ABSTRACT

Sheri Dial Herndon, AN ANALYSIS OF THE IMPACT OF mCLASS: READING 3D ON STUDENTS' READING ACHIEVEMENT IN SECOND GRADE (Under the direction of Dr. William Grobe). Department of Educational Leadership, March 2015.

The purpose of this program evaluation was to research North Carolina's adoption of mClass: Reading 3D to determine program effectiveness, how teachers use student data from the program to improve instructional practices, and the extent, if any, mClass: Reading 3D has impacted students' reading achievement in second grade. Additionally, the researcher analyzed data to report if and how continuous and ongoing professional development associated with mClass: Reading 3D provided teachers with the necessary skills to effectively impact students' reading achievement.

Data from this study will be used to inform the implementation process of mClass: Reading 3D that may have a positive impact on students' reading achievement. A descriptive study using both qualitative and quantitative data was used to address the research questions.

Data were collected from teacher surveys, educational administrators, transformational/instructional coaches, and student test scores to determine the impact of mClass: Reading 3D on student reading achievement in second grade. The findings for this study indicated that mClass: Reading 3D had a somewhat positive impact on students' reading achievement in grades K-3. The K-3 teachers are using mClass: Reading 3D data to drive instruction. Although the findings of this study were somewhat positive, the data are not being utilized to the fullest potential to improve student reading achievement. The findings suggested there is a need for specific and ongoing professional development to improve the overall effectiveness and implementation of the program.

AN ANALYSIS OF THE IMPACT OF mCLASS: READING 3D ON STUDENTS' READING ACHIEVEMENT IN SECOND GRADE

A Dissertation

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Doctor of Education in Educational Leadership

by

Sheri Dial Herndon

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Chapters 1-3 were written in collaboration with my colleagues:
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AN ANALYSIS OF THE IMPACT OF mCLASS: READING 3D ON STUDENTS'

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DEDICATION

I would like to thank my husband, Chad Herndon, for his support and unconditional love throughout the dissertation process. I am grateful for my two children, Darien Alexis and Jalyn Montana, who have inspired me and helped me stay focused to make sure my family came first and working on a dissertation second. My parents, Allen and Yvonne Dial, and sister, Lisa Dial Hunt, were excited, supportive, and encouraging as I continued to further my education by working on a doctorate degree. My family has given me strength and direction to complete this process. Dr. Ruth Dial Woods, my aunt, was available to hear my thoughts and concerns throughout the entire process. A special thank you is sent to my family for being by my side as I pursued this goal.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1: INTRODUCTION

The purpose of this study was to explore the relationship that exists between the history of reading, the impact of mClass: Reading 3D on student achievement in second grade, and the impact of quality professional development through a program evaluation. Data from this study will be used to improve the implementation process of mClass: Reading 3D that may have a direct impact on student achievement. This dissertation is a program evaluation of a state-mandated early reading assessment program implemented in K–3 classrooms in a rural public school system in North Carolina. Chapter 1 provides background information for implementing the mClass: Reading 3D Assessment Program in three selected public elementary schools in one school district. mCLASS: Reading 3D is a validated and research-based reading assessment which includes quick indicators of early skill development and deeper observations of student interaction with authentic text to diagnose reading comprehension of students enrolled in grades K–5 (Amplify Education, 2014a). The assessment provides a comprehensive view of an individual student's reading development.

The Need for Study

Prior to the adoption of mClass: Reading 3D, K–2 teachers in the State of North Carolina assessed reading skills using a running record. A running record is a tool developed by New Zealand educator Marie Clay that assists teachers in identifying patterns in student reading behaviors and serves as a way to precisely observe, record, and carefully analyze reading behaviors (Tierney & Readence, 2005). These patterns allow a teacher to see the strategies a student uses to make meaning of individual words and texts as a whole. Running records, when paired with comprehension inquiry, can be used to identify an instructional reading level for individual students. While running records are a diagnostic tool, they can and should be used to inform instruction and help extend a reader's use of strategies (Gunther, 2013). Clay (1993) provided detailed information for using a running record to analyze strategies. Running records allow teachers to monitor student achievement as they use resulting data to make decisions about appropriate instructional support and materials (Tierney & Readence, 2005).

Prior to the state mandated implementation of the mClass: Reading 3D assessment, no diagnostic standardized assessment program was used to evaluate students' reading achievement in grades K-2. The K-2 reading assessments that were being used throughout the state failed to meet the requirements of newly mandated state and federal initiatives such as Race to the Top and Read to Achieve. For example, goals and expectations of these K–2 assessments did not align with goals and expectations of the state-developed end-of-grade (EOG) reading test given to students in grade three to measure academic growth and proficiency levels. Further, the state did not include letter and sound identification in the 2005 North Carolina K-2 literacy assessment (North Carolina Department of Public Instruction [NCDPI], 2009). Since many schools and districts were including this component in locally developed assessments, letter and sound identification was a component added to the 2009 revised literacy assessment produced by the state as a strategy to improve reading skills (NCDPI, 2009). This component yielded information for planning and classroom instruction.

