The Impact of the Implementation of a District Literacy Plan on Student Achievement as Measured by the NWEA-MAP Reading Assessment

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Abstract

Literacy instruction has long been a topic of debate in education. Many districts have attempted to implement effective literacy programs that improve student achievement. The purpose of this non-experimental, quantitative study was to determine to what extent a District Literacy Plan (DLP) affected student reading achievement scores on the NWEA-MAP reading assessment. This study compared fall to spring reading composite gains scores of students four years prior to the implementation of District A's literacy plan (pre-DLP implementation) to fall to spring reading composite gains scores of students four years after implementation (post-DLP implementation).

Overall, the results of the study revealed that the implementation of the DLP did not have a significant positive impact on student Northwest Evaluation Association-Measures of Academic Progress (NWEA-MAP) reading gains scores. Further, the study showed that there was no significant differential impact on MAP reading gains scores based on student gender, or based on whether students received English Language Learner (ELL) or special education services. However, the results indicated that there were significant differential impacts on MAP reading gains scores based on student socio-economic status or SES and race/ethnicity. Students in the free/reduced lunch group had significantly lower gains scores post-DLP implementation, while students in the full-pay lunch group showed no significant difference pre- and post-DLP implementation. Black and Hispanic students' reading gains scores were significantly lower post-DLP implementation, while White and Other students showed no significant difference pre- and post-DLP implementation.

Dedication

To the wonderful educators who have impacted and influenced my life in numerous ways: Susan Engelmann, you are the reason I became an educator. Without your gentle nudge, encouragement, love, and support, I might not have made the leap to where I am today. Thanks for being my second mother and guiding me when I doubted myself. Ryan Most, you encouraged me and convinced me to keep going even to the point of competing with me to complete our dissertations. You may have beaten me to the finish, but for me it was a marathon, not a sprint. Without your friendship and gentle prodding, I might not be writing this dedication. You have all greatly made an everlasting impression on my life as role models, mentors, and friends. Thank you for teaching me, having faith in me, and most importantly, for showing me that I could do anything if I worked hard.

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Chapter 1

Introduction

Literacy is the foundation on which each student's educational journey is built. Building a strong literacy foundation provides the opportunity for increased academic achievement. With the increasing need to ensure that students are literate and capable citizens of society, there have been numerous attempts in school districts, especially urban school districts, at implementing literacy programs to help improve student literacy and competitiveness in a global society (Project Manager of Literacy Lab Classroom Cohort and District Literacy Advisory Council, personal communication, November 1, 2017). It is imperative to the future of our students that we strengthen literacy instruction, support teachers and administrators through professional development, and promote higher levels of learning.

Due to ever-changing academic expectations, instructional methods continue to evolve. A goal that remains consistent is the teacher's desire to instruct each student effectively and guide students to academic success (Project Manager of Literacy Lab Classroom Cohort and District Literacy Advisory Council, personal communication, November 1, 2017). Because of the push to equip students with the necessary literacy skills, numerous programs and initiatives have been implemented in most schools and districts.

As this focus on literacy spreads across the nation, schools require more teachers to be qualified to detect and correct deficiencies in reading comprehension, vocabulary, and writing. The literacy movement has been decades in the making; therefore, it is paramount to provide quality instruction that facilitates the learning of necessary literacy

skills (Rauscher, 2016). This instruction involves engaging in authentic reading activities, which has been shown to improve student achievement (Rauscher, 2016). Rauscher suggested that these instructional strategies must be evidence-based, rigorous, and focused specifically on building students' knowledge by improving their reading comprehension through exposure to a variety of different texts, explicit vocabulary instruction, and comprehension strategies. This study examined literacy instruction designed to improve student reading achievement and stemmed from of the implementation of District A's literacy initiative.

Background

District A is a Midwestern urban district consisting of 21,937 students that represents a diverse community with the following demographics: Fifty percent Hispanic, 29% African American, 12% White, and 10% other ethnicities (District A Report Card, 2018). Of these students, 85% are identified as economically disadvantaged based on their free/reduced lunch status. In addition, 41% of the students are English Language Learners (ELL) and 14% are students with disabilities. The district had previously implemented a variety of reading programs in the early 1980s to help students improve their academic achievement, but consistency and fidelity of implementation was lacking (District A, 2013). Reading scores in District A had dropped since their rise in the mid to late 1990s, and student performance in reading as measured by the state reading assessment had plateaued by the early 2000s (Project Manager of Literacy Lab Classroom Cohort and District Literacy Advisory Council, personal communication, November 1, 2017).

The district commissioned two external literacy audits (2011-2012 and 2015-2016) conducted by the American Institutes for Research (AIR). In 2012, the AIR audit of District A's literacy practices found that nearly 26% of students read below the basic level and did not have the ability to understand text at their respective grade levels. These students were unprepared for the rigorous literacy demands of postsecondary education and the workplace.

The 2011-2012 audit rendered recommended literacy strategies for elementary, middle, and high schools to implement; however, elementary schools were the focus of the current study. The three main recommendations suggested by AIR (2012) were to implement with fidelity the components of the balanced literacy block, develop and implement with fidelity a district-wide word study curriculum, and ensure the time students spent working independently was productive.

In response, the district implemented a Balanced Literacy Instructional model in 2012-2013, which included Animated Alphabet, Guided Reading, and Fountas and Pinnell benchmark assessments, a reading fluency test administered twice during the school year (fall and spring). All elementary schools in District A implemented the Big 3 Plus, which included knowing the students as readers, receiving training in the implementation of Interactive Read Alouds (IRA), and Monitored Independent Reading (MIR) with newly purchased classroom library sets provided by the district. Additional recommendations included increasing rigorous instruction, differentiated instruction, attempting to increase student engagement, vocabulary instruction, independent reading, writing instruction, and district-provided professional learning in each of these areas (AIR, 2012).

District A created a literacy initiative introduced in 2013-2014 called the District Literacy Plan (DLP) with the objective to ensure that all students develop as literate citizens (District A, 2013). A component of the DLP was district and building professional development on Interactive Read Aloud (IRA) and Reading Workshop, which incorporated Guided Reading, or small group reading, and Writing Workshop. Underlying the DLP was the adoption of the Marzano Model of Instruction, which integrates goals, scales, learning goals, and learning targets as a way to help teachers become effective educators while simultaneously implementing the DLP (Project Manager of Literacy Lab Classroom Cohort and District Literacy Advisory Council, personal communication, November 1, 2017).

A second external literacy audit was conducted by AIR during the 2016-2017 academic year to examine the impact of the programs, initiatives, and activities implemented as a part of the DLP. Results from the second audit highlighted the work the district had done since the first audit by recognizing that literacy is central to learning, an increase in the amount and quality of writing instruction, and incorporation of the independent reading recommendation from the earlier audit. In addition, the district was making efforts to continue the literacy initiative or goals (Rauscher, 2016).

The audit conducted by Rauscher (2016) outlined several recommendations that the district should consider in order to have the greatest impact on student achievement. The recommendations included: continue the focus on improving the literacy achievement by providing sequential, systemic, and explicit word study that is appropriate to the developmental stage of each student; ensure all components of balanced literacy are implemented with fidelity in the elementary reading program; implement an intervention

program for students who are below grade level; and increase the rigor of general classroom instruction. Additional recommendations included implementing a gradual release of responsibility model of instruction (Fisher & Frey, 2013), a framework for structured teaching that shifts the cognitive load from teacher to student.

At the beginning of the 2016-2017 school year, District A incorporated the above literacy components of the DLP, along with the Marzano Model of Instruction, to streamline or combine all aspects into one plan that addressed literacy in conjunction with learning and instructional conditions (Project Manager of Literacy Lab Classroom Cohort and District Literacy Advisory Council, personal communication, November 1, 2017). The six overarching goals of the DLP were identified as:

- Actively promote and support school-based literacy improvement efforts.
- Provide continual professional development to all leaders who actively engage in and monitor the implementation of the DLP for increasing student achievement.
- Actively engage all students in reading, writing, speaking, and reasoning in all content areas to improve learning outcomes and performance.
- Provide continual and differentiated professional learning for all teachers to actively engage in the implementation of the DLP and use data to determine the impact of professional learning on student achievement.
- Consistently integrate high-quality reading, writing, language, and vocabulary instruction to improve all students' literacy development and content learning.
- Appropriate and adequate literacy interventions implemented to support struggling readers and writers to attain and maintain grade-level achievement within the context of a school-wide literacy improvement effort (District A, 2013, p. 2).

Statement of the Problem

The audit of District A's literacy programs conducted by The American Institute for Research (AIR) in 2012, found that students in District A were lacking necessary literacy skills to be successful in their academic careers. As a result, during 2013-2014 District A implemented an initiative, the District Literacy Plan (DLP). The DLP included evidence-based literacy practices intended to improve student achievement and required revising reading and writing instructional practices (Project Manager of Literacy Lab Classroom Cohort and District Literacy Advisory Council, personal communication, November 1, 2017). After four years of implementation, data collected in conjunction with the initiative had not been analyzed to examine whether the DLP initiative had significantly affected reading growth and proficiency (Project Manager of Literacy Lab Classroom Cohort and District Literacy Advisory Council, personal communication, November 1, 2017). Due to the lack of analysis as to whether the new practices from that plan were having any impact or worth continuing in conjunction with new 2016-2017 recommendations, it was imperative to examine the effectiveness of the 2013-2014 DLP implementation.

Purpose of the Study

The first purpose of this study was to examine the overall impact of the District Literacy Plan (DLP) on fifth-grade students' reading achievement as measured by NWEA-MAP reading scores by comparing fall to spring reading composite gains scores of students prior to the implementation of the DLP (pre-DLP implementation) to fall to spring reading composite gains scores following the implementation of the plan (post-DLP implementation). The second purpose of this study was to investigate whether the

DLP implementation led to any differences in reading gains for fifth-grade student sub-groups based on gender (male or female), socio-economic (SES) status (free/reduced lunch or full-pay), race/ethnicity (Hispanic, Black, White, or Other), English language learner (ELL) status (received services or did not receive services), and special education (SPED) status (received services or did not receive services). The third purpose was to determine whether the levels or categories of the independent variables (gender, SES, race/ethnicity, ELL status, and SPED status) were differentially impacted by DLP implementation.

Significance of the Study

Literacy instruction is key to ensuring students can read and write and, therefore, become well-rounded global citizens. The focus of this study was to review the data regarding the DLP implementation. The findings could help District A, and similar districts, determine whether such a literacy initiative could increase reading growth over four years of implementation. Administrators, teachers, instructional coaches, and other district staff or stakeholders would also benefit from the current research study. The results would allow the administrators to make data-based decisions regarding policy, and provide valuable information for teachers and instructional coaches about the overall impact of district-wide literacy programs on MAP reading composite mean fall to spring gains scores for different sub-groups of students.

Delimitations

Delimitations are under the control of the researcher and are used to clarify the boundaries of the study and narrow the focus of the research (Roberts, 2004). The following delimitations were employed for the study: (a) the sample included one public,

urban school district in Kansas; (b) fifth-grade student data was sampled for analysis; (c) reading achievement was measured using the fall to spring composite gains scores on the NWEA-MAP pre-DLP implementation from 2009-2010 through 2012-2013, and post-DLP implementation from 2013-2014 through 2016-2017.

Assumptions

"Assumptions are postulates, premises, and propositions that are accepted as operational for purposes of the research" (Lunenburg & Irby, 2008, p. 135). One assumption for the current study was that all District A elementary classroom teachers included in the study were provided with district professional development regarding the DLP initiative. A second assumption was that all teachers provided the same quality of instruction to their students. A third assumption was that all students were motivated to perform their best on the MAP reading assessments. A fourth assumption was the data were correctly entered into an Excel spreadsheet. The final assumption was the MAP reading assessment accurately measured reading achievement growth.

Research Questions

The following questions guided the purpose of this study:

RQ1. To what extent was there a difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation?

RQ2. To what extent were the differences in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of

2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, impacted by gender, socio-economic (SES) status, race/ethnicity, English Language Learner (ELL) status, or special education (SPED) status?

Definition of Terms

Key terms are words that can have different meanings and appear throughout the research study. According to Roberts (2004), "this section of the dissertation provides the definition for the terms used that do not have a commonly known meaning or that have the possibility of being misunderstood" (p. 139). The following terms were defined and used for the study:

Balanced Literacy. According to Wiencek, Vazzano, and Reizian (1999), the Balanced Literacy program includes the components of Interactive Read Aloud, Guided Reading, Shared Reading, Interactive Writing, Shared Writing, Reading Workshop, Writing Workshop, and Word Study.

