The Impact of Reading Fluency on Missouri Assessment Program Performance

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Submitted to the Graduate Department and Faculty of the School of Education of
Baker University in partial fulfillment of the requirements for the degree of
Doctor of Education in Educational Leadership

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Date Defended: June 4, 2015

Abstract

  The purpose of this study was to determine if a relationship exists between
reading fluency, as measured by scores on the Reading Curriculum Based Measure (R-
CBM) Benchmark assessments, and student performance, as measured by scale scores on
the Communication Arts Missouri Assessment Program (MAP) assessments. A
secondary purpose of this study was to determine if grade level, gender, race/ethnicity,
and socio-economic status affected the relationship between reading fluency and student
performance. A quantitative non-experimental correlational research design was used for
this study in which the researcher analyzed archival data to compare R-CBM Benchmark
scale scores, the independent variable, with MAP Communication Arts scale scores, the
dependent variable. The moderator variables were grade level, gender, race/ethnicity,
and socio-economic status. The population for this study included students in grades 3
through 5 from five elementary schools within a Missouri school district. The sample for
this study ($N = 885$) included students enrolled in the selected Missouri school district
during the 2010-2011 school year. Results indicated there is a statistically significant
relationship between reading fluency, as measured by R-CBM Benchmark scale scores
and student performance, as measured by MAP Communication Arts scale scores. As
reading fluency scores increase, the student performance scores on the MAP
Communication Arts also increase. Results indicated that the relationship between
reading fluency and student performance is not affected by grade, gender, and socio-
economic status. The results also indicated a marginally statistically significant
difference does exist when comparing the relationship between R-CBM Benchmark scale
scores and the MAP Communication Arts scale scores of Black students with the

relationship between R-CBM Benchmark scale scores and MAP Communication Arts scale scores of White students. Recommendations for further research include replicating the study to include the online fixed-form MAP English Language Arts assessment and extending the study to include students in grades 6 through 8.

Dedication

This dissertation is dedicated to Andrew, Madeline, and Elizabeth. Thank you for being my biggest cheerleaders throughout this process. Andrew, I appreciate your support and encouragement throughout this endeavor. Madeline and Elizabeth, thank you for getting excited every time I submitted a chapter! I also dedicate this dissertation to my grandmothers, Audrey Houston and Patsy McClintock, who passed away during this challenge. I refer to your practices and statements often. A special thanks to Tom and Dee Maier and Carl and Judy Brennaman for watching and supporting my beautiful girls while I accomplished this journey.

Acknowledgements

I would like to acknowledge my family, friends, and colleagues for their constant support and encouragement. To Andrew, thank you for being such a loving father and remarkable husband. We can now begin the next journey in our life! To Madeline and Elizabeth, I am so blessed to be your mom. I appreciate your patience and understanding as I worked on my "paper." I love you all more than words can say.

To my parents and my in-laws, thank you for all the sacrifices you made so this would be possible. Thank you for making sure the girls never missed an event or an activity while I wrote. Thank you for helping my dream of earning my doctorate come true.

I want to extend a sincere thank you to Dr. James Robins and Ms. Peg Waterman. The countless hours of evaluation and reflection, timely encouragement, and patience you each devoted to my work will never be forgotten. This completed dissertation would not have been possible without your guidance. I would also like to add a special thanks to Dr. Kokoruda and Dr. Mathes for giving of their time to serve as my committee members.

To my best friend, Corey VanDine, God knew what He was doing when He put us together all of those years ago! Thank you for seeing me through this process! Thank you for not giving up on me! Here's to our next adventure!

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Chapter One

Introduction

The National Reading Panel selected fluency as one of the reading components to research (National Institute of Child Health and Human Development [NCHHD], 2000a). The Panel selected the area of fluency to study following the release of the 1995 National Assessment Education Progress (NAEP) report on the status of fluency in American schools (NICHHD, 2000a). The 1995 study examined a sampling of fourth grade students across the United States (Pinnell et al.). The results of the study indicated that 44% of fourth grade students were dysfluent (Pinnell et al., 1995). The results of this study caused the National Reading Panel to further investigate reading fluency and its impact on student performance (NICHHD, 2000a). The publication of the *National Reading Panel Report* in 2000 caused educators to question the priority and role of reading fluency within classrooms (Daane, Campbell, Griggs, Goodman, & Oranje, 2005).

While reading fluency has not been reestablished by educators to its same highly prioritized status as in the beginning of the 20th century, it has returned as one of the daily classroom communication arts instructional components occurring in schools (Rasinski, 2006). With the partially regained status, the 2002 (NAEP) Special Study of Oral Reading indicated that students were not meeting the fluency standard (Daane et al., 2005). Of the fourth graders included in the 2002 NAEP Special Study of Oral Reading, only 10% earned proficient scores by reading "with phrasing that was consistent with the author's syntax and with some degree of expressiveness" (Daane et al., 2005, p. v).

Furthermore, 40% of the fourth graders in the 2002 NAEP Special Study of Oral Reading earned below basic comprehension scores due to their inability to meet the minimal fluency standards (Daane et al., 2005).

The results found in the 2003 NAEP's Nation's Report Card on Reading were consistent with the 2002 NAEP's Special Study of Oral Reading. On the 2003 National Report Card, students' work was rated as being on one of the four performance levels either below basic, basic, proficient, or advanced (U.S. Department of Education, 2003). The 2003 NAEP reading assessment resulted in 37% of the fourth grade students scoring at the below basic level, 32% at the basic level, 24% at the proficient level, and 8% at the advanced level (U.S. Department of Education, 2003). While the fourth grade NAEP reading assessment did not directly measure reading fluency, the assessment was timed and did require the students to read and answer approximately ten questions within a twenty-five minute timeframe (U.S. Department of Education, 2003).

On the 2003 NAEP, Missouri's fourth grade students scored similarly to the national results. The Missouri results disaggregated by performance level: 32% scored in the below basic range, 34% in the basic range, 26% in proficient range, and 8% in the advanced range during the 2003 NAEP assessment (U.S. Department of Education, 2003). The fourth grade national average score was 216 and Missouri's fourth grade average score was 222 (U.S. Department of Education, 2003). This placed Missouri among 24 states scoring above the national average in the proficient range (U.S. Department of Education, 2003).

Background

Students across Missouri have struggled to achieve at the proficient or advanced level on the Communication Arts Missouri Assessment Program (MAP) test. In Missouri, 27.08% of the third grade students scored at the proficient level and 17.42% scored at the advanced level on the 2011 Communication Arts MAP test (Missouri Department of Elementary and Secondary Education [MODESE], 2011d). These statistics have indicated that 55.5% of Missouri third grade students were not adequately achieving in the area of communication arts that year. These statistics cause Missouri school districts to routinely collect and disaggregate student performance data of all kinds (MODESE, 2011d). As a result, Missouri districts, including the Sunshine School District, are evaluating communication arts programs and assessments to monitor the relationship between the student performance data and MAP proficiency (Assistant Superintendent of Elementary Education, personal communication, September 19, 2012; MODESE, 2011d).

Missouri Assessment Program. Missouri's educational quest for student achievement and academic proficiency has been manifested in numerous ways. Several assessments have been utilized in Missouri schools throughout the years. While the assessments have changed, the goal to create academically proficient students has not. The Missouri Mastery and Achievement Tests (MMATs) scoring guide contents described academic proficiency as correctly answering three out of four questions within each skill set (Osterlind & Merz, n.d.). MODESE determined academic proficiency through specific grade level established scale scores ranges (e.g. third grade proficiency

scale score ranges 648 to 790, fourth grade ranges 662 to 820) (MODESE, 2011a).

Despite the changes in the assessment tools and the proficiency standards used in

Missouri, all were designed to identify areas of strengths and weaknesses in student

achievement for districts, educators, and students. These strengths and weaknesses were

identified to improve the quality of education for Missouri students (MODESE, 2000,

2011d).

Missouri's quest for state-wide universal academic proficiency began in the

mid1980s (MODESE, 1986). In 1985, the Missouri General Assembly passed the

Missouri Excellence in Education Act (MODESE, 1986), which was designed to improve

education in all schools and districts across the state (MODESE, 1986). As a result of

this act, MODESE (1986) published the *Core Competency and Key Skills for Missouri*

Schools document, which outlined specific learner outcomes for students in grades two

through ten (MODESE, 1986). The document also provided specific guidance to

educators about how to integrate the grade level learner outcomes within a district's

curriculum and specified procedures for utilizing criterion-referenced assessments;

however, the document did not specifically identify a common criterion-referenced

assessment for all districts within Missouri to administer (MODESE, 1986).

In 1986, MODESE contracted with the Center for Educational Assessment at the

University of Missouri-Columbia to develop a criterion-referenced assessment for

Missouri districts as a result of the Missouri Excellence in Education Act (MODESE,

1986; Osterlind & Merz, n.d.). The criterion-referenced Missouri Mastery and

Achievement Tests (MMATs) were developed and utilized throughout the state from

1986 to 1997 (MODESE, 2000; Osterlind & Merz, n.d.). The MMATs were administered to students in grades two through ten and were designed to provide common academic information about student performance across the state and to identify trends in scores (Osterlind & Merz, n.d.).

During the 1997-1998 school year, MODESE began the assessment transition between the MMATs and the Missouri Assessment Program (MAP). The MAP is the annual spring assessment given to students in grades three through eight (MODESE, 2014a). The MAP consists of communication arts and math assessments used with all six assessed grades and science assessments used with two of the six assessed grades (MODESE, 2011c). The MAP assessment was developed to further assess students' ability to apply learning in a variety of contexts rather than focusing on specific grade level skills (MODESE, 2000). MAP results are reported as a proficiency classification, a scale score, and a *TerraNova* Survey National Percentile rank (MODESE, 2000, 2011d, 2014b). The proficiency classifications range from below basic, basic, proficient, and advanced (MODESE, 2011c, 2014b). MAP scale scores are correct response point values that assign proficiency levels (MODESE, 2011c, 2014b). The greater the scale score, the closer to proficiency the student has scored (MODESE, 2011c, 2014b). The *TerraNova* Survey National Percentile scores are nationally norm-referenced and compare the performance level with other grade level students across the United States (MODESE, 2011c, 2014b).

The importance of MAP assessment results evolved as a result of the No Child Left Behind (NCLB) Act implemented in 2001 under the direction of President George

W. Bush. NCLB was designed to ensure every child in the United States met individual state proficiency standards by the year 2014 (U.S. Department of Education, 2004). Due to the 2014 academic proficiency standards set for every child, an increased urgency developed to move students into the proficiency range in the areas of communication arts. To have met the 2014 NCLB standards deadline, Missouri's elementary students' performance on the Communication Arts MAP would had to have improved from 44.5% of third grade students scoring at the proficient or advanced level to 100% of third grade students scoring at the proficient or advanced levels (MODESE, 2011d).

Sunshine District overview. The Sunshine School District is a tier two urban Missouri K-12 school district. The Sunshine District is positioned between one of Missouri's large urban school districts and two large suburban school districts. The Sunshine District contains two early-childhood centers, ten elementary schools, three middle schools, two high schools, two alternative schools, and one career center (MODESE, 2011b). The early childhood centers serve children from three to five years of age; the elementary schools serve students from kindergarten through fifth grade; the middle schools enroll students from sixth through eighth grade; the high schools serve students from ninth through twelfth grade; the alternative schools educate students from kindergarten through twelfth grade who require additional support due to conduct and emotional disorders; and the career center serves students in tenth through twelfth grades who seek technical career training (Assistant Superintendent of Elementary Education, personal communication, September 19, 2012).

Sunshine District's demographic data. The 2010-2011 Sunshine School District student demographics were reported in five race/ethnicity categories and two socioeconomic statuses. During the 2010-2011 school year 8,651 students were enrolled in the school district. The race/ethnicity demographics in the 2010-2011 school year were 46.9% African-American, 43.2% Caucasian, 7.6% Hispanic, 2% Asian, and .4% Multiracial. In 2010-2011, 53.9% of the student population qualified for free or reduced-priced lunch (MODESE, 2011b). Communication Arts MAP performance data for the Sunshine School District elementary schools were reported in four areas for students in grades three through five. The four reported achievement levels included advanced, proficient, basic, and below basic. Annually, Missouri's Department of Elementary and Secondary Education (MODESE) reports MAP test performance results by district, building, grade level, and subgroup (MODESE, 2011b).

Sunshine District's MAP performance data. The 2011 Sunshine School District's third grade MAP data is disaggregated by race and reported in percentages in Table 1. Table 1 depicts the third grade Communication Arts MAP disaggregated data. Race/ethnicity groups represented in this table include Asian, Black, Hispanic, Multiracial, and White. The data is also disaggregated by both gender and socio-economic status. The 2011 third grade MAP Achievement data indicates that the majority of all the third grade students achieved at the basic level. Of the 642 students tested, 48% were female and 52% were male (MODESE, 2011a). Out of the 642 third grade students, 64% of students received free or reduced lunch assistance and 36% were students paying full-price for lunch (MODESE, 2011a). Within the third grade student

group, 2% of the students were identified as Asian, 44% of the students were identified as

Black, 12% of the students were identified as Hispanic, 5% of the students were

identified as Multiracial, and 37% of the students were identified as White (MODESE,

2011a). The majority, 54.8%, of the third grade students scored at the Basic level on the

2011 Communication Arts MAP (MODESE, 2011a).

Table 1

Disaggregated Third Grade 2011MAP CA Achievement Levels

	Percentage of Students at Each Achievement Level			
Demographics	Below Basic	Basic	Proficient	Advanced
Asian	7.7	30.8	38.5	23.1
Black	19.5	62.8	12.1	5.7
Hispanic	13.3	68.0	12.0	6.7
Multiracial	13.8	48.3	20.7	17.2
White	10.7	43.4	28.1	17.8
Free/Reduced Lunch	19.0	61.1	13.6	6.3
Full-Priced Lunch	7.8	43.7	28.6	19.9
Male	17.6	53.7	18.5	10.1
Female	12.1	56.0	19.5	12.4
Total	15.0	54.8	19.0	11.2

Note. Adapted from *Missouri Achievement Program Achievement Level 4 Report*, by MODESE, 2011a.

The 2011 fourth grade MAP Achievement data for the Sunshine School District is

reported in Table 2. Table 2 depicts the fourth grade Communication Arts MAP

disaggregated data. Race/ethnicity groups represented in this table include Asian, Black,

Hispanic, Multiracial, and White. The data is also disaggregated by both gender and

socio-economic status. The 2011 fourth grade MAP Achievement data reveals some

variability in the achievement level results. The majority of the fourth grade students scored at the basic level; however, the majority of the multiracial subgroup of students scored at the proficient level. Of the 649 students tested, 49.5% were female and 50.3% were male (MODESE, 2011a). Within the fourth grade student group, 60% students received free or reduced lunch assistance and 40% were students paying full-price for lunch (MODESE, 2011a). Out of the 649 fourth grade students, 3% of the students were identified as Asian, 42% of the students were identified as Black, 8% of the students were identified as Hispanic, 4% of the students were identified as Multiracial, and 43% students were identified as White (MODESE, 2011a). The majority, 43.7%, of the fourth grade students scored at the Basic level on the 2011 Communication Arts MAP (MODESE, 2011a).

Table 2

Disaggregated Fourth Grade 2011 CA MAP Achievement Levels

	Percentage of Students at Each Achievement Level			
Demographics	Below Basic	Basic	Proficient	Advanced
Asian	0.0	50.0	31.3	10.8
Black	23.7	48.9	18.9	8.5
Hispanic	11.1	55.6	22.2	11.1
Multiracial	3.8	30.8	46.2	19.2
White	12.9	36.8	28.2	22.1
Free/Reduced Lunch	23.1	46.0	18.8	12.1
Full-Priced Lunch	7.3	38.1	33.8	20.8
Male	20.2	45.1	21.8	12.9
Female	12.7	42.2	27.3	17.7
Total	16.5	43.7	24.5	15.3

Note. Adapted from *Missouri Achievement Program Achievement Level 4 Report*, by MODESE, 2011a.

Table three contains the 2011 fifth grade MAP Achievement data for the Sunshine School District. Table 3 depicts the fourth grade Communication Arts MAP disaggregated data. Race/ethnicity groups represented in this table include Asian, Black, Hispanic, Multiracial, and White. The data is also disaggregated by both gender and socio-economic status. The majority of the 2011 fifth grade students scored at the basic level on the Communication Arts MAP assessment. The exceptions were students in the Asian subgroup of students who scored at the proficient level. Of the 672 students tested, 46% were female and 54% were male (MODESE, 2011a). Within the total fifth grade

student group, 60% of the students received free/reduced lunch assistance and 40% were students paying full-price for lunch (MODESE, 2011a). Within the fifth student group, 1% were identified as Asian, 45.6% were identified as Black, 11% were identified as Hispanic, 5% of the students were identified as Multiracial, and 37.4% of the students were identified as White (MODESE, 2011a). The majority of the fifth grade students scored at the Basic level on the Communication Arts MAP (MODESE, 2011a).

Table 3

Disaggregated Fifth Grade CA 2011MAP Achievement Levels

	Percentage of Students at Each Achievement Level			
Demographics	Below Basic	Basic	Proficient	Advanced
Asian	0.0	33.3	55.6	11.1
Black	17.0	57.3	18.0	7.7
Hispanic	6.5	54.5	28.6	10.4
Multiracial	9.4	59.4	21.9	9.4
White	9.2	43.8	30.7	16.3
Free/Reduced Lunch	17.5	52.8	20.6	9.0
Full-Priced Lunch	4.5	47.7	32.3	15.4
Male	15.7	52.2	21.2	11.0
Female	8.4	50.6	29.2	11.7
Total	12.4	51.5	24.9	11.3

Note. Adapted from *Missouri Achievement Program Achievement Level 4 Report,* by MODESE, 2011a.

The Communication Arts MAP is administered yearly in the spring to students in grades three through eight (MODESE, 2011c, 2014). MODESE utilizes the Communication Arts MAP results to determine students' level of proficiency with the

Show-Me Standards/GLE Strands (MODESE, 2011c). Annually, MODESE presents the

collective student results to the state legislature to make decisions about education; in

addition to providing the MAP results to the state legislature, MODESE also releases the

assessment information to the public during the summer following the spring assessment

sessions (MODESE, 2011c, 2014). The Communication Arts MAP scores reflect

individual student's comprehension skills along with mastery of the grade level Show-Me

Standards and GLE Strands (MODESE, 2011c). Students in the Sunshine School District

are collectively performing at the Basic level in grades three through five (MODESE,

2011a). Annually, the Sunshine School District analyzes MAP data to identify areas of

strengths and weaknesses in the area of Communication Arts by building, grade level,

subgroup, and district (Assistant Superintendent of Elementary Education, personal

communication, September 19, 2012).

      Reading comprehension. Comprehension in the most basic form is the reader's

"ability to understand and make meaning from spoken and written language" (Vaughn &

Linan-Thompson, 2004, p. 135). Fountas and Pinnell (2006) described comprehension as

an active process rather than a product. In order to understand and make meaning from

text, readers experience a complex process (Fountas & Pinnell, 2006; NICHHD, 2000a;

Vaughn & Linan-Thompson, 2004). The *National Reading Panel Report* (NICHHD,

2000a) identified three key instructional themes that affect reading comprehension.

Reading comprehension as a "complex cognitive process" (p. 4-1) and involves the

instructional themes of vocabulary instruction, strategy instruction, and teacher

preparation (NICHHD, 2000a, p. 4-1). The *National Reading Panel Report* (NICHHD,

2000a) identified vocabulary instruction as a key instructional theme due to the influence of vocabulary words in understanding text. "As a learner begins to read, reading vocabulary encountered in text is mapped into the oral vocabulary the learner brings to the task. When the word is not in the learner's oral vocabulary, it will not be understood when it occurs in print" (NICHHD, 2000a, p. 4-3). Strategy instruction was the second key instructional theme of reading comprehension identified in the *National Reading Panel Report* (NICHHD, 2000a). Strategy instruction provides readers with an awareness of their level of comprehension while reading and prepares readers with coping skills when encountering complex text (Fountas & Pinnell, 2006; NICHHD, 2000a). The third instructional theme identified in the *National Reading Panel Report* (NICHHD, 2000a) addressed teacher preparation.

Students with strong comprehension skills make reading appear effortless; however, they combine all areas of literacy simultaneously. Proficient readers, readers with the ability to decode and understand text, perform separate tasks while reading (Fountas & Pinnell, 2006; Kuhn, 2003). Struggling readers, readers lacking the ability to recognize words and unable to understand text, are associated with poor comprehension (Rasinski, 2000). Rasinski (2000) described proficient readers as having better comprehension due to the ability to recognize words with ease. "Good readers read words rapidly and accurately, set goals for reading, note the structure and organization of text, monitor their understanding while reading, create mental notes and summaries, anticipate what will happen in the text, and revise and evaluate their thinking as they read" (Vaughn & Linan-Thompson, 2004, p. 101). "Slow, dysfluent reading, is linked to

poor comprehension. This leads to students reading less, which in turn results in their making slower progress in reading than students who read at a more normal rate" (Rasinski, 2000, p. 147).

The Executive Summary in the 2011 NAEP reports reading comprehension in fourth grade students has not changed (U.S. Department of Education, 2011). "Students responded to questions designed to measure their reading comprehension across two types of text: literary and informational" (U.S. Department of Education, 2011, p. 1). Reading comprehension was linked to student performance throughout the report. The purpose of the assessment was to gather information about student performance and their ability to understand a variety of text and respond to questions (U.S. Department of Education, 2011). Achievement levels are assigned to each student based on the accuracy of the responses (U.S. Department of Education, 2011). The achievement levels provide a summary of the reading comprehension skills and behaviors students performing at that level should possess (U.S. Department of Education, 2011). There are three possible achievement levels; basic, proficient, and advanced with scale score ranges from 0 to 500 (U.S. Department of Education, 2011). Students earning proficient and advanced achievement levels are considered stronger readers based on their ability to read and comprehend text (U.S. Department of Education, 2011).