Book and print awareness was primarily used as a kindergarten assessment in 2005 (NCDPI, 2009). The North Carolina K-2 assessment, which was revised in 2009, included a book with a matching script as a component of the assessment. This was to be used during the first two years of school to ensure assessed skills were aligned with the North Carolina Standard Course of Study (NCDPI, 2009). Phonemic awareness was originally designed for use in grades K-1. However, beginning in 2009, the state required the assessment in grades K–2.

The running record contained leveled books to be used for fluency assessment. To enhance oral retell, the North Carolina K–2 revised assessment included the same rubric descriptors for fiction and nonfiction texts (NCDPI, 2009). Comparing a student's assessment in grade three to his/her assessment in grade two was quite problematic. Many educators stated that running records and K–2 assessments allowed too much teacher subjectivity and judgment, unlike the Grade 3 EOG. Therefore, many times this subjectivity led to a huge discrepancy between the performance of a student enrolled in K–2 as compared to third grade. By the end of the 2009–2010 school year, only 59% of third-grade students taking the North Carolina End-of-Grade reading test scored at or above Level III proficiency (NCDPI, 2010b).

An assessment gap definitely exists in U.S. schools. Schools are struggling to enable students to attain the advanced literacy skills required for the 21st century American economy (Haskins, Murnane, Sawhill, & Snow, 2012). Ralph Smith, Executive Vice President of the Annie E. Casey Foundation stated, "We will never close the achievement gap, we will never solve our dropout crisis, we will never break the cycle of poverty that afflicts so many children if we don't make sure that all our students learn to read" (as cited in Annie E. Casey Foundation, 2013b). Furthermore, to the detriment of the child, many times student reading deficiencies failed to be diagnosed until grade three. Essentially, 70% of students who reach age nine and who cannot read will remain illiterate (Shaywitz, 2005). Eamon (2002) found that households experiencing poverty provided a less cognitively stimulating environment, which is somewhat associated with lower achievement scores. Neuman and Celano (2001) reported that summer breaks for students from families with less income can mean less access to libraries, bookstores, camps, and literate experiences.

> The gap between strong and struggling readers increases significantly as children progress through school, according to a study of 382 children by Canadian researchers.

> The study found that as students progressed from kindergarten to grade three, those in the lower ranks of reading achievement were likely to remain there. Moreover, at each subsequent data collection point over a four-year period, the struggling readers fell further behind their grade-level reading peers. (Fiester, 2013, p. 4)

A real need exists to develop and build students' reading capacity during the primary and elementary years in order to prepare students to meet the reading challenges posed by heavy content and extensive curriculum requirements at the secondary level. Therefore, kindergarten, first, second, and third-grade students shall be assessed with valid, reliable, formative, and diagnostic reading assessments made available to local school administrative units by the North Carolina State Board of Education (NC General Assembly, 2012).

Deficiency in reading achievement starts early and accelerates over the course of a student's school experience (Keiser, 2011). Reading expectations increase as students leave elementary school and enter middle grades where they will face complex content-based informational texts. If teachers do not intervene and diagnose reading deficiencies early and appropriately, students who enter middle school as unsteady readers have a greater chance of becoming struggling readers (Sturtevant, 2003).

Since the passage of the No Child Left Behind Act in 2001, more and more states are implementing statewide assessments. This Act included a requirement that all children would be proficient in reading and mathematics by the 2013–2014 school year (U.S. Department of Education, 2010c). Schools and districts were held accountable for students' mastery of state academic content standards. The stakes were and still remain high since both federal and state legislation require tough sanctions for students, teachers, and school districts if they perform poorly on the new assessments. Federal mandates forced state and local education agencies to implement aggressive accountability measures to improve low test scores associated with reading deficiencies. For example, the North Carolina General Assembly's Read to Achieve program was enacted to ensure that every student reads at or above grade level by the end of third grade (NCDPI, 2012).

There was a need to research North Carolina's adoption of mClass: Reading 3D to determine program effectiveness and its impact in the selected public school district. This study attempted to indicate the extent, if any, mClass: Reading 3D has impacted students' reading achievement in second grade, and determine how teachers use student data from the program to identify instructional practices that may impact student achievement. Additionally, the researcher analyzed collected data to report if and how continuous and ongoing professional development associated with mClass: Reading 3D provided teachers with the necessary skills to effectively impact students' reading achievement.

Statement of the Problem

The decline in third-grade North Carolina End-of-Grade reading scores placed an increased emphasis on improving reading achievement of students in grades kindergarten through second. These diminishing student achievement scores, based on state standardized achievement tests, have resulted in a sense of urgency for public school districts in North Carolina to implement a diagnostic reading assessment program to improve student performance (NC School Report Card, 2013). These concerns have led to the adoption of mClass: Reading 3D across the State of North Carolina to meet local and state mandates, as outlined in the Read to Achieve program (NCDPI, 2012).