Fountas and Pinnell Benchmark Assessment System (F&P BAS). F&P BAS is a reading assessment that determines the reading level of a student by listening to students read while observing their behaviors to quantify specific reading behaviors that aid teachers in planning reading instruction (Fountas & Pinnell, 2017).

Guided Reading. Guided reading is an instructional approach that is a component of the Balanced Literacy Framework utilized to teach reading with a small group of students who demonstrate similar reading behaviors while reading similar leveled texts (Fountas & Pinnell, 2017).

Gradual Release of Responsibility. Gradual release of responsibility is an instructional framework conceptualized nearly 30 years ago and redefined by Fisher and Frey (2013) as a structured way of teaching that transfer the cognitive load from the teacher to the student. The more common or coined terms for this are: "I do, We do, You, do." Fisher and Frey (2013) redefined the framework by adding "You do it together" or collaborative learning.

Interactive Read Aloud (IRA). Interactive Read Aloud or IRA is a teaching strategy that involves teachers using a specific text to engage students in listening and talking about the text, which therefore helps the students to develop a better understanding of the text. IRAs tailor teachers' instruction to teach a specific technique used by the author, build vocabulary, and demonstrate fluency (Miller Burkins, 2018).

Literacy. According to a report by UNESCO (2005), the common definition of literacy is "a set of tangible skills, particularly the cognitive skills of reading and writing" (p. 149).

Marzano Model of Instruction. Marzano Model of Instruction is a framework for effective instruction that outlines teaching strategies and gives both teachers and administrators tools to become more effective (Learning Sciences International, 2018).

Monitored Independent Reading (MIR). Monitored Independent Reading or MIR is an instructional strategy where students self-select books to read independently at their reading level for a set block of time (Wiencek et al., 1999).

Northwest Evaluation Association-Measures of Academic Progress (NWEA-MAP, 2013). NWEA-MAP is a computerized adaptive assessment system utilized to measure student progress or growth in the subjects of reading and math, helping teachers

to target instruction and administrators to make well-informed system-wide decisions. For this study, the composite score of the MAP reading assessment was utilized.

Reading Workshop. Reading workshop is an instructional practice component of Balanced Literacy in which teachers model a specific reading strategy sometimes combined with MIR to allow for practice of the strategy taught in the mini-lesson, and then conferring with students on reading skills and strategies (Children's Literacy Initiative, 2017).

Writing Workshop. Writing workshop is a component of Balanced Literacy where teachers demonstrate or model a specific writing method in a mini-lesson (Children's Literacy Initiative, 2017).

Organization of the Study

Chapter 1 included an introduction of the study, the background information for District A, and the problem statement. The purpose statement, significance of the study, delimitations, and research assumptions were also provided. The research questions were identified and terms related to the study were defined. Chapter 2 presents a review of the literature providing an overview of the history of developments in reading and best practices in reading instruction and literacy. In addition, research on Balanced Literacy, effective literacy practices, and effective literacy components are reviewed. Chapter 3 presents the research design, population and sample, sampling procedures, instrumentation, measurement, validity and reliability, data collection procedures, data analysis procedures and hypothesis testing, and concludes with the limitations of the study. Chapter 4 includes the descriptive statistics associated with the participant sample, as well as the hypothesis testing results. Chapter 5 focuses on relating the findings of the

current study to the literature, conclusions, implications for action, and recommendations for future research.

Chapter 2

Review of the Literature

The purpose of this study was to determine if a literacy initiative implemented in an urban school district affected student reading achievement scores. This chapter includes a review of research regarding the history and implementation of literacy instruction in America. It also includes research related to the components of the reading process, the research relevant to reading instructional models, and the NWEA-MAP assessment as a reading achievement tool. The history of the District Literacy Plan (DLP) is also included.

Reading Instruction in America

The debate surrounding reading instruction has focused on the emphasis of phonics versus whole language instruction during the earliest stages of formal reading instruction. Whole language is the approach that endeavors to teach children to read words as whole pieces of language, meaning that children are not taught to break down sounds individually but, rather to take words at face value and associate them with prior knowledge (Pressley, 2002). Those in support of phonics-based instruction argued that phonics was an essential skill, while those in favor of whole-language instruction argued that phonics was impractical if a child could not comprehend what he or she read (Rose, 2007).

From the colonial era through the mid-1800s, there was one common belief about how to teach children to read: teach them to decode, or to break the alphabetic code through use of exercises or practice with letters and sounds, and give them material with which to practice those letters and sounds (McGill-Franzen, 2000). The belief that

teaching beginning readers to recognize, name, and sound out the letters of the alphabet while using primers to accomplish this concept continued well into the early to mid-nineteenth century (Patterson, Cormack, & Green, 2012). This concept included identifying and decoding high-frequency words with the belief that early reading instruction should include comprehension, interpretation, application, and word recognition (McGill-Franzen, 2000). Through decoding, students are able to obtain stronger word recognition and the ability to spell fluently. Decoding, she found, also supported students in furthering their comprehension. Furthermore, McGill-Franzen (2000) believed that children should use texts repeatedly to ensure mastery. In fact, she found that student knowledge of letters and sounds has a larger influence on reading achievement than mental ability.

In 1848, Horace Mann, the secretary of the Massachusetts Board of Education, suggested that educators teach students to recognize whole words on sight, rather than requiring them to use the arduous process of decoding (Pearson & Gallagher, 1983). Over the next 100 years, children read from books such as the Dick and Jane leveled readers that contained primarily the words they had already been taught to recognize. Upon encountering a word that had not been taught, children were told to use picture or context clues to determine its meaning. The emphasis on teaching students to recognize whole words automatically and to use clues to determine the meaning of unfamiliar words became known as the whole language approach (Pressley, 2002).

In the 1950s, Flesch stoked the controversy of reading instruction further by arguing that phonics or decoding words was the only natural way to learn to read and to deny instruction to children who could not teach it to themselves was undemocratic

(Flesch, 1955). His ideas polarized the field of research on how children learn to read and oversimplified the phonics-based approach to teaching reading. This ideology popularized the basal reading programs that stressed phonics in primary grades because "code-emphasis" approaches were considered more effective than "meaning-emphasis" approaches (Teale & Yokota, 2000).

By the 1960s, workbooks accompanied by skill-based lessons became more elaborate (Pearson & Gallagher, 1983). Teacher manuals became more sophisticated and were as long and detailed as the student text. The basal texts, which supported the whole language methodology included a script for teachers to follow as students read stories and practiced skills. For example, in the early readers, vocabulary was sequenced in a specific order of increasing frequency of word usage. Students were viewed solely as receivers of knowledge; teachers dispensed knowledge while students absorbed as much information as possible. Comprehension was viewed as the product of decoding and listening (Pressley, 2002).

In the mid-1960s the United States Office of Education, funded The First-Grade Studies in order to address the inequities in education and redistribute educational opportunities (McGill-Franzen, 2000). The First-Grade Studies concluded that students who were taught phonics had a stronger foundation for reading than children who were not taught phonics; however, there was still not one instructional method that prevailed as a best practice (Slavin, Lake, Davis, & Madden, 2009). There was variation among classroom teachers employing a particular method of reading instruction. Thus, as Pressley (2002) also concluded, reading instruction was more likely to improve because of improved training of teachers, and improved school learning climates, rather than

implementing changes in instructional materials.

In the 1970s, researchers began to systematically study reading (Pearson & Gallagher, 1983). The National Assessment of Educational Progress (NAEP) was administered for the first time in the late 1970s. At that time, policymakers began to acknowledge the scope of reading problems in American society (McGill-Frazen, 2000). Whole language re-emerged in the 1980s as a grass roots movement to engage students in rich reading and writing activities through comprehension without placing emphasis on isolated and systemic phonics patterns and instruction (Teale & Yokota, 2000). In the late 1980s, literature became a major component in reading curriculum (Langer, 2002). The concept of book clubs engaged children in the reading of literature in the same way as adults engage one another in voluntary reading circles. Such structures were found to increase participation and motivation as students learned to appreciate the text they were reading (Fountas & Pinnell, 2017).

As a result of re-emerging whole language trends, basal texts became the catalyst for dramatic changes in the 1990s. The whole language approach to reading instruction put comprehension, literature-based reading, integrated instruction, and process writing into practice. This movement was confused with the mentality that whole language meant all students received the same instruction through the same text. The idea or actual practice was quite different. Teachers were to observe children during reading, diagnose what they needed, and arrange learning to allow students to discover their own insights in reading and writing (Pressley, 2002). The long history of debate concerning the best way to teach reading, a history so contentious that it has been called the “Reading Wars” by some scholars, gave way to consensus among educators that was built on data-driven

evaluation of the effectiveness of various instructional strategies which support a balance of whole language and phonemic awareness (Wylie, 2012). This led to an evolution of blending the two approaches, which allows students to start with phonics and phonemic awareness and then gradually transition to the whole-language approach as their reading skills develop. This approach allows students to learn phonics in the primary years of their education then later develop reading fluency, vocabulary, and reading comprehension in the intermediate years. Students who are taught to read using this blended technique become stronger readers and writers (Wylie, 2012).

In education, science-based research has increasingly affected decision-making and educational policies, which was reflected in the report from the National Academy of Education in order to address adopting a more balanced approach to reading instruction (Teale & Yokota, 2000). A science-based approach to reading instruction can reduce the influence of politicians, parents, school board members, and others and increase the influence of reading experts and teachers (McGill-Franzen, 2000). Identifying reading strategies that are research-based is useful for analyzing meaningful results. Students become more knowledgeable, capable, and informed citizens when their instruction is based on research (Langer, 2002). If teachers want to meet the national reading goals, they must utilize effective research-based reading practices with their students. Since the publication of the Report of the National Reading Panel (NRP) in 2000, commissioned by Congress to assess effective research-based reading instructional practices, most policy documents, assessment frameworks, and reading programs have subscribed to the idea that there are “five essential components” of reading that most likely foster success across the range of student abilities (NRP, 2000). The findings from this report revealed that

skills-based literacy instruction should focus on the development of phonemic awareness, phonics, reading fluency, vocabulary, and reading comprehension strategies because these were the most effective components to positively improve and increase reading achievement (NRP, 2000; Fountas & Pinnell, 2017). These literacy components must be part of the balanced literacy approach to teaching reading, which acknowledges that there is not a single way to help students obtain growth in reading. In a balanced literacy environment, teachers make reading and writing more personal and meaningful. Cultures and customs of students may be considered to help facilitate a love for reading. Incorporating students' cultures and customs increases student motivation to read because of the feeling of a sense of acceptance and inclusion (Fountas & Pinnell, 2017). Studies that supported a balanced literacy approach to instruction had a positive effect on student reading achievement in comparison to basal instruction for the reason the engaging texts were culturally relevant and implementation of responsive teaching increased this engagement (Wiencek et al., 1999).

Essential Components of Reading Instruction

The effective and essential components of reading instruction include phonemic awareness, phonics, reading fluency, vocabulary and reading comprehension. These components are considered the foundation for literacy competency (Fountas & Pinnell, 2017). Pressley (2002) suggested that skills-based instruction containing these components have a positive impact on student achievement. Effectively weaving these components into literacy instruction helps students attain literacy skills.

Phonemic awareness and phonics. When words are spoken, they are the combination of sounds in speech. Phonemic awareness is the recognition of speech

sounds, and the student's ability to manipulate the sounds to form words (Fountas & Pinnell, 2017). Phonemic awareness influences outcomes in word recognition and comprehension for all students. Instruction in phonemic awareness stimulates language learning, which will help students build meaningful associations so they can make sense of how to best use phonics when reading (Pressley, 2002). Explicit instruction in phonemic awareness is beneficial for most beginning readers, particularly for those who have reading difficulties, English Language Learners (ELL), and students from low socio-economic backgrounds (Pressley, 2002). Fenty and Brydon (2017) pointed out that students who know how to read and spell proficiently, know how to segment words into phonemes and blend phonemes into words. Students who can read and pronounce words by identifying a sound with each letter have the foundation for literacy.