Reading fluency. The 2000 *National Reading Panel Report* brought public attention to reading fluency by summarizing reading fluency research, classroom instructional practices, and assessment techniques (NICHHD, 2000b). The report also included the evolving definition of reading fluency. The original definition of reading

fluency in *The Literacy Dictionary* (NICHHD, 2000b) was, "fluency is freedom from word identification problems" (pp. 3-6). While there is not one universally recognized definition of fluency, the behaviors of fluent readers are universally described among researchers (Hall, 2006; Kuhn, Schwanenflugel, & Meisinger, 2010; Rasinski, 2010). The definition of reading fluency is dependent on whether the individual is reading orally or silently (Rasinski, 2010; Topping, 2006). The fluency definitions address either how the reader sounds while reading or the amount of meaning gained by the reader while reading (Rasinski, 2010; Topping, 2006). Hoffman (1987) described fluent oral readers as having the ability to understand and create meaning from the text. In addition to Hoffman's description, the *National Reading Panel Report* (NICHHD, 2000a) characterized oral fluent readers as having the ability to, "read the text with speed, accuracy, and proper expression" (p. 11). Duffy (2003) captured the type of reading, oral and silent, in his definition of reading fluency: fluency is the ability to orally and silently read text smoothly with appropriate phrasing and intonation" (p. 36). Pikulski and Chard (2005) stated, "Reading fluency refers to efficient, effective word recognition skills that permit a reader to construct the meaning of text. Fluency is manifested in accurate, rapid, expressive oral reading and is applied during, and makes possible, silent reading comprehension" (p. 510). Topping (2006) defined silent reading fluency as "the extraction of maximum meaning at maximum speed in a relatively continuous flow, leaving spare simultaneous processing capacity for other higher-order processes" (p.173). Topping (2006) also defined oral reading as "more demanding, since among the higher-order processes, the reader must have an awareness of audience needs and the capability

to manage the prosodic demands for expressiveness" (p.173). Prosodic demands include the reader's attentiveness to phrasing, rhythm, pitch, pausing, and stress while reading text (Topping, 2006). Rasinski and Padak (2008) described fluent readers as individuals who "read efficiently, expressively, and meaningfully for the purpose of constructing meaning from the text" (p. xii).

While the definitions of reading fluency vary, there are similar components in all. Researchers have primarily focused on automaticity, comprehension, or prosody within the definition (Chard, Piluski, & McDonagh, 2006; Daane et al., 2005; Duffy, 2003; Hoffman, 1987; Rasinski, 2006; Rasinski & Padak, 2008; Topping, 2006). The majority of the definitions include statements about speed and accuracy. Some of the reading fluency definitions include phrases about how readers develop meaning from the text or statements describing how the reader sounds while reading aloud.

The assessments available to measure reading fluency are as diverse as the definitions of reading fluency. Oral reading fluency measures monitor the number of words read aloud correctly (WRC) and the number of errors a student makes within a specified time frame (Hall, 2006). There are products and resources available for educators to purchase to assess reading fluency. The majority of the products and resources available involve reading passages aloud within established time limits; however, other assessments are available that assess reading fluency through word lists and letter naming (Moats, 2005).

AIMSweb reading-curriculum based measure. AIMSweb is a web-based system that offers a variety of Curriculum-Based Measures (CBM). "It [AIMSweb]

offers multiple assessments for universal screening and progress monitoring, web-based

data management, charting, and reporting" (Pearson Education, 2011a, para. 1). The

AIMSweb CBMs are standardized timed tests used to efficiently measure students'

acquisition of basic skills (Pearson Education, 2011a). AIMSweb CBMs are designed to

be used as universal screeners and progress monitoring tools. The universal screeners are

intended to be administered three times per year to all students during the benchmarking

time frames of fall, winter, and spring (Pearson Education, 2011a). The purpose of the

fall, winter, and spring benchmarking is to produce immediate data about how individual

students and large groups of students are progressing. The R-CBM Benchmarks provide

educators with simple, accurate, and efficient formative data about student achievement

(Shin & Shin, 2002a). Teachers administer the R-CBM Benchmarking process to gain

immediate feedback about student specific skill progress. In 2011, Pearson Education

(2011a) offered ten curriculum-based measures in the areas of reading, math, writing, and

spelling, which were accessible through the AIMSweb System and Software Program.

Educators can obtain significant information about a student's oral reading

fluency by administering the R-CBM fluency probes. The R-CBM probe results provide

educators information about individual students, groups of students, and program needs

(Shinn & Shinn, 2002a). To encourage educators to administer the R-CBM Benchmarks,

Shinn and Shinn (2002a) identified three main reasons. The first reason to administer the

R-CBM is to identify students requiring reading fluency intervention. The second reason

is to measure students' fluency progress over the course of the year. This allows

educators to monitor individual fluency progress from one benchmark to another within

the same school year. The final reason to administer the R-CBM is to make fluency

program evaluation decisions (Shinn & Shinn, 2002a).

The R-CBM Benchmark fluency passages provide quantitative and qualitative

data (Shinn & Shinn, 2002a). The quantitative data provides educators with knowledge

about how the general population is responding to the current reading fluency instruction

provided within the district purchased reading fluency program. The qualitative data

provides educators with information about how students are utilizing individual reading

fluency strategies while taking the R-CBM (Shinn & Shinn, 2002a). By examining both

the quantitative and qualitative data, educators can determine the reading fluency

program to best meet the needs of the general population and individual students.

During the 2007-2008 school year, the Sunshine District purchased AIMSweb as

a universal screening assessment for the elementary buildings and continued to renew its

AIMSweb subscription each year through the 2014-2015 school year (Assistant

Superintendent of Elementary Education, personal communication, September 5, 2014).

The Sunshine School District utilized previous benchmarking data collected from the

AIMSweb assessments administered during the years 2007 to 2010 to make decisions

about the elementary reading program (Assistant Superintendent of Elementary

Education, personal communication, September 3, 2010). The data collected from

AIMSweb, was one of the factors causing the district to make a change from the Four

Blocks Literacy Model to a more comprehensive communication arts program Rigby's

Literacy by Design (Assistant Superintendent of Elementary Education, personal

communication, September 3, 2010).

Rigby Literacy by Design. Rigby Literacy by Design is a comprehensive literacy program written for students in grades kindergarten through fifth grade which is instructor led and includes direct reading instruction in the areas of fluency, comprehension, phonemic awareness, phonics, and vocabulary (Hoyt et al., 2008). The developers of the Rigby Literacy by Design program suggested instructional routines and timeframes for each of the communication arts components and recommended 90 minutes of communication arts instruction per day. The timeframes included 30 minutes for phonics and phonemic awareness instruction, 20 minutes for vocabulary and comprehension instruction, 20 minutes for reading instruction, 5 minutes for reading fluency instruction, and 15 minutes for writing instruction (Hoyt et al., 2008). The Gradual Release of Responsibility model was utilized within the Rigby Literacy by Design model to support students within both whole group and small group reading instruction (Hoyt et al., 2008).

Rigby's Literacy by Design's Gradual Release of Responsibility model includes a five step process: Modeling, Guided Practice, Independent Practice, Reflection, and Extension of the Learning (Hoyt et al., 2008). The Modeling step, within the Gradual Release of Responsibility model, begins with the teacher orally thinking through fluency strategies for the students (Hoyt et al., 2008). The Rigby Literacy by Design program preselects the strategies for each whole and small group lesson, allowing the teacher time to model the identified strategy for the students (Hoyt et al., 2008). During the modeling step, the teacher does all of the reading and thinking aloud while the students observe (Hoyt et al., 2008). Guided Practice is the second step of the Gradual Release of

Responsibility model; during this step, the teacher and the students attempt to apply the identified strategy together; the teacher and the students share the reading and thinking during this step (Hoyt et al., 2008). The teacher offers support and feedback to the students as they develop their ability to apply the identified strategy while reading together (Hoyt et al., 2008). The third step of the model is Independent Practice. Students apply the identified strategy while reading alone; the students individually read and think through the text (Hoyt et al., 2008). The Reflection step follows Independent Practice; during the Reflection step, the students individually consider their strategy application (Hoyt et al., 2008). "When learners bring their behaviors with text to a conscious level where they can analyze it, understand it, and become a deliberate participant in their own growth, they take control of their own comprehension" (Hoyt et al., 2008, p. T93). Extension of Learning is the final step in the Gradual Release of Responsibility model. The Extension of Learning step is accomplished when students intentionally apply the identified strategy in a new context (Hoyt et al., 2008). Following the Extension of Learning step, an assessment is conducted to determine if additional instruction is required or if a new strategy can be introduced.

The Sunshine School District adopted the Rigby Literacy by Design program in 2009, purchasing the program for all ten elementary schools. Elementary teachers and administrators participated in a two-day training session prior to implementing the program. Following the Rigby training sessions, the professional development responsibilities shifted to the teacher-leaders within the Sunshine School District (Assistant Superintendent of Elementary Education, personal communication, September

3, 2010). Professional development trainers provided the training to the Sunshine teachers, administrators, and Teaching and Learning Coaches (Communication Arts Curriculum Coach, personal communication, January 10, 2012). The Sunshine School District followed the recommended program components, including whole and small group instruction, for a total of 90 minutes per day as outlined by the developers of Rigby Literacy by Design. Students in grades three through five received a minimum of 40 minutes per week of dedicated reading fluency practice, as directed by the Rigby developers (Teaching and Learning Coach, personal communication, September 6, 2011). The 40 minute weekly fluency practice occurred within the 90 minute Literacy by Design daily routine (Teaching and Learning Coach, personal communication, September 6, 2011).

Statement of the Problem

For the purpose of this study, fluent readers were defined according to Rasinski and Padak (2008) as individuals who "read efficiently, expressively, and meaningfully for the purpose of constructing meaning from the text" (p. xii). Fluent reading is an outcome of the complex process of reading instruction that begins in kindergarten and continues through second grade (Moats, 2001; Rasinski, 2010). Traditionally, during the primary grades, greater emphasis is placed on reading fluency instruction and practice (Rasinski, 2010). During the primary grades, kindergarten through second, instruction occurs on individual letters, words, phrases, sentences, and books (Moats, 2001). As students enter grade three, the reading instructional focus shifts from learning to read to understanding text (Moats, 2001). During the upper elementary grades, reading fluency

becomes less of an instructional focus and more of an expected practice (Rasinski, 2010). Due to the complex nature of reading fluency, it is difficult for practitioners in classrooms to understand the impact reading fluency might have on standardized assessment scores. Educators in the Sunshine School District do not know if there is a relationship between reading fluency, as measured by R-CBM scores, and reading performance, as measured by the MAP Communication Arts scale scores for students in grades three through five (Assistant Superintendent of Elementary Education, personal communication, January 10, 2012).

Purpose Statement

The purpose of this study was to determine if a relationship exists between reading fluency, as measured by scores on the R-CBM Benchmark assessments, and student performance, as measured by scale scores on the Communication Arts MAP assessments. A secondary purpose of this study was to determine if grade level, gender, race/ethnicity, and socio-economic status affected the relationship between the R-CBM Benchmark scale score and student performance, as measured by scale scores, on the Communication Arts MAP.

Significance of the Study

Of the third through fifth grade students in the Sunshine School District, 64.4% performed at the basic or below basic level on the 2011 Communication Arts MAP assessment (MODESE, 2011a). This research study could influence instructional practices in the Sunshine School District if there is a relationship between reading fluency as measured by R-CBM scores and MAP performance scale score data. If this is

the case, Sunshine School District would potentially have more knowledge about how to

adequately focus their instructional time and incorporate additional reading fluency into

the daily practice for students in grades three through five. Educators could also know

the extent that R-CBM scores can be used to focus instruction on identified fluency

deficits detected through the oral fluency assessments. The identification of the fluency

deficit areas could allow educators to identify additional opportunities to prepare

individuals for proficiency as measured by the MAP achievement levels. The findings

from this research study could provide the Sunshine School District and other districts

within the state of Missouri with information about reading fluency instructional focus

and practice for students in grades three through five. The field of education could

benefit from the research on reading fluency and performance on the MAP. If a

correlation is determined between fluency and performance on the MAP, there could be a

correlation between fluency and other communication arts performance assessments. In

addition, there are students who continue to struggle in the area of reading and teachers

who do not understand the area on which to focus. With this new information, teachers

may be able to better plan for reading instruction within their classrooms.

Delimitations

According to Lunenburg and Irby (2008), "delimitations are self-imposed

boundaries set by the researcher on the purpose and scope of the study" (p. 134). This

study included students from five elementary schools within one tier-two urban Missouri

school district. Since only five of the ten elementary schools in the district were selected

for the study, the sample size could limit the results of the study. The reading fluency

measure was limited to the AIMSweb R-CBM spring benchmark scores. In addition, only third, fourth, and fifth grade students with Communication Arts MAP scores and AIMSweb R-CBM scores were included in this study. Lastly, data was used only from the 2010-2011 school year. These delimitations may impact the ability to generalize the results beyond this Missouri tier-two urban school district.

Assumptions

Lunenburg and Irby (2008) stated, "assumptions are postulates, premises, and propositions that are accepted as operational for purposes of the research" (p. 135). The study was based on the following assumptions:

1. All teachers administered the communication arts portion of the MAP with fidelity in accordance with the MAP guidelines.

2. All teachers administered the R-CBM portion of the AIMSweb Benchmark assessments with fidelity in accordance with the AIMSweb administration and scoring manual.

3. All Communication Arts MAP and R-CBM AIMSweb data utilized in this study was accurately recorded.

4. All students applied their best effort on both the Communication Arts MAP and R-CBM assessments.

Research Questions

The following research questions guided this study.

Research question one. To what extent is there a relationship between reading fluency, as measured by the R-CBM Benchmark scale score, and student performance, as measured by the MAP Communication Arts scale score?

Research question two. To what extent is the relationship between reading fluency, as measured by the R-CBM Benchmark scale score, and student performance, as measured by the MAP Communication Arts scale score, affected by grade level?

Research question three. To what extent is the relationship between reading fluency, as measured by the R-CBM Benchmark scale score, and student performance, as measured by the MAP Communication Arts scale score, affected by gender?

Research question four. To what extent is the relationship between reading fluency, as measured by the R-CBM Benchmark scale score, and student performance, as measured by the MAP Communication Arts scale score, affected by race/ethnicity?

Research question five. To what extent is the relationship between reading fluency, as measured by the R-CBM Benchmark scale score, and student performance, as measured by the MAP Communication Arts scale score, affected by socio-economic status?

Definition of Terms

The following terms are referenced throughout this research study.

At-risk student. A student may be considered at-risk due to characteristics that may adversely impact a student's ability to perform at the desired standard. At-risk

characteristics may include gender, race/ethnicity, and socio-economic status (Fantuzzo, LeBoeuf, & Rouse, 2013).

Automaticity. The "capacity for performance without conscious attention" is called automaticity (Moats, 2005, p. 4). Automaticity is "the ability to perform a task while devoting little attention to the reading task" (Tracey & Morrow, 2006, p.136).

Comprehension. Comprehension is the reader's "ability to understand and draw meaning from spoken and written language" (Vaughn & Linan-Thompson, 2004, p. 135).

Dysfluent. A reader is considered dysfluent when he/she displays one or more of the characteristics of lacking underlying skills in phonological awareness and/or phonics, slow speed, word knowledge, and limited comprehension (Moats, 2005). Readers can also be considered dysfluent if the reading rate is too fast and interferes with punctuation and meaning (Rasinski, Rikli, & Johnston, 2009).

Missouri Assessment Program (MAP) Scale Scores. The writers of the MAP, CTB/McGraw-Hill, configure a MAP scale score based on correct responses provided by the student. "The scale scores describe achievement on a continuum that in most cases spans the complete range of Grades 3-8" (MODESE, 2011c, p. 4). These scale scores vary depending on the content areas; therefore, cannot be compared. The range of scores for Communication Arts range from 455 to 875 (MODESE, 2011c).

Missouri Assessment Program (MAP) Achievement Levels. "Student performance can be reported in terms of four performance, or achievement levels, that describe a pathway to proficiency. Achievement-level scores provide a description of what students can do in terms of the content and skills assessed, as described in the Grade

Level Expectations" (MODESE, 2011c, p. 4). The achievement levels options are advanced, proficient, basic, and below basic (MODESE, 2011c).

No Child Left Behind (NCLB). The No Child Left Behind Act (2001) resulted in a federal reform for elementary and secondary education. NCLB contained four components of accountability, research-based best practices, expanded parental options, and greater local control (U.S. Department of Education, 2004). As part of the accountability component, NCLB set the expectation that by 2014 every child would score in the proficient or advanced range on the MAP assessment in the areas of communication arts and mathematics (U.S. Department of Education, 2004).

Prosody. Prosody is an element of fluency. Prosody is defined as "reading with expression" (Kuhn, 2003, p. 131). Attributes to prosody are pitch, intonation, emphasis, rate, patterns of language, and appropriate phrasing (Kuhn, 2003).

Race/Ethnicity. A particular ethnic affiliation or group (Merriam-Webster Online Dictionary, 2012). For the purpose of this study, the race/ethnic groups were identified as Asian, Black, Hispanic, Multiracial, and White. MODESE provides a common definition for each race/ethnic group; however, "Racial/ethnic designations, as used by the U.S. Department of Education, Office of Civil Rights, do not denote scientific definitions of anthropological origins" (MODESE, 2011-2012, p. 277). Race/ethnicity is determined by how the parent or guardian identifies the students during enrollment (MODESE, 2009). DESE categorizes the "Asian race/ethnicity as a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent. The Black race/ethnicity is categorized as a person having origins in any of

the original peoples of the Black racial groups of Africa. The Hispanic race/ethnicity is categorized as a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race. The Multiracial race/ethnicity is a person having origins from more than one racial heritage. The White race/ethnicity is a person having origins in any of the original peoples of Europe, North Africa, or the Middle East" (MODESE, 2009, pp. 121-122).

   Reading-Curriculum Based Measure (R-CBM). The R-CBM is a timed oral reading fluency measure. The R-CBM probes are written at grade level and include a range of 250-300 words per passage. Students are given three R-CBM passages during one testing setting and one minute to read each passage. At the conclusion of the three passages, the examiner finds the median score of WRC and the median score of the errors. The scores are recorded in the WRC over the number of errors (Shinn & Shinn, 2002a).

   Reading-Curriculum Based Measure (R-CBM) Benchmark. The R-CBM benchmark passages measure reading fluency utilizing standardized leveled passages (Shinn & Shinn, 2002a). The R-CBM benchmark passages are administered and scored in a standardized manner (Shinn & Shinn, 2002a). "Three Standard Benchmark Reading Assessment Passages are used in each grade (1-8) to develop school reading benchmarks" (Shinn & Shinn, 2002a, p.9). "Benchmarking is designed to inform instruction to improve achievement. Benchmarks are given three times a year for all students; using grade-level assessment probes [passages]" (Pearson Education, 2012, p. 4).

Socio-economic Status. "The Free and Reduced-Priced Lunch (FRPL) program counts, although informative about the economic status of a school district, will not match the official federal poverty measure. Based on income guidelines published by the U.S. Department of Health and Human Services, FRPL has different income levels for eligibility." (U.S. Census Bureau, 2010, para. 4). The socio-economic status determines the level of financial assistance families with school-aged children receive for fee-based expenses (U.S. Census Bureau, 2010). Lunch assistance is one example of fee-based expenses. Based on the income guidelines established by the FRPL, a socio-economic status is determined for students (U.S. Census Bureau, 2010). Students are placed into one of the three categories free, reduced, or full-priced lunch assistance. "For the 2011 SAIPE estimates, the official poverty threshold for a family of four containing two related children under age 18 was $22,811, compared with $23,050 set by the 2012 poverty guidelines" (U.S. Census Bureau, 2012, para. 6).

Overview of Methodology

A quantitative correlational research design was utilized for this study. The researcher collected and analyzed third through fifth grade students' AIMSweb R-CBM Benchmark median scores and 2011 Communication Arts MAP scale scores from five elementary schools within the Sunshine School District. The researcher's statistical methodology included calculating correlation coefficients, conducting one sample t tests for the statistical significance of the coefficients, and conducting Fisher's z tests to compare correlational coefficients.

Summary or Organization of the Study

Chapter one included an introduction to the research study, the significance of the study, statement of the problem, purpose of the study, delimitations, assumptions, research questions, and definition of terms. The final section of chapter one briefly addressed the overview of methodology for the study. Chapter two is a review of the literature, which includes the theoretical foundations and conceptual framework of the study. Chapter three is a description of methodology used in the research to include the research design, population and sample, sampling procedures, instrumentation, measurement, validity and reliability, data collection procedures, data analysis and hypothesis tests, and limitations as related to this study. Chapter four includes the descriptive statistics, hypothesis testing, and additional analysis. Finally, chapter five provides a study summary including an overview of the problem, purpose statement and research questions, a review of the methodology, the major findings of the study, findings related to the literature, implications for action, and recommendations for future research.

Chapter Two

Review of Literature

This chapter provides a background of information and literature associated with reading fluency and student performance at the elementary level. This chapter is divided into eight distinct sections. The sections explore the history of reading fluency, provide an overview of reading fluency, and describe two forms of assessment: Reading Curriculum-Based Measures (R-CBMs) and the Missouri Assessment Program (MAP). The sections also address reading performance and how varying student attributes influence that achievement, address race/ethnicity, investigate gender, explore age and grade level, and examine socio-economic statuses.

History of Reading Fluency

Educators have spent many years studying the difficulties related to acquisition of reading skills. The research in this area has largely focused on fluency, comprehension, and decoding. While each of these components is considered to be important in the acquisition of reading skills, the focus of this research is on the area of reading fluency.

Early theories and perspectives. Mental discipline theory, created by the philosopher Plato and further developed by Aristotle, originated the concept of repetition and practice which is foundational to all theories of reading fluency. These ancient Greek philosophers developed a theory which acknowledged the brain as a muscle that must be routinely exercised for optimal performance (Tracey & Morrow, 2006). Mental discipline theory's primary concept was that learning strengthens the mind, resulting in intellectual behavior (Tracey & Morrow, 2006). Both automaticity and repeated readings

function under the premise that routine practice results in rapid word recognition, which frees the reader to think about the text. Mental discipline theory was foundational to the automaticity theories and research (Tracey & Morrow, 2006).