Purpose of the Study

The purpose of this study was to explore the relationship that exists between the history of reading instruction, the impact of mClass: Reading 3D on student achievement in second grade, and the impact of quality professional development through a program evaluation. Data from this study will be used to inform the implementation process of mClass: Reading 3D that may have a positive impact on students' reading achievement. Specifically, the study addressed the following research question:

To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

Other questions related to this study included:

- To what extent, if any, do teachers use student data from the mClass: Reading 3D assessment to determine instructional practices that may impact students' reading achievement?
- To what extent, if any, did continuous and ongoing professional development associated with mClass: Reading 3D provide teachers with the necessary skills to impact students' reading achievement?

The use of student data to determine instructional practices and continuous and ongoing professional development associated with mClass: Reading 3D may have an impact on student reading achievement.

Significance of the Study

The importance of reading and becoming literate cannot be overstated (Snow, Burns, & Griffin, 1998). Learning to read is one of the most important abilities a student can acquire (Kirk, 1999; Reitzhammer, 1990). Students who do not learn to read as expected are less likely to complete high school (Morris, Shaw, & Perney, 1990; Reitzhammer, 1990; Shanahan & Barr, 1995). With increased expectations for accountability for student success (Bailey, 2002), schools are faced with finding alternative methods to improve student achievement. The study described here has the potential to add to the body of research regarding the use or effectiveness of mClass: Reading 3D to improve student reading achievement in rural North Carolina public schools. Collected data were analyzed from surveys, interviews, and the mClass: Reading 3D results collected from beginning of year (BOY), middle of year (MOY), and end of year (EOY) reports from students in grade two during the 2012–2013 school year in the three selected elementary schools. This descriptive study sought greater understanding of how mClass: Reading 3D impacted students' reading achievement in second grade; how teachers use data to drive instructional practices; and to what extent, if any, professional development provided teachers with the necessary skills to effectively impact students' reading achievement. Results may help schools assess time and effort regarding the implementation of mClass: Reading 3D. Teachers and administrators have the opportunity to collaborate in the development of continuous improvement processes that include the analysis of data to guide and transform instruction, inform ongoing professional development and support, and reduce the achievement gap (Amplify Insight, 2013).

Overview of Methodology

The method of inquiry was a program evaluation using descriptive statistics. Green and Carracelli (1997) indicated qualitative and quantitative data are used to gain a greater understanding or picture of the construct of interest. According to Creswell (2009), the mixed method approach gives overall strength to a study, making this approach greater than either qualitative or quantitative research. Yin's (2009) research stated that multiple data sources allow researchers to address more complicated research questions and collect a richer and stronger amount of evidence than can be provided in a study using one method. Quantitative data includes closed-ended information that may be obtained from attitude, behavior, or performance instruments. Analysis consists of analyzing scores collected on instruments, checklists, or public documents to answer research questions. On the other hand, a qualitative study consists of open-ended information the researcher gathers through interviews, observations, or gathering documents or artifacts. Data are typically analyzed into themes or categories of information. This qualitative study closely examined how mClass: Reading 3D was implemented and how effective the implementation has been to guide instruction to improve student reading achievement.

Definitions of Terms

This program evaluation used various terms to accurately describe the research. Terms defined here will be used throughout this dissertation.

Adult learning—"The process of adults gaining knowledge and expertise" (Knowles, Holton, & Swanson, 2005, p. 174).

Assessment—Refers to the "specification and verification of problems for the purpose of making different kinds of decisions" (Salvia & Ysseldyke, 1998, p. 22).

Average Daily Membership (ADM)—The sum of the number of days in membership for all students in individual Local Education Agencies (LEAs), divided by the number of school days in the term (NCDPI, 2013a).

BOY (Beginning of Year)—Time of year mClass: Reading 3D assessment is administered (PB Works, 2013). BOY assessments usually occur in September. BOY assessments are part of mClass: Reading 3D benchmark assessments.

Cut score—"The minimum score required for performance at each National Assessment of Educational Progress (NAEP) achievement level. NAEP cut scores are determined through a standard-setting process that convenes a cross-section of educators and interested citizens from across the nation. The group determines what students should know and be able to do relative to a body of content reflected in the framework. The National Assessment Governing Board then adopts a set of cut scores on the scale that defines the lower boundaries of *Basic*, *Proficient*, and *Advanced*" (National Center for Education Statistics [NCES], 2013b, "Cut score").

Daze—A new measure in DIBELS Next used to measure the reasoning processes that constitute comprehension and assess the student's ability to construct meaning from text using word recognition skills, background information and prior knowledge, familiarity with linguistic properties such as syntax and morphology, and cause-and-effect reasoning skills. Daze serves as the standardized DIBELS version of maze procedures for specifically measuring reading comprehension (Amplify Education, 2013a).

DIBELS—Dynamic Indicators of Basic Early Literacy Skills (DIBELS) are a set of procedures and measures for assessing the acquisition of early literacy skills from kindergarten through sixth grade.