The goal of phonics instruction is to help students see the relationship between letters and sounds. An effective phonics program includes direct teaching of the sounds associated with letters. Like other reading components, phonics cannot be the entire reading program. Instead, phonics should be integrated with other elements of reading instruction. Focusing only on phonics helps students understand how to decode but they lack the comprehension for what they read (Pressley, 2002). Phonics is an important part of reading, but it is not the ultimate goal for readers since some of the phonics generalizations are often unreliable. One example is the "silent e" rule, in that a vowel followed by an 'e' is long and the 'e' is silent only works for about 63% of the words (Moustafa, 2000). There are over 211 letter-phoneme correspondences that apply to at least five of the one- and two-syllable words within the comprehension vocabularies of young children; therefore, the programs that emphasize meaning are more effective than

traditional parts-to-whole phonics instruction (Moustafa, 2000). Children who are taught phonics in context are more successful in sounding out unfamiliar words compared to children who are taught traditional phonics.

Fluency. When students begin to read quickly and accurately, they become readers that are more fluent. Fluency is the accurate and rapid reading of letters, sounds, words, sentences, or passages (Fountas & Pinnell, 2017). In addition, fluency is not merely speed. Fluency is a combination of several factors such as, rate or speed, phrasing, expression, intonation, and pacing (Fountas & Pinnell, 2017). When readers are focused on decoding an unknown word within the text, they begin losing the meaning of the passage. Developing fluency is a critical component to a balanced literacy program (Fountas & Pinnell, 2017). Teachers facilitate reading fluency by providing students with opportunities for repeated oral reading. Teachers can facilitate fluency growth by ensuring students are reading texts that are matched to their ability. In addition, systematic practices should be in place in classrooms to monitor student fluency progress. According to Fountas and Pinnell (2017), fluency develops from practice.

Kim (2015) found that there were two types of fluency: text-reading fluency and word-reading fluency, both of which have a small correlational role in reading achievement. Text-reading fluency is defined as the ability to read text quickly and accurately with expression within context, while word-reading fluency refers to reading or identifying words in isolation such as a sight word list. Kim (2015) further established that children read words more rapidly within context than out of context. For beginning readers, when decoding is the primary focus of reading development, word-reading fluency and text-reading fluency tend to overlap in which both kinds of fluency do not

directly impact comprehension. Kim (2015) reported that a bi-directional relationship between reading comprehension and text-reading fluency exists. Emergent literacy skills such as phonological awareness, orthographic awareness, morphological awareness, letter name knowledge, vocabulary, and rapid automatized naming are not correlated to text-reading fluency. According to Kim (2015) evidence supports higher order cognitive skills are built on foundational language and cognitive skills and reading comprehension involves higher order thinking processes. Overall, Kim (2015) determined that text-reading fluency predicts reading comprehension and vice versa, therefore text-reading fluency is a bridge to reading comprehension because of the higher order comprehension processes that are engaged.

Kuhn, Schwanenflugel, and Meisinger (2010) determined that many researchers have narrowed the definition of fluency to that of automatic word recognition but upon further examination, there are four types of reading fluency with a relationship to accuracy, automaticity, and prosody. The four types defined by Kuhn et al. (2010) are fluency as accuracy and automaticity, fluency as prosody, fluency as skilled reading, and fluency as a bridge to comprehension. Fluency as accuracy and automaticity is comprised of the ability to recognize and identify words rapidly and correctly using phonemic awareness and letter to word correspondence. Fluency as prosody is reading with appropriate expression or intonation. Fluency as skilled reading is the ability to decode and comprehend text, which involves incorporating background knowledge, syntactical, orthographic, and vocabulary knowledge as well as affective factors. Fluency as a bridge to comprehension involves a reciprocal relationship between automaticity, decoding, and prosody that contributes to understanding text and constructing knowledge from reading

the text. All of these work in conjunction to determine whether a student can read fluently. Fluent readers have these skills and can utilize them effortlessly. Kuhn et al. (2010) expressed having a firm understanding of what constitutes fluency, its role in the reading process, and how it fits into the literacy process will help educators make informed instructional decisions about reading instruction. According to Rasinski (2012), fluency development should be considered one of the pillars of effective reading instruction because it increases word recognition and therefore improves silent and oral reading. Rasinski (2012) stated that the most authentic definition of fluency is "reading with and for meaning, and any instruction that focuses primarily on speed with minimal regard for meaning is wrong" (p. 517). He firmly believes that fluency is a bridge from word recognition to reading comprehension. Fluency is an integral part of the reading process, but in isolation, it is not the most vital component. Much of the research on fluency suggests that it is a bridge to comprehension; therefore, there is not research that debunks the importance of fluency but instead discusses the role it plays in reading instruction (International Literacy Association, 2018).

Vocabulary. Pressley (2002) found that students need many opportunities for developing a rich vocabulary through listening, speaking, reading, and writing in a cohesive manner. Vocabulary knowledge influences both comprehension and fluency. Receptive vocabulary development is a valuable component of reading instruction. As students begin to understand word meanings and how words are placed in text, they also begin to strengthen their comprehension of the text. Students develop receptive vocabulary when they listen to others speak and begin using similar words themselves. In addition, reading vocabulary is developed when students are reading text themselves and

becoming familiar with words (Fountas & Pinnell, 2017). Sedita (2005) emphasized the importance of vocabulary knowledge as one of the core components of reading instruction. Vocabulary instruction leads to comprehension gains, therefore, she suggested multiple exposures to vocabulary and connecting this to the existing background knowledge of students, as well as providing direct, explicit instruction in order to promote word awareness or consciousness (Sedita, 2005).

There is a significant discrepancy in vocabulary knowledge among learners from different socio-economic groups from toddlers to high school students (Roskos, Christie & Richgels, 2003). Beginning with young readers, teachers can make a vast difference in vocabulary knowledge. Fountas and Pinnell (2017) stated that teachers should teach words and their meanings, provide students with opportunities to practice with key vocabulary, practice with word knowledge while students read and listen to texts. When teachers provide systematic and explicit instruction in vocabulary there will be improvements in students' proficiency on state-mandated accountability assessments (Pressley, 2002). Teachers need to teach words that enhance vocabulary choices, not reiterate words that students already know. Proven criteria for vocabulary instruction are as follows: provide multiple exposures, use the vocabulary words in interactive discourse, and teach vocabulary so that learning one word leads to learning many words (Pressley, 2002).

Reading comprehension. Reading comprehension involves accessing prior knowledge, understanding vocabulary, making inferences, and linking key ideas (Pressley, 2002). Comprehension does not come through rote instruction. It requires the simultaneous use of a series of strategies that enables students to understand text. For

example, students must be able to construct meaning during and after reading, understand facts and opinions, and draw logical conclusions. The most effective methods for teaching students how to comprehend text are those that foster active response, either written or spoken (Roskos, Christie, & Richgels, 2003). The teacher's role is to ensure students participate actively prior to reading, utilize strategies and skills during reading, and provide time for students to reflect on the author's intent and bring their own meaning to the text.

Effective Models of Literacy Instruction

For reading programs to be adopted in many states and districts, thorough and informed instruction surrounding each of the five components of reading is required. In a Balanced Literacy program, teachers must focus on and practice the five components of literacy in context (Fountas & Pinnell, 2017). In the development of lifelong readers, it is imperative for students to know how to apply reading skills to make meaning from the text. According to Langer (2002), readers must know how to use their reading strategies and understand how the reading strategies fit into the bigger picture of literacy.

The balanced literacy approach adopts the idea that reading achievement is developed through effective instruction using various approaches that allow for both teacher and student autonomy, with the overall goal of implementing skills-based reading practices, which emphasizes the use of phonics and meaning-based practices that emphasizes reading comprehension, to improve overall literacy instruction (Frey, Lee, Tollefson, Pass, & Massengill, 2005). Therefore, effective literacy instruction should include a balance of both phonics instruction and a whole language approach in order to teach both skills and meaning. Frey et al. (2005) also suggested that the best way to

achieve this goal is to emphasize the importance of reading and writing by providing a specific uninterrupted block of time to allow for sustained reading every day. By creating a positive collaborative classroom environment as well as setting high yet realistic standards and expectations for all students, this will lead to academic gains in reading achievement.

Fountas and Pinnell (2017) identify components that are effective for reading instruction. These components are Guided Reading, Shared Reading, Interactive Read Aloud, Writing Workshop, and Reading Workshop. These components are most effective in any reading program because they promote the necessary literacy skills that students would need in order to become literate readers and writers (Fountas & Pinnell, 2017). Commercial programs have incorporated the same components or elements described in balanced literacy. There isn't one over-arching literacy program that is considered the most effective program, but having all of the components mentioned above will increase the likelihood of reading achievement (Fountas & Pinnell, 2017).

Guided reading. Guided reading is a research-based strategy that is associated with balanced literacy instruction that improves student fluency (Iaquinta, 2006). Students are placed in dynamic groups based on skills or needs. The teacher works with students based on the specific skills they need to practice or improve. Effective grouping occurs in order to allow for direct instruction for students who need reinforcement of a particular skill that is currently being taught or studied (Morrow, 2000). The teacher monitors for application of strategies while students are in small dynamic groups (Iaquinta, 2006). The texts used are more challenging than what the student is currently reading. The purpose of this literacy component is to develop an independent student who

can process and self-monitor by using specific cues that help the student become a skillful reader. This approach allows the teacher to provide instruction as close as possible to students' instructional levels while gradually increasing the difficulty of the material in a manner that scaffolds instruction. Students benefit when they read materials with which they can practice what they have learned. Guided reading reinforces problem-solving, comprehension, and decoding while providing opportunities to establish good reading habits and strategies. This is also a time to develop comprehension skills through questions that are about the text, within the text, and beyond the text. These types of questions promote critical thinking and collaboration about the text. The critical element in this approach is the effective and skillful teaching that helps readers learn the strategies to become independent readers (Fountas & Pinnell, 2012).

Shared reading. In this literacy approach, the teacher assumes responsibility for reading a text in order to demonstrate fluent and automatic reading skills and strategies. Shared reading is an imperative component of balanced literacy since it is a stepping-stone for guided reading. Primarily, this approach utilizes enlarged texts that are visible to students that may include content materials, storybooks, charts, poems, or songs (Dougherty-Stahl, 2012). This is usually done with the whole group in order to teach concepts about print and print conventions, as well as to teach comprehension, interpretation, and to analyze text features, word study, phonics, word analogies, and structural analysis (Morrow, 2000). Students benefit from highly visible demonstrations of the reading process because the concepts and conventions of print are made very accessible. The examination of textual features such as letters, words, and parts of words, helps students develop an understanding of the alphabetic principle and the nature of

written language (Dougherty-Stahl, 2012).

Interactive Read Aloud. Interactive Read Alouds are influential learning opportunities for beginning readers because the nature of this literacy approach allows for teachers to effectively model and scaffold comprehension (Wiseman, 2011). In this literacy approach, the teacher explicitly models fluency and the reading process by reading a book above students' reading levels while students listen and respond. During this time, the teacher is interacting with the text and providing opportunities to discuss the focus of the story with students. The purpose is to model what reading fluency looks like and to discuss the text focusing on a standard. This is also a manner in which to stretch students beyond their current reading levels, particularly to expand vocabulary and develop concepts (Morrow, 2000). This is a way to expose students to a variety of text, which can include fiction, nonfiction, and poetry. This method includes ways to engage students in varied forms of response such as discussion, writing, drama, art, and movement. Students benefit from listening, responding, expanding their knowledge vocabulary and concepts (Strickland, 2000).

Writing Workshop and Reading Workshop. Writing Workshop is another literacy approach that provides students the time and opportunity to use the writing process to create texts in various forms, such as books, essays, and speeches, in a meaningful way. Teachers conduct mini-lessons about the writer's craft (Jones, Reutzel, & Fargo, 2010). The mini-lessons are based on a writing skill which the student will practice independently allowing the teacher to conference with other students in order to help with writing concepts, editing, or revising with the end result of developing students as independent writers who have studied various writing strategies (Jones et al., 2010).