During the late 1890s, Cattell published research about the reading process. The research conducted by Cattell identified a connection between reading speed and sentences (Samuels, 2006b; Tracey & Morrow, 2006). Participants in the study were given individual letters, words in isolation, and sentences. Cattell's research found that the reader's speed increased when more context was provided (as cited in Samuels, 2006b; Tracey & Morrow, 2006). Research indicated that subjects identifying single random letters moved at a slower pace than ones identifying single letters within a familiar word (Samuels, 2006b). Research also showed that reading speed and accuracy increased when the readers were given sentences to read rather than single words in random orders (Samuels, 2006b; Tracey & Morrow, 2006). The work of Cattell was not further developed until the 1950s during the cognitive processing era (Samuels, 2006b; Tracey & Morrow, 2006).

The cognitive processing perspectives furthered the concept of reading fluency (Samuels, 2006b; Tracey & Morrow, 2006). The cognitive processing perspectives viewed reading as an internal process that is unobservable (Samuels, 2006b; Tracey & Morrow, 2006). Cognitive psychologists believe humans are active learners which causes them to continuously reconstruct meaning based on new experiences and current knowledge (Samuels, 2006b; Tracey & Morrow, 2006).

Rauding theory, originated by Carver in 1977, furthered the cognitive processing perspectives by introducing new terminology to the reading community (as cited in Carver & Leibert, 1995). Rauding is the cognitive process that is generally considered reading and occurs when the reader is reading at a constant rate with minimal effort (Carver & Leibert, 1995; Tracey & Morrow, 2006). There are two efficiency levels that readers exhibit within this theory. One is the rauding accuracy level, which indicates the reader's vocabulary knowledge, and the second level is the rauding rate, which reveals the reader's pace of reading (Carver & Leibert, 1995; Tracey & Morrow, 2006). The rauding accuracy level is accomplished by reading on-level text and the rauding rate is achieved by reading below-level text (Carver & Leibert, 1995). The on-level text provides readers opportunities to encounter new vocabulary and the below-level text offers readers practice to improve rate (Carver & Leibert, 1995; Tracey & Morrow, 2006). Carver and Leibert (1995) conclude individuals need to experience text both on and below one's reading ability.

Early reading fluency in America. The importance of reading fluency in American schools has varied over the past two centuries. Many researchers and studies divide the timeframes into eras based on the popularity of reading fluency. Rasinski (2006, 2010) addressed the role fluency played in schools during the 1800s. Due to the agrarian culture, many families had one reader with the responsibility to read to others (Rasinski, 2006, 2010). In addition to having few readers within the family, many families also had limited access to books (Hoffman, 1987). During the 1800s, oral reading was a skill used for entertainment, thus the schools often placed heavy emphasis

on oral reading and recitation (Hoffman, 1987). Samuels (2006a) divided the fluency

eras into two distinct time periods within the 20th century: the role of reading fluency in

schools from 1900-1970 and the role of reading fluency in schools from 1970 to the

present. At the beginning of the 20th century, the primary emphasis on oral reading

fluency was on the decline. The 1900s brought about the prominence of silent reading

among researchers (Samuels, 2006a).

In the early 1900s, researchers began the first shift away from reading fluency in

the United States. As access to text increased in the 20th century, silent reading became

the most efficient practice for educators to implement (Rasinski, 2006; Samuels, 2006b).

The shift in practice increased the volume of reading students completed within the

school year (Rasinski, 2006; Samuels, 2006b). Educators questioned the importance

placed on oral reading, and the role of silent reading and reading comprehension became

the prioritized instructional reading practices (Paige, Rasinski, & Magpuri-Lavell, 2012;

Rasinski, 2006; Samuels, 2006b). The time frames of the silent reading shifts were not

consistent across the country. Some school districts added the silent reading instructional

practice to their course of studies as early as 1902 while others were as late as the 1940s

in the adoption of this practice (Rasinski, 2006; Samuels, 2006b). The 1900s also

brought about the prominence of silent reading among researchers (Samuels, 2006a).

Samuels (2006a) examined the role of reading fluency in schools from 1900-1970 and

from 1970 to the present.

During the 1960s and 1970s, researchers LaBerge and Samuels developed their

automaticity theory, later to become the automatic information processing model

(Samuels, 1979, 2006a, 2006b; Tracey & Morrow, 2006). According to automaticity theory, reading occurred in two phases when students were not automatic with word recognition. The first phase was decoding unfamiliar words and the second phase was attending to the meaning of the text (Samuels, 2006a). Automaticity theory hypothesized that struggling students exert all of their effort into decoding the unknown words which causes an inability to understand the meaning (Paige et al., 2012; Rasinski, 2006; Samuels, 1979). This theory combined fluency and comprehension for the first time (Samuels, 2006a, 2006b). Automaticity theory was the first modern reading fluency theoretical concept (Rasinski, 2006). Through the work of LaBerge and Samuels, automaticity theory later created the use of repeated readings, which is still a current practice in the 21st century (Samuels, 1979, 2006a, 2006b).

Repeated reading is a technique with the purpose to develop automatic word recognition which leads to reading fluency (Samuels, 1979, 2006a, 2006b). The repeated readings process has evolved since its initial conception from Automaticity Theory. In the mid-1970s, Samuels (1979) conducted initial repeated readings work with intellectually challenged students in the Minneapolis School District. He used 50 to 200 word passages with the students to read and reread over a defined period of time. This practice was continued with the students until the criterion of 85 words read per minute was achieved (Samuels, 1979). While the students were reading the passages, the teachers would record number of words read per minute, the word accuracy rate, and the number of errors (Samuels, 1979, 2006a, 2006b). The repeated readings data were charted and graphed to show students' growth over time. One of Samuels' findings

showed how students participating in the repeated reading process increased their time on the initial read as they progressed to new text (Rasinski, 2006; Samuels, 1979). The repeated reading practice increased a student's ability to quickly recognize words in new text which caused an increase in fluency (Rasinski, 2006; Samuels, 1979,).

Similar repeated readings work was also conducted by Chomsky (1978) using the neurological impress method (Rasinski, 2006; Samuels, 2006b). Neurological impress method involved students listening to fluent readers while reading (Rasinski, 2006; Samuels, 1979, 2006b). Chomsky's (1978) repeated readings followed a similar structure as Samuels with the distinct difference of utilizing recorded books for students to listen to while following along with the book (Rasinski, 2006; Samuels, 2006a). This practice continued until students thought they could read the book fluently (Rasinski, 2006). Chomsky's (1978) neurological impress method, similar to Samuels', resulted in the student's ability to transfer the word recognition into unfamiliar text (Rasinski, 2006). Through the work of O'Shea, Sindelar, and O'Shea (1987), four repeated readings were found to be the most efficient number of times for students to read the same passage. Deno (2003) took a similar approach to repeated readings when he created the curriculum-based measurement (CBM) to monitor students' fluency growth. The CBM was administered for one minute on a weekly basis using text characteristic of passages used during instruction (Deno, 2003). The students read similar text each week to monitor and measure progress (Deno, 2003).

While the emphasis on oral reading fluency declined in the 1900s, many teachers maintained the round-robin teaching practice during the second half of the 20th century

(Rasinski, 2006). Round-robin reading consists of teachers calling on individuals to read unrehearsed text aloud for the purpose of monitoring students' word recognition (Opitz & Rasinski, 1998; Rasinski, 2006). By the end of the 20th century, reading fluency was not considered a primary reading component (Kuhn et al., 2010; Rasinski, 2006). Reading fluency began the 20th century as the most prioritized instructional reading practice in American schools and ended the century as one of the least prioritized reading techniques (Rasinski, 2006).

Overview of Reading Fluency

Since the publication of the National Reading Panel's Report in 2000, reading fluency has emerged again as a prioritized reading component in American schools. While it has not reached the same highly prioritized status as in the beginning of the 20th century, reading fluency has returned as one of the daily components occurring in schools (Kuhn et al., 2010; Rasinski, 2006). The role of reading fluency in the classroom shifts depending on student reading ability, text complexity, background knowledge, and purpose (Samuels, 2006b). Due to these factors, reading fluency is situational and inconsistent (Samuels, 2006b). A student's reading ability will directly influence the ability to read at a fluent rate. In addition to reading ability, text complexity effects reading fluency (Samuels, 2006b). Students may demonstrate fluency while reading grade level text, but may not read with fluency when faced with above grade level text (Samuels, 2006b). Fluency is impacted by the knowledge the reader possess about the text topic (Samuels, 2006b). If students are familiar with the topic, the students will not be as consumed by the vocabulary and information within the text. Furthermore, the

purpose for reading can also influence reading fluency. If the purpose is assessment of reading fluency versus the development of reading fluency, students will approach the text in a different manner. Research conducted during the end of the 20th century reprioritized the role of reading fluency in improving reading accuracy and developing comprehension (Samuels, 2006b).

Methods of reading fluency instruction. The methods of teaching reading fluency vary within each model, but have similar foundational constructs. The majority of these methods were developed for remedial reading programs and disabled students (Rasinski, 1989). Originally, these approaches were developed for intensive reading support working with individual students or small groups of students; however, many of these methods have been implemented in large group and classroom settings (Rasinski, 1989, 2010). Additionally, these methods were originally designed to provide instruction to students with identified learning disabilities (Rasinski, 1989).   These foundational methods are modeled fluent reading, repeated reading, assisted reading, and phrase-cued reading (Rasinski & Mraz, 2008).

Modeled fluent reading is a method of fluency instruction implemented in classrooms from the early 1800s. All readers need to hear exemplars of text read aloud (Rasinski, 2010; Zutell & Rasinski, 1991). The modeled fluent reading method is designed for adults to read aloud children's literature to students on a routine basis (Rasinski, 2010; Zutell & Rasinski, 1991). When teachers regularly read aloud to students, the teacher is providing examples of how fluent readers sound (Rasinski, 2010; Zutell & Rasinski, 1991). Modeled fluency typically occurs during the primary grades of

elementary school (Paige et al., 2012). The common expectation is for students to develop reading fluency at the end of the primary grades (Paige et al., 2012). The modeled fluent reader provides authentic examples of how fluent readers sound, attend to syntactic changes, adjust to rhythms, recognize patterns of language, display control over the language, adjust the voice inflection and intonation, and make meaning of the text simultaneously (Rasinski & Padak, 2008; Rasinski, 2010; Stayter & Allington, 1991; Zutell & Rasinski, 1991).

Within the modeled fluency method, there are some specific practices developed for teachers to utilize with students. One of the specific practices is the Oral Recitation Lesson (ORL) (Hoffman, 1987; Rasinski, 2006, 2010). The ORL practice begins with the teacher reading a passage to students while modeling proper prosody (Hoffman, 1987; Rasinski, 2006, 2010). The teacher then summarizes the text for students (Hoffman, 1987; Rasinski, 2006, 2010). The next step in the ORL practice involves two tasks for the students to complete. The first task requires the student to practice reading the same passage with the teacher while the second task requires the students to individually practice and perform the passage for the teacher (Hoffman, 1987; Rasinski, 2006, 2010). During the performance, the teacher assesses the students' for fluency (Hoffman, 1987; Rasinski, 2006, 2010). Research revealed that students reading well below grade level benefitted from the ORL approach (Rasinski, 2010). These struggling readers demonstrated progress in both reading fluency and comprehension (Rasinski, 2010).

Reading is a complicated process that requires precise attention to text. When models are provided, they provide developing readers insight into the multifaceted process that occurs with each encounter of text (Rasinski, 2010). An essential practice in the modeled fluent reader method is to discuss the thinking required while reading text (Zutell & Rasinski, 1991). Fluent readers can be described as reading with minimal effort and with a natural verbal conversational sound (Paige et al., 2012; Rasinski, 2010). Without the discussion provided by the fluent reader model, developing and struggling readers will be unaware of all the essential factors readers are obligated to attend to while reading (Rasinski, 2010). The modeled fluent reading method is a common practice used in classrooms today.

Another method of fluency instruction utilized in classrooms across history is repeated readings. The method of repeated readings was developed by Samuels (1979, 2006a, 2006b). Repeated readings method was initially designed to use with students with intellectual deficits, but the process was also found effective for general education students (Rasinski, 2006; Samuels, 1979). The repeated readings method consists of students reading and rereading short passages for the purpose of completing 85 words within a one minute time frame (Samuels, 1979). Samuels (1979) defined short passages as text containing between fifty to two-hundred words. The length of the passage was dependent on the student's reading skills.

The repeated readings process begins with students initially reading the selected passage orally to a teacher. While the student is reading the passage, the teacher graphs the student's speed, accuracy, and number of errors (Samuels, 1979, 2006a, 2006b).

After the initial reading, the student practices the same passage independently until the teacher listens to the student again and graphs the results of the practiced passage (Samuels, 1979, 2006a). The student continues to reread the current passage until the 85 word per minute criteria is met (Samuels, 1979, 2006a, 2006b). Once students meet the word per minute criteria, they are issued a new passage and the process is repeated (Samuels, 1979).

Samuels' repeated readings method emphasized speed over accuracy; however, the student repeated reading graphs indicated that when the speed improved, the accuracy also improved (Samuels, 1979, 2006a). As students continued with the repeated readings method, the speed of the initial reading improved over time. In addition to the increase in speed, the students experienced an improvement in reading comprehension through the repeated readings method. As the students spent more time with the passage, their understanding of the text improved. This was due to a decrease in the direct attention to individual letter sounds and/or words (Rasinski, 2006; Samuels, 1979). One technique that Samuels (1979) recommended was to pose different types of comprehension questions with each rereading of the assigned passage. Teachers were directed to use passages from books. The books were divided up into smaller sections of approximately 200 words (Samuels, 1979). As the student met the 85 word per minute criteria, the next section of the book was assigned to the student (Samuels, 1979). This repeated readings method led to automaticity of text, leaving the reader to attend to comprehension rather than decoding words (Rasinski, 2006; Samuels, 1979, 2006a, 2006b). The implementation of the repeated reading method resulted in additional positive outcomes

for the readers participating in this instructional approach. Students participating in this method demonstrated deeper knowledge and information from the text read and practiced over time (Rasinski, 2010). The repeated reading method enhanced the reader's effectiveness with the text (Rasinski, 2010; Samuels, 1979).

Chomsky (1978) applied a variation to Samuels (1979) repeated readings method. Chomsky (1978) utilized the process of listening to one specific familiar text until the student was able to read it independently. This practice capitalized on the practice of young children memorizing a specific book after hearing the same book read repeatedly over a short period of time. This methodology was applied after studying how young children learn to read (Chomsky, 1978). Pre-kindergarten children exhibiting reading ability started with familiar books that were read to them multiple times (Chomsky, 1978). These texts appeared to be memorized by the young children; however, over a period of time, the children started applying their memorization skills to unfamiliar text (Chomsky, 1978). Therefore, the assistance of an older reader was not needed when encountering new books (Chomsky, 1978). This skill acquisition prompted Chomsky (1978) to apply the same practices as the young pre-kindergarten children to third grade students. The third grade students selected one text to hear repeatedly over a period of time via a tape recording while following along with the printed text (Chomsky, 1978). The addition of the printed text allowed the third grade students to apply their limited reading skills in an effort to transfer their decoding knowledge to unfamiliar text (Chomsky, 1978). The students read along with the recorded text to practice and then later recorded themselves reading the text aloud (Chomsky, 1978). The third grade

students participating in this variation of repeated readings exhibited the same reading

behaviors of the pre-kindergarten readers after four months of the intervention (Chomsky,

1978). The third grade students required less assistance when encountering unfamiliar

words and text, instead they sought more independence in reading and requested help

when required (Chomsky, 1978). Prior to this intervention, the students were

unsuccessful at reading full text and waited for fluent readers to support them by

supplying word-by-word assistance (Chomsky, 1978).

Through the development of the automatic information processing theory, three

levels emerged (Samuels, 1979, 2006a, 2006b; Tracey & Morrow, 2006). The first level

is identified as the non-accurate stage. In the non-accurate stage, readers are unable to

recognize words in an efficient manner (Samuels, 1979, 2006a). In the non-accurate

stage, the reader is either unable to comprehend the text, or the meaning of the text is

highly compromised due to the reader's inability to recognize the words (Samuels, 1979).

The second level is the accuracy stage (Samuels, 1979). In this stage, readers recognize

words; however, the reader is slow and inefficient (Samuels, 1979). Readers in the

accuracy stage experience poor comprehension due to dysfluent reading (Samuels, 1979).

The third level of the automatic information processing theory is the automatic stage

(Samuels, 1979). Readers in the automatic stage are able to recognize words without

hesitation (Samuels, 1979). Automatic stage readers read at a quick pace and sound like

they are speaking while orally reading (Samuels, 1979). These readers should have

adequate to superb comprehension at the automatic level (Samuels, 1979). The repeated

readings method provides opportunities for readers to master sections of text before

moving on, furthering the reader's comprehension of the material (Samuels, 1979). While there are several variations of the repeated reading method implemented, the distinct difference of the authentic method is the requirement of the reader mastering the passage, with the 85 words per minute criterion, before advancing to the next section.

The assisted reading method developed by Chomsky (1978) was based on the concept that children develop reading fluency skills based on their exposure to text. The assisted readings method was developed from the reading development of children from academic families (Chomsky, 1978). The assisted readings method reviewed characteristics of children whose families frequently read and discussed text (Chomsky, 1978). The primary characteristic of children from these families was the children's ability to read familiar books, even at young ages (Chomsky, 1978). These students often saw themselves as readers and were confident in their approach to text. The students only requested assistance from proficient readers when they needed help (Chomsky, 1978). These same students were so confident in their reading abilities that they often dismissed the adults once the unknown word was supplied (Chomsky, 1978). The significant difference between the confident readers and the struggling readers was the exposure to familiar text. The assisted reading method capitalized on repeatedly reading the text selected by the individual student.

In the assisted reading method, readers listened to the same text until they were able to replicate the text (Chomsky, 1978). The assisted reading process began with individual students selecting a highly interesting book. The readers listened to the selected book until the students are able to replicate the reading without assistance

(Chomsky, 1978). The students listened to the books through an audio recording in which they were able to manipulate as needed (Chomsky, 1978). The recording allowed the students to begin and end at specific points, slow the rate down for clarification, listen to the recording on multiple occasions, and practice with dignity without an audience (Chomsky, 1978).

The procedures for the assisted reading method began with the student selecting a book. Once the book was selected, the students listened to the book on tape until the students felt confident in their ability to read the book without assistance (Chomsky, 1978). The assisted reading method increased the children's confidence with books while simultaneously modeling fluent reading. Once a child could emulate the tape without assistance, the student was considered to possess the ability to fluently read the specific selected text. As the student's exposure to books increased, the child's sight vocabulary grew (Chomsky, 1978). According to the research, students who participated in this approach developed the ability to recognize words from one text to another (Chomsky, 1978).

Phrase-cued reading is another method of reading fluency utilized in classrooms. Fluent readers acknowledge phrases while reading text. Phrase-cued reading separates the sentences into meaningful segments of text to both support the reader and develop awareness of the meaning (Kuhn et al., 2010; Rasinski, 2012). Rasinski, Yildirim, & Nageldinger (2011) stated, "Researchers argue that expression or prosody in reading helps readers chunk the text they read into syntactically appropriate units (e.g., noun phrases, verb phrases, prepositional phrases) that assist them in constructing meaning" (p.

252). Each phrase type may require explicit instruction in recognizing the phrase and the meaning of the phrase. Phrase recognition can be difficult to identify due to type of phrase, punctuation, and indistinguishable phrases (Rasinski et al., 2011). Phrase recognition also depends on the reader's knowledge and awareness of the syntactic structures within the sentence (Mokhtari & Thompson, 2006). "Many phrase boundaries are not explicitly marked, and readers must infer the appropriate places to phrase text within sentences. For struggling readers, this additional task of inferring meaningful phrase boundaries may simply add to an already complex and laborious process" (Rasinski et al., 2011, p. 253). The ability to recognize and utilize phrase boundaries within written text is a developmental process (Kuhn et al., 2010). Proper phrasing requires readers to have knowledge about discourse and how word position, punctuation, and stress impact the segmenting of a sentence (Kuhn et al., 2010; Walker, Mokhtari, & Sargent, 2006). Children's full understanding of prosodic features continues to develop until age eleven (Kuhn et al., 2010).

Reading fluency's role in text comprehension. Comprehension is the only desired outcome of individuals while reading. Reading fluency impacts comprehension, while comprehension can impact reading fluency. This relationship often makes it difficult to identify the causal connection between the two and how they influence the reader (Mokhtari & Thompson, 2006). Fluent readers utilize their skills while reading both orally and silently. Oral and silent reading is impacted by the reader's ability to decode and comprehend text (Paige et al., 2012).

Dysfluent readers are unable to read fluently and, as a result, struggle with comprehension. Typically, dysfluent readers spend the majority of their time decoding unfamiliar words rather than thinking about the text being read, while the fluent reader spends time gaining meaning from the text. However, some dysfluent readers move too quickly through the text, which also impacts understanding the text (Mokhtari & Thompson, 2006; Paige et al., 2012; Rasinski, 2000; Rasinski, Rikli, & Johnston, 2009; Samuels, 1979). The dysfluent readers compromise the content of the text by spending less time reading due to underdeveloped and inefficient skills (Mokhtari & Thompson, 2006; Rasinski, 2000, 2010).