DIBELS Next—Provides two types of testing, benchmark assessment and progress monitoring. Benchmark assessment, or screening, refers to testing all students three times per year for the purpose of identifying those who may be at risk for reading difficulties. Once students are identified as at risk for reading difficulties, they can receive progress monitoring testing more frequently to ensure that the instruction they are receiving is helping them make progress (Dynamic Measurement Group, 2012).

DIBELS Oral Reading Fluency (DORF)—A standardized, individually administered test of accuracy and fluency with connected text. The DIBELS ORF passages and procedures are based on Stan Deno and colleagues' program of research and development of Curriculum-Based Measurement of Reading at the University of Minnesota (Shelton, Altwerger, & Jordan, 2009).

Early-grade reading—Refers to pre-kindergarten through the third grade, which can be characterized as basic reading skills and perception; later reading is done for comprehension and other higher-level tasks (Chall, 1967).

EOY (End of Year)—Time of year mClass: Reading 3D assessment is administered (PB Works, 2013). EOY assessments usually occur in May.

First Sound Fluency (FSF)—Standardized, individually administered test of phonological awareness. The FSF measure assesses a student's ability to segment one, two, or three syllable words into their individual phonemes fluently. The FSF measure has been found to be a good predictor of later reading achievement (Nelson, 2003).

Formative assessment—Use of observational or diagnostic measures to provide detailed information about a student's progress. Formative assessments provide teachers with frequent data regarding the growth and development of students. The purpose of this data is to allow teachers to plan appropriate differentiated small group instruction that will meet the needs of each student. Collecting data for formative types of assessment can be done in a variety of ways. According to Wang (2008), "formative assessments play an important role in both the traditional learning environment and the e-Learning environment" (p. 1249). Traditionally, this has been a paper-pencil type of data collection. However, Wireless Generation offers a way to collect this data electronically, which speeds up the delivery of that data analysis for each child. For this study, formative assessment, also called progress monitoring is defined as, "a probe used between benchmarks to target specific content areas for remediation" (Reaves & Sullivan, 2010, p. 38).

Governance—The shared power of planning, administering, and implementing an action; incorporates components such as responsibility for developing, designing, evaluating, and handling academic matters (Diamond, 2002).

Initial Sound Fluency (ISF)—A standardized, individually administered measure of phonological awareness that assesses a child's ability to recognize and produce the initial sound in an orally presented word (Kaminski & Good, 1996, 1998). The ISF measure is a revision of the measure formerly called Onset Recognition Fluency (OnRF).

Large-scale standardized reading assessment—Refers to state or national assessments on reading that are administered to all participants in the same conditions and manner (Wheeler & Haertel, 1993).

Letter Naming Fluency (LNF)—Standardized, individually administered test that provides a measure of risk, based on research by Marston and Magnusson (1988). Students are presented with a page of upper- and lower-case letters arranged in a random order and are asked to name as many letters as they can. Students are told if they do not know a letter, they will be told the letter. The student is allowed 1 minute to produce as many letter names as he/she can, and the score is the number of letters named correctly in 1 minute.

Literacy—Literacy is hard to define and is constantly changing. It is a shifting target that will continue to change over time. What it meant to be literate a few decades ago no longer holds true today. Past definitions used included learning to read and sounding out words from traditional texts (AACTE, 2008). For the purpose of this study, literacy will be used as a broader term. In order to be literate in the 21st century, students must be able to successfully collaborate and communicate through various types of media. Literacy teachers will be expected to change with new technologies and be able to support a variety of resources in order to meet the needs of young aspiring readers (Clay, 2001a).

mCLASS®: Reading 3D—A key program to understand in this study. According to amplify.com, mClass: Reading 3D is a validated, research-based assessment that combines quick indicators of early skill development and deeper observations of student interaction with authentic text. Components include screening, diagnosing, and individualizing instruction for, and tracking all K–5 students at every stage of reading development in efforts to give a comprehensive view of each student's reading development (Wireless Generation, n.d.). Essentially, Reading 3D uses multiple formative assessments electronically in order to isolate skills and ensure mastery. Since these assessments are administered electronically, the analysis from the assessment data is available to the teacher instantaneously by accessing the data on a web server.

mClass: Reading 3D Benchmark Assessments—assessments that "are administered three times a year" (Beginning of Year [BOY], Middle of Year [MOY], and End of Year [EOY]) "to identify students who require reading support and intervention, and to find a student's instructional reading level" (Amplify Education, 2014b, "Assessment Overview," para. 1). All measures are used as benchmark assessments.

MOY (Middle of Year)—Time of year mClass: Reading 3D assessment is administered (PB Works, 2013). MOY assessments usually occur in January.