Reading Workshop prioritizes independent reading practice at the students individual reading level. Authentic texts are used for each student to practice authentic reading (Feezell, 2012). Fountas and Pinnell (2017) indicated that the Reading Workshop structure includes four components. First, there is whole group instruction time where the teacher models a think-aloud regarding a reading or comprehension strategy. Then, students are asked to share their own thinking and learning with a peer or with the whole group. A strategy or skill based mini-lesson focuses on one clear concept that will help students read more effectively as well as develop deep knowledge of reading concepts, strategies, and skills (Feezell, 2012). Additionally, during Reading Workshop, time is provided for independent reading as the teacher circulates the room to confer with students. Fountas and Pinnell (2017) relay the importance of the instructional role of the teacher as a model. In lieu of Guided Reading, needs-based groups can meet with the teacher during independent reading to address the specific needs of the readers. In a needs-based group, the teacher focuses on intensive instruction and discussion with students who may have similar needs. Students are given time to reflect on their learning with others. The purpose of this critical reflection time is to provide readers with time to talk about their response to the text. Fountas and Pinnell (2017) affirm that this allows students to expand their reading proficiency. These four components provide students the opportunity to engage and work with literacy in a predictable structure.

Evolution of balanced literacy in the United States

Balanced literacy originated in California in 1996 as a call to action in order to increase low reading scores (Frey et al., 2005). The initial intent of balanced literacy was to focus on skills-based and meaning-based teaching during a set block of time, usually

between 90 and 120 minutes. This was to ensure that there was a systemic and explicit way of teaching phonics to increase comprehension as well as exposure to literature-based experiences that allowed students to interact and connect with literature (Fountas & Pinnell, 2017). Frey et al. (2005) maintained that a successful balanced literacy program must combine a balance of direct instruction by the teacher, which includes modeling of skills, strategies, processes, and student-centered activities. Thus, essential components of literacy would reflect the principles of effective learning and teaching. An effective balanced literacy program should include various elements of community, authenticity, integration, modeling, student autonomy, and connection to the literature (Frey et al., 2005). Wiencek et al. (1999) suggested that a balanced literacy program is a program that may seem quite simple, yet in implementation is quite complex because of the teacher's ability to execute the program with fidelity in order to increase student achievement in reading. Oral discourse is an essential component because it creates a way for students to interact with the literacy structure. There are no packaged quick fixes to improving literacy education. Each student has specific individual instructional needs that can be addressed with a variety of interventions (Pressley, 2002).

One of the interventions for students includes a way to address the needs of the English Language Learner (ELL). Avalos, Plasencia, Chavez, and Rascon (2007) suggested that ELL students should receive modified instruction in guided reading three to five times per week for 20 to 30 minutes in order to see consistent gains in reading achievement. The modified reading instruction will enhance and enrich as well as provide linguistic opportunities for ELL students who need more exposure and practice with vocabulary, semantics, syntax, and morphology. The study conducted by Avalos et al.

(2007) involving ELL students in elementary and secondary classrooms demonstrated that students made gains in reading by receiving modified guided reading instruction that included culturally relevant texts that teachers read aloud in order to model fluency combined with the other balanced literacy aspects of reading instruction. A balanced literacy approach contains many of the components that researchers have previously addressed.

Northwest Evaluation Association-Measures of Academic Progress (NWEA-MAP)

One way to assess reading skills involves utilizing the Northwest Evaluation Association-Measures of Academic Progress (NWEA-MAP) reading assessment as a means to determine student reading achievement based on the strands, or factors and constructs of literature, informational text, and vocabulary acquisition and use (Converse, 2016). NWEA-MAP is a computerized adaptive assessment system utilized to measure student progress or growth in the subjects of reading and math, helping teachers to target instruction for intervention purposes and administrators to make system-wide decisions regarding the data from this assessment. The composite reading scores are utilized to calculate reading achievement growth in the form of fall to spring gain scores. The NWEA-MAP Reading assessment is a non-timed computerized adaptive assessment tool used to measure student reading proficiency, which is administered to students three times during the school year: fall, winter, and spring.

Reardon, Fahle, Kalogrides, Podolsky, and Zarate (2016) have studied the test format of the NWEA-MAP and found that a gender achievement gap exists in subject area tests. Their study included data from 3,700 school districts in which they analyzed whether or not achievement gaps were present. Reardon et al. (2016) found that a gender

achievement gap exists between males and females. Males perform better than females on multiple choice questions while females perform better on constructed-response questions in both math and reading. VanDerHeyden and Burns (2018) determined from their study that utilizing the NWEA-MAP as a screening tool to make data decisions benefitted students who were at risk, such as students identified as receiving special education services and students receiving ELL or English Language Learner services. Their study included data from seven schools over a two-year time span that administered reading assessments such as the NWEA-MAP, the Developmental Reading Assessment, Curriculum-Based Measurement, and Year-End Accountability Tests to determine which screening assessment would provide the most useful data in order to better inform instruction and determine whether or not intervention was needed. Fenty and Brydon's (2017) study further indicated that students with learning disabilities were impacted by literacy instruction that was explicit and systemic. The study included data from two schools in both rural and suburban districts. The focal point of the study was on content assessment scores garnered from an after-school tutoring program conducted by pre-service teachers with the assistance and guidance of the researchers. Additionally, McDonald Conner et al. (2009) affirmed that students who were considered at risk, are from a low SES background, or belonged to underrepresented minorities showed growth in reading achievement when literacy instruction was individualized while using the balanced literacy approach.

History of the District Literacy Plan (DLP)

District A utilized the NWEA-MAP as a way to measure student achievement knowing that this assessment tool was a predictor of student success on the state

assessment, but found that reading scores had dropped since their rise in the mid to late 1990s. As a result, student performance in reading measured by the state reading assessment plateaued (District A, 2013). The district had previously implemented a variety of reading programs to help students improve their academic achievement, but consistency of implementation was lacking (District A, 2013). Therefore, in an effort to examine ways in which the district could improve their achievement scores, two external literacy audits were commissioned (2011-2012 and 2015-2016) and conducted by the American Institutes for Research (AIR). In 2012, the American Institute for Research (AIR) audit of District A's literacy practices found that nearly 26% of students read below the basic level and did not have the ability to understand text at their respective grade levels. These students were unprepared for the rigorous literacy demands of postsecondary education, and the workplace.

The 2011-2012 audit recommended specific components to implement for elementary, middle, and high schools. Recommendations for the elementary schools will be the focus of the current study. The three main recommendations suggested by AIR (2012) were to implement with fidelity the components of the balanced literacy block, develop and implement with fidelity a district-wide word study curriculum, and ensure the time students spend working independently is productive.

In response, the district implemented a Balanced Literacy Instructional model in 2012-2013, which included Animated Alphabet, Guided Reading, Fountas and Pinnell (F&P) benchmark assessments, and a reading fluency test administered twice during the school year (fall and spring). All elementary schools in District A implemented Shared Reading, Interactive Read Alouds (IRA), and Monitored Independent Reading (MIR) with

newly purchased classroom library sets. Additional recommendations included increasing rigorous instruction, differentiated instruction, providing higher levels of student engagement, vocabulary instruction, independent reading, discussion, writing instruction, and professional learning in each of these areas (AIR, 2012). At the same time, District A created a literacy initiative to be introduced in 2013-2014 called the District Literacy Plan (DLP) with the objective to ensure that all students develop as literate citizens (District A, 2013). A component of the DLP was district and building professional development on IRA and Reading Workshop, which incorporated Guided Reading, or small group reading, and Writing Workshop.

After four years of implementation of the DLP, a second external literacy audit was conducted during the 2016-2017 academic year to determine the impact of the programs, initiatives, and activities. Results from the second audit highlighted the work the district had done since the first audit by noting the recognition that literacy is central to learning, an increase in the amount and quality of writing instruction, and incorporation of the independent reading recommendation from the earlier audit. In addition, the district was making efforts to continue the work around literacy (Rauscher, 2016).

The second audit authored by Rauscher (2016) outlined several recommendations that the district must consider in order to have the greatest impact on student achievement. The recommendations included: continue the focus on improving the literacy achievement by providing sequential, systemic, and explicit word study that is appropriate to the developmental stage of each student, ensure all components of balanced literacy are implemented in the elementary reading program, implement an intervention program for students who are below grade level, and increase the rigor of classroom instruction.

Additional recommendations included implementing a gradual release of responsibility model of instruction (Fisher & Frey, 2013), a framework for structured teaching that shifts the cognitive load from teacher to student.

Summary

This review of the literature served as an overview of the historical perspective on reading instruction in America, research-based components of the reading process, and effective models of literacy instruction including Balanced Literacy as an effective instructional model. Additionally, included was a review of the NWEA-MAP as an assessment tool to determine reading achievement, as well as the history of the District Literacy Plan (DLP). Chapter 3 contains a description of the methodology employed in the study, including the research design, population, and sample. Sampling procedures including the instrumentation and measurement tools are presented. In addition, an articulation of the study's data collection procedures as well as a description of the study's data analysis, hypothesis tests, and limitations is provided.

Chapter 3

Methods

District A implemented a District Literacy Plan (DLP) in the academic year of 2013-2014 to increase student proficiency in reading. However, District A has been fully implementing the DLP without assurance that it was positively affecting student reading growth. The purpose of this study was to examine the overall impact of the DLP on fifth-grade student reading achievement as measured by fall to spring NWEA-MAP reading composite gains scores by comparing the mean gains scores from 2009-2010 through 2012- 2013, pre-DLP implementation, to 2013-2014 through 2016-2017, post-DLP implementation. The second purpose of this study was to investigate whether the DLP implementation led to any differences in reading gains based on student gender, socio-economic status (SES), race/ethnicity, English Language Learner status (ELL), and special education status (SPED). The third purpose was to determine whether mean MAP fall to spring reading composite gains scores for pre-DLP implementation compared to post-DLP implementation for each level or category of the demographic variables to investigate differential impacts of the DLP.

This chapter presents the methodology used to conduct the research study. Included is a description of the research design and the population sample studied. The data collection process is described with a detailed explanation of the procedures followed during the study. The data analysis and procedures for hypotheses testing are discussed, and the chapter concludes with the limitations of the study.

Research Design

A quantitative research design was utilized for the study. According to Creswell (2009), a quantitative research design best addressed the current problem being studied by identifying the factors or variables that influence an outcome. The dependent variable, growth in reading, was measured by the gains scores in the NWEA-MAP reading composite scores from fall to spring for fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation. The independent variables in the study were the time intervals before and after implementation of the DLP, as well as gender (male or female), SES status (free/reduced lunch or full-pay lunch), race/ethnicity (Hispanic, Black, White, or Other), ELL status (received services or did not receive services), and SPED status (received services or did not receive services) of students. The MAP reading composite gains scores means from 2009-2010 through 2012-2013, pre-DLP implementation, were compared to the gains scores means from 2013-2014 through 2016-2017, post-DLP implementation.

Selection of Participants

Purposive sampling was used for the current study. A purposive sample is a non-probability sample that is selected based on characteristics of a population. Purposive sampling is also known as judgmental, selective, or subjective sampling (Roberts, 2004). The participants in this study were all fifth-grade students enrolled in District A, four years prior to implementation (2009-2010 to 2012-2013) of the District Literacy Plan (DLP) and four years after implementation (2013-2014 to 2016-2017).

Measurement

Northwest Evaluation Association Measures of Academic Progress (NWEA-MAP) reading composite scores were utilized to calculate reading achievement growth in the form of fall to spring gains scores. The NWEA-MAP Reading assessment is a non-timed computerized adaptive assessment tool used to measure student reading proficiency, and is administered to students three times during the school year: fall, winter, and spring. The NWEA-MAP Reading assessment uses a Rausch unit scale (RIT) to interpret test scores (Converse, 2016). The RIT score correlates directly to the curriculum in each subject area. RIT scores range from 100 to 300. Students in the third grade typically start at the 180 to 200 level RIT range and progress to the 220 to 260 RIT level by high school (Converse, 2016). There is a composite RIT score rendered for the overall reading assessment and sub-scale RIT scores are provided for constructs that are assessed in reading such as Literature, Informational Text, and Vocabulary Acquisition and Use. For this study, the overall or composite RIT score was utilized for statistical analysis.

Validity and reliability. According to Lunenburg and Irby (2008), "validity is the degree to which an instrument measures what it purports to measure…most standardized achievement tests have good content validity…" (p. 181). According to Northwest Evaluation Association (NWEA, 2013), the Measures of Academic Progress (MAP) test is valid in that it measures what it purports to measure, which is student achievement status in accordance with the state standards. It is also an adequate predictor of student success on state assessments (NWEA, 2013). The Rausch Unit (RIT) or numerical value represents the most difficult question that a student is capable of answering 50% of the time. According to Shudong, McCall, Hong, and Harris (2013), the content of NWEA-

MAP is one of the most important sources of evidence for validity in achievement tests because all items match the quantifiable sections of a set of academic content standards both in breadth and depth of content and knowledge.