Reading fluency contributes to text comprehension by the readers' ability to recognize words automatically and by the readers' ability to utilize prosodic features (Kuhn, 2003; Mokhtari & Thompson, 2006; Paige et al., 2012; Rasinski, 2010; Samuels, 1979). Proficient readers, readers with the ability to decode and understand text, perform two different tasks while reading. Proficient readers decode words and construct meaning from the text simultaneously (Kuhn, 2003; Mokhtari & Thompson, 2006; Paige et al., 2012). Kuhn (2003) summarized many works by stating, "individuals have a limited amount of attention available for reading. This being the case, attention expended on one component of reading is, necessarily, attention that is unavailable for another" (p. 130). Both the ability to decode unfamiliar words efficiently and identify sentence structure concurrently are the prerequisites for comprehension (Mokhtari & Thompson, 2006). The ability of the reader to identify the sentence structures within the text indicates the reader's ability to identify the author's purpose of the text (Mokhtari &

Thompson, 2006). Ehri (1998) furthered the explanation of automaticity by stating, "the term sight indicates that sight of the word activates that word in memory including information about its spelling, pronunciation, typical role in sentences, and meaning" (p. 45). A proficient reader has a well-developed sight word vocabulary that allows the reader to concentrate on the meaning of the text.

In order for readers to develop automaticity with word recognition, they must practice. The practicing begins with discreet skills, such as letter and sound recognition, then moves into sight words, and finally, word parts or syllables (Moats, 2005). Once the readers have mastered these discreet skills, the way to develop automaticity is through repeated readings (Kuhn, 2003). By developing word automaticity, the reader is able to focus on comprehending text. Skilled readers approach text in different manners depending on background knowledge, text complexity, purpose, and desired outcome. Skilled readers understand the need for variance in their pacing and that speed is not the only contributing factor to comprehending the text (Kuhn et al., 2010; Paige et al., 2012; Rasinski, 2010,).

The second way reading fluency contributes to reading comprehension is through prosody. Reading with prosody is globally recognized as using appropriate expression, intonation, and attention to phrasing (Kuhn et al., 2010; Lems, 2006; Paige et al., 2012; Rasinski, 2010). Prosodic features include "pitch or intonation, stress or emphasis, tempo or rate, the rhythmic or regularly reoccurring patterns of language and the use of appropriate phrasing" (Kuhn 2003, p. 131). Prosodic features are qualitative measures of reading fluency (Paige et al., 2012; Walker et al., 2006). The reader's application of the

prosodic features provides educators insight into how the reader is interpreting the text. When students read with prosody, they demonstrate their understanding of the text (Hudson, Lane, & Pullen, 2005; Mokhtari & Thompson, 2006; Paige et al., 2012).

> By incorporating such prosodic elements into their oral reading, readers are providing clues to an otherwise invisible process, that of comprehension. Furthermore, their use of expression can be seen as an indicator of their understanding of what is being read because they can only begin to apply appropriate phrasing and expression to a text if they are able to make sense of it. (Kuhn, 2003, p. 131)

There continues to be an unresolved debate regarding comprehension. One group of reading theorists believes comprehension occurs before fluency. Another group of reading theorists promotes fluency is a precursor for reading comprehension (Chard et al., 2006; Mokhtari & Thompson, 2006; Rasinski, 2010). While reading fluency may not impact every reader's comprehension, fluency does influence some components of reading for all (Mokhtari & Thompson, 2006; Rasinski, 2010). A reciprocal relationship exists between fluency and comprehension, each reading component directly impacting the other (Chard et al., 2006; Hudson et al., 2005; Kuhn et al., 2010; Mokhtari & Thompson, 2006; Paige et al., 2012; Rasinski, 2010).

Overview of the Reading Curriculum-Based Measures

Curriculum based measures (CBMs) originated in the late 1970s and early 1980s as an efficient assessment instrument to gather information about special education students' overall reading progress (Christ & Silberglitt, 2007; Deno,

2003; Deno & Marston, 2006; Kuhn et al., 2010). The CBM measured the effectiveness of the interventions occurring within the special education classrooms (Deno, 2003). This practice of utilizing CBMs to provide formative feedback to the teacher about instructional strategies implemented became a common practice in general education classrooms in the mid to late 1980s (Christ & Silberglitt, 2007; Deno, 2003; Deno & Marston, 2006; Kuhn et al., 2010). While the CBM is an informal assessment, there are established procedures for educators to follow when utilizing it in the area of reading, mathematics, and writing (Deno & Marston, 2006).

The CBM standard procedures contain specific characteristics and are considered technically adequate. "The reliability and validity of CBM have been achieved through using standardized observational procedures for repeatedly sampling performance on core reading, writing, and arithmetic skills" (Deno, 2003, p. 185). The CBM identifies what to measure and utilizes prescriptive stimulus materials (Deno, 2003; Deno & Marston, 2006; Kuhn et al., 2010). Specific text selection procedures are identified to allow for CBM use from district curriculum or commercially produced text (Deno, 2003; Deno & Marston, 2006; Kuhn et al., 2010). The CBM thoroughly explains how to measure by identifying specific information about "…duration, administration, student directions, and scoring procedures" (Deno, 2003, p. 185). The CBM has a consistent performance sampling procedure, and the examiner observation practices include counting the number of correct and incorrect words within the

allotted timeframe (Deno, 2003). The CBM has multiple equivalent samples. "The repeated observations of performance are structured so that students respond to different but equivalent stimulus materials that are drawn from the same general source" (Deno, 2003, p. 185). The CBM is time-efficient with a sampling range from one to three minutes in length (Deno, 2003). Finally, the use of a CBM is easy to teach; the procedures are easily duplicated without impacting the reliability of the data (Deno, 2003).

The procedures for administering a reading CBM are structured around a one minute time allotment, tracking words read correctly (WRC) and errors (Deno, 2003; Deno & Marston, 2006). These procedures are repeated over a specified time period to record reading progress (Deno, 2003; Deno & Marston, 2006). Originally, teachers selected reading material from the district's curriculum for students to read aloud (Deno, 2003; Deno & Marston, 2006; Kuhn et al., 2010). However, this approach became cumbersome in selecting appropriate text due to the variance in text complexity between passages (Deno & Marston, 2006; Kuhn et al., 2010). The variance in text complexity resulted in inaccurate information about the student's reading ability and progress. The inconsistent text complexity and student results created the need for standardized CBM procedures. The standardized procedures created opportunities for commercialized products (e.g. AIMSweb, DIBELS, etc.) to be created and sold to educators to utilize (Deno & Marston, 2006; Kuhn et al., 2010).

The commercial Reading-Curriculum Based Measures (R-CBM) passages follow the same standardized administering procedures. Students are allotted one minute to orally read the passage. During that time frame, the examiner records student errors. The examiner records both the number of WRC within the one minute time along with the number of errors the student made within the one minute time (Deno & Marston, 2006; Kuhn et al., 2010).

The CBM originated as a guide to instructional practice and a way to monitor student progress. Over thirty years later, the CBM continues to drive instructional practice. In many districts, Response to Intervention (RTI) decisions are based on the data collected from the CBM (Christ & Silberglitt, 2007). "Response to intervention (RTI) is the practice of providing high-quality instruction and interventions matched to students' needs, monitoring progress frequently to make decisions about the changes in instruction or goals, and applying child-response data to important educational decisions" (National Association of State Directors of Special Education, 2006, p. 3).

Overview of AIMSweb R-CBM. "AIMSweb is an assessment system that provides the framework for RTI implementation and tiered instruction. It [AIMSweb] offers multiple assessments for universal screening and progress monitoring, web-based data management, charting, and reporting" (Pearson Education, 2011a, para. 1). The R-CBM allows educators to make informed decisions about student's reading and fluency growth (Pearson Education, 2011a;

Shinn & Shinn, 2002). AIMSweb R-CBMs are standardized timed tests used to

efficiently measure reading fluency (Pearson Education, 2011a).

Predictive value between R-CBM and standardized state assessments. While

CBMs offer insight into individual, group, school, and district progress, there is a

question about other information CBMs can provide about student academic

achievement. In the educational era of high-stakes testing, district leaders are asking if

the CBM offer a predictive value about student achievement on state standardized

assessments. There are numerous studies (Crawford, Tindal, & Stieber, 2001; Merino &

Beckman, 2010; McGlinchey & Hixon, 2004; Stage & Jacobson, 2001) reviewing the

predictive ability of the R-CBM on state standardized assessments. These studies were

conducted across the United States and reviewed a variety of standardized tests and state

assessments (Merino & Beckman, 2010).

In the Merino and Beckman (2010) study, the predictive value was examined

between AIMSweb R-CBM, AIMSweb Maze, and the Measure of Academic Progress in

Nebraska. There were 376 participants in this study in grades second through fifth

(Merino & Beckman, 2010). The Measure of Academic Progress assessment included in

the Merino and Beckman (2010) study was a computer based multiple-choice assessment.

The Measure of Academic Progress assessment adjusted to individual student's correct

and incorrect responses (Merino & Beckman, 2010). The assessment included between

25 and 30 questions and was completed in one sitting, needing between 20 to 40 minutes

for completion (Merino & Beckman, 2010). The AIMSweb R-CBM was administered

three times throughout the year, in fall, winter, and spring intervals. The AIMSweb R-

CBM benchmarking procedures were followed (Merino & Beckman, 2010). The

AIMSweb Maze, a paper/pencil assessment, was also administered three times per year,

in the fall, winter, and spring and followed the AIMSweb Maze benchmarking

procedures (Merino & Beckman, 2010). The AIMSweb Maze assessment required

students to silently read a cloze passage with omitted words (MetaMetrics, 2011; Shinn &

Shinn, 2002b). Every seventh word was omitted leaving the student with three word

choices to select and complete the sentence (MetaMetrics, 2011; Shinn & Shinn, 2002b).

One of the word choices was the correct word, one was a close choice, and one was a

random word (MetaMetrics, 2011; Shinn & Shinn, 2002b). The AIMSweb Maze was

administered whole group and in a three minute timed session (MetaMetrics, 2011; Shinn

& Shinn, 2002b). Merino and Beckman (2010) found there was a higher predictive value

between the R-CBM and the Measure of Academic Progress than the Maze and the

Measure of Academic Progress. The R-CBM scores were a closer predictor in the fall of

second grade than the other grades included in this study (Merino & Beckman, 2010).

Stage and Jacobsen (2001) examined fourth grade students' scores from R-CBMs

and their performance success on the Washington Assessment of Student Learning

(WASL). This study utilized district CBM passages selected from the basal series rather

than commercial CBM passages (Stage & Jacobsen, 2001). The Stage and Jacobsen

(2001) study included 173 fourth grade students. The students all attended one

elementary school within the Puget Sound area (Stage & Jacobsen, 2001). Stage and

Jacobsen (2001) administered R-CBMs three times throughout the school year in

September, January, and May to all fourth grade students. All students read from the

same R-CBM for one minute each during all three assessment periods (Stage & Jacobsen, 2001). The WASL is both a norm and criterion-referenced untimed assessment comprised of multiple choice, short answer, and extended written response type questions (Stage & Jacobsen, 2001). The WASL is administered over a two day period, lasting 50 minutes on day one and 25 minutes on the second day during the month of May (Stage & Jacobsen, 2001). The Stage and Jacobsen (2001) study identified there was a positive correlation in the students' September CBM scores and their performance on the WASL in May.

During the 2009-2010 school year, Pearson Education examined the correlation between the R-CBM Benchmark results and the standardized state assessment results. The examination contained R-CBM and state assessment data from 32,002 students within twenty states; six of the twenty states included in the study were Midwestern states (Pearson Education, 2011b). Missouri, however, was not one of the states included in the R-CBM study. Pearson Education's (2011b) examination found,

> The state pass rate is a strong predictor of target scores, because the lower the
>
> pass rate, the more difficult it is for students to succeed, and the higher the
>
> AIMSweb benchmark score must be to predict success on the state test. (p. 12)

Success Probability targets were established to identify the individual students scoring between a fifty and eighty percent success rate on the state assessment (Pearson Education, 2011b). "The Success Probability target scores are median values across states and are applicable in states whose pass rates are typical for the country (i.e., about 65% to 85% for reading…)" (Pearson Education, 2011b, p. 4). Missouri requires a

minimum of eighty percent accuracy to be considered proficient on the Communication

Arts MAP assessment (MODESE, 2011c). Since AIMSweb did not include state specific

pass rates, the user was to increase or decrease the 80% Success Probability target score

respectively based on specific state pass rates (Pearson Education, 2011b). The Success

Probability targets vary by grade level and benchmarking sessions (i.e. fall, winter, and

spring) (Pearson Education, 2011b). Individual state proficiency rates are not assigned to

the Success Probability targets due to the nationally averaged passing rates (Pearson

Education, 2011b).

In addition to the Success Probability targets, AIMSweb offers At-Risk Screener

targets (Pearson Education, 2011b). The At-Risk Screener is designed to identify 80% of

the students at-risk for not meeting the state passing standards (Pearson Education,

2011b). The At-Risk Screener targets are state specific and provide targets for each

grade level based on the state proficiency standards (Pearson Education, 2011b). The

purpose of the At-Risk Screening targets is to identify specific groups of students

requiring interventions rather than predicting individual student success rates (Pearson

Education, 2011b). The At-Risk Screener targets vary by state, grade level, and

benchmarking sessions (Pearson Education, 2011b).

Overview of the Missouri Assessment Program (MAP)

Following the passage of Missouri's Senate Bill 380, known as the Outstanding

Schools Act of 1993, Missouri's Department of Elementary and Secondary Education

(MODESE) developed grade specific information, skills, and expertise (MODESE,

2011c). The grade level specific guidelines were called the Show-Me Standards/Grade

Level Expectations (MODESE, 2011c). Following the completion of the Show-Me Standards/Grade Level Expectations, MODESE began the transition from the Missouri Mastery and Achievement Tests (MMATs) to the Missouri Assessment Program (MAP) (MODESE, 2000, 2011d). The MAP originated in 1998 and continues to be administered yearly to Missouri students (MODESE, 2014a).

The Outstanding Schools Act of 1993 included two pieces of important legislation. The first, Section 160.514 of the Senate Bill 380 (1993a), stated that Missouri State Board of Education would adopt a maximum of seventy-five performance standards to identify the knowledge, skills, and expertise for students to advance through school. This section provided very specific language about the process and procedures that MODESE should follow to identify the maximum seventy-five academic standards (Senate Bill 380, 1993a). Section 160.514 also stated the State Board of Education will develop curriculum frameworks containing the performance standards for districts to utilize for guidance (Senate Bill 380, 1993a). Within one year of the development of the curriculum frameworks from the State Board of Education, individual district's school boards were to create or adopt a written curriculum to ensure students acquire the knowledge, skills, and expertise identified in the performance standards (Senate Bill 380, 1993a). The State Board of Education, in compliance of the Senate Bill 380, developed the performance standards known as the Show-Me Standards (MODESE, 2000).

The second piece of important legislation from the Outstanding Schools Act of 1993 was Section 160.518 (Senate Bill 380, 1993b). Section 160.518 stated that the State Board of Education shall develop a statewide assessment program (Senate Bill 380,

1993b). The statewide assessment shall measure grade level specific content knowledge covering reading, writing, mathematics, world and American history, government, geography, and science (Senate Bill 380, 1993b). The second provision within Section 160.518 stated that the State Board of Education will use results from the state assessment program to be compared to previous scores of the same school (Senate Bill 380, 1993b).

Senate Bill 380 (1993a, 1993b) instituted the development of the Show-Me Standards and the Missouri Assessment Program for the state. The seventy-three total Show-Me Standards were fully completed and approved by the State Board of Education in 1996 (MODESE, 2000). The Show-Me Standards were divided into two categories. One category included performance standards and the other contained knowledge standards (MODESE, 2000). Of the seventy-three standards, thirty-three were categorized as performance and forty were categorized as knowledge (MODESE, 2000). The Show-Me Standards were designed to provide guidance to districts in developing performance standards; they were not mandated per Missouri's law (Senate Bill 380, 1993a, 1993b). School districts have local control over education (Senate Bill 380, 1993a, 1993b).

The Show-Me Standards contained four goals to connect both the knowledge and performance categories (MODESE, 2000). The four goals were written in the form of objectives.

1. "Students in Missouri public schools will acquire the knowledge and skills to gather, analyze, and apply information and ideas" (MODESE, 2000, p.78).

2. "Students in Missouri public schools will acquire the knowledge and skills to communicate effectively within and beyond the classroom" (MODESE, 2000, p. 78).

3. "Students in Missouri public schools will acquire the knowledge and skills to recognize and solve problems" (MODESE, 2000, p. 78).

4. "Students in Missouri public schools will acquire the knowledge and skills to make decisions and act as responsible members of society" (MODESE, 2000, p. 78).

During the initial years of MAP administration, content areas were not assessed consecutively each year. Originally, students in grades three, seven, and eleven took the communication arts assessments; students in four, eight, and ten took the math assessments; the social studies assessments were administered to students in grades four, eight, and eleven; and the science assessments were given to students in three, seven, and ten (MODESE, 2000). The early MAP required students to spend approximately three hours for assessment completion (MODESE, 2000). Similar to the current structure, the original MAP contained multiple choice, constructed response, and performance event test items (MODESE, 2000). With the exception of the MAP social studies assessments, the majority of the multiple choice questions were the nationally normed *TerraNova* Survey portion of the communication arts, math, and science MAPs (MODESE, 2000). The *TerraNova* Survey tests were published by CTB McGraw-Hill, which was under contractual agreements with MODESE (MODESE, 2000). The constructed response and performance event items were written specifically for the MAP (MODESE, 2000). These items required students to provide written information to show a deeper level of understanding. The constructed response items called for written explanation and/or

visual display of thinking (MODESE, 2000). The performance events entailed more complex problems that needed thorough written responses to show the thinking process (MODESE, 2000).

The MAP scores have consistently been reported in the same format since the origination of the test. Students receive a scale score, achievement level, and *TerraNova* Survey national percentile for each subject area assessed (MODESE, 2000, 2011f). One of the significant differences between the current MAP and the original is the information obtained from the assessments. Originally, educators could gather information about how students were progressing comparatively with the Show-Me Standards, examining both the content and process standards identified within the Show-Me Standards (MODESE, 2000, 2010). In the current MAP design, grade span assessments show students' proficiency rates towards meeting the Show-Me Standards/Grade Level Expectations (MODESE, 2010). As indicated by the 2010 MAP Technical report,

> The MAP was originally designed as grade-span tests to measure Missouri's
> Show-Me Standards. These standards were adopted by the Missouri State Board
> of Education in 1996. Since their inception, Missouri's Show-Me Standards have
> been further refined to better delineate Content Standards, Process Standards, and
> Content Strands/Grade Level Expectations as Missouri changed its testing
> program to comply with the requirements of No Child Left Behind. Starting in
> 2006, grade-level tests were administered in Communication Arts and
> Mathematics. In 2008, grade-span tests were administered for the first time. In

2010, MAP tests were no longer administered at the high school level. It was

replaced by the Missouri End-of-Course Assessments. (MODESE, 2010, p. 1)

   While the reporting of MAP performance remains the same, the achievement

levels have changed. Originally, student performance levels were reported in five

achievement levels categories (MODESE, 2000). The five achievement levels were Step

I, Progressing, Nearing Proficient, Proficient, and Advanced (MODESE, 2000). In 2006,

the performance levels were altered from five levels to four due to the Communication

Arts and Mathematics grade-level tests (MODESE, 2006). Student performance levels

continue to be reported in four categories (MODESE, 2014). These four achievement

levels are below basic, basic, proficient, and advanced (MODESE, 2011f). Students earn

separate achievement levels on the communication arts, mathematics, and science MAP

assessments.

   The MAP evolved several times from its origination in the late 1990s. One of the

more recent evolutions occurred in 2011. Due to financial reasons, Missouri's

Department of Elementary and Secondary Education did not require the performance

events and writing prompt to be administered on the communication arts, mathematics,

and science assessments on the 2011 MAP (MODESE, 2011e). The 2010 MAP versions

were unaltered and used again during the 2011 MAP testing window (MODESE, 2011e).

However, the 2011 versions still contained the performance events that were not being

administered during the 2011 year (MODESE, 2011e). The performance events and

writing prompts were included in the 2011 MAP assessment booklets; however, under

the guidelines provided from the state of Missouri, schools were mandated not to

administer or score specific sections of the MAP (MODESE, 2011e, 2011g). The

removal of the performance events and writing prompts impacted the third grade

Communication Arts MAP assessment at the elementary level. The removal of the

performance events impacted the fourth grade mathematics and fifth grade science

assessments at the elementary level (MODESE, 2011f). "Generally speaking, the

psychometric criteria examined in this research suggest that the removal of the PE

[performance events] has little impact overall for the vast majority of Missouri students"

(MODESE, 2011e, p.A-15).

Since the 2010 MAP version was administered during 2011, the same scoring

tables were utilized with the exception of the third grade Communication Arts assessment

(MODESE, 2011e). Although there was a slight improvement noted across the state

between the 2010 third grade Communication Arts mean scale score and the 2011 third

grade Communication Arts mean scale score, the difference was only two tenths of a

point (MODESE, 2011e). In 2010, the third grade mean scale score was 640.5 and the

2011 third grade mean scale score was 640.7 (MODESE, 2011e, p.A-7).

Overview of Student At-Risk Factors

The term at-risk is commonly referred to as characteristics that may adversely

impact a student's ability to perform at the desire standard (Fantuzzo et al., 2013). While

at-risk factors include gender, race, ethnicity, and socio-economic status, the concept of

at-risk factors is much larger than these demographic data points (Fantuzzo et al., 2013).

At-risk factors may also include a child's birth weight, prenatal care, age of mother at

birth, education of mother, stability of living situation, exposure to chemicals during

pregnancy, exposure to chemicals after birth, and exposure to abuse (Fantuzzo et al., 2013). Children can be impacted by one or more of these at-risk factors.