NCLB—On January 8, 2002, President Bush signed into law the No Child Left Behind Act (NCLB) of 2001. The Act is the most sweeping reform of the Elementary and Secondary Education Act (ESEA) since ESEA was enacted in 1965. It redefines the federal role in K–12 education and will help close the achievement gap between disadvantaged and minority students and their peers. It is based on four basic principles: stronger accountability for results, increased flexibility and local control, expanded options for parents, and an emphasis on teaching methods that have been proven to work (NCDPI, 2013a).

Nonsense Word Fluency (NWF)—A standardized, individually administered test of the alphabetic principle including letter-sound correspondence in which letters represent their most common sounds and of the ability to blend letters into words in which letters represent their most common sounds (Kaminski & Good, 1996).

Pedagogy—The art or method of teaching (Pedagogy, 2014).

Phoneme Segmentation Fluency (PSF)—A standardized, individually administered test of phonological awareness (Kaminski & Good, 1996). The PSF measure assesses a student's ability to segment three- and four-phoneme words into their individual phonemes fluently and has been found to be a good predictor of later reading achievement (Kaminski & Good, 1996).

Professional development—As defined by the National Professional Development Council (2000), is "a lifelong collaborative learning process that nourishes the growth of individuals, teams, and the school through a daily job embedded, learner-centered, focused approach" (DuFour, DuFour, Eaker, & Many, 2006, p. 217); the learning process that supports and fosters instructionally effective educators; on-the-job teacher training; interchangeable terms generally recognized by the educational community include "inservice," "staff development," "teacher training," "teacher learning," and "professional learning."

Professional learning community (PLC)—A group of educators, both teachers and administrators, who collaborate to share learning experiences with the intent of improving their instructional effectiveness for the benefit of students (Hord, 1997); sometimes referred to as Professional Learning Teams (PLTs).

Progress monitoring—The practice of testing students briefly, but frequently on the skill areas in which they are receiving instruction, to ensure that they are making adequate progress (Dynamic Measurement Group, 2012).

Read to Achieve—Part of the Excellent Public Schools Act which became law in July of 2012 and applied to all schools at the beginning of the 2013–2014 school year. The purpose of the program is to ensure every child reads at or above grade level by third grade through early identification and services for reading difficulties, increased parental notification of academic need and progress, and grade promotion based partly on reading proficiency (NCDPI, 2012).

Self-efficacy—One's judgment about his or her capability to complete a task; one's perception of his or her capacity or power to produce a desired effect (Bandura, 1993).

Technology—Generically defined as "tools created by human knowledge on how to combine resources to produce desired products, to solve problems, fulfill needs, or satisfy wants" (AACTE, 2008, p. 5). However, in this case, the technology that is being used for the mClass: Reading 3D program is specific to Wireless Generation/Amplify specs. Resnick and Berger (2010) described this technology as a "platform that makes it easy for schools and teachers to manage the assessment process and that puts at teachers fingertips, the insights and actions that should follow from assessment data" (p. 3).

Train the Trainer—Professional development approach used by the State of North Carolina and the district in which a person from an elementary school attended mClass: Reading 3D training and was expected to return to school and share what had been learned.

Summary

In summary, this chapter described the methodology used to guide this descriptive study. The need for this study has been attributed to the huge discrepancy that currently exists in students’ reading performance between K–2 and grade 3. The statement of the problem addressed a decline in reading proficiency among third-grade students (NCDPI, 2010b) which led to the adoption of the mClass: Reading 3D program. The mClass: Reading 3D assessment identifies the needs of struggling readers to improve reading achievement. The purpose of this study explored the extent to which the mClass: Reading 3D program impacted students’ reading achievement in second grade, the extent teachers used student data to drive instruction, and the extent professional development impacted students’ reading achievement. The study was significant in that the researcher sought to develop a greater understanding of how mClass: Reading 3D has impacted students’ reading achievement as it related to time and effort invested in the program. The methodology was a program evaluation, using descriptive statistics, to closely examine how mClass: Reading 3D was implemented and its effectiveness to guide reading instruction. Selected terms were defined in Chapter 1 to describe the research. Results from this study can be generalized to other schools in the district.

Chapter 2 provides an extensive review of the literature. Chapter 3 provides a detailed explanation of the procedures and methodologies that were used in this research study. Chapter 4 offers an analysis and explanation of the resulting quantitative and qualitative data. Additionally, Chapter 4 includes a discussion of the findings, conclusions, and recommendations of this study.

CHAPTER 2: REVIEW OF LITERATURE

> *Learning to read and write opens doors to progress and prosperity across a lifetime.* (National Institute for Literacy, 2009)

The purpose of this study was to explore the relationship that exists between the history of reading, the impact of mClass: Reading 3D on student achievement in second grade, and the impact of quality professional development through a program evaluation. Data from this study can be used to improve the implementation process of mClass: Reading 3D that may have a direct positive impact on students' reading achievement. Specifically, the data obtained from this study attempted to answer the following question:

To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

Other questions related to this study included:

- To what extent, if any, do teachers use student data from the mClass: Reading 3D assessment to determine instructional practices that may impact students' reading achievement?
- To what extent, if any, did continuous and ongoing professional development associated with mClass: Reading 3D provide teachers with the necessary skills to impact students' reading achievement?