The factor structure is directly related to the construct validity interpretation of the test. Factor invariance across grades is an essential requirement for use in vertical scaling and interpretation of student growth based on test scores (Shudong et al., 2013). Measurement invariance is a statistical property of measurement that indicates that the same construct is being measured across some specified groups (Widaman, Ferrer, & Conger, 2010). Shudong et al. (2013) found that the results show the consistency and reasonableness of interpretation of the MAP RIT scale across grades and academic calendar years for the different states. The marginal reliabilities of the MAP tests across all 50 states and grades are consistently in the low to mid 0.90s (NWEA, 2013).

Data Collection Procedures

Permission to use district data was obtained through an email request to the Director of Evaluation, Research and Assessment of District A (Appendix A). The Data Utilization Agreement was completed on February 1, 2018 and emailed to the Director of Evaluation, Research and Assessment and to the School Board. Approval was granted on February 16, 2018 to use the archival assessment data providing no individual student identifiers were used and there was no reference to the district's name (Appendix B). Baker University Institutional Review Board (IRB) approval was granted on July 20, 2018 (Appendix C).

The archival data file of fifth-grade elementary students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and data for

fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation was assembled. Student names were deleted and assigned a number. The password protected data file was emailed from the district and received by the researcher. Data was entered on a password protected Microsoft Excel Spreadsheet, which was stored on a secure computer. The data will be destroyed within one year of the completion of the study.

Data Analysis and Hypothesis Testing

The NWEA-MAP reading composite gains scores pre- and post-DLP implementation were analyzed to address each research question. The gains scores were calculated by subtracting the fall MAP Reading composite scores from the spring MAP Reading composite scores for all fifth-grade students. Two different statistical analysis procedures were employed to test the hypotheses. The type of statistical analysis used to address each research question was determined by the variables. The mean gains scores were also compared by the variables of gender (male or female), SES status (free/reduced lunch or full-pay), race/ethnicity (Hispanic, Black, White, or Other), ELL status (received services or did not receive services) and SPED status (received services or did not receive services) after being categorized by a variable created to represent pre- and post-DLP implementation depending on the year the data was collected.

RQ1. To what extent was there a difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation?

***H1*.** There was a difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation.

The hypothesis was tested using an independent samples *t*-test between the two groups (pre- and post-DLP implementation) using alpha of $p < .05$. The independent samples *t*-test is an inferential statistical test that determines whether there is a statistically significant difference between the means of two unrelated groups (Keppel & Wickens, 2004). The mean MAP reading composite gains scores of the two groups, pre- and post-DLP implementation were compared on an interval scale dependent variable for mean differences.

RQ2. To what extent were the differences in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, impacted by gender, socio-economic (SES) status, race/ethnicity, English Language Learner (ELL) status, or special education (SPED) status?

H2. The difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, was impacted by students' gender (male or female).

H3. The difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, was impacted by students' socio-economic (SES) status (free/reduced lunch or full-pay).

H4. The difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, was impacted by students' race/ethnicity status (Hispanic, Black, White, or Other).

H5. The difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, was impacted by students' English Language Learner (ELL) status (received services or did not receive services).

H6. The difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, was impacted by students' special education (SPED) status (received services or did not receive services).

The general statistical procedure for testing hypotheses H2 through H6 was a multivariate factorial design which was used to test for main effects (differences in the mean MAP composite reading gains scores pre- and post-DLP implementation by the demographic sub-groups identified), and to test for interactions between the demographic variable levels or sub-groups and the pre- and post-DLP implementation groupings (differentially impacting the mean MAP reading composite gains scores). "Factorial designs are created by combining every level of one independent variable with every level of another" (Keppel & Wickens, 2004, p. 195). This allows the effect of two independent variables to be tested separately on the dependent variable, but can also test the effect of the combination of the independent variables on the dependent variable.

A series of two-factor ANOVAs were conducted to test hypotheses two through six. In each two-factor ANOVA, one of the two categorical variables used to group the dependent variable, NWEA- MAP reading composite fall to spring gains scores was DLP implementation status (pre- or post-DLP). The other independent categorical variables entered in each two-factor ANOVA were the demographic variables corresponding to the individual hypotheses: gender (male and female), SES status (free/reduced lunch and full-pay), race/ethnicity (Hispanic, Black, White, and Other), ELL status (received services or did not receive services), or SPED status (received services or did not receive services). The level of significance for all statistical tests was set at $p < .05$. Significant ANOVA findings were followed by post-hoc pairwise mean comparisons using the appropriate statistical procedures to adjust alpha levels due to conducting multiple statistical tests.

Limitations

Lunenburg and Irby (2008) defined the limitations of a study as factors that could influence the results of the study, but are not under the control of the researcher. Factors that may have an effect on student reading achievement were school absences, and student motivation (both internal and external). Another factor that could have influenced the results of the study was the extent to which teachers in District A implemented the DLP with fidelity. An additional factor that could be a limitation was other instructional activities impacting reading growth that may have occurred during the four years of implementation were not accounted for, controlled, or taken into consideration. A final limitation of the study was students were administered the NWEA-MAP reading assessment with their classroom teachers as their test examiners, which could have potentially limited the study if discrepancies existed in the testing environments.

Summary

Chapter 3 provided an overview of the quantitative research study. The research design was explained, and the population sample was identified. NWEA-MAP reading assessments and gains scores were described. The research questions and hypotheses were stated and the data analysis procedures were outlined. In Chapter 4, the results of the hypothesis testing are presented to determine what effect the implementation of the DLP had on fifth-grade students' reading achievement, and whether student demographic characteristics differentially impacted the amount of fall to spring changes observed in the MAP reading composite gains scores.

Chapter 4

Results

This chapter provides an overview of the findings from the study. The first purpose of this study was to examine the overall impact of the DLP on fifth-grade student reading achievement as measured by fall to spring NWEA-MAP reading composite gains scores. The mean MAP reading composite gains scores from 2009-2010 through 2012-2013, pre-DLP implementation, were compared to the mean MAP reading composite gains scores from 2013-2014 through 2016-2017, post-DLP implementation. The second purpose of this study was to investigate whether the DLP implementation resulted in differences in mean NWEA-MAP reading composite gains scores based on student gender, socio-economic (SES) status, race/ethnicity, English Language Learner (ELL) status, and special education (SPED) status. The third purpose was to determine whether the mean MAP reading composite gains scores were differentially impacted by the levels or categories of the independent demographic variables in combination with pre- and post-DLP implementation.

Descriptive Statistics

Data from District A were received as an excel file. The data was coded based on the variables examined and tested for this study. Variables were coded into numeric values then imported into IBM SPSS version 25.0 (IBM, 2017), which was used for all analyses. The academic years of 2009-2010 to 2012-2013, pre-DLP implementation, were coded as 1 and the academic years of 2013-2014 to 2016-2017, post-DLP implementation, were coded as 2. The independent variables were coded as follows: Gender (male 1, female 2), SES status (free/reduced lunch 1, full-pay lunch 2),

race/ethnicity (Hispanic 1, Black 2, White 3, and Other 4), ELL status (received services 1 or did not receive services 2), SPED status (received services 1 or did not receive services 2). Some variables such as race/ethnicity were recoded for analysis categories, and gains scores were created by subtracting the fall MAP reading composite scores from the spring MAP composite scores. Outliers within the student gains scores were defined as being more than three standard deviations from the group mean. These outlier scores were identified for both the pre- and post-DLP implementation groups and removed from their groups for analysis. Five outliers were removed from the pre-DLP implementation group and one outlier was removed from the post-DLP implementation group. All statistical assumptions for the analysis procedures were checked and met. The analysis focused on research questions comparing the averaged or mean MAP reading composite gains scores from the pre- and post-DLP implementation groups, and whether student demographics had differential impacts on the comparison results. The purposive sample for this study included District A archival data from NWEA-MAP reading composite scores for all fifth-grade students for 2009-2010 to 2012-2013, pre-DLP implementation, and all fifth-grade students for 2013-2014 to 2016-2017, post-DLP implementation. The frequencies and percentages for each demographic category by group (pre- and post-DLP implementation) can be found in Table 1.

Table 1

Demographics

Category		Pre-DLP		Post-DLP	
		n	%	n	%
Gender	Male	448	53.5	477	51.9
	Female	390	46.5	442	48.1
Race/Ethnicity	Hispanic	392	46.8	458	49.8
	Black	288	34.4	287	31.2
	White	104	12.4	93	10.1
	Other	54	6.4	81	8.8
SES Status	Free/Reduced Lunch	721	86.0	757	82.4
	Full-Pay Lunch	117	14.0	162	17.6
ELL Status	ELL	345	41.2	400	43.5
	Non-ELL	493	58.8	519	56.5
Sped Status	Sped	121	14.4	136	14.8
	Non-Sped	717	85.6	783	85.2
Total		838	100.0	919	100.0

Hypothesis Testing

Data from District A was coded based on the variables examined and tested for this study. Variables were coded into numeric values then imported into IBM SPSS version 25.0 (IBM, 2017), which was used for all analyses. The analysis focused on two research questions. Each research question is delineated below with the corresponding hypotheses and the method and results of the statistical analysis.

RQ1. To what extent was there a difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation?

***H1*.** There was a difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation.

An independent samples *t*-test was conducted to test H1. The mean MAP reading composite gains scores were statistically compared for differences between the pre-DLP implementation and post-DLP implementation groups and the level of significance was set at $p < .05$. The results indicated a significant difference between the groups [t (1,1755) = 5.293, $p < .001$]. The pre-DLP implementation group rendered significantly higher mean gains scores (M = 34.32, SD = 11.20) than the post-DLP implementation group (M = 31.48, SD = 11.29). The results showed that there was a significant difference and H1

was supported because means gains scores were higher pre-DLP implementation than post-DLP implementation.

RQ2. To what extent were the differences in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, impacted by gender, socio-economic (SES) status, race/ethnicity, English Language Learner (ELL) status, or special education (SPED) status?

H2. The difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, was impacted by students' gender (male or female).

The two-factor ANOVA results pertaining to H2 showed that there was a significant main effect for pre- and post-DLP implementation, [F (1,1753) = 28.348, $p <$ .001], but the effect size was very small with a partial eta squared value of 0.016. No significant main effect for gender was detected, and there was no significant interaction between pre- and post-DLP implementation and gender. The results for H2 are summarized in Table 2 below.

Table 2

Summary of Two-Factor ANOVA Test for Pre- and Post-DLP Implementation and Gender

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Pre- and Post DLP	1	3586.26	28.35	0.000	0.016
Gender	1	88.52	0.07	0.403	0.000
Pre- and Post DLP x Gender	1	122.19	0.97	0.326	0.001
Error	1753				

Results for H2 showed that there was no significant main effect for gender. Males (M = 33.08) had a higher mean than females (M = 32.56), but the difference was not significant. There was no significant interaction between DLP group and gender. Both males and females achieved higher mean gains pre-DLP implementation, 34.29 and 34.37, respectively, than post-DLP implementation with means of 31.95 and 30.97, respectively. These results showed that hypothesis H2 was not supported. NWEA-MAP mean reading composite gains scores by pre- and post-DLP and gender can be found below in Table 3.

Table 3

Descriptive Statistics for MAP Reading Gains Scores by Pre- and Post-DLP Implementation and Gender

	Pre-DLP			Post-DLP			Total		
Gender	n	M	SD	n	M	SD	n	M	SD
Female	390	34.37	11.41	442	30.97	11.12	832	32.56	11.38
Male	448	34.29	11.03	477	31.95	11.43	925	33.08	11.29
Total	838	34.32	11.20	919	31.48	11.29	1757	32.84	11.33

H3. The difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, was impacted by student SES (received free/reduced lunch or full-pay lunch).

The results for H3 indicated that there was a significant main effect for pre- and post-DLP implementation [F (1,1753) = 4.867, p = .028], but it rendered a very small effect size of partial eta squared equal to .003. There was also a significant main effect for SES identified in which the free/reduced lunch group reading composite gains scores mean was significantly different than the full-pay lunch group [F (1, 1753) = 5.941, p = .015], but there was a very small effect size with a partial eta squared of .003. A significant interaction effect for pre- and post-DLP implementation and SES was also

detected [F (1, 1753) = 5.090, p = .024], but this also had a very small effect size with a partial eta squared of .003. The results for H3 are summarized in Table 4 below.

