reading or writing Wrap-up
Focus of lesson (Circle all that apply): Ph Aw Phonics Fluency Vocab Comp

Observation of instructional practices used by the teacher:

Practice	Description	Level of implementation 0-not evident 1-attempted 2-some use 3-exemplary use
Based on NRP core elements		
Identifiable focus on core element		
Adequate time to address content		
Practice or review is provided		
Effective support of concept development		

Word-level, comprehension, and writing skills are taught explicitly		
Instruction at students' developmental level		
Models or coaches		
Asks questions for evaluation		
Assesses student work		
Differentiates based on students' levels		
Encourages students to do academic tasks for themselves		
Tailored for ELL students		
Fosters discussion		
Gives students an opportunity to ask questions		
Checks for understanding		
Clarifies unknown vocabulary		
Models language structures		

Opportunities for connected/meaningful reading and writing		
Explains value/relevance of lesson		
Activates background schemata		
Engages in practice of reading or writing		
Use of connected texts		
Makes reading/writing connections		
Instruction is systematic and explicit		
Explains purpose of lesson		
Gives direction for activity		
Provides clear explanations with good examples		
Provides a summary		
Effective behavior management		

Provides feedback on student performance		
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Student engagement (Head count of on- or off-task at three points in time)

Check #	Time	Students on task/total students	Notes
At 3 min mark			
At 10 min mark			
At 16 min mark			

Part 3: Additional notes or comments by observer (Written after lesson observation for elaboration or clarification)

APPENDIX C. SURVEY

Teacher Information Survey

Hello! Thank you for completing this survey! This survey has **3 parts**, and it will probably take you about **15 minutes** to complete.

Part 1: Information about you

We'd like to know a bit about you and your background.

Name: _____ **Gender** (circle one): Male / Female

Date: ____/____/____ **School name:** _____

Native language (circle one):

English Spanish Somali Hmong Other (list): _____

Other language(s) with which you are familiar (e.g., you could have a simple dialogue with a student; circle all that apply):

English Spanish Somali Hmong Other (list): _____

To what racial/ethnic group do you belong?

African American Native American Hispanic White

Other (list): _____

Were you ever an English language learner (ELL)? (circle one): Yes / No

What is your role in the school?

Classroom teacher ELL specialist Reading teacher Administrator
Educational assistant Other (list): _____

If you are a classroom teacher, what grade level(s) will you teach in 2011-2012? (circle all that apply)

Pre-K K 1 2 3 4 5

What is the highest level of education you have completed?

BA/BS BA/BS+30 MA/M.Ed. MA/M.Ed.+30 PhD/Ed.D.

Do you have a Minnesota K-12 Reading License? Yes / No

Do you have a Minnesota K-12 ESL License? Yes / No

Do you have a Minnesota Special Education License? Yes / No

Please list any other teaching licenses or additional certifications you have:

How many years of teaching experience do you have (not including 2011-2012)? _____

Part 2: Multiple choice and fill-in-the-blank questions

The following questions assess your knowledge of the 5 major reading skills identified by the National Reading Panel. Circle or fill in the best answer for each question.

1. What is the third speech sound, or phoneme, in the word “wretch”?

- a. /ch/
- b. /e/
- c. /t/
- d. /r/

2. Count the number of syllables that you hear in each of the following words.
(The first 3 have been done for you as examples.)

- a. higher 2
- b. threat 1
- c. physician 3
- d. lightning
- e. capital
- f. shirt
- g. spoil
- h. decidedly
- i. banana
- j. walked
- k. recreational
- l. lawyer

3. A student is having trouble identifying the sounds in spoken words. Which activity would be appropriate for addressing this phonemic awareness issue?

- a. Manipulating letter tiles to create new words.
- b. Talking to the child and writing out what he/she says.
- c. Working on written and oral vocabulary.
- d. Orally substituting the beginning sounds of words to create new words with familiar ending sounds.

4. In her kindergarten class, Ms. Frank uses several different tasks to help her students identify sounds in words. Which directions indicate the use of a blending task?

- a. "Put the sounds together to say the word: /t/ /a/ /p/."
- b. "Tell me the first sound of 'tap'."
- c. "Say 'tap'. Now say it again, but don't say /t/."
- d. "Say each sound in 'tap'."

5. Which word has a prefix?

- a. definition
- b. proactive
- c. mistletoe
- d. super
- e. hamburger

6. " _____ " is an example of the "y rule" for adding endings.

- a. easier
- b. hoping
- c. enjoyable
- d. plowed

7. Ms. Stanley, a kindergarten teacher, is preparing activities to teach phonological awareness in a developmentally appropriate sequence. Which of the following should she teach first?
- a. Matching sounds and letters
 - b. Identifying words that rhyme
 - c. Identifying vowels that say their own name
 - d. Counting the number of speech sounds in words
8. Mr. Hamilton, a first-grade teacher, notices that Rafael spends much of his free time writing. He notes that Rafael misspells many words but that his misspellings suggest knowledge of some letter-sound relationships. For instance, he spelled “zipper” as “zipr” and “elephant” as “elifint”. To promote Rafael’s spelling development, which would be the best step for Mr. Hamilton to take?
- a. Engage Rafael in activities that promote phonological awareness
 - b. Teach Rafael standard spelling patterns before he spends more time writing
 - c. Teach Rafael standard spelling patterns within the context of his compositions
 - d. Encourage him to continue to write a lot
9. Circle the *FIVE* words in which the use of morphemes will enable intermediate-grade students to figure out the meaning of the word. Assume students know the meaning of the root word.
- a. unusable
 - b. discord
 - c. careless
 - d. emphasis
 - e. misspell
 - f. rewashable
 - g. decisive
 - h. dejected
 - i. absent
 - j. useful

10. A first-grade teacher is preparing a read-aloud lesson for her class. She is thinking about selecting four or five words from the story to discuss with the students. If selected by the teacher, which category of words below will *most* affect whether students understand the story?

- a. Names of characters
- b. The words that are hardest to pronounce
- c. Words that students will encounter in other texts
- d. Specialized words in the story

11. For skilled readers, listening and reading comprehension are usually approximately equal. For developing readers in grades K through 3, it is true that

- a. reading comprehension is usually better than listening comprehension.
- b. listening comprehension is usually better than reading comprehension.
- c. reading and listening comprehension are usually about the same.
- d. the relationship between reading and listening is idiosyncratic or depends on the student.