A study conducted by Fantuzzo et al. (2013) reviewed the relationship between schools with higher numbers of at-risk students and measures of academic performance. The Fantuzzo et al. (2013) study included students from kindergarten to third grade. This study was conducted in a large urban school district in Philadelphia which contained 10,639 students (Fantuzzo et al., 2013). Of the 10,639 children in the study, 68% qualified for free or reduced lunch, 51% male, 49% female, 67% African-American, 14% white, 14% Hispanic, and 5% Asian/other (Fantuzzo et al., 2013). The study determined that the mother's level of education influences her child's performance in school (Fantuzzo et al., 2013). This study also determined that large groups of students not receiving adequate prenatal care were also at-risk to perform below grade level in reading (Fantuzzo et al., 2013). In addition to the maternal education and prenatal care, this study also examined the impact of students experiencing homelessness and/or abuse. The results of the Fantuzzo et al. (2013) study signified that students experiencing homelessness and/or abuse, resulting in removal from the home, not only performed below grade level, but also impacted the peers in the classrooms resulting in below level reading performance. The study stated that the peers in the classrooms with increased mobility, caused by unstable living conditions including homelessness and displacement, contributed to a classroom environment of uncertainty (Fantuzzo et al., 2013). This study concluded by recommending that schools with large numbers of at-risk student

populations need to provide both academic and social supports to meet the needs of the students and families (Fantuzzo et al., 2013).

Rowley and Wright (2011) conducted a study examining the achievement gap, as measured by test scores, between white and black tenth grade students. The study also inspected additional influencers on students and academic achievement. Rowley and Wright studied how specific roles impact achievement. This study examined student performance role, school environment role, teacher role, family role, and peer role in conjunction with student achievement of white and black students (Rowley & Wright, 2011). The student performance role encompassed the behaviors and beliefs of the students. These behaviors included homework completion, extracurricular participation, classroom contribution, and intrinsic motivation (Rowley & Wright, 2011). The role of the school environment was also reviewed in this study. The school environment looked at the student-teacher ratio, social environment, class size, and school rules (Rowley & Wright, 2011). The role of the teacher was the next factor studied. These factors included teacher attitude, student perception of teacher actions, and teacher's knowledge of cultural diversity (Rowley & Wright, 2011). The role of the family was also included. The family influencers were parental expectations of achievement, parental education, socioeconomic status, two-parent versus one-parent families, and sibling size (Rowley & Write, 2011). The final contributing influencer examined was the role of peers. "The social group a student belongs to includes people from the same community; therefore, a student's social group can reinforce a devaluation of education, which contributes to high dropout rates and lower academic achievement" (Rowley & Wright, 2011, p. 95).

Rowley and Wright (2011) conducted an independent sample *t* test to measure the statistical difference between test scores of Black and White tenth grade students for all covariates of the model. The test scores indicated, "Black students score on average 82.8% of what White students score ($p < .001$; $d = 1.07$)" (Rowley & Wright, 2011, p. 97). The only meaningful variable in the student role performance was the increased likelihood of White students spending additional hours on homework than Black students ($p < .001$, $d = .24$) (Rowley & Wright, 2011). However, extended homework time has greater impact on Black students than White students. For a one hour increase, Black students improved their test scores by .3 of a point while White students improved .2 of a point (Rowley & Wright, 2011). The school environment resulted in two meaningful variable differences. The student-teacher ratio was meaningful between Black and White students in this study (Rowley & Wright, 2011). White students were more likely to have lower student-teacher ratios than Black students, ($p < .001$, $d = .23$) indicating smaller class sizes (Rowley & Wright, 2011). Additionally, the number of school rules between schools showed a meaningful difference, ($p < .001$, $d = .71$), with Black students attending schools with more rules than White students (Rowley & Wright, 2011). The factors from the role of the family did not display meaningful results; however, there was a statistical difference between parental school participation and socioeconomic statuses of Black and White families (Rowley & Wright, 2011). "For every increase in SES [Socioeconomic Status], regardless of the race, there is an increase in test scores by nearly 14 points" (Rowley & Wright, 2011, p. 101). Peer group influence did not indicate any meaningful differences between Black and White students (Rowley &

Wright, 2011). While the Rowley and Wright (2011) study examined tenth grade students, the findings have relevance at the elementary level. The findings indicate the need for emphasizing homework with parents, providing opportunities for parent involvement, and the ensuring school settings that teach and reinforce positive behaviors.

Overview of grade and reading performance. Historically, reading fluency is considered a focus in the primary grades; however, more research suggests that the development of reading fluency extends past the younger grades in schools (Rasinski, Rikli, & Johnston, 2009). In three of the studies conducted by Rasinski and fellow researchers, the findings have supported the need for additional reading fluency instruction through the secondary grades (Rasinski, 2010; Rasinski & Padak, 2008; Rasinski et al., 2009). While reading fluency is not a measure of rate alone, there are still substantial research findings to support a strong correlation between reading rate and reading comprehension among third, fifth, seventh, and ninth grade students (Rasinski et al., 2009). In addition to the examination of reading rate and comprehension, there is also research to support the impact prosody has on reading comprehension at both elementary and secondary levels (Mokhtari & Thompson, 2006; Rasinski et al., 2009).

While there are many possible hypotheses regarding demographic data and its impact on reading achievement, there are some findings that support the theory on age and grade. When comparing children growing up in poverty versus children growing up in a more affluent environment, children in poverty exhibit less of an achievement gap upon arriving to kindergarten (Aikens & Barbarin, 2008). However, the achievement gap widens and continues to grow as students advance in schools. The socio-economic status

(SES) gap in reading achievement grows the widest during the first grade year (Aikens & Barbarin, 2008). The reading skills required of a first grader are quite different than those of a kindergartener. The first grade reader is expected to transfer the letter sound knowledge to decode unfamiliar words at a quick pace (Aikens & Barbarin, 2008). By the end of the primary grades, students are expected to master word and sentence automaticity and the emphasis shifts from fluency instruction and practice to application in the upper grades (Paige et al., 2012).

As students refine their fluent reading abilities during the upper elementary grades, they also enhance their abilities to comprehend sophisticated text (Paige et al., 2012). As students advance through elementary into middle school, they spend greater amounts of time reading silently rather than orally. The reader's ability to move with automaticity through text influences his comprehension (Paige et al., 2012; Rasinski et al., 2009).

Since 1969, the NAEP has administered assessments to gather information about education in America (Daane et al., 2005). In 1992, the governing board requested further information about oral reading (Daane et al., 2005). This study was conducted by a team of leading researchers in the area of reading (Daane et al., 2005). The Pinnell et al. (1995) research team conducted the oral reading special study requested of the governing board by Congress. The study focused on oral reading abilities of fourth grade students (Pinnell et al., 1995). The fourth grade students participating in the Pinnell et al. (1995) study read the selected passage silently twice prior to the reading the passage aloud. Of the fourth graders in the study, 55% were fluent, with 13% of these fluent

readers meeting the highest ranking on the fluency scale (Pinnell et al., 1995). The

researchers noted the 13% receiving the highest ranking obtained this level by reading

with expression (Pinnell et al., 1995). The results of the Pinnell et al. (1995) study

indicated a strong relationship between reading fluency and overall reading proficiency.

The Pinnell et al. (1995) found reading fluency and reading frequency were related.

In 2002, the NAEP launched another large scale reading assessment (Daane et al.,

2005). On the main NAEP assessment, 61% of the fourth grade students scored in the

fluent categories (Daane et al., 2005). Of the 61% scoring well in the area of fluency,

these students also scored well in the comprehension portion of the 2002 NAEP (Daane

et al., 2005). To gather additional information about oral reading, the governing board

commenced another special study (Daane et al., 2005). This study was titled the Special

Study of Oral Reading (Daane et al., 2005). This study exclusively examined fourth

grade students and how their reading ability impacted accuracy and comprehension, rate

and comprehension, and fluency and comprehension (Daane et al., 2005). There were

1,779 fourth grade students selected to participate in the 2002 NAEP's Special Study of

Oral Reading (Daane et al., 2005). The 1,779 students were a smaller subset of the

140,000 students who took the full NAEP reading assessment (Daane et al., 2005). The

special reading study comprised of the individual scores from the standard NAEP reading

comprehension assessment and individual scores from the oral reading fluency

assessments (Daane et al., 2005). Fourth grade students individually read into a computer

microphone to digitally record the passage (Daane et al., 2005). By digitally recording

the individual students reading aloud, the test administrator was able to focus on the

student rather than taking notes and coding assessments (Daane et al., 2005). Following the oral reading, the students were asked questions about the passage to assess the level of comprehension obtained during the reading (Daane et al., 2005). The Special Study of Oral Reading utilized one of the most basic passages included in the main NAEP assessment (Daane et al., 2005). Of the 1,779 students participating in the Special Study or Oral Reading, approximately 35% read the selected passage with a 98-100 percent accuracy, 40% read with an accuracy rate between 95-97 percent, 19% read with an accuracy rate between 90-94 percent, and 6% read with less than 90 percent accuracy rate (Daane et al., 2005). The Special Study of Oral Reading also reported accuracy results by gender and racial/ethnic groups. The accuracy rate of the fourth grade males was as follows: 32% read the passage with an accuracy rate between 98-100 percent; 39% read with an accuracy rate between 95-97 percent; 21% read with an accuracy rate between 90-94 percent; and 7% read with an accuracy rate below 90 percent (Daane et al., 2005). The accuracy rate of the fourth grade females was similar. Thirty-seven percent read the passage with an accuracy rate between 98-100 percent; 40% read with an accuracy rate between 95-97 percent; 17% read with an accuracy rate between 90-94 percent; and 6% read with an accuracy rate below 90 percent (Daane et al., 2005). The gender data did not indicate a significant performance difference; however, the gender data did indicate that more females than males met the fluency accuracy rate standards. The Daane et al. (2005) cautioned interpreters not to make generalizations about an entire group due to the small number of fourth grade students participating in the special report subgroup.

In addition to the gender data, the Special Study of Oral Reading also reported accuracy data by race/ethnicity. Only three ethnic groups were reported in this study based on the small number of students representing the unnamed groups (Daane et al., 2005). The three ethnic groups included White, Black, and Hispanic (Daane et al., 2005). Thirty-eight percent of the White students read the passage with accuracy rates between 98-100 percent, 40% read with accuracy rates between 95-97 percent, 17% read with accuracy rates between 90-94 percent, and 5% read with accuracy rates below 90 percent (Daane et al., 2005). Twenty-three percent of the Black students read the passage with accuracy rates between 98-100 percent, 40% read with accuracy rates between 95-97 percent, 28% read with accuracy rates between 90-94 percent, and 9% read with accuracy rates below 90 percent (Daane et al., 2005). Thirty-one percent of the Hispanic students read the passage accuracy rates between 98-100 percent, 35% read with accuracy rates between 95-97 percent, 21% read with accuracy rates between 90-94 percent, and 12% read with accuracy rates below 90 percent (Daane et al., 2005). The results from this study indicated a variance in fluency accuracy rates among race/ethnicities. A higher percentage of the White students met the fluency accuracy rates than the Black and Hispanic students.

To extend the studies conducted by Pinnell et al. and Daane et al., Rasinski, Rikli, and Johnston (2009) conducted a study examining the relationship between comprehension and fluency as measured by prosody. The study included students in grades three, five, and seven from a small suburban district, totaling 6,100 students, and a large district, comprised of 61,000 students, in Omaha, Nebraska. The students were

administered the Stanford Achievement Test, ninth edition, reading comprehension subtest and a standardized, norm-referenced silent reading assessment (Rasinski et al., 2009). The Stanford Achievement Test reading comprehension subtest was administered in a sixty minute timeframe (Rasinski et al., 2009). The norm-referenced reading assessment was administered in a ten minute time period (Rasinski et al., 2009). The norm-referenced silent reading passages were selected for each participating grade level student (Rasinski et al., 2009). One passage was issued for seventh graders and two were utilized for the third and fifth grade students (Rasinski et al., 2009). The Stanford Achievement Test reading comprehension subtest was scored in accordance to the protocol, while the norm-referenced silent reading passages were scored utilizing the Multi-Dimensional Fluency Scoring Guide (MFSG) (Rasinski et al., 2009). The MFSG is a rubric to measure a student's prosody while reading aloud (Rasinski et al., 2009). The MFSG was also utilized in the Pinnell et al. (1995) and Daane et al. (2005) studies. Rasinski et al. (2009) found there was a strong correlation among prosodic fluent reading and silent reading comprehension in all three grades. The correlations were the strongest in grades three and five. Grade three had a 0.634 correlation between oral reading fluency and silent reading comprehension, grade five had a 0.657 correlation, and grade seven had a 0.571 correlation (Rasinski et al., 2009). The difference between the fifth and seventh grade correlation scores exemplifies the continued progress older students are expected to make in the area of reading. Rasinski et al. (2009) found the seventh grade results supportive of the continued instructional requirements in the area of reading fluency past the elementary level.

Paige et al. (2012) also conducted a study, furthering the works of Pinnell et al. (1995) and Daane et al. (2005), examining the impact of individual's ability to read silently and comprehend text. Ninth grade students from a selected Washington high school participated in the study. The 108 students in the study attended a Washington high school that historically performed in the bottom five percent of the state on the state assessments. The 108 ninth grade students represented a variety of ethnic groups. Forty-three percent of the students in the study were White, 49% of the students were African-American, 5% were Hispanic, 2% were Asian American, and 2% represented other ethnicities. Additionally, 86% of the student body at the selected Washington high school received free or reduced priced lunches. The students within the study completed two reading assessments. The students were administered the Test of Reading Comprehension: Fourth Edition and a CBM. The Test of Reading Comprehension assessed comprehension. The students silently read the assessments within the Test of Reading Comprehension to obtain a composite score. The students were also given a CBM to orally read. The CBM was a 408 word passage on a ninth grade reading level. While the students orally read the CBM passage, the examiner digitally recorded their readings. The examiners analyzed the readings using the Multidimensional Fluency Scale rubric that measures expression and volume, phrasing, smoothness, and pace to determine a prosodic score (Paige et al., 2012).

The results of the study indicated a strong relationship between silent reading, fluency, and comprehension (Paige et al., 2012). Students scoring well on the Test of Reading Comprehension also scored well on the oral reading assessment, measured by

the Multidimensional Fluency Scale. Sixteen percent of the ninth grade students in the

study earned significantly below level scores on both the Test of Reading Comprehension

and the Multidimensional Fluency Scale. The results from this study support the

relationship between fluency and comprehension. Additionally, the study indicates a

need for further fluency instruction outside of elementary school for students not meeting

the grade level fluency standards (Paige et al., 2012).

The results from these studies were similar. The results displayed a strong

correlation between reading fluency and comprehension despite the type of assessment.

The results also indicated a need for further instructional focus in the area of reading

fluency beyond the primary grades. Students with poor reading fluency are more likely

to struggle in the area of comprehension at all ages and/or grades.

Overview of gender and reading performance. Kirkham and Lampley (2014)

conducted a study examining the relationship between the R-CBM and the

reading/language arts portion of the Tennessee Comprehensive Assessment Program

(TCAP) for third grade students. The participants included 911 third grade students from

thirteen elementary schools located in eastern Tennessee (Kirkham & Lampley, 2014).

Archival data from fall, winter, and spring R-CBM Benchmark scale scores and reading

assessment scores from the TCAP obtained during the 2010-2011 school year were

utilized (Kirkham & Lampley, 2014). A multiple regression analysis was conducted to

determine the predictive value between the R-CBM fall, winter, and spring Benchmark

scale scores and TCAP reading proficiency scores (Kirkham & Lampley, 2014). "The

linear combination of R-CBM scores was significantly related to the TCAP reading

score, F(3, 766) = 288.12, $p < .001$" (Kirkham & Lampley, 2014, p. 41). Kirkham and Lampley (2014) also examined if a significant relationship between the R-CBM Benchmark scale scores and the TCAP reading scores was influenced by gender. All bivariate correlations between male student's R-CBM Benchmark scale scores and male TCAP reading and language arts scores were statistically significant (Kirkham & Lampley, 2014). The correlation coefficient for male students was .74. Kirkham and Lampley (2014) also found that the scores for female students, using the same measures. All bivariate correlations between female student's R-CBM Benchmark scale scores and female TCAP reading and language arts scores were statistically significant (Kirkham & Lampley, 2014). The correlation coefficient for female students was .73 (Kirkham & Lampley, 2014).

Below, Skinner, Fearrington, and Sorrell (2010) conducted a study examining gender differences in early literacy. The participants in the Below et al. (2010) study included 1,218 students in grades kindergarten through fifth grade from three elementary schools in a rural setting in the United States. Forty-nine percent of the participants were male and 50.2% were female (Below et al., 2010). Students in grades kindergarten and first grade were administered four early literacy fluency assessments; the Individual Sound Fluency (ISF), Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF), and Nonsense Word Fluency (NWF) (Below et al., 2010). The early literacy fluency assessments measure the specific pre-reading skills of producing individual letter sounds (ISF) when shown letters, identifying individual letters (LSF) in random order, segmenting words into individual sounds (PSF), and decoding and/or sounding out

nonsense words (NWF) (Good, Wallin, Simmons, Kame'enui, & Kaminski, 2002). Each of the early literacy fluency assessments are administered individually within one minute timeframes (Good et al., 2002). The results of the four early literacy assessments administered to kindergarten and first grade students indicated females performed higher than males in each of the fluency assessments (Below et al., 2010). Students in grades first through five were administered Oral Reading Fluency (ORF) assessments (Good et al., 2002). ORF is a one minute timed assessment which measures the number of words read correct using a grade level passage (Below et al., 2010). The results of the ORF assessments showed no significant gender differences for student scores in grades first through third (Below et al., 2010). In the fourth grade sample, the females outperformed the males; however, there were no significant gender differences in the fifth grade sample (Below et al., 2010). While gender differences were identified in the results of the early literacy assessments, gender did not impact the results of the ORF assessments for students in grades one, two, three, and five (Below et al., 2010).

The *MAP Grade Level Assessments 2011 Addendum to the 2010 Technical Report* reported the variance in performance by gender (MODESE, 2011e). Cohen's *d* was used to calculate the significance of the effect size on the performance differences by gender comparing the performance of females to males (MODESE, 2011e). Cohen's *d* examines the standard deviation of either two identical groups (MODESE, 2011e). Cohen's *d* is calculated by a formula and the results can show trends in data (MODESE, 2011e). The Cohen *d* guidelines were used to interpret the effect size: "*d* = .20 is a small-effect size, *d* = .50 is a medium-effect size, and *d* = .80 is a large-effect size" (MODESE, 2011e, p.

36). MODESE (2011e) reported a small difference in mean test scores was found between females and males; in which females performed higher than the males in all assessed grade levels on the Communication Arts tests.

In 2011 the NAEP launched another reading assessment to collect achievement data on the nation's fourth and eighth grade students (U.S. Department of Education, 2011). The 2011 NAEP report included fourth and eighth grade reading performance data from 1992 to 2011. The report disaggregates reading data into numerous categories including gender performance. In 2011, females scored higher than males by a difference of seven points (U.S. Department of Education, 2011). This point difference is not statistically significant; however, in years 1994 and 2000 the performance was significantly different (U.S. Department of Education, 2011). In 1994, the females reading score gap was ten points different than the males and in 2000, the females score difference was 11 points higher than the males (U.S. Department of Education, 2011). The females have consistently scored higher than the males on the NAEP reading assessments from 1992 to 2011 (U.S. Department of Education, 2011).

One consistent factor in determining academic success for all children is parental participation in school (Harris & Graves, 2010). Children of all ages benefit from parents who are actively involved in their education. While parent involvement looks different within each age and grade range, there are some common parent participation practices that benefit all children (Aikens & Barbarin, 2008; Fantuzzo et al., 2013; Harris & Graves, 2010; Rowley & Wright, 2011). The three parent participation practices identified as having positive academic outcomes include school-based parent

participation, homework support, and parental supervision (Fantuzzo et al., 2013; Harris & Graves, 2010). Harris and Graves (2010) examined the influence of cultural capital on the reading achievement of fifth grade African American boys. Cultural capital was defined as the investment of time in teaching children about cultural and educational priorities (Harris & Graves, 2010). Harris and Graves stated, "African American 5th grade boys with high reading achievement were 1.26 times more likely to participate in parent-supervised activities that transfer culture capital than their lower-achieving peers. This gives the indication that students with high reading scores spend more time involved in activities such as visiting libraries, museums, and zoos with their parents" (p. 451). The key finding in this study was the role of the parent versus other non-parent supervisors on reading achievement for fifth grade African American boys. This study found that lower-achieving African American male readers in grades three through five were more likely to participate in cultural capital activities supervised by non-parents than high-achieving African American boys. Harris and Graves defined cultural capital activities as visiting a library, museum, sporting event, and zoo. The value in the parental participation in the cultural capital is expressed verbally between parents and sons during non-school activities. These types of conversations signify the parental values and expectations about academic achievement and create opportunities for parents and sons to further develop academic skills outside of school and homework support (Harris & Graves, 2010).

Overview of race/ethnicity and reading performance. For over 200 years, discussions about the educational inequalities between white and minority children have

been held in the United States. These discussions occurred as early as 1827, led by the

first President of the New York African Society for Mutual Relief, and continue today

during the 21st century (Tatum, 2013). The New York African Society for Mutual Relief

was a charitable organization for free African-American community members in the

1800s (National Humanities Center, 2007). Prominent African-American men and clergy

were members of the New York African Society for Mutual Relief (National Humanities

Center, 2007). The early discussions addressed the need for minority males to study the

sciences and literature (Tatum, 2013). "Studying the sciences and literature as a pathway

to social and economic parity and as a pathway to manhood was the resounding call

almost 200 years ago" (Tatum, 2013, p. 76). The United States has a lengthy history of

conversing about the educational disparities; however, it does not have the same history

of resolving the educational issues between minority, non-white students in public

schools (Rowley & Wright, 2011; Tatum, 2013). Over the course of United States

history, the government has intervened to erode the disparities in the educational system

among minority and white students. For example, in 1964, the *Civil Rights Act* was

passed creating government policy to ban discrimination in schools (Rowley & Wright,

2011). Thirty-seven years later, the government created the *No Child Left Behind Act*

(2001) to better address the educational needs of all children (Rowley & Write, 2011).

Neither of these acts has effectively leveled the education system (Rowley & Wright,

2011; Tatum, 2013). In an attempt to close the achievement gap between minority and

white students in 2012, President Obama instituted an executive order, the *White House*

Initiative on Educational Excellence for African Americans (Tatum, 2013). While these

government policies have been put into place to decrease the academic performance

disparities between non-white and white students, the achievement gap still exists in

American schools.