Table 4

Summary of Two-Factor ANOVA Test for Pre- and Post-DLP Implementation and SES

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Pre- and Post-DLP	1	612.92	4.87	0.028	0.003
SES	1	748.15	5.94	0.015	0.003
Pre- and Post-DLP x SES	1	641.02	5.09	0.024	0.003
Error	1753				

The significant main effect for SES showed that the free/reduced lunch group (M = 33.12) achieved higher means gains scores than did the full-pay lunch group (M = 31.35). The significant interaction between pre- and post-DLP implementation and SES showed that there was a differential impact of SES on pre- and post-DLP implementation mean reading gains scores, but identifying the exact group differences required additional post-hoc pairwise comparisons. The descriptives for pre- and post-DLP implementation mean reading composite gains scores and SES can be found in Table 5. These results showed that H3 was supported. There was a significant main effect for SES and a significant interaction, thus SES had an impact on the differences in mean gains scores.

Table 5

Descriptive Statistics for MAP Reading Gains Scores by Pre- and Post-DLP Implementation and SES

	Pre-DLP			Post-DLP			Total		
SES Status	n	M	SD	n	M	SD	n	M	SD
Free/Reduced	721	34.81	11.09	757	31.50	11.20	1478	33.12	11.26
Full-Pay	117	31.33	11.49	162	31.37	11.72	279	31.35	11.60
Total	838	34.32	11.20	919	31.48	11.29	1757	32.84	11.33

H4. The difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, was impacted by students' race/ethnicity status (Hispanic, Black, White, or Other).

The two-factor ANOVA results pertaining to H4 showed that there was a significant main effect for pre- and post-DLP implementation [F (1,1749) = 5.376, p = .021] with a very small effect size of partial eta squared equal to .003. There was no significant main effect for race/ethnicity detected; however, results showed that there was a significant interaction effect between pre- and post-DLP implementation and the race/ethnicity categories [F (3, 1749) = 3.861, p = .009] with a very small effect size of a partial eta squared value equal to .007. The results for H4 are summarized in Table 6.

Table 6

Summary of Two-Factor ANOVA Test for Pre- and Post-DLP Implementation and Race/Ethnicity

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Pre- and Post-DLP	1	676.21	5.38	0.021	0.003
Race/Ethnicity	3	171.93	1.37	0.251	0.002
Pre- and Post-DLP x Race/Ethnicity	3	485.68	3.86	0.009	0.007
Error	1749				

The significant interaction between pre- and post-DLP implementation and race/ethnicity showed that there was a differential impact of race/ethnicity category on pre- and post-DLP mean reading gains scores, but identifying the exact group differences required additional post-hoc pairwise comparisons. The descriptive statistics for pre- and post-DLP implementation by race/ethnicity can be found below in Table 7. The results showed that H4 was supported. There was a significant interaction identified between pre- and post-DLP implementation for the race/ethnicity categories, and this had a differential impact on mean reading gains scores.

Table 7

Descriptive Statistics for MAP Reading Gains Scores by Pre- and Post-DLP Implementation and Race/Ethnicity

	Pre-DLP			Post-DLP			Total		
Race/ Ethnicity	n	M	SD	n	M	SD	n	M	SD
Hispanic	392	34.75	11.04	458	31.72	10.61	850	33.12	10.90
Black	288	34.45	11.41	287	29.78	11.05	575	32.12	11.64
White	104	33.00	11.84	93	33.71	13.99	197	33.34	12.87
Other	54	33.13	9.98	81	33.59	11.70	135	33.41	11.00
Total	838	34.32	11.20	919	31.48	11.29	1757	32.84	11.30

H5. The difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, was impacted by students' ELL status (received services or did not receive services).

The two-way ANOVA results pertaining to H5 showed a significant main effect for pre- and post- DLP implementation [F (1,1753) = 27.707, $p < .001$], but with a small effect size of partial eta squared equal to .016. A significant main effect was detected for ELL status [F (1, 1753) = 12.510, $p < .001$], although it rendered a very small effect size with partial eta squared equal to .007. No significant interaction between ELL status and

pre- and post-DLP implementation was identified. The results from the two-factor ANOVA can be found below in Table 8.

Table 8

Summary of Two-Factor ANOVA Test for Pre- and Post-DLP Implementation and ELL Status

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Pre- and Post-DLP	1	3483.161	27.707	0.000	0.016
ELL Status	1	1572.609	12.510	0.000	0.007
Pre- and Post-DLP x ELL	1	22.158	0.176	0.675	0.000
Error	1753	125.712			

The significant main effect for ELL status showed that students who received ELL services (M = 33.91) achieved significantly higher means than students who did not receive ELL services (M = 32.05). The results showed that H5 was supported because the significant main effect of whether or not students received ELL services made a difference in reading gains scores. The descriptive statistics for reading composite gains scores for pre and post-DLP and ELL status can be found in Table 9.

Table 9

Descriptive Statistics for MAP Reading Gains Scores by Pre- and Post-DLP Implementation and ELL Status

	Pre-DLP			Post-DLP			Total		
ELL Status	n	M	SD	n	M	SD	n	M	SD
ELL	345	35.32	10.78	400	32.69	10.89	745	33.91	10.91
Non-ELL	493	33.63	11.45	519	30.55	11.51	1012	32.05	11.58
Total	838	34.32	11.20	919	31.48	11.29	1757	32.84	11.33

H6. The difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, was impacted by students' special education or SPED status (received services or did not receive services).

The results of the analysis indicated there was a statistically significant main effect for pre- and post-DLP implementation [F (1,1753) = 14.298, p < .001] with a very small effect size of partial eta squared equal to .008. A significant main effect for SPED status between students receiving special education services and students not receiving services was detected [F = (1, 1753) = 19.126, p = < .001] with a small effect size of partial eta squared value equal to .011. There was no significant interaction identified between

SPED status and pre- and post-DLP implementation. The two-factor ANOVA results pertaining to H6 are summarized in Table 10.

Table 10

Summary of Two-Factor ANOVA Test for Pre- and Post-DLP Implementation and SPED Status

Variable and Source	*df*	*MS*	*F*	*p*	η^2
Pre- and Post-DLP	1	1790.999	14.298	0.000	0.008
SPED Status	1	2395.793	19.126	0.000	0.011
Pre- and Post-DLP x SPED Status	1	0.391	0.003	0.955	0.000
Error	1753	125.263			

The means for the SPED status main effect showed that the non-SPED group (M = 33.32) achieved significantly higher mean reading gains than the SPED group (M = 29.99). The descriptive statistics for H6 can be found in Table 11. The results showed that H6 was supported because SPED status made a significant difference in reading gains scores.

Table 11

Descriptive Statistics for MAP Reading Gains Scores by Pre- and Post-DLP Implementation and SPED Status

	2010-2013			2014-2017			Total		
	n	M	SD	n	M	SD	n	M	SD
SPED	121	31.53	13.48	136	28.63	12.74	257	29.99	13.15
Non-SPED	717	34.80	10.71	783	31.98	10.95	1500	33.32	10.92
Total	838	34.32	11.20	919	31.48	11.29	1575	32.84	11.33

Additional Analyses

The Analysis of Variance (ANOVA) statistical procedure indicates whether or not there is a significant difference among groups, but does not provide information as to exactly which groups differ. In order to further examine the significant ANOVA results, all possible pairs of sub-groups within the larger ANOVA procedure were compared statistically for differences. Post-hoc pairwise comparisons were conducted to follow up on both the significant interactions between pre- and post-DLP implementation with SES status (free/reduced lunch or full-pay lunch), and the interaction between pre- and post-DLP with the race/ethnicity categories (White, Black, Hispanic or Other).

For the significant interaction between pre- and post-DLP implementation and SES (free/reduced lunch or full-pay lunch), post-hoc pairwise comparisons were conducted to probe the interaction. The pre-DLP free/reduced lunch group (M = 34.81) achieved significantly higher mean reading gains than the pre-DLP full-pay lunch group

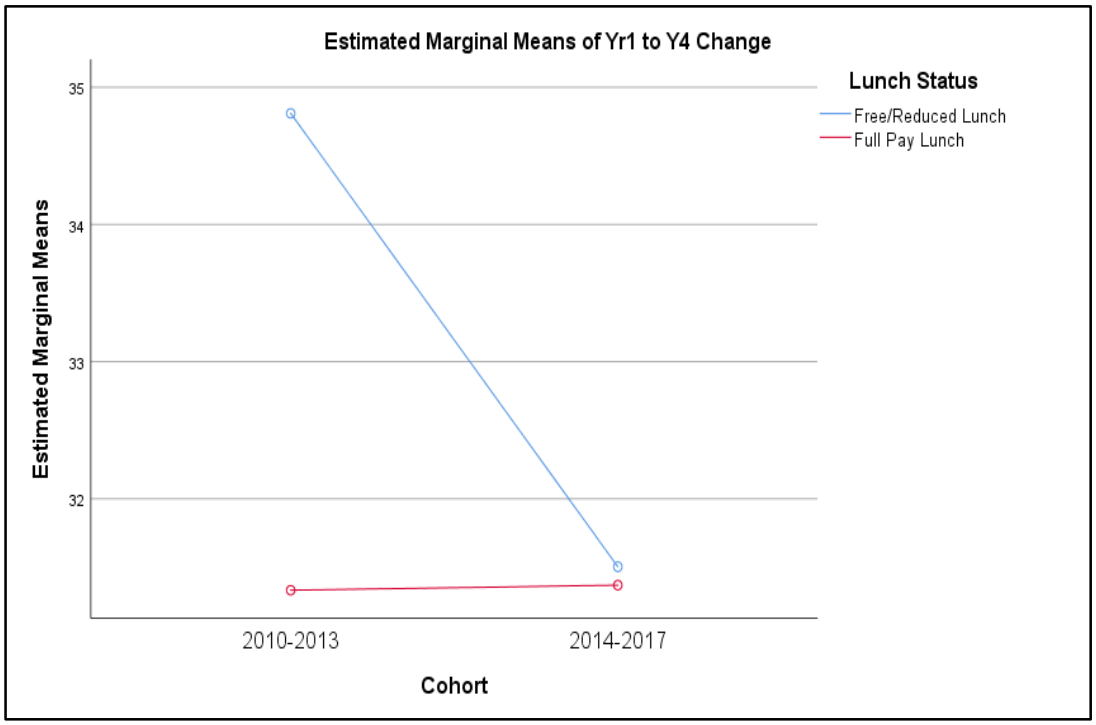
(M = 31.33) with a Tukey's Honestly Significant Difference (HSD) of 3.477 (p = .01). A Tukey's HSD of 3.305 (p < .001) showed that the pre-DLP free/reduced lunch group (M = 34.81) also had significantly higher mean reading gains compared to the post-DLP free/reduced lunch group (M = 31.50). The pre-DLP free/reduced lunch group (M = 34.81) also achieved significantly higher mean reading gains than the post-DLP full-pay lunch group (M = 31.37) with a Tukey's HSD of 3.440 (p = .002). Table 12 shows the descriptive statistics for SES status (free/reduced or fully-pay lunch) by pre- and post-DLP. Figure 1 shows the significant interaction between SES status and pre- and post-DLP implementation. The free/reduced lunch students experienced a significant decrease in their reading composite gains scores from pre- and post-DLP, but full-pay lunch students showed very little change in their reading gains from pre- to post-DLP.

Table 12

Descriptive Statistics for SES Status Pre- and Post-DLP Implementation

	Pre-DLP			Post-DLP			Total		
SES Status	n	M	SD	n	M	SD	n	M	SD
Free/Reduced	721	34.81	11.09	757	31.50	11.20	1478	33.12	11.26
Full-Pay	117	31.33	11.49	162	31.37	11.72	279	31.35	11.60
Total	838	34.32	11.20	919	31.48	11.29	1757	32.84	11.33

Figure 1. Interaction for MAP Reading Gains Scores between Pre- and Post-DLP Implementation and SES Status



For the significant interaction between pre- and post-DLP implementation and race/ethnicity, post-hoc pairwise comparisons were conducted. However, the race/ethnicity category and pre- and post-DLP implementation combination groups had significantly different variances from their perspective means as evidenced by a non-significant Levene's test for homogeneity of variance (p = .27). Since the assumption of homogeneity of variance was not met, the Games-Howell procedure of post-hoc pairwise comparisons for groups with non-equivalent variances was used. The pre-DLP Hispanic group (M = 34.75) achieved significantly higher mean reading gains than the post-DLP Hispanic group (M = 31.72) with a Games-Howell mean difference of 3.032 (p < .001). The pre-DLP Hispanic group (M = 34.75) also achieved significantly higher mean reading gains than the post-DLP Black group (M = 29.78) with a Games-Howell mean difference

of 4.966 ($p < .001$). The pre-DLP Black group (M = 34.45) rendered significantly higher mean reading gains than the post-DLP Hispanic group ($M = 31.72$) with a Games-Howell mean difference of 2.730 ($p = .025$). The pre-DLP Black group ($M = 34.45$) also showed significantly higher mean reading gains than the post-DLP Black group (M = 29.78) with a Games-Howell mean difference of 4.664 ($p < .001$). Table 13 shows the descriptive statistics for the mean MAP reading composite gains scores of the categories race/ethnicity by pre- and post-DLP.