The use of student data to determine instructional practices and continuous and ongoing professional development associated with mClass: Reading 3D may have an impact on student reading achievement.

This review of literature provides background information relative to mClass: Reading 3D. The history of reading was explored to include instructional trends, reading initiatives and policies, and the development of the mClass: Reading 3D assessment program. A description of program components is provided. Research on technology is included to show how student assessment has evolved to meet the demands of 21st century learning. Additionally, an extensive review of professional development research is included to examine the extent to which teachers are equipped with necessary skills to positively impact students' reading achievement. Professional development models are outlined to provide a framework of variations relating to teacher training. The program evaluation attempted to provide a detailed analysis that may guide the selected school district and state for future recommendations on the implementation and impact of the mClass: Reading 3D assessment.

Why is Literacy Important?

What is literacy? The answer lies within the time frame one is referencing throughout history. Most people assume that literacy simply means being able to read and write. However, in today's complicated and ever changing world, this definition is too simple to adequately define the true meaning of "literacy."

The development of literacy occurs across the lifespan of the individual from "womb to tomb" (Alexander, 2006). Throughout history, the definition of literacy has taken on different meanings reflecting needs, issues, and concerns relative to the time period. For example, according to Barnhart and Steinmetz (1988), in 1878, Webster defined literate as "learned." In the 1892 edition of *Webster's Dictionary of English Language*, the term means "instructed in learning and science." It is interesting to note that this definition does not mention the act of reading to which literacy was so strongly linked in its origin and is so strongly linked today. Boothe (2006), on the other hand, defined literacy as a "series of processes that can offer us a means, a pathway, to deeper more complex understandings and constructions of our own worlds" (p. 11). A new development in education is determining what "literacy" means in the 21st century (Price, 2013). The definition provided by the Department of Education and Skills (DES) in the National Strategy to Improve Literacy and Numeracy Among Children and Young People 2011–2020 noted that "literacy includes the capacity to read, understand and critically appreciate various forms of communication including spoken language, printed text, broadcast media, and digital media" (DES, 2011, p. 8). Currently, Reading Connections (2013) defines literacy as "an individual's ability to read, write, speak, compute and solve problems at levels of proficiency necessary to function on the job, in the family of the individuals, and in society" (para. 1). This definition appropriately applies to the varied contexts taking place in the educational world today. For example, there is functional literacy, cultural literacy, computer literacy, mathematical literacy, scientific literacy, digital literacy, and global literacy. In each of these terms, the word literacy refers to a level of competence.

Literacy is one of the most important foundational skills for success in school and life. Literacy in the 21st century requires much more from a skilled reader than a generation ago. The long-term economic effects of not becoming a good reader and failing to graduate from high school are now more severe. The National Institute for Literacy (2009) reported that our nation's farmers and mechanics have transformed into a different type of society with different needs. As the structure of jobs has changed, along with the economy, occupational and basic literacy skills have become more essential for advancement in the workforce (Kirsh, Braun, Yamamoto, & Sum, 2007). Today's workforce must be literate to achieve economic, civic, and social success. Literacy has emerged as a key to success in 21st century America. People with higher literacy skills have higher salaries, higher employment rates, higher civic participation, lower public assistance rates, and lower crime rates than people with lower literacy skills (Fiedrich & Jellema, 2003; Kirsch, Braun, Yamamoto, & Sum, 2007; Ohio Literacy Resource Center, 2013; Osberg, 2001).

Literacy skills, a high school diploma, and a college degree were not as important as a generation ago because the economy of the United States was built on agriculture and manufacturing. However, today's economy is both knowledge-based and globally competitive. Changes are driven by technological advances and globalization (Kirsch et al., 2007). This new economy demands higher literacy skills and creates jobs that require advanced learning (Musen, 2010). Employers need workers who have mastered reading processes that allow them to locate information and use higher- level thinking strategies. Snow et al. (1998) suggested there was a rising demand for increased literacy to accompany the development of technology and increasing competitiveness in a global knowledge economy.

The NCES (2008) reported the following facts that greatly concern educators, politicians, parents, and employers on a local, state, national, and international level:

- On a national level, American adults (age 16+) function at the lowest literacy level. They are, at best, able to perform tasks involving brief, uncomplicated texts.
- One in seven U.S. adults can't read this paper.
- Thirty percent of new job applicants fail basic literacy tests given by prospective employers. Sixty-five percent of these are denied employment because they lack the basic reading and/or math skills necessary for the job they sought.
- In North Carolina, more than one million (approximately 22%) adults experience reading and writing difficulties that seriously affect their daily lives and that of their families.