   Rowley and Wright (2011) examined reading and math achievement difference

between White and Black tenth grade students, and the results indicated there are several

factors that influence academic achievement of students, not exclusively race or ethnicity.

Rowley and Wright reviewed multiple settings and potential influencers on the

participating tenth grade students. These included individual student perceptions, school

environments, teacher perceptions, family beliefs, and peer relationships (Rowley &

Wright, 2011). The results from the study showed that all of these factors could

positively or negatively impact student performance depending on the values,

perceptions, and beliefs of the individual students and their environment (Rowley &

Wright, 2011).

   Rowley and Wright (2011) examined the gap in assessment scores between White

and Black tenth grade students. The researchers examined the effects of school settings

and student performance. Rowley and Wright (2011) included 752 participants

representing 1,221 public, Catholic, and private schools. Of the 1,221 schools included

in the study, 580 were public, 95 were Catholic, and 77 were private. Three hundred

sixty-one of the schools were located in suburban settings, 250 were located in urban

settings, and 141 were located in rural settings. The results from the study indicated,

"that Black students score on average 82.8% of what White students score ($p < .001$; $d =$

1.07)" (Rowley & Wright, 2011, p. 97). This result supports Rowley and Wright's hypothesis that an achievement gap does exist between Black and White students.

Buck and Torgesen (2003) studied the predictive value of a one minute oral reading fluency (ORF) measure on achievement on the reading portion of the Florida Comprehensive Assessment Test – Sunshine State Standards (FCAT-SSS). Buck and Torgesen (2003) included 1,102 third grade participants from thirteen elementary schools in one Florida school district. The researchers also examined how the categorical variable of race/ethnicity affected the predictive value of the ORF on the reading portion of the FCAT-SSS. Buck and Torgesen (2003) created a categorical variable for race/ethnicity which included 701 of the 1,102 participants. Buck and Torgesen (2003) found the correlations between ORF and the reading portion of the FCAT-SSS performance similar across the three racial/ethnic groups ($r = .70$ for white students; $r = .62$ for African-American students; $r = .78$ for Hispanic students). "The interaction between these variables was not significant, $x^2 (1) = 0.209$, $p = .65$, indicating that the predictive relationship of ORF on FCAT-SSS scores was not significantly different for African-Americans and white students" (Buck & Torgesen, 2003, p. 7). The correlation for white students was .70, the correlation for African-American students was .62, and the correlation for Hispanic students was .78 (Buck & Torgesen, 2003). The results indicated that the correlation for African-American student's scores and the correlation for white student's scores were not significantly different. The correlation for Hispanic student's scores and the correlation for white student's scores was not significantly different (Buck & Torgesen, 2003).

The results from the Special Study of Oral Reading conducted by NAEP in 2002 revealed a difference in performance across race/ethnicities (Daane et al., 2005). The Special Study of Oral Reading measured student's oral reading fluency. The results were as follows: 68% of White students were fluent, 40% of Black students were fluent, and 46% of Hispanic students were fluent (Daane et al., 2005). In addition to the fluency levels, the Special Study of Oral Reading also reported accuracy levels by race/ethnicity. Ninety-eight percent was established as the accuracy level (Daane et al., 2005).

The *MAP Grade Level Assessments 2011 Addendum to the 2010 Technical Report* also reported the variance in performance by race/ethnicity (MODESE, 2011e). Cohen's *d* was used to calculate the significance of the effect size on the performance differences by race/ethnicity (MODESE, 2011e). The Cohen *d* guidelines were also used to interpret the effect size (MODESE, 2011e). The 2011 MAP state data indicated,

> There is a medium difference in mean Communication Arts test scores of Black students compared to White students where Black students underperform White students in all grades. There is a small difference between the mean test scores of Hispanic and White students where Hispanics underperform White students on Communication Arts in all grades except Grade 3 where there is a medium difference. Similarly, there is a small difference between the mean test scores of Native Americans and White students where Native Americans underperform White students on Communication Arts in all grades except Grade 5. There is a small difference in the mean Communication Arts test scores where Asian/Pacific

Islander students outperform White students in all grades except Grades 3 and 8. (MODESE, 2011f, p. 36-37).

Overview of socio-economic status and reading performance. The family's socio-economic status may determine more about the academic achievement level of children than previously thought. The poverty and academic performance gap continues to widen despite an increase in awareness and the implementation of school interventions. Children born in poverty between the 1950s and the mid1970s scored 0.9 of a standard deviation lower on standardized reading assessment than children born in wealth (Reardon, 2013). Children born into poverty in the late 1970s to early 2000s now score at least 1.25 standard deviations lower than children born into affluent families on standardized reading assessments (Reardon, 2013). The higher the SES of the family, the more likely the student, regardless of race, gender, or age, will perform as a reader (Harris & Graves, 2010). One of the distinct factors of the socio-economic gap is that many high income families consist of two college educated parents while low income families consist of one high school educated parent (Reardon, 2013).

As a result of a child's socio-economic status, there are strong predictors about primary school performance (Reardon, 2013). The SES gap between high and low income families was visible among children entering kindergarten (Reardon, 2013). The difference between children entering kindergarten from high and low income families was 1.15 standard deviations and only decreased to 1.25 standard deviations by the eighth grade (Reardon, 2013). The standard deviations were based on a scale developed by Reardon (2013) which created common scale scores for several math and reading

assessments. These scores were disaggregated and expressed as "income achievement gap in standard deviation units" (Reardon, 2013, p. 10). Due to limited resources for low income families, children growing up in poverty acquire language skills at a slower pace than children growing up in economic advantaged homes (Aikens & Barbarin, 2008; Reardon, 2013). The gradual pace of language also impacts the speed and readiness of letter recognition and phonological awareness which places children from lower SES backgrounds at risk for lower reading achievement during school especially at the younger ages (Aikens & Barbarin, 2008; Reardon, 2013). Children from economically disadvantaged homes on average have less exposure to literature and parents who are less connected to schools (Aikens & Barbarin, 2008).

Not only are there distinct differences between the homes of children living in economically disadvantaged settings, but there are also differences among the school settings within disadvantaged neighborhoods. In general, schools within low income neighborhoods are low performing and offer less opportunities for extracurricular involvement than schools within higher income settings (Aikens & Barbarin, 2008; Fantuzzo et al., 2013). Classrooms within high poverty schools have different climates; they can often feel less child-centered, lack rigorous instruction, focus more on discipline, offer fewer resources for children, and have teachers with a negative tone, than classrooms within less economically disadvantaged settings (Aikens & Barbarin, 2008). Children growing up in economically disadvantaged neighborhoods are impacted by multiple factors that influence their reading achievement (Aikens & Barbarin, 2008). Children growing up in poverty have numerous factors that can influence their reading

achievement; however, increasing the quantity of books available within the home, increasing parental involvement in school, and access to child-centered preschool can mitigate the impact poverty plays on reading achievement in school (Aikens & Barbarin, 2008).

Paleologos and Brabham (2011) conducted a study examining the effectiveness of DIBELS oral reading fluency (ORF) for predicting reading comprehension, as measured by the Stanford Achievement Test–Tenth Edition (SAT-10), of high and low income students. Paleologos and Brabham (2011) selected 215 third grade students from eight elementary schools located in the southeastern region of the United States. The participants were placed into four categories by income and fluency skill (Paleologos & Brabham, 2011). Of the 215 participants, 56 of the students represented high-income with proficient fluency skill, 56 of the students represented low-income with proficient fluency skill, none of the students represented high-income without proficient fluency skill, and 103 students represented low-income without proficient fluency skill (Paleologos & Brabham, 2011). Students scoring at or above the minimum score of 110 words read correct per minute on the DIBELS ORF Spring Benchmark were placed in the proficient fluency skill category (Paleologos & Brabham, 2011). Income was determined by the qualifications of free, reduced, or full-priced lunch status. Students attending schools with 90-100% free or reduced lunch status were placed in the low-income category (Paleologos & Brabham, 2011). The students categorized as high-income did not qualify for free or reduced lunch and attended schools in communities with median incomes above $100,000 (Paleologos & Brabham, 2011).

Paleologos and Brabham (2011) examined ORF scores and SAT-10 scores to determine the predictive value of students from both high- and low-incomes with proficient fluency skill and of students from both high and low-incomes without proficient fluency skill. Pearson's product moment correlation coefficients between fluency and comprehension scores for high-income ($n = 56$) and low-income ($n = 56$) students with proficient fluency skill were obtained (Paleologos & Brabham, 2011). "Statistically significant positive correlations between fluency and comprehension were found for high-income students with proficient fluency skill ($r = .600$, $p < .001$) but not low-income students with proficient fluency skill ($r = .229$, $p > .05$)" (Paleologos & Brabham, 2011, p. 65). Income did affect the relationship between fluency and comprehension for the high-income students with proficient fluency skill (Paleologos & Brabham, 2011).

Pearson's product moment correlation coefficients between fluency and comprehension scores for high-income ($n = 0$) and low-income ($n = 103$) students without proficient fluency skill were also obtained (Paleologos & Brabham, 2011). "Statistically significant positive correlations between fluency and comprehension were found for low-income students without proficient fluency skill ($r = .652$, $p < .001$)" (Paleologos & Brabham, 2011, p. 66). Income did affect the relationship between reading fluency and comprehension for the low-income students with proficient fluency skill (Paleologos & Brabham, 2011). Data analyses were not conducted for high-income students without proficient fluency skill ($n = 0$) due to an insufficient sample size (Paleologos & Brabham, 2011). Income did affect the relationship between reading

fluency and comprehension for low-income students without proficient fluency skill

(Paleologos & Brabham, 2011).

Summary

This review of literature provided an overview of the history of reading fluency

and reading fluency methods. The reading curriculum-based measures (CBMs) and

reading fluency assessments were also included in this chapter. Additional research on

student achievement and various factors that affect student achievement was also

included to provide a broader perspective on reading fluency. An introduction of the

Missouri Assessment Program (MAP) was also included. Finally, overviews of the four

identified factors that influence student performance in the area of reading fluency were

included in this chapter. In chapter three, the researcher discusses the methodology

utilized in this study.

Chapter Three

Methods

The primary purpose of the study was to determine the relationship between the

Reading Curriculum Based Measure (R-CBM) Benchmark scale scores and student

performance, as measured by the Missouri Assessment Program (MAP) Communication

Arts scale scores. Additional purposes included to learn if grade level, gender,

race/ethnicity, and socio-economic status affected the relationship between reading

fluency, as measured by the R-CBM Benchmark scale score, and student performance, as

measured by scale scores, on the Communication Arts MAP. Included in this chapter are

the descriptions of the research design, the population, the sample, and the sampling

procedures. In addition to these sections, this chapter also includes the instrumentation,

the data collection procedures, the data analysis and hypothesis testing, and finally, the

limitations of the study.

Research Design

The research design utilized for this study was quantitative and non-experimental.

Quantitative research "relies primarily on the collection of numeric data"

(Johnson & Christiansen, 2008, p. 33). Non-experimental research is comprised of

independent variables that cannot be changed or altered (Johnson & Christiansen, 2008).

The non-experiemental research method used in this study was correlational research.

"In correlational research, the researcher studies the relationships between one or more

quantitative independent variables and one or more quantitative dependent variables"

(Johnson & Christiansen, 2008, p. 44). The independent variables analyzed were reading

fluency, as measured by R-CBM Benchmark scale scores, and grade level, gender, race/ethnicity, and socio-economic status of students. The dependent variable examined was student performance, as measured by the MAP Communication Arts scale scores. The moderator variables were grade level, gender, race/ethnicity, and socio-economic status.

Population and Sample

Johnson and Christensen (2008) stated, "The population is the large group to which a researcher wants to generalize his or her sample results" (p. 224). The population for this study included elementary students in grades 3 through 5 enrolled in the Sunshine School District. The sample was from the 2010-2011 school year. The sample of male and female students represented a variety of racial/ethnic backgrounds and socio-economic statuses. The racial/ethnic groups represented in this study were Asian, Black, Hispanic, Multiracial, and White. The socio-economic statuses, as measured by meal prices, represented Free or Reduced or Full-Priced categories.

The study sample included 885 students. There were 908 third through fifth grade students enrolled in the five schools. However, not all of the 908 students met the established participation criteria. Table 4 contains the number of participants per grade level at each building.

Table 4

Elementary School Identification for Participants of the Study

School	Grade 3	Grade 4	Grade 5
Elementary 1	58	56	61
Elementary 2	46	49	39
Elementary 3	68	64	71
Elementary 4	57	69	58
Elementary 5	49	64	76
Total	278	302	305

Note. Adapted from *Missouri Achievement Program Achievement Level 4 Report*, by MODESE, 2011a.

Sampling Procedures

Purposive sampling was utilized in this study. According to Johnson and Christensen (2008), in purposive sampling "the researcher specifies the characteristics of a population of interest and then tries to locate individuals who have those characteristics" (p. 239). There were several established criteria utilized to select participants within this research study. The first established criterion was the students were enrolled in grades three through five at one of the five selected elementary schools within the Sunshine School District during the 2010-2011 school year. The second criterion was the students had a 2011 Spring R-CBM Benchmark scale score. The third established participation criterion was the students had a 2011 Communication Arts MAP scale score. Of the 908 students enrolled in the five selected elementary schools, the sample included 885 students who met the established participation criteria.

Instrumentation

The instrumentation for this study was derived from AIMSweb R-CBM protocols and the Communication Arts MAP. The instrument used to measure the independent variable of reading fluency was the R-CBM Benchmark scale scores. The instrument used to measure the dependent variable was the MAP Communication Arts scale scores. These instruments were utilized to determine the impact reading fluency has on academic performance for students in grades three through five.

The measurement sections describe how the instruments were used to collect the data used to measure the variables in the research questions. "The measurement process operates by assigning symbols or numbers to objects, events, people, characteristics, and so forth according to a specific set of rules" (Johnson & Christensen, 2008, p. 137). Each component examined within the student demographic data was assigned a symbol to represent each student's grade level, gender, race/ethnicity, and socio-economic status. The AIMSweb R-CBM measurement section reviews the scoring process to measure the variables in the research questions. The MAP measurement section outlines the administration process to measure the variables in the research questions

Student demographics. The student demographic data collected for this study were gender, grade, race/ethnicity, and socio-economic status. The demographic data were stored in the Sunshine District's student information database. The database contained information about enrolled students within the district. Upon entering the Sunshine District, parents or guardians completed enrollment forms. These forms

contained information about the child's date of birth, gender, race/ethnicity, address, parents, siblings, and previous school information (Assistant Superintendent of Elementary Education, personal communication, January 10, 2012). The student's grade assignment was determined by age and previous school enrollment. The child's race/ethnicity and gender were self-reported by the parent. Additionally, parents and guardians were offered an optional Free and Reduced Lunch application to complete. This application was submitted to the Food Services Department and the family's eligibility was determined by the established Federal Guidelines. The socio-economic status of Free/Reduced or Full-Priced was entered in the district's database (Director of Food Services, personal communication, June 9, 2014).

AIMSweb instrumentation. The R-CBM assessment protocols were created and developed by Pearson Education (2012). The AIMSweb R-CBM is a one minute timed oral reading curriculum-based measure that assesses students' reading fluency. AIMSweb provides three standard R-CBM Benchmark passages per grade level. The R-CBM Benchmark passages are created and utilized for students in grades one through eight (Shinn & Shinn, 2002a). The R-CBM Benchmark reading passages range in length between 250-300 words per passage with the exception of the first grade passages which are approximately 150 words in length (Shinn & Shinn, 2002a). These reading passages are by grade level, are administered one-on-one with a one minute time limit, and utilize the same font, size, and format (Shinn & Shinn, 2002a). There are standardized assessment directions and testing recommendations which should be followed with fidelity (Shinn & Shinn, 2002a). The R-CBM Benchmark passages are administered

three times per year in four month intervals (Pearson Education, 2011a). AIMSweb establishes three R-CBM Benchmarking assessment windows per year (Pearson Education, 2011a). The benchmarking windows are four weeks in length during the Fall, Winter, and Spring assessments (Pearson Education, 2011a). The Sunshine School District has reduced each of the four week benchmarking assessment window to two weeks during the Fall, Winter, and Spring (Assistant Superintendent of Elementary Education, personal communication, January 10, 2012).

The *AIMSweb Training Workbook: Administration and Scoring of Reading-Curriculum Based Measures (R-CBM) for Use in General Outcome Measurement* provides standardized directions for administering the R-CBMs (Shinn & Shinn, 2002a). The training workbook begins with recommendations for establishing a test-conducive environment prior to administering the R-CBM benchmarks (Shinn & Shinn, 2002a). AIMSweb recommends the testing environment to be quiet and free from distractions within a classroom (Shinn & Shinn, 2002a). The three identified R-CBM Benchmark passages are administered during each assessment window.

To begin the assessment, the test administrator needs student and examiner copies of the three benchmark passages, a stopwatch or timer, and a pen or pencil (Shinn & Shinn, 2002a). The examiner and student R-CBM copies are formatted in the same manner with the exception of the numbering down the right side of the examiner's copy. The numbering assists with scoring the number of words read correctly (Shinn & Shinn, 2002a).

During the one minute time period, students individually read the benchmark passages aloud until the one minute time is up. The students follow these procedures for all three benchmark passages. The benchmark passages are labeled by grade level and chronologically to indicate the order the benchmark passages are to be read. Students read their assigned grade level R-CBM Benchmark passages regardless of reading ability (Shinn & Shinn, 2002a).

The final steps in the R-CBM Benchmark process is calculating the student's score and entering the score into the AIMSweb data-base. The *AIMSweb Training Workbook: Administration and Scoring of Reading-Curriculum Based Measures (R-CBM) for Use in General Outcome Measurement* also provides specific scoring directions, including specific information about what constitutes correct and incorrect responses (Shinn & Shinn, 2002a). The final step in the scoring process is to enter the median score of the WRC into the AIMSweb data-base (Shinn & Shinn, 2002a). The R-CBM benchmarking process does not include the assessment of phrasing, intonation, or comprehension. Assessment administrators may make anecdotal notes on the R-CBM passages about individual student performances in these areas; however, the AIMSweb System and Software Program do not store this type of information within the system.

To calculate the AIMSweb R-CBM Benchmark score, the examiner records the total number of words read within the one minute time, then subtracts the number of errors to obtain the WRC. The student receives two scores for each passage. One score is for the WRC and the other score is for the total number of errors made within the one minute. This process is followed for each of the three benchmark passages. Once all

three passages are administered, the examiner determines two separate median scores by reviewing the results from the three benchmarking passages. One of the median scores is the number of WRC; the other median score is the number of errors (Shinn & Shinn, 2002a).

AIMSweb measurement. This section reviews the data collected from the AIMSweb R-CBM Bechmkarks. The independent variable AIMSweb R-CBM Benchmark scale scores were referenced in research questions one through five. Following the administration of the three benchmark passages, the separate median scores for number of WRC and number of errors are reported in the WRC/Errors format (Shinn & Shinn, 2002a). For the purpose of this study, the spring benchmark median scores were utilized.

AIMSweb validity and reliability. According to Johnson and Christensen (2008), validity and reliability are the "two most important psychometric properties to consider when using a test" (p. 143). Validity is "the accuracy of the inferences or interpretations you make from the test scores" (Johnson & Christensen, 2008, p. 144). Construct validity is, "the extent to which a higher order construct is represented in a particular way" (Johnson & Christensen, 2008, p. 272). Reliability "refers to the consistency or stability of a set of test scores" (Johnson & Christensen, 2008, p. 144).

The *AIMSweb Technical Manual* contains information about the relationship between the fall and spring R-CBM scores for students in third through eighth grade (Pearson Education, 2012). The data was collected by Pearson Education (2012) based on browser-based scoring utilizing AIMSweb. The Pearson Education (2012) study

examined between 900 and 1,400 students per grade level during the 2009-2010 school year. The R-CBM scores were correlated between .60 and .70 with the state reading assessments (Pearson Education, 2012). The criterion-related coefficients showed a relationship between the R-CBM and the same content knowledge when it was measured by the state reading assessments. These findings provide moderately strong support for the construct validity of the R-CBM assessments.

In addition to the validity information, the *AIMSweb Technical Manual* (Pearson Education, 2012) also contained information regarding the reliability of the AIMSweb probes. The most relevant types of reliability included in the *AIMSweb Technical Manual* (Pearson Education, 2012) were alternative-form, split-half, and inter-rater reliability. Alternative-form reliability denotes the consistency or inconsistency between scores within the same content area, but different probes (Pearson Education, 2012). The alternative-form reliability indicates whether performance scores change from probe to probe and/or day to day (Pearson Education, 2012). The split-half reliability "evaluated the consistency of performance across time" (Pearson Education, 2012, p. 9). The inter-rater reliability signifies the consistency or inconsistency between raters while scoring the same student (Pearson Education, 2012).

Howe and Shinn (2002) examined the reliability using the coefficients. The alternative-form reliability of each passage was recorded. A sample of 204 students in grades one through eight was included in this study. Howe and Shinn (2002) found the alternative-form reliability for third grade to be .85, for fourth grade to be .85, and for fifth grade to be .88. The Howe and Shinn (2002) study determined the alternative-form

coefficients ranged from .79 to .92 for the participants in grades one through eight. These results indicated the alternative-form reliability was strong among the third, fourth, and fifth grade passages. The split-half reliability coefficients demonstrated a reliability of .94 from a 2011 sample group of second, fourth, sixth, and eighth grade students from five public schools in Minnesota and Texas (Pearson Education, 2012). The Spearman-Brown formula was used to determine the reliability of the scores within the one minute timeframe (Pearson Education, 2012). Split-half reliability and inter-rater reliability analysis yielded similar results from the 2011 Minnesota and Texas sample group (Pearson Education, 2012). "Inter-rater reliability coefficients were calculated using Shrout and Fleiss Formula, which takes into account differences in the level of scores assigned by different raters as well as difference in how they rank-order students" (Pearson Education, 2012, p. 10). The inter-rater agreement was found to be very high with an inter-rater coefficient of .99 (Pearson Education, 2012).