Table 13

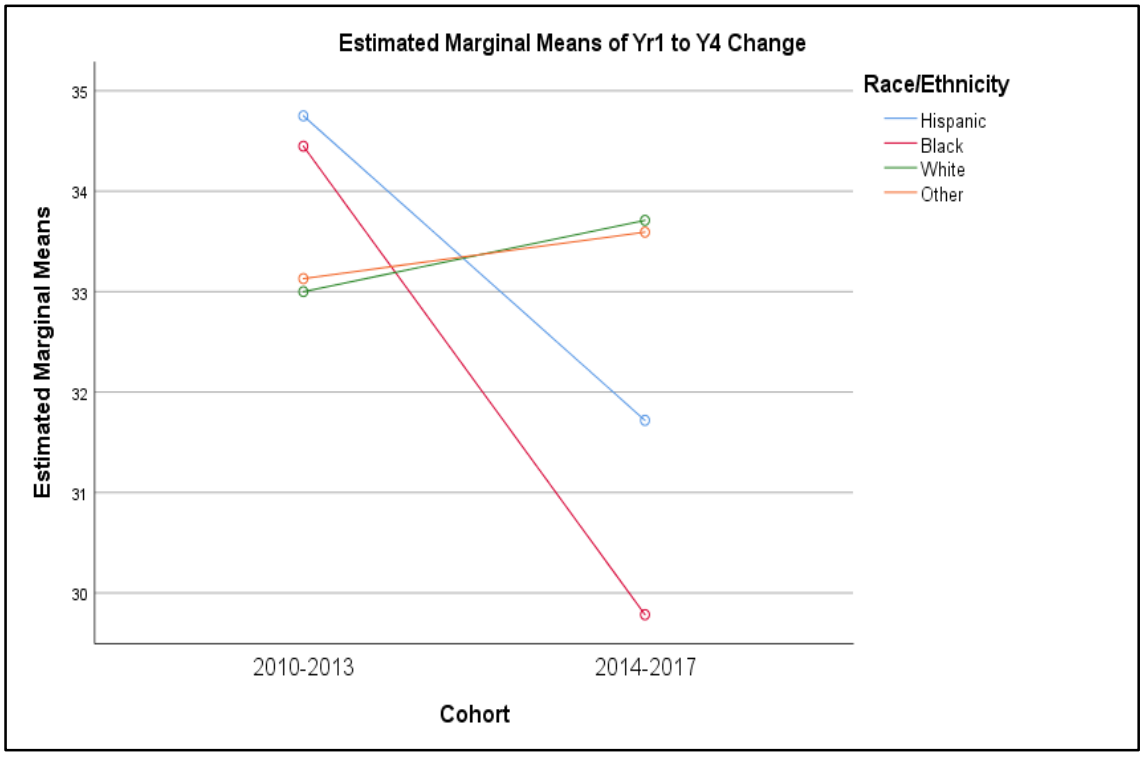
Descriptive Statistics for Race/Ethnicity Pre- and Post-DLP Implementation

	Pre-DLP			Post-DLP			Total		
Race/ Ethnicity	n	M	SD	n	M	SD	n	M	SD
Hispanic	392	34.75	11.04	458	31.72	10.61	850	33.12	10.90
Black	288	34.45	11.41	287	29.78	11.05	575	32.12	11.64
White	104	33.00	11.84	93	33.71	13.99	197	33.34	12.87
Other	54	33.13	9.98	81	33.59	11.70	135	33.41	11.00
Total	838	34.32	11.20	919	31.48	11.29	1757	32.84	11.30

The significant interaction between pre- and post-DLP implementation with the race/ethnicity categories of Hispanic, Black, White, or Other are represented in Figure 2. The figure shows that Hispanic students mean reading composite gains scores were the greatest of all the race/ethnicity group pre-DLP, but decreased significantly from pre- to

post-DLP. Black students mean reading gains started slightly lower than Hispanic students pre-DLP, but Black students experienced a greater decrease than the Hispanic students from pre- to post-DLP. This was very different than the pattern in pre- to post-DLP mean reading gains observed for the other two race/ethnicity categories. The mean reading gains for White students were lowest of all race/ethnicity categories pre-DLP, but White students experienced the greatest mean reading gains post-DLP. Other students had slightly higher mean reading gains than White students pre-DLP, but Other students experienced slightly lower mean reading gains than White students post-DLP.

Figure 2. Interaction for MAP Reading Gains Scores between Pre- and Post-DLP Implementation and Race/Ethnicity



Summary

Chapter 4 provided the findings of the independent *t*-test and the series of two-factor ANOVA procedures conducted to test the hypotheses associated with the study.

The results of the analysis indicated that the pre-DLP implementation group had significantly higher mean MAP reading composite gains scores than did the post-DLP implementation group. Significant differences were found in the overall MAP reading composite gains scores based on SES status, ELL status, and SPED status demographic subgroups. Students receiving free/reduced lunch and students receiving ELL services, rendered significantly higher mean reading gains scores than did their full-pay lunch and non-ELL counterparts. However, students receiving SPED services had significantly lower mean reading gains than their non-SPED counterparts. There was a significant interaction effect detected with regard to mean MAP reading composite gains scores between pre- and post-DLP implementation and SES status (free/reduced and full-pay lunch). A significant interaction was also detected for mean reading gains between pre- and post-DLP implementation and the race/ethnicity categories of Hispanic, Black, White, or Other. In Chapter 5, a summary of the research study, connections to the literature regarding major findings, implications for action, recommendations for further study, and conclusions are discussed.

Chapter 5

Interpretation and Recommendations

Literacy instruction has undergone many changes with the historical trends and fads that are often rampant in the education field. Despite the waxing and waning trends, one constant that remains is the importance of ensuring that students become literate citizens in a global society. This chapter contains a summary of the study, which includes an overview of the problem, purpose statement, research questions, and a review of the methodology. Additionally, this chapter presents the major findings of the study and how these findings relate to the literature. Finally, this chapter includes implications for action, recommendations for the future research, and concluding remarks.

Study Summary

The following section provides a summary of the current study, which includes an overview of the problem examining whether or not the District Literacy Plan (DLP) had an impact on fifth-grade student reading achievement as measured by fall to spring NWEA-MAP reading composite gains scores by comparing the mean gain scores from 2009-2010 through 2012-2013, pre-DLP implementation to 2013-2014 through 2016-2017, post-DLP implementation. Overall, the results of the study revealed that the implementation of the District Literacy Plan (DLP) did have a significant impact on student MAP reading gains scores, but the reading gains did not increase after the implementation of the DLP. The subsequent section states the purpose of the study and includes the research questions. A review of the methodology and the major findings of the study complete the summary.

Overview of the problem. The greatest influence on literacy and reading achievement is a literacy program that contains effective components that contribute to student achievement (Fountas & Pinnell, 2017). Various literacy programs may claim to increase student achievement in reading, yet these programs may be missing some vital components. Districts with diverse demographic populations have searched for ways to increase student achievement through research-based literacy practices. District A was no exception to this search for increasing reaching achievement through effective literacy practices. After implementing a District Literacy Plan (DLP) during the academic years of 2013-2016 in order to address the literacy needs, the data had yet to be analyzed to determine the impact of the DLP implementation.

Purpose statement and research questions. The purpose of this study was to determine the extent of the overall impact of the District Literacy Plan (DLP) on fifth-grade students' reading achievement as measured by NWEA-MAP reading composite scores by comparing the mean fall to spring gains scores. The MAP reading composite gains scores mean from 2009-2010 through 2012-2013, pre-DLP implementation, were compared to the mean gains scores from 2013-2014 through 2016-2017, post-DLP implementation. The second purpose of this study was to investigate whether the effects of the DLP on MAP reading gains scores were different for fifth-grade student sub-groups based on student gender (male or female), socio-economic (SES) status (free/reduced lunch or full-pay), race/ethnicity (Hispanic, Black, White, or Other), English Language Learner (ELL) status (received services or did not receive services), and special education (SPED) status (received services or did not receive services). Another purpose was to determine whether mean MAP reading composite gains scores for the years before DLP

implementation compared to the years after DLP implementation for each level or category of the demographic variables indicated differential impacts for any group.

The following research questions were used to guide the study:

RQ1. To what extent was there a difference in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation?

RQ2. To what extent were the differences in NWEA-MAP fall to spring reading composite gains scores between fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation, impacted by gender, socio-economic (SES) status, race/ethnicity, English Language Learner (ELL) status, or special education (SPED) status?

Review of the methodology. This quantitative study involved District A, a Midwestern urban public school district. The research utilized reading assessment data from fifth-grade students before and after DLP implementation. The sample for this study consisted of fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation, and from 2013-2014 through 2016-2017, post-DLP implementation. The type of statistical analysis used to address each research question was determined by the variables which included reading composite gains scores for the pre- and post-DLP implementation, gender, SES status, ELL status, and SPED status.

The Northwest Evaluation Association Measures of Academic Progress (NWEA-MAP) reading assessment was administered to fifth-grade students enrolled during the academic years of 2009-2010 through 2012-2013, pre-DLP implementation and fifth-grade students enrolled during the academic years of 2013-2014 through 2016-2017, post-DLP implementation. The dependent variable, growth in reading, was measured by the fall to spring gains scores in the NWEA-MAP reading composite scores. The independent variables in the study were the time intervals before and after implementation of the DLP, as well as gender (male or female), SES status (free/reduced lunch or full-pay), race/ethnicity (Hispanic, Black, White, or Other), ELL status (received services or did not receive services), and SPED status (received services or did not receive services) of students. The mean MAP reading composite gains scores from 2009-2010 through 2012-2013, pre-DLP implementation, were compared to the mean gains scores from 2013-2014 through 2016-2017, post-DLP implementation for this study. Both an independent samples *t*-tests and a series of two-factor ANOVAs were used to analyze the difference between pre- and post-DLP reading composite gains scores based on the independent demographic variables, and to investigate a differential impact of the DLP implementation depending on the level or category of the demographic variables.

Major findings. Results of the independent samples *t*-test related to the first research question revealed that there was an overall statistically significant difference in the mean student reading gains scores between pre- and post-DLP implementation, in which the pre-DLP implementation group had higher gains than the post-DLP implementation group. The results of the two-factor ANOVA test related to the second research question showed there was no significant difference in mean reading gains based

on gender and there was no significant interaction between pre- and post-DLP implementation and gender. There was a significant difference in mean reading gains scores based on SES in which the free/reduced lunch group had higher means gains scores than the full-pay lunch group. There was also a significant interaction between the categories of SES status and pre- and post-DLP. The free/reduced lunch group experienced large decreases in their mean reading gains scores from pre- to post-DLP, but the full-pay lunch group showed very little change in their mean gains scores due to the DLP implementation.

The two-factor ANOVA results pertaining to ELL status showed a significant difference in mean MAP composite reading gains scores for pre- and post- DLP implementation in which students receiving ELL services experienced significantly higher mean gain scores than the non-ELL students. The results also indicated that non-SPED students showed higher mean reading gains than students receiving special education services. However, no significant interactions were detected between pre- and post-DLP and ELL or SPED status.

There were no significant differences in the overall mean reading gains scores for race/ethnicity detected; although, results indicated that there was a significant interaction effect between pre- and post-DLP implementation and the categories of the race/ethnicity demographic variable. The mean reading gains for the Hispanic and Black demographic groups were much higher during pre-DLP implementation than post-DLP implementation, but the White and Other race/ethnicity groups had slightly higher mean gains scores during post-DLP implementation than pre-DLP implementation.