- Compared to the national average, low literacy is higher among adults in North Carolina.
- Eighty percent of the fast growing jobs in the U.S. require some post-secondary education.
- More than 40% of the U.S. workforce and more than 50% of high school graduates do not have basic skills for employment.
- Individuals with low literacy skills have a higher rate of hospitalization and increased incidents of medication and treatment errors than the general public.
- The health care industry estimates that $73 billion per year of necessary health care expense attributes to poor literacy.
- Research demonstrates that low literacy, poor health, and early death are linked.
- Children whose parents have low literacy skills are more likely to become adults with low literacy skills than children whose parents are good readers.

Throughout the K–12 school experience, children continue to build upon prior knowledge to develop grade level academic skills and knowledge. With each additional year, gains in reading are smaller and smaller (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996). Francis et al. (1996) stated that students who fall behind in the early grades have a harder time catching up, making it particularly important to identify struggling students as early as possible. Reading improvements are easier to obtain in the early years but harder later on. In other words, there is greater potential for learning reading skills in the early grades. The potential for early rapid learning comes as no surprise to scholars of cognitive development. Typically, societies that provide formal schooling for children, implement it between ages five and seven. This is the time that many children begin school and develop the ability to cooperate and to coordinate points of view with others (Musen, 2010).

Phonemic awareness is essential for learning to read, but it is not enough in and of itself. Phonemic awareness must be incorporated in instruction and practice in order for students to learn the relationship between letters and sounds (National Center to Improve the Tools of Educators, 1996). As students are taught the five components of reading, they build upon these skills to begin reading to learn. During this process, children learn to read fluently by regularly reading new stories and rereading older stories. Children are taught to extend their experiences with words, language, and ideas in books by progressively reading more difficult texts (National Center to Improve the Tools of Educators, 1996).

If trends hold true, 6.6 million low-income children currently in the birth to 8 age group are at increased risk of failing to graduate from high school on time because they will not be able to meet the proficient reading level of the NAEP by the end of third grade (Annie E. Casey Foundation, 2013a).

Reading proficiently by the end of third grade is a crucial marker in a child's educational development. Failure to read proficiently is linked to higher rates of school dropout, which suppresses individual earning potential as well as the nation's competitiveness and general productivity (Annie E. Casey Foundation, 2013a). By third grade, students are expected to know the fundamentals of reading and be able to apply their reading skills across the curriculum. Students are no longer being taught how to read in third grade. Instead, teachers use written text to teach other material such as social studies, science, and mathematics. Shifting from "learning to read" to "reading to learn" is very difficult for students who have not mastered basic reading skills. As they progress in age, struggling readers find themselves exposed to more and more complicated types of text. Simply stated, mastery of text gets more difficult for struggling readers. Of the fourth graders who took the NAEP reading test in 2009, 83% of children from low-income families and 85% of low-income students who attend high-poverty schools failed to reach the “proficient” level in reading (Annie E. Casey Foundation, 2013a).

Reading skills in third grade are highly predictive of future academic performance. Fletcher and Lyon (1998) discovered that 74% of third graders who read poorly are still struggling in ninth grade. They also found that high school graduation rates can be predicted based on third-grade reading scores. Therefore, one can conclude that early reading skills affect not only graduation rates, but also economic impacts for students and communities.

While children in elementary school recognize reading as important, their success hinges upon their enjoyment of reading, motivation to read, and confidence in their own aptitude. Unfortunately, competence beliefs tend to decrease between first and fourth grade as children become more aware and compare themselves to their peers (Wigfield et al., 1997).

In a longitudinal study of literacy development in first through fourth grade, it was found that poor readers do not often read outside of school because they do not enjoy reading and would rather do other things (Wigfield et al., 1997). When asked whether they would rather clean their room or read, only 5% of the good readers said they would rather clean. In contrast, 40% of the poor readers preferred to clean. Therefore, children who are reading at grade level or who see themselves as skilled readers are more likely to spend their time reading, which reinforces and improves reading skills.

Furthermore, achievement, interest, and competence beliefs in reading are highly correlated to third grade student achievement. The students who enjoy reading the most and have confidence in their reading abilities are also the students who score the best on reading tests

(Rathbun, West, & Husken, 2004). This suggested that struggling readers in early grades might avoid reading due to lack of engagement and lack of confidence. With less reading practice and lack of motivation, low-performing readers fall further behind their classmates each year, leading to lower graduation and college-going rates.

Typically, statewide standardized testing begins in third grade because it is challenging to accurately and thoroughly test younger children. Very young children have short attention spans and typically express their knowledge through interactive ways rather than through pencil and paper activities. Younger children develop cognitively in uneven and episodic ways, and are highly influenced by environmental factors (Guddemi & Case, 2004). Therefore, testing needs to be administered carefully, frequently, and in short amounts of time. Based on these findings, third grade is commonly the grade of choice to begin exposing students to the rigor and demand of statewide standardized testing.