Christ and Silberglitt (2007) conducted another R-CBM Benchmark probes reliability study. In the Christ and Silberglitt (2007) study, the sample consisted of 8,200 students from grades one through five. These students were enrolled in both rural and suburban districts in the Midwest. The data for the Christ and Silberglitt (2007) study was collected for eight consecutive school years. Christ and Silberglitt (2007) analyzed correlations between fall and winter benchmark data and winter and spring benchmark data. Christ and Silberglitt (2007) found the median alternative-form reliability coefficient for first through fifth grade in both fall-winter benchmark periods and winter-spring benchmark periods. The data is presented in Table 5. The Howe and Shinn

(2002) and Christ and Silberglitt (2007) studies provided strong evidence for the

reliability of the of the AIMSweb R-CBM Benchmark scores. The coefficients ranged

from the high .80s to the low 0.90s in both studies (Howe & Shinn, 2002; Christ &

Silberglitt, 2007).

Table 5

R-CBM Median Alternative-Form Reliability AIMSweb Data

Grade Level	Fall-Winter	Winter-Spring
Grade 1	-	.88
Grade 2	.93	.94
Grade 3	.94	.95
Grade 4	.95	.95
Grade 5	.92	.93

Note. Adapted from Christ, T. J. & Silberglitt, B., (2007). Estimates of the standard error of measurement for curriculum-based measures of oral reading fluency. *School Psychology Review,* 36, p. 130-146.

MAP instrumentation. The MAP is a grade level assessment used to measure

the student's proficiency level of the Grade Level Equivalent Standards (MODESE,

2011c). The Communication Arts MAP was comprised of three subtests of reading,

writing Standard English, and formal writing (MODESE, 2011c). The instrument used to

measure the dependent variable was the student performance on the 2011 MAP

Communication Arts. The 2011 Communication Arts MAPs for students in grades three

through five were comprised of three subtests assessed over a period of three days.

MODESE provided educators across the state strict timeframes to administer the 2011

MAP. The 2011 state testing window was from March 28 to April 22 (MODESE, 2011-

f).

According to MODESE's (2011g) *Missouri Assessment Program: Examiner's Manual*, the assessment included both constructed response and selected response items throughout the assessments. Students were required to provide an original response on constructed response items. The constructed response items measured content knowledge and provided an explanation about the student's thought process for responding to the question (MODESE, 2011c). Students are required to read a question and select one of the three to five provided choices as the correct answer for the selected response items. The selected response items assessed content knowledge and provided insight to the student's thinking (MODESE, 2011c).

Four achievement levels are determined from the scale score ranges: advanced, proficient, basic, and below basic; the achievement level scores indicate content knowledge and skill attainment on the Grade Level Expectations (GLE) (MODESE, 2011c, 2014). An advanced achievement level indicates the student demonstrated a thorough understanding of the grade level content and earned a scale score above the identified ranges (MODESE, 2011c, 2014). A proficient achievement level means the student demonstrated grade level expected content knowledge and earned a scale score between the specified ranges (MODESE, 2011c, 2014). The basic achievement level shows the student exhibits partial grade level content knowledge and earned a scale score within the specific ranges (MODESE, 2011c, 2014). The below basic achievement level indicates a lack of understanding the grade level specific content and the student earned a scale score lower than the basic range (MODESE, 2011c, 2014). Table 6 contains the 2011 achievement level scale scores range by grade levels.

Table 6

2011 MAP Communication Arts Achievement Level Scale Score Ranges

Achievement Levels	Grade 3	Grade 4	Grade 5
Below Basic	455-591	470-611	485-624
Basic	592-647	612-661	625-674
Proficient	648-672	662-690	675-701
Advanced	673-790	691-820	702-840

Note. From *Missouri Assessment Program Grade-Level Assessments: Guide to Interpreting Results*, by MODESE, 2011c.

Grade level specific *Examiner Manuals* contain standardized directions and timing guidelines for each assessment and subtest (MODESE, 2011f). The *Missouri Assessment Program Grade-Level Assessments: Test Coordinator's Manual* (2011f) contained the examiner guidelines, timing guidelines, and test security guidelines. Following the administration of the MAP, the booklets are returned to CTB/McGraw-Hill for scoring (2011f). The selected response test items are scored by machine and the constructed response items are hand scored by trained personnel (MODESE, 2011f).

MAP measurement. This section reviews the data collected from the Communication Arts MAP. The dependent variable Communication Arts MAP scale scores were referenced in research questions one through five. MAP scale scores were obtained from correct responses when students made valid attempts to complete a content area MAP assessment; the assessment also establishes the student's achievement level within a specific content area (MODESE, 2011c). "The scale scores range in value from 455 to 875 for Communication Arts" (MODESE, 2011c, p. 4). These numerical scale

scores were used to measure Communication Arts MAP performance and assign achievement levels.

MAP validity and reliability. The *Missouri Assessment Program Grade-Level Assessments: 2011 Addendum to the 2010 MAP Technical Report* (2011e) provided validity and reliability information. The *Missouri Assessment Program Grade-Level Assessments: 2010 MAP Technical Report* (2010) provided information about the validity of the MAP. "Evidence for construct-related validity – the meaning of test scores and the inferences they support – is the central concept underlying the MAP validation process" (MODESE, 2010, p. 131). Johnson and Christensen (2008) define construct validity as, "the extent to which a higher order construct is represented in a particular study" (p. 584). Construct-irrelevant variance and construct under-representation were considered in the development of the MAP (MODESE, 2010). "Construct-irrelevant variance refers to error variance that is caused by factors unrelated to the constructs measured by the test" (MODESE, 2010, p. 131). "Construct under-representation occurs when the content of the assessment does not reflect the full range of content that the assessment is expected to cover. MAP is designed to represent the Show-Me Standards/GLE Strands" (MODESE, 2010, p. 131). The MAP does not attempt to minimize the construct under-representation.

To ensure the reliability of the scoring of the constructed-response items, inter-rater reliability statistics were calculated (MODESE, 2011c). "For each item, a weighted Kappa was calculated to reflect the level of improvement beyond the chance level in the consistency of scoring" (MODESE, 2011e, p. 7). For the Communication Arts

assessments, the raters were in 93% agreement (MODESE, 2011e). Cronbach's

coefficients alpha were reported for each grade level three through five in Table 6

(MODESE, 2011e). Cronbach's coefficient alpha measures the internal consistency of

items within a group (Johnson & Christensen, 2008). Cronbach's coefficients alpha were

computed using census data and resulted in reliability statistics of 0.90 or greater

(MODESE, 2011e). These statistics provide strong evidence for internal consistency.

These statistics also provide strong evidence for the reliability of the measurement using

the Communication Arts MAP.

Table 7

Reliability in Communication Arts MAP

Grade	Number of Items	Number of Score Points	Cronbach's Alpha
3	58	62	.91
4	58	62	.92
5	56	61	.91

Note. Adapted from *Missouri Assessment Program Grade-Level Assessments: 2011 Addendum to the 2010 Technical Report* by MODESE, 2011e, p. 30.

Due to financial reasons, Missouri's Department of Elementary and Secondary

Education (MODESE) did not require the performance events and writing prompt to be

administered on the Communication Arts, Mathematics, and Science assessments on the

2011 MAP. On the 2011 MAP, the performance events and writing prompts were

included in the assessment booklets; however, under the guidelines provided from

Missouri, schools were mandated not to administer specific sections of the MAP

(MODESE, 2011e, 2011g). The removal of the performance events and writing prompts

impacted the third grade Communication Arts MAP assessment at the elementary; the

absence of the performance event removed four points from the total possible earned on

the Communication Arts MAP assessment (MODESE, 2011c). The four point deduction

required Missouri to adjust the cut scores for the 2011 year (MODESE, 2011c).

MODESE analyzed the differences in cut scores among the 2010 and 2011 MAP scores

to determine the effect of the removal of the performance events from the 2011

assessment. It was determined that there was a slight improvement in scale scores when

the performance events were removed (MODESE, 2011c). However, the slight increase

in scale scores was less than one point difference in the third grade Communication Arts

scores when comparing the 2010 and 2011 scores (MODESE, 2011c).

CTB/McGraw-Hill (2011) reviewed the impact the removal of the performance

events and writing prompt had on the MAP reliability. As stated in the *Missouri*

Assessment Program Grade-Level Assessments: 2011 Addendum to the 2010 MAP

Technical Report (2011f),

> The removal of the [performance events] PEs does not unduly impact the test
>
> reliability statistics. Overall, the test reliability for each grade/content area is
>
> above 0.90. This is not surprising since [constructed response] CR items affect
>
> test reliability less than [selected response] SR items do. (p. A-15)

Due to the impact of the reliability statistics affected by the removal of the

performance events, Missouri's Department of Elementary and Secondary Education

(MODESE) questioned if 2010 and 2011 MAP data would be comparable (MODESE,

2011e).   By eliminating the performance events from the 2011 MAP, the Department of

Elementary and Secondary Education and CBT/McGraw-Hill (2011) decreased the

testing times and days; however, there was little variation in the mean scale score and achievement level (MODESE, 2011e).

In order to make valid cross-year comparisons, the same construct [CA] must be measured from year to year. From the analyses of the percentage of items measuring each GLE/Content Standard, it appears that the same construct is generally being measured in all grades/content areas. (MODESE, 2011e, p. A-16).

The *Missouri Assessment Program Grade-Level Assessments: 2011 Addendum to the 2010 MAP Technical Report* (2011e) summarizes the validity and reliability of the assessment in chapter 9. "All reliability statistics are .90 or greater for all tests indicating acceptable reliability" (MODESE, 2011e, p. 28). The validity of the assessment was obtained from the construct validity and the item fit (MODESE, 2010). The removal of the performance events did not require the Department of Elementary and Secondary Education to rescale the MAP test or the standards (MODESE, 2011e). Despite the removal of the performance events in 2011, the MAP scale scores were still comparable to previous years (MODESE, 2011e).

Data Collection Procedures

Prior to collecting the data for this dissertation, the researcher requested the approval of the Sunshine School District. The request for archival data was made to the Assistant Superintendent of Elementary Education and the Director of Extended Learning in the Sunshine School District. The request and approval letters are included (see Appendices A and B). In addition, the researcher applied to the Baker University Institutional Review Board for permission to conduct the study. The application and

approval letter from the Baker University Review Board are included with the requests (see Appendices C and D). The archival data was electronically sent from the Director of Extended Learning to the research student in separate Word, Excel, and Portable Document Format (PDF) documents. Individual student 2011 MAP data from five elementary buildings was sent in a Word document. The 2011 socio-economic status report was sent in Excel documents. Individual student 2011 R-CBM AIMSweb data from five elementary buildings was sent in an Excel document. This data was combined into one Excel workbook where the researcher replaced individual student names with identification numbers in order to maintain anonymous and confidential information. The Excel workbook was comprised of individual student identification numbers, elementary schools were coded as numbers to protect the anonymity of the schools, individual student 2011 Communication Arts MAP data was included by scale scores, individual student socio-economic statuses were coded to indicate free/reduced or full-priced lunch support, individual student 2011 R-CBM median scores, gender was coded as male or female, race/ethnicity was coded as Asian, Black, Hispanic, Multiracial, or White.

Data Analysis and Hypothesis Testing

A hypothesis was developed to address each of the five research questions within the study. Each research question is listed below followed by the hypothesis and data analysis utilized. The researcher imported the data into IBM® Statistical Package for the Social Sciences (SPSS®) 22.0 to conduct the analyses.

Research question one. To what extent is there a relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP Communication Arts scale scores?

Research hypothesis one. The relationship between R-CBM Benchmark scale scores and the MAP Communication Arts scale scores is affected by reading fluency.

The relationship between the variables was examined using a Pearson product moment correlation coefficient. The correlation coefficient was calculated to measure the strength and direction of the relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts achievement score. A one sample *t* test was conducted to determine if the correlation coefficient was statistically significant. The significance level was set at .05.

Research question two. To what extent is the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP Communication Arts scale scores, affected by grade level?

Research hypothesis two. The relationship between the R-CBM Benchmark scale scores and MAP Communication Arts scale scores is affected by grade level.

Scores were disaggregated by grade level. A correlation was calculated to measure the strength and direction of the relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores for students at each grade level. A Fisher's *z* test was conducted to compare each pair of correlations to determine if the difference between them was statistically significant. The correlation for third graders was compared to the correlation for fourth graders, the correlation for fourth

graders was compared to the correlation for fifth graders, and the correlation for third graders was compared to the correlation for fifth graders. The significance level was set at .05.

Research question three. To what extent is the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP Communication Arts scale scores, affected by gender?

Research hypothesis three. The relationship between the R-CBM Benchmark scale scores and MAP Communication Arts scale scores is affected by gender.

Scores were disaggregated by gender. A correlation was calculated to measure the strength and direction of the relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts achievement for male students and for female students. A Fisher's *z* test was conducted to compare the correlation for males with the correlation for females to determine if the difference between them was statistically significant. The significance level was set at .05.

Research question four. To what extent is the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP Communication Arts scale scores, affected by race/ethnicity?

Research hypothesis four. The relationship between the R-CBM Benchmark scale scores and MAP Communication Arts scale scores is affected by race/ethnicity.

Scores were disaggregated by race/ethnicity. A correlation was calculated to measure the strength and direction of the relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts achievement for students in each

race/ethnicity category: Asian, Black, Hispanic, Multiracial, and White. A Fisher's z test

was conducted to compare each pair of correlations to determine if the difference

between them was statistically significant. The correlation for Asian students was

compared to the correlation for Black students, the correlation for Asian students was

compared to the correlation for Hispanic students, the correlation for Asian students was

compared to the correlation for Multiracial students, and the correlation for Asian

students was compared to the correlation for White students. The significance level was

set at .05.

Research question five. To what extent is the relationship between reading

fluency, as measured by the R-CBM Benchmark scale scores, and student performance,

as measured by the MAP Communication Arts scale scores, affected by socio-economic

status?

Research hypothesis five. The relationship between the R-CBM Benchmark

scale scores and MAP Communication Arts scale scores is affected by socio-economic

status.

Scores were disaggregated by socio-economic status. A correlation was

calculated to measure the strength and direction of the relationship between the R-CBM

Benchmark scale scores and the MAP Communication Arts achievement for students in

each of the SES categories. A Fisher's z test was conducted to compare the correlation

between the R-CBM Benchmark scale scores and the MAP Communication Arts

achievement between free or reduced status students and full-priced status students to

determine if the difference between them was statistically significant. The significance level was set at .05.

Limitations

This study potentially had the following limitations.

1. The R-CBM and MAP Communication Arts assessments were administered by different examiners to some students. This could potentially limit the study based on teacher-student relationships and teacher training.

2. Race/ethnicity and socio-economic status were self-reported by parents. Upon enrolling in the Sunshine School District, parents were asked to select the race of the child. The race/ethnicity information was determined by the parent's enrollment information. At the beginning of each school year, parents were provided opportunities to apply for meal assistance by submitting the Free and Reduced Lunch application. This application form was optional and a child's confidential socio-economic status was established by the eligibility of the Free and Reduced Lunch form.

3. Students were administered the Communication Arts MAP assessments during the late spring over a series of days. The scale score was determined based on the student's performance on the entire Communication Arts section. While the teachers administered the MAP followed the standardized directions, there were external factors which could have influenced a child's performance on the MAP. Some of the external factors that could have influenced a child's performance were health, attitude, confidence,

wakefulness, and distress. These factors could have impacted a student's performance on the MAP depending on the significant degree of the factor(s).

Summary

Chapter three provided an overview of the non-experiemental, quantitative, correlational research study. The research questions and hypotheses were outlined in this chapter. The population and sample were described, as well as, the sampling procedures. In addition, the R-CBM Benchmark and Communication Arts MAP assessments were explained in detail. In Chapter four, the results of the hypothesis testing are presented to determine the extent to which there is a relationship between student achievement as measured by the R-CBM Benchmark scale scores and student performance on the Communication Arts MAP assessment.

Chapter Four

Results

The purpose of this study was to determine if there was a relationship between reading fluency, as measured by AIMSweb R-CBM Benchmark scale scores, and student performance, as measured by the Missouri Assessment Program (MAP) Communication Arts scale scores. An additional purpose was to determine if demographic variables affected the relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores. In previous chapters, the background of the study was stated, literature was reviewed, methodology was identified, and research questions, hypotheses, and hypotheses testing were stated. This chapter includes the descriptive statistics and the results of the hypothesis testing.

Descriptive Statistics

The potential participants in this study were enrolled in grades three, four, and five in the Sunshine School District during the 2010-2011 school year. The students were enrolled in five of the ten elementary schools in the Sunshine School District. The sample was $N = 885$ who participated in both the AIMSweb R-CBM Benchmark Spring assessment and the MAP Communication Arts assessment during the spring of 2011. The sample included 278 (31.4%) third grade students, 302 (34.1%) fourth grade students, and 305 (34.5%) fifth grade students. The sample included 405 (45.8%) female and 480 (54.2%) male students. The sample was comprised of 10 (1.1%) Asian students, 378 (42.7%) Black students, 50 (5.6%) Hispanic, 23 (2.6%) Multiracial students, and 424

(47.9%) White students. There were 201 (22.7%) participants who received free or reduced lunch and 684 (77.3%) participants who paid full price for lunch.

Hypothesis Testing

The analysis of the hypothesis testing for each research question are discussed in this section. The results of the analysis are described within the section.

Research question one. To what extent is there a relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP Communication Arts scale scores?

Research hypothesis one. The relationship between R-CBM Benchmark scale scores and the MAP Communication Arts scale scores is affected by reading fluency.

A Pearson product moment correlation coefficient was calculated to index the strength and direction of the relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores. A one-sample t test was conducted to test for the statistical significance of the correlation coefficient. The level of significance was set at .05. The correlation coefficient ($r = .776$) provided evidence for a strong positive relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores. The results of the one sample t test indicated a statistically significant relationship between R-CBM Benchmark scale scores and the MAP Communication Arts scale scores, $df = 883$, $p = .000$. As R-CBM Benchmark scale scores increase the MAP Communication Arts scale scores increase.

Research question two. To what extent is the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP Communication Arts scale scores, affected by grade level?

Research hypothesis two. The relationship between the R-CBM Benchmark scale scores and MAP Communication Arts scale scores is affected by grade level.

The data set was disaggregated by grade level and a correlation was calculated for third, fourth, and fifth grades. The third grade sample contained 278 students, the fourth grade sample contained 302 students, and the fifth grade sample contained 305 students. A total of 885 students met the participation criteria for this study. A Pearson product moment correlation was calculated to measure the strength and direction of the relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores for students at each grade level. The third grade correlation coefficient ($r = .773$) provided evidence for a strong positive relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores. The fourth grade correlation coefficient ($r = .770$) provided evidence for a strong positive relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores. The fifth grade correlation coefficient ($r = .777$) provided evidence for a strong positive relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores.

A Fisher's z test was conducted to compare each pair of correlations to address research question 2. The results of the Fisher's z test comparing the correlation for third grade and the correlation for fourth grade R-CBM Benchmark scale scores and MAP

Communication Arts scale scores indicated the correlations were not statistically

different, $z = .09$, $p = .928$. The results of the Fisher's z test comparing the correlation for

fourth grade and the correlation for fifth grade R-CBM Benchmark scale scores and MAP

Communication Arts scale scores indicated the correlations were not statistically

different, $z = -.21$, $p = .834$. The results of the Fisher's z test comparing the correlation

for third grade and the correlation for fifth grade R-CBM Benchmark scale scores and

MAP Communication Arts scale scores indicated the correlations were not statistically

different, $z = -.12$, $p = .905$. The results of the Fisher's z tests indicated that grade level

did not affect the relationship between reading fluency, as measured by the R-CBM

Benchmark scale scores and student performance, as measured by the MAP

Communications Arts scale scores.

Research question three. To what extent is the relationship between reading

fluency, as measured by the R-CBM Benchmark scale scores, and student performance,

as measured by the MAP Communication Arts scale scores, affected by gender?

Research hypothesis three. The relationship between the R-CBM Benchmark

scale scores and MAP Communication Arts scale scores is affected by gender.

The data set was disaggregated by gender and a correlation was calculated for

male and female students. There were 480 male and 405 female participants included in

this study. A Pearson product moment correlation was calculated by gender to index the

direction and strength of the relationship between the R-CBM Benchmark scale scores

and the MAP Communication Arts scale scores for male students and for female students.

A Fisher's z test was conducted to address research question 3. The two sample

correlations were compared. The correlation for males ($r = .777$) provided evidence for a strong positive relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores. The correlation for females ($r = .777$) provided evidence for a strong positive relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores.

A Fisher's z test was conducted to compare the correlation to determine if gender affected the relationship between reading fluency and student performance. The level of significance was set at .05. The results of the Fisher's z test comparing the correlation for male students and female students indicated the correlations were not statistically different, $z = .456$, $p = .912$. The Fisher's z test results indicated gender did not affect the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP Communications Arts scale scores.

Research question four. To what extent is the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP Communication Arts scale scores, affected by race/ethnicity?

Research hypothesis four. The relationship between the R-CBM Benchmark scale scores and MAP Communication Arts scale scores is affected by race/ethnicity.

There were five categories for the race/ethnicity research question 4. Due to sample size issues, the Asian students were not included in the hypothesis test and the Hispanic and Multiracial students were grouped into one category labeled Hispanic/Multiracial. Scores were disaggregated by race/ethnicity. A Pearson product

moment correlation was calculated to measure the strength and direction of the relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores for students in each race/ethnicity category: Black, Hispanic/Multiracial, and White. The Black race/ethnicity category correlation coefficient ($r = .792$) provided evidence for a strong positive relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores. The Hispanic/Multiracial race/ethnicity category correlation coefficient ($r = .796$) provided evidence for a strong positive relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores. The White race/ethnicity category correlation coefficient ($r = .738$) provided evidence for a strong positive relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores.