Findings Related to the Literature

The current study addressed whether a district literacy initiative was successful in its implementation of components of the balanced literacy approach by increasing MAP reading composite gains scores. Overall results for the pre-DLP and post-DLP implementation means comparison did show significant differences between groups, in which the pre-DLP group rendered larger mean reading gains scores than the post-DLP group. These results are not consistent with Fountas and Pinnell's (2017) research, which indicated that students participating in a balanced literacy program obtain reading growth at a higher rate in comparison to those receiving basal instruction. Fountas and Pinnell (2017) addressed phonemic awareness, phonics, reading fluency, vocabulary, and reading comprehension through their research, which is concentrated on increasing student reading growth with effective reading elements tied to the balanced literacy components.

The results of the current study indicated that there was not a significant interaction between pre- and post-DLP implementation based on gender. There was also no significant main effect for gender. In fact, males had a higher mean score than females but the difference was not significant. Both males and females achieved higher mean gains scores pre-DLP implementation than post-DLP implementation. These results show no achievement gap by gender, although Reardon et al. (2016) argued that indeed an achievement gap existed between males and females based on their study of the NWEA-MAP reading assessment. Their study included data from 3,700 school districts in which they analyzed whether or not achievement gaps were present. Males performed better than females on multiple-choice questions, such as the NWEA-MAP assessment used in

this study, while females performed better on constructed-response questions in both math and reading.

The results of the current study provided evidence that socio-economic status affected performance. There was a significant main effect for SES in which the free/reduced lunch group reading composite scores were significantly higher than the full-pay lunch group. There was also a significant interaction effect for pre- and post-DLP implementation and SES, which showed that the free/reduced lunch group had higher mean gains scores pre-DLP implementation than post-DLP implementation while the full-pay group had higher mean gains scores post-DLP implementation. VanDerHeyden and Burns (2018) addressed this in their study, which stated that students who are at risk, including students who are considered below the poverty level or low SES, benefit from systematic and targeted reading intervention to increase reading achievement. McDonald Conner et al. (2009) stated that students from a low SES background showed growth in reading achievement when literacy instruction is individualized while implementing the balanced literacy approach.

There was a differential impact based on the race/ethnicity category performance pre- and post-DLP according to the composite gains scores from NWEA-MAP reading assessment. McDonald Conner et al. (2009) asserted that students who belong to underrepresented minority groups showed growth in reading achievement when literacy instruction is individualized while using the balanced literacy approach. Their research opposed the findings of the study. Results showed that there were larger mean gains scores for the Hispanic and Black demographic groups during pre-DLP implementation compared to post-DLP implementation; however, the White and Other demographic

categories had slightly higher mean gains scores post-DLP implementation. The students may have been receiving other individualized instruction before implementation of the DLP.

The results from the current study for ELL status showed a significant main effect for pre- and post- DLP implementation, which signifies that the ELL group had higher mean gains scores pre-DLP implementation than post-DLP implementation. ELL status is affected by performance; this indicates that there is a positive change in the literacy achievement scores for ELL students. These results are not consistent with findings from Avalos et al. (2007), which indicated that students, particularly ELL students, participating in a balanced literacy program obtain reading growth in comparison to those receiving other means of literacy instruction. The results of the current study do not align with Grabe's (2010) study that comprehension of ELL students was directly impacted by explicit and systemic literacy instruction. VanDerHeyden and Burns (2018) determined from their study that utilizing the NWEA-MAP as a screening tool to make data-based decisions benefitted students who were at risk, such as students identified as receiving ELL services. Although the results from the study showed that ELL students' mean gains scores decreased pre- to post-DLP, these studies could be utilized to determine future implementation of literacy practices that would benefit ELL students in reading growth.

The results of the analysis indicated there was a statistically significant difference between pre- and post-DLP implementation based on student SPED status, which signified that SPED students had higher mean gains scores pre-DLP implementation than post-DLP implementation. Fenty and Brydon's (2017) study further indicated that students with learning disabilities were impacted by literacy instruction that was explicit

and systemic. This research does not support the current study because SPED students had higher gains pre-DLP than post-DLP. VanDerHeyden and Burns (2018) addressed this in their study, which found that students who are at-risk benefit from systemic and targeted reading intervention to increase reading achievement. The research of VanDerHeyden and Burns (2018) suggested that including targeted intervention would benefit students who are at-risk, which may be a future consideration for districts who are considering which type of literacy program to implement.

Participation in the District Literacy Plan (DLP) did not result in increased mean gains scores on achievement on formative assessments such as the MAP reading achievement test. Students achieved higher gains pre-DLP implementation than post-DLP implementation. This result may be due to the possibility that after the implementation of the DLP some fifth-grade groups arrived more prepared and already scoring at a higher level on the MAP reading assessment than fifth-grade groups before the implementation of the DLP, which resulted in students not having as much room to grow, thus the gains would be less. The purpose of the current study was to determine if the DLP implementation had an effect on reading growth for fifth-grade students. The study demonstrated that students experienced larger mean gains in achievement from fall to spring on MAP reading composite scores pre-DLP implementation than post-DLP implementation in all demographic categories except the SES category of full-pay lunch, and the White and Other categories of the race/ethnicity demographic variable.

Conclusions

As addressed in Chapter 1, school districts are tasked with selecting a reading program that will positively impact student reading growth. District A implemented a

literacy initiative that included components of balanced literacy in order to increase reading achievement. The results of the study indicated that students had more growth pre-DLP. However, some groups had higher gains than previous groups, which resulted in not having as much room to grow. Therefore, fifth-grade students who entered with higher MAP reading scores will have fewer gains, which may potentially limit growth over that year. Students' gains decreased but their actual performance may not have been lower if we were to examine the end of year raw scores. This section included conclusions from the current study addressing the amount of reading growth or fall to spring gains for fifth grade students based on implementation of the District Literacy Plan (DLP). Implications for action and recommendations for future research will be discussed and the chapter closes with concluding remarks.

Implications for action. The DLP did not help increase reading growth. The results of this study suggest that District A should consider closely examining whether their selected reading program accurately addresses the needs of students in order to positively impact reading achievement. The DLP didn't help increase fall to spring MAP reading composite score gains but if they came in to fifth-grade with higher scores due to instruction based on the DLP during previous grades, they would not have as much room to grow over that year.

The study of District A's DLP showed that a focus on reading instruction benefits students but perhaps with some interventions or other literacy skills added to the DLP. District A provided reading instruction for students through the balanced literacy approach. The findings from this study have implications for stakeholders ranging from district level administrators to those creating education expectations and making decisions

on a state and national level. The implications include a need to focus on using data to make decisions that will positively impact student achievement. The potential for improved reading achievement is not solely related to one streamlined program, but it may require other targeted instruction to help at-risk students such as lower SES, ELL, and SPED students.

Overall results of the study did reveal a statistically significant difference between pre- and post-DLP implementation. The results indicated that pre-DLP mean MAP reading composite gains scores were higher than post-DLP mean gains scores. Consequently, this creates an implication for action for District A. The district should consider completing fidelity checks to ensure that the balanced literacy components and other forms of literacy instruction are in place, and rigorous similar instruction is provided throughout all schools. In addition, areas of weakness should be identified for students who are labeled to be at-risk. More individualized instruction may be necessary to meet the literacy needs of these students.

District A should consider the variation in how literacy instruction is implemented for its students in demographic sub-groups as it helps to prepare those students for reading achievement. Students of lower SES status, ELL status, and SPED status may require more time to acquire the content and build foundational reading skills through targeted intervention instruction or modified instruction. The increase in reading composite gains scores on the NWEA-MAP assessment for ELL and SPED students pre-DLP implementation might have been due to other instructional factors in which the students received individualized services contributing to growth. Another factor that may have contributed to reading gains higher scores pre-DLP may be smaller class sizes in the

testing environment for special education students. The NWEA-MAP reading assessment is typically given in the regular education setting by the regular education teacher. District A may want to consider making accommodations for ELL and SPED students to be administered the MAP reading assessment in smaller group settings.

Recommendations for future research. This study adds to the body of research focused on effective literacy instruction. The results of this study revealed a continued need to explore the possible reasons that District A's approach of implementing the DLP did not show the anticipated growth in overall reading achievement originally intended. This may indicate that students were more prepared after the implementation of the DLP; and therefore, did not necessarily make great gains. These unexpected results lead to questioning which literacy programs or specific literacy instructional strategies could increase reading growth. Following are potential topics for future research:

1. Employ the state reading assessment scores, in addition to the MAP reading scores to triangulate data examine the relationship between the two assessments that measure reading achievement.
2. Use the MAP reading composite raw scores from year end to look at achievement instead of growth.
3. Examine gains scores from one year to the next.
4. Increase the sample size by including other districts with similar demographics that also use the balanced literacy components. This would help to expand the generalizability of the study.
5. Conduct a study of the fidelity of implementation of the DLP program within District A.

Concluding remarks. Literacy instruction remains a topic of discussion and debate. This study examined the effect of the District A's District Literacy Plan on fifth-grade student reading growth as measured by the NWEA-MAP reading assessment composite scores in the form of fall to spring gains scores. These gain scores were analyzed to determine whether gender, SES status, race, ELL status, and SPED status had a significant impact on the reading growth of students receiving Balanced Literacy instruction. Study results indicated that students receiving Balanced Literacy instruction were impacted by implementation of the DLP. Fifth-grade students had lower MAP reading composite gains scores after implementation. This may be a result of DLP implementation at earlier grade levels. SES status, SPED status, ELL status, and race/ethnicity had an impact on the NWEA-MAP reading assessment mean gains scores, pre-DLP implementation, while gender did not.

The ability to read fluently and comprehend text are essential skills that all students must obtain to become literate citizens and contributing members of society. Unfortunately, literacy rates across America continue to be a concern that affects the field of education. The challenges associated with educating a growing percentage of struggling readers is difficult, as school districts are desperate to find the best reading programs. Districts, similar to District A, must continue to invest in literacy instruction that improves reading growth and achievement. Reading programs should be carefully analyzed for fitting the needs of the district and implemented with fidelity across the district to ensure the desired effect on reading achievement.

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Appendices

Appendix A: Approval to Obtain and Use Data

From: XXXXXX
Sent: Thursday, February 1, 2018 at 8:59 AM
To: Judy Vang
Subject: RE: Data for Research

Hi Judy,

In order to move forward, we need to have a data agreement in place. Yes, I can provide raw data that will not have any student identifiable information. In regards to your earlier question, you would not be able to identify the district or any schools in your reporting. Once we get the agreement finalized, I can send you the raw data file. Thanks!

Appendix B: Data Utilization Agreement

Data Utilization Agreement

The [redacted] (hereinafter referred to as the District) and Judy Vang have entered into an agreement under which Ms. Vang shall be given permission use data provided by the District.

Ms. Vang will adhere to all provisions for confidentiality and protection of student and teacher information as described in the U.S. Department of Education's Protection of Pupil Rights Amendment (PPRA) (20 U.S.C. § 1232h; 34 CFR Part 98) and The Family Educational Rights and Privacy Act (FERPA) (20 U.S.C. § 1232g; 34 CFR Part 99).

No identifiable information regarding any District student, teacher, or school shall be released by Ms. Vang in any report.

Judy Vang	[redacted] Board of Education
Judy Vang Printed Name	[redacted] Printed Name
2/1/18 Date	2/6/18 Date

Appendix C: Baker University Institutional Review Board Approval

Baker University Institutional Review Board

July 20th, 2018

Dear Judy Vang and Sharon Zoellner,

The Baker University IRB has reviewed your project application and approved this project under Exempt Status Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

Please be aware of the following:

1. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
2. Notify the IRB about any new investigators not named in original application.
3. When signed consent documents are required, the primary investigator must retain the signed consent documents of the research activity.
4. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.
5. If the results of the research are used to prepare papers for publication or oral presentation at professional conferences, manuscripts or abstracts are requested for IRB as part of the project record.

Please inform this Committee or myself when this project is terminated or completed. As noted above, you must also provide IRB with an annual status report and receive approval for maintaining your status. If you have any questions, please contact me at npoell@bakeru.edu or 785.594.4582.

Sincerely,

Nathan Poell, MA
Chair, Baker University IRB

Baker University IRB Committee
Scott Crenshaw
Erin Morris, PhD
Jamin Perry, PhD
Susan Rogers, PhD