The Fisher's z tests were conducted to compare the correlations to determine if race/ethnicity affected the relationship between reading fluency and student performance. The results of the Fisher's z test comparing the correlation for Black students and the correlation for Hispanic/Multiracial students indicated the correlations were not statistically different, $z = -.08$, $p = .936$. The results of the Fisher's z test comparing the correlation for Black students and the correlation for White students indicated the difference between the correlations was marginally significant, $z = -1.84$, $p = .066$. The results of the Fisher's z test comparing the correlation for Hispanic/Multiracial students and the correlation for White students indicated the correlations were not statistically different, $z = -1.1$, $p = .271$. The results of the Fisher's z tests indicated race/ethnicity did

not affect the relationship between reading fluency, as measured by the R-CBM

Benchmark scale scores and student performance, as measured by the MAP

Communications Arts scale scores, when comparing the correlation of Black student's

scores and the correlation of Hispanic/Multiracial student's scores and the correlation of

Hispanic/Multiracial student's scores and the correlation of White student's scores. The

results of the Fisher's z tests indicated race/ethnicity marginally affects the relationship

between reading fluency, as measured by the R-CBM Benchmark scale scores, and

student performance, as measured by the MAP Communications Arts scale scores, when

comparing the correlation of Black student's scores and the correlation of White student's

scores.

      Research question five. To what extent is the relationship between reading

fluency, as measured by the R-CBM Benchmark scale scores, and student performance,

as measured by the MAP Communication Arts scale scores, affected by socio-economic

status?

      Research hypothesis five. The relationship between the R-CBM Benchmark scale

scores and MAP Communication Arts scale scores is affected by socio-economic status.

      The data set was disaggregated by socio-economic status. A Pearson product

moment correlation was calculated to measure the strength and direction of the

relationship between the R-CBM Benchmark scale scores and the MAP Communication

Arts scale scores for students in each of the SES categories. The correlation for free or

reduced status students ($r = .783$) provided evidence for a strong positive relationship

between the R-CBM Benchmark scale scores and the MAP Communication Arts scale

scores. The correlation for full-priced status students ($r = .753$) provided evidence for a strong positive relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores.

A Fisher's z test was conducted to compare the correlation to determine if socio-economic status affected the relationship between reading fluency and student performance. The level of significance was set at .05. The results of the Fisher's z test comparing the correlation for free or reduced students and the correlation for full-priced students indicated the correlations were not statistically different, $z = .91$, $p = .363$. The results of the Fisher's z test indicated SES status did not affect the relationship between reading fluency, as measured by the R-CBM Benchmark scales scores and student performance, as measured by the MAP Communications Arts scale scores.

Summary

This chapter included the descriptive statistics and results of the hypothesis testing for this study. The results from the calculation of the correlation coefficient, testing the statistical significance of the correlation, and the comparison of grade, gender, race/ethnicity, and socio-economic status were included in this chapter. Results indicated there was a strong relationship between the R-CBM Benchmark scale scores and the MAP Communication Arts scale scores. However, the results from the Fisher's z tests indicated the demographic (grade, gender, race/ethnicity, and socio-economic status) differences between correlations were not statistically significant with the exception of the difference between the correlation for Black students and the correlation for White students. The difference between the correlation for Black students and the correlation

for White students was marginally statistically significant. Chapter five includes an

overview of the study, major findings, findings related to the literature, implications for

action, recommendations for future studies, and concluding remarks.

Chapter Five

Interpretation and Recommendations

Standardized assessments have an important role in identifying the areas

of strengths and weaknesses in student achievement for districts, educators, and

students. The Missouri Assessment Program (MAP) has served as the

standardized assessment of student performance which examined the correlation

between reading fluency and student performance for students in grades three

through five. The fluency measurement used for this study was Achievement

Improvement Monitoring System (AIMSweb) Reading-Curriculum Based

Measures (R-CBM) Benchmark scale score. This chapter contains a summary of

the study including an overview of the problem, purpose statement, and research

questions, and a review of the methodology. The major findings and how they

relate to the literature review are also included in this chapter. Finally,

implications for action and recommendations for future research are shared.

Study Summary

This study was conducted to determine the relationship between reading fluency,

as measured by the R-CBM Benchmark scale scores and student performance, as

measured by the MAP Communication Arts scale scores. The sample consisted of third

through fifth grade students attending the Sunshine School District during the 2010-2011

school year. This section provides an overview of chapters one through four of the study.

This section also includes an overview of the problem, the purpose of the statements and

the research questions, review of the methodology, major findings, and the findings related to the literature.

Overview of the problem. Due to the strong emphasis placed on the results of the Missouri Assessment Program (MAP), Missouri educators are seeking effective instructional practices to implement within their classrooms to develop academically proficient students. The Sunshine School District utilizes AIMSweb's R-CBM to measure reading fluency (Assistant Superintendent of Elementary Education, personal communication, September 3, 2010). The R-CBM is the only fluency assessment administered in the Sunshine School District (Assistant Superintendent of Elementary Education, personal communication, September 3, 2010). The R-CBM measures a student's reading fluency progress (Shinn & Shinn, 2002a). The problem researched in this study was that the Sunshine School District was monitoring reading fluency with the R-CBM Benchmark passages, but the district did not know if there was a relationship between reading fluency and student performance.

Purpose statement and research questions. The purpose of this study was to determine the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP Communication Arts scale scores. The additional purposes were to determine if the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP CA scale scores, was affected by grade, gender, race/ethnicity, and socio-economic status. Five research questions were developed to guide the study. The research questions were developed to determine

if there was a relationship between the independent variable (R-CBM Benchmark scale scores) and the dependent variable (MAP Communication Arts scale scores), and if the moderator variables (grade level, gender, race/ethnicity, and socio-economic status) affected the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by the MAP CA scale scores.

Review of the methodology. A quantitative non-experimental correlational research design was utilized in this study. The population and sample for this study included 885 students in grades three through five from the Sunshine School District. The researcher analyzed third through fifth grade students' AIMSweb R-CBM spring Benchmark scale scores and 2011 MAP Communication Arts scale scores from five elementary schools within the Sunshine School District. One of the hypotheses in this study stated that a positive relationship exists between the independent variable (R-CBM Benchmark scale score) and the dependent variable (MAP Communication Arts scale score). The remaining four hypotheses in this study stated that the moderator variables (grade level, gender, race/ethnicity, and socio-economic status) affected the relationship between the independent variable (R-CBM Benchmark scale score) and the dependent variable (MAP Communication Arts scale score) when each were considered.

Data was imported into IBM ® Statistical Package for Social Sciences (SPSS®) 22.0 for analysis. Pearson product moment correlations were calculated to determine the strength and the direction of the relationship between reading fluency, as measured by the R-CBM Benchmark scale score, and student performance, as measured by the MAP

Communication Arts scale score. Correlation coefficients used to test for the significance were calculated to determine the strength and direction of the relationship between reading fluency, as measured by the R-CBM Benchmark scale score, and student performance, as measured by the MAP Communication Arts scale scores. A one sample *t* test was conducted to determine if the correlation coefficient was statistically significant. Fisher's *z* tests were also conducted to determine if the relationship between reading fluency and student performance was affected by grade, gender, race/ethnicity, or socio-economic status.

Major findings. Results indicated there is a statistically significant relationship between reading fluency, as measured by R-CBM Benchmark scale scores, and student performance, as measured by MAP Communication Arts scale scores. As reading fluency R-CBM scores increased, the student performance scores on the MAP Communication Arts also increased. Results indicated that grade, gender, race/ethnicity, and socio-economic status did not affect the relationship between reading fluency, as measured by R-CBM Benchmark scale scores, and student performance, as measured by MAP Communication Arts scale scores. However, the results indicated race/ethnicity marginally affected the relationship between R-CBM Benchmark scale scores and the MAP Communication Arts scale scores when comparing the correlation for Black student's scores and the correlation of White student's scores.

Findings Related to the Literature

This section connects the findings from the current study with the research presented in chapter two. Similarities and differences between the current study's

findings and the research presented in chapter two are noted. The results of the current study indicated there is a positive relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by MAP Communication Arts scale scores. This finding is consistent with the Merino and Beckman (2010) study, in which, the researchers Merino and Beckman (2010) examined the predictive value between the R-CBM and the Measure of Academic Progress in Nebraska and found there was a predictive value between the R-CBM and the Measure of Academic Progress. In addition Stage and Jacobsen (2001) also examined the predictive value between the R-CBM and the Washington Assessment of Student Learning (WASL). The results from the Stage and Jacobsen (2001) study indicated a positive relationship existed between the R-CBM scores and the WASL scores.

The results of the current study indicated no difference in the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by MAP Communication Arts scale scores, based on grade level. Third, fourth, and fifth grade levels were included in the current study. These results are consistent with the Rasinski, Rikli, and Johnston's (2009) research results, which indicated a strong correlation exists between reading fluency and student performance for students in grades three and five.

The current study's results indicated there was no difference in the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by MAP Communication Arts scale scores, when the data was disaggregated by gender. The results of this study are consistent with the

findings from the Kirkham and Lampley (2014) study. Kirkham and Lampley (2014) found that gender does not affect the relationship between the R-CBM Benchmark scale scores and student performance on the Tennessee Comprehensive Assessment Program (TCAP).

The results of this study indicated there was no difference in the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by MAP Communication Arts scale scores, by race/ethnicity. Three race/ethnicity categories were utilized in this study. The race/ethnicity categories were Black, Hispanic/Multiracial, and White students. The results of this study indicated no difference existed when comparing the correlational coefficients for Black and Hispanic/Multiracial students and Hispanic/Multiracial and White students. The current study's results indicated a marginally significant difference when comparing the correlational coefficients for Black and White students. These findings are consistent with findings from the Buck and Torgesen (2003) study. Buck and Torgesen (2003) found a strong correlation between DIBELS Oral Reading Fluency (ORF) and the Florida Comprehensive Assessment Test – Sunshine State Standards (FCAT-SSS). The correlation for African-American student's scores and the correlation for white student's scores were not significantly different. The correlation for Hispanic student's scores and the correlation for white student's scores were not significantly different. Income did affect the relationship between fluency and comprehension for the high-income students with proficient fluency skill. Income did affect the relationship between fluency and comprehension for the low-income students with proficient fluency

skill (Buck and Torgesen, 2003). The Despite the race/ethnicity variable, the correlation among the student's assessment scores was high. The results from this study support the findings from the Buck and Torgesen (2003) study.

The current study's results indicated there was no difference in the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by MAP Communication Arts scale scores, based on socio-economic status. For this study, students were divided into the two categories of Free or Reduced and Full-Priced lunch status. The correlations were not statistically different when comparing the Free or Reduced category with the Full-Priced category. The findings from the Paleologos and Brabham (2011) study are in contrast with the findings from this study. Paleologos and Brabham (2011) found a statistically significant difference between reading fluency, as measured by the DIBELS ORF scores, and student performance, as measured by the Stanford Achievement Test-Tenth Edition (SAT-10) scores, based on socio-economic status. The correlations from the Paleologos and Brabham (2011) study were statistically significant for high-income and low-income students. "Reading fluency, as measured by DIBELS ORF, is effective for predicting performance of high-income students in reading comprehension and overall reading achievement on standardized test" (Paleologos & Brabham, 2011, p. 68).

The similarities and differences from the current study and the literature were reviewed in this section. The positive relationship between reading fluency and student performance was a consistent finding among the current study and the literature in chapter two. This consistency supports the importance of reading fluency. The

moderator variables, grade level, gender, race/ethnicity, and socio-economic status resulted in inconsistent findings between the current study and the literature.

Conclusions

As introduced in chapter one, Missouri educators continuously evaluate communication arts programs, assessments, and classroom practices to monitor the relationship between reading fluency and MAP proficiency. The Sunshine School District utilized AIMSweb's R-CBM Benchmark passages to monitor reading fluency. The findings from this study have implications for educators ranging from classroom teachers to state and national policy makers. The following section outlines implications for actions, recommendations for future research, and concluding remarks.

Implications for action. The Sunshine School District administers the R-CBM Benchmark assessments to monitor individual reading fluency scores. The MAP is administered annually in the spring to meet the assessment guidelines established by Missouri's Department of Elementary and Secondary Education (MODESE). Since a positive relationship was found between the R-CBM Benchmark scale scores and MAP Communication Arts scale scores, it is recommended that the Sunshine School District continue utilizing the R-CBM assessments. It is also recommended that the Sunshine School District examine the amount of instructional time devoted to reading fluency during the school day to determine if additional time needs to be provided within the schedule.

Results indicated that grade, gender, race/ethnicity, and socio-economic status did not affect the relationship between reading fluency, as measured by the R-CBM

Benchmark scales scores, and student performance, as measured by MAP CA scale scores. However, results indicated race/ethnicity marginally affected the relationship between reading fluency, as measured by the R-CBM Benchmark scale scores, and student performance, as measured by MAP CA scale scores when comparing the correlation for Black student's scores and the correlation for White student's scores. These findings indicate the R-CBM is a strong predictor of assessment scores for all subgroups. It is recommended that the Sunshine School District monitor the frequency and quality of the fluency instruction occurring. Monitoring fluency practice ensures all students receive rigorous reading fluency instruction as directed. The Sunshine District should also consider increasing the amount of time dedicated to reading fluency practice to ensure all students have adequate time to develop and improve reading fluency levels.

Recommendations for future research. Several recommendations have been developed to further analyze the impact reading fluency has on student performance. Due to the fact that Missouri's assessment system has been aligned to the Missouri Learning Standards, an online fixed-form assessment was administered for the first time in the spring of 2015 (MODESE, 2014c). Students in grades three through eight participated in this new online version (MODESE, 2014c). This study could be replicated to determine if a relationship between R-CBM Benchmark scale scores and the new online MAP Communication Arts scale scores exists. This study could also be replicated to determine if grade level, gender, race/ethnicity, and socio-economic status affect the relationship between the two assessments. Additionally, a study could include students in grades sixth, seventh, and eighth to determine if the relationship between the

R-CBM Benchmark scale scores and the MAP Communication Arts scale scores is statistically significant. The purpose of the study could be to replicate the current study with middle school students. This study could also be replicated using data from other states to determine if the findings are consistent with the Missouri results. Finally, a researcher could extend the study to include two additional groups within the moderator variables. These additional groups could be English Language Learners and students with Individual Education Plans.

Concluding remarks. Reading fluency is a skill that all students need to possess to ensure academic success. All school districts must continue to value reading fluency instruction within all grade levels and invest in programs that include reading fluency as an essential component. In addition to valuing fluency instruction, districts also need to value the data collected from reading fluency assessments. By continuously analyzing reading fluency data, school districts can plan and provide resources for increasing reading fluency and student performance for their students

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Mrs. Suzanne Brennaman
Westridge Elementary School
suzanne.brennaman@raytownschools.org

April 22, 2012

To: Lynda Shrader, Assistant Superintendent of Elementary Education

Ms. Shrader, I am working on my doctorate of education leadership through Baker University. I am interested in writing my dissertation on the impact of reading fluency on MAP achievement. I believe this data will provide the district with valuable information about classroom practices and assessments. I also believe this information could benefit our district in the way of scheduling the minutes for communication arts in grades three through five.

I need the following data to complete my study:
2011 individual student CA MAP scores for students in grades 3-5
2011 student demographic information: gender, race, grade, and socio-economic status for students in grades 3-5
2011 spring R-CBM AIMSweb benchmark scores for students in grades 3-5

I need this data from the following schools: Blue Ridge, Eastwood, Fleetridge, Robinson, and Westridge.
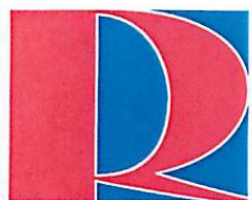
At the conclusion of my study, I will return the data to you to ensure the confidentiality of the students.

If you have any questions, please contact me at 816-268-7290.

Sincerely,

Suzanne Brennaman
Principal
Westridge Elementary School

Appendix B: District Data Approval Letter

6608 Raytown Road •Raytown, MO 64133 • Phone (816) 268-7000 • Fax (816) 268-7029

Mrs. Lynda Shrader
Assistant Superintendent of Elementary Education
Lynda.shrader@raytownschools.org

May 18, 2012

To: Marlene DeVilbiss, Director of Federal Programs
Cc: Suzanne Brennaman

Marlene, please provide Suzanne Brennaman with the following data for the five listed schools. Suzanne is using this data to complete her dissertation work at Baker University. At the conclusion of her study, Suzanne will return the data to you to ensure the confidentiality of the students.

Please provide Suzanne with:
2011 individual student CA MAP scores
2011 student demographic information: gender, race, grade, and socio-economic status
2011 spring R-CBM AIMSweb benchmark scores

Suzanne needs this data for 3rd-5th grade students attending Blue Ridge, Eastwood, Fleetridge, Robinson, and Westridge during the 2010-2011 school year.

If you have any questions, please contact me at 816-268-7220.

Sincerely,

Lynda Shrader
Assistant Superintendent of Elementary Education
Raytown School District

Appendix C: Baker University IRB Request

BAKER
UNIVERSITY

SCHOOL OF EDUCATION
GRADUATE DEPARTMENT

Date: 8-27-14

IRB PROTOCOL NUMBER _____

(IRB USE ONLY)

IRB REQUEST
Proposal for Research
Submitted to the Baker University Institutional Review Board

I. **Research Investigator(s)** (Students must list faculty sponsor first)

Department(s)   **School of Education Graduate Department**

Name   Signature

1. Dr. James Robins   _____,   Major Advisor

2. Margaret Waterman   _____,   Research Analyst

3. Dr. Kokoruda   _____,   University Committee
                                                    Member

4. Dr. Staci Mathes   _____,   External Committee
                                                    Member

Principal Investigator: Suzanne Brennaman
Phone: 816-935-1556
Email: suzanne.brennaman@raytownschools.com
Mailing address: 1126 SW Eastman Ct
                 Blue Springs, MO 64015

Faculty sponsor: Dr. James Robins
Phone: 913-344-122
Email: jrobins@bakeru.edu

Expected Category of Review: _X_ Exempt ___ Expedited ___ Full

II: Protocol: (Type the title of your study)

The Impact of Reading Fluency on Missouri Assessment Program Achievement

Summary

In a sentence or two, please describe the background and purpose of the research.

The purpose of this study was to determine if a relationship exists between students' scores on the R-CBM Benchmark assessments and the achievement levels on the Communication Arts MAP assessments. The second purpose of the study was to determine if grade level affected the relationship between the R-CBM Benchmark scale score and student achievement on the Communication Arts MAP. The third purpose of this study was to identify whether the relationship between R-CBM Benchmark assessments and MAP achievement levels was influenced by gender. The fourth purpose of the study was to examine if the relationship between MAP achievement levels and R-CBM Benchmark scores is influenced by race/ethnicity. The final purpose of the study was to examine whether the relationship between MAP achievement levels and R-CBM Benchmark scores is influenced by socioeconomic status.

Briefly describe each condition or manipulation to be included within the study.

There will be no conditions or manipulations in this study.

What measures or observations will be taken in the study? If any questionnaire or other instruments are used, provide a brief description and attach a copy.
Will the subjects encounter the risk of psychological, social, physical or legal risk? If so, please describe the nature of the risk and any measures designed to mitigate that risk.

The dependent variable will be the academic achievement as measured by the Communication Arts MAP. The independent variable will be student demographics and reading fluency. There will be no questionnaires or other instruments utilized in the study. Subjects will not encounter psychological, social, physical, or legal risks.

Will any stress to subjects be involved? If so, please describe.

There will be no stress to subjects involved

Will the subjects be deceived or misled in any way? If so, include an outline or script of the debriefing.

There will be no deception or misleading in this study.

Will there be a request for information which subjects might consider to be personal or sensitive? If so, please include a description.

There will be no request for information of a personal or sensitive nature.

.

Will the subjects be presented with materials which might be considered to be offensive, threatening, or degrading? If so, please describe.

Subjects will not be presented with materials that are offensive, threatening, or degrading.

Approximately how much time will be demanded of each subject?

The subjects will not experience any disruption to the instructional time.

Who will be the subjects in this study? How will they be solicited or contacted? Provide an outline or script of the information which will be provided to subjects prior to their volunteering to participate. Include a copy of any written solicitation as well as an outline of any oral solicitation.

The subjects of the study will be third through fifth grade students in the Raytown School District during the 2010-2011 school year. There will be no direct contact with students. The data sets will be provided by the Raytown School District. A written request was submitted and the requested data sets were provided. The written request is attached.

What steps will be taken to insure that each subject's participation is voluntary? What if any inducements will be offered to the subjects for their participation?

The data is archival there is no need for solicitation.

How will you insure that the subjects give their consent prior to participating? Will a written consent form be used? If so, include the form. If not, explain why not.

Subjects will not be contacted in this study; therefore written consent will not be necessary.

Will any aspect of the data be made a part of any permanent record that can be identified with the subject? If so, please explain the necessity.

There will be no impact on the subjects' permanent records.

Will the fact that a subject did or did not participate in a specific experiment or study be made part of any permanent record available to a supervisor, teacher or employer? If so, explain.

There will be no impact on the subjects' permanent records.

What steps will be taken to insure the confidentiality of the data? Where will it be stored? How long will it be stored? What will be done with it after the study is completed?

Each subject will be assigned a numeric code to ensure anonymity. Names will be removed from the data set to further protect confidentiality. The data will be kept for three to five years from completion of the study. After that time, the data will be destroyed.

If there are any risks involved in the study, are there any offsetting benefits that might accrue to either the subjects or society?

There will be no direct risks to the subjects.

Will any data from files or archival data be used? If so, please describe.

The data in this study will be archival data. The archived information will include 2011 MAP data, 2011 AIMSweb R-CBM data, 2011 socio-economic data, gender, race/ethnicity, and grade data. Each subject will be assigned a numeric code to ensure anonymity.

Appendix D: Baker University IRB Approval Letter

May 11, 2015

Dear Suzanne Brennaman and Dr. Robins,

The Baker University IRB has reviewed your research 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 CTodden@BakerU.edu or 785.594.8440.

Sincerely,

Chris Todden EdD
Chair, Baker University IRB

Baker University IRB Committee
Verneda Edwards EdD
Sara Crump PhD

Erin Morris PhD
Scott Crenshaw