The History of Reading Instruction

The debate over the best way to teach a student to read has been ongoing for over 100 years. For many years, effective reading instruction has led to many heated debates. As history shows, reading instruction had a bumpy road that reflected many of the concerns and policies of the time period. For example, during the colonial period, educators argued about materials and methods for teaching reading, including who should be taught in America's schoolhouses (Monaghan, 2005). Young women were kept at home stitching and cooking while wishing for more schooling opportunities. Also, in the early 19th century, reading instruction became a "lightning rod" as the Quaker North Carolina-born abolitionist, Levi Coffin, was chastised for teaching enslaved people to read during Sunday school (Landau, 2006).

In the 1830s, the McGuffey Eclectic Reader was published and subsequently widely used in American schools. The book's religious and moralistic content paralleled the patriotic enthusiasm for the new nation. While focusing on the alphabet and basic literacy, good citizenship was also inspired. The book was built as one text per grade level and included articulation guides for mispronounced words, introduction of vowel sounds, and much repetition (Dewitz, Leahy, Jones, & Sullivan, 2010). The McGuffey Eclectic Reader has been widely regarded as the predecessor of the modern-day basal. "Basal readers are collections of books in a series used for teaching reading" (About.com, 2014, "Definition," para. 1). Despite the usefulness of the leveled text in one-room schoolhouses, Horace Mann, in his 1842 report to the *Massachusetts Board of Education,* expressed his disdain for the alphabetic-spelling approach (Graves, Juel, Graves, & Dewitz, 2011).

According to one teacher's experiences in education, the teaching of reading has changed over the past 50 years. A former elementary teacher, who began her educational career in fall 1955 in the selected county chosen for this study, explained her experience as a teacher during a personal interview. Mrs. Bee taught first grade for one year and had approximately 57 students; however, the next year, she moved to second grade. During those early years, teachers stressed attendance. However, many of Mrs. Bee's students were farm children and were often absent from school in order to work in the tobacco or cotton fields during certain times of the school year.

Although Mrs. Bee taught all subject areas, only reading books were provided. Since schools were segregated at the beginning of her teaching career, Mrs. Bee indicated the reading books were probably received from White schools, even though she taught all Native American children until schools were integrated. During the first year of integration, she had one White student, seven Black students, and the remaining children were Native American.

In her early years of teaching, a visitor to her classroom would see Mrs. Bee working with a group of students in a reading circle, using flash cards, flipcharts, and "Jerry and Alice" books. Later, "Dick and Jane" books were used during reading instruction. Words taught with flashcards and flipcharts were used in various classroom readings. Mrs. Bee remembered using the teacher's manual, along with approximately 10 pre-primer books, which included different levels of books for each grade level. She taught sentences such as the following during reading instruction: "See Jerry run"; "Run, Jerry, run"; and "Jerry can run fast."

Mrs. Bee recalled moving from sight word reading instruction to phonics. Teaching students how to read by focusing on phonics helped prepare students to read. Once they learned phonics, students were then grouped by ability so they could become better readers.

When asked if subjects were integrated, Mrs. Bee neither recalled the use of that term, nor did she recall an emphasis on helping students make connections to the real world. Whether teaching science or health, teachers were expected to teach in units where students were encouraged to learn phrases and songs to go along with their lessons. For example, when teaching students about healthy eating habits, Mrs. Bee recalled singing the following: "M stands for milk. You need to drink plenty. No tea or coffee until you are 20."

Teachers had to be creative. Copy machines were not available; therefore, teachers used a hectograph. Limited technology was available in the classroom to assist with instruction.

When asked about students who read on a low reading level, Mrs. Bee stated,

> They may not have been the top readers, but they could read. Teachers had slow readers and may have retained some, but we did not have seven or high numbers like that. Teachers may have gotten "the first reader" to help speed lower level reading up a little in second grade. Also, the teachers would let their top students, at a certain time of the day,

> work with students at a lower level. The top students became the teacher and listened to other child read. That was students helping students.

Beyond reading instruction, Mrs. Bee recalled administering some type of pretest and posttest. When asked where the tests came from, she stated that she guessed they came from the state. She recalled making a hand-made graph of student test scores from low to high. This information had to be submitted to the principal, but teachers did not do anything specifically with those scores.

The principal was the primary contact for curriculum and other educational issues. Later in her teaching career, Mrs. Bee remembered supervisors were hired to conduct classroom observations and make suggestions for improving instructional practices. Teachers were not evaluated based on their teaching performance during Mrs. Bee's early years of teaching.

Professional development came later in Mrs. Bee's educational career. She recalled attending music, language arts, science, and mathematics workshops outside the county. Mrs. Bee remembered attending a workshop at Appalachian State University on team teaching, which she implemented for nine years. Team teaching included learning centers focused on creative writing, phonics, and listening for students to learn sounds. High-achieving first-grade students wanted to do what second-grade students were doing, and second-grade students wanted to do what third-grade students were doing. As a result, they worked well together and challenged one another. This type of teaching capitalized on the strengths and weaknesses of the students and teachers alike.

Mrs. Bee stated that she hopes that what is now being done in education is for the best. Her students got their foundation in a "country school." She stated that she is proud when she sees these children, some of whom have now become doctors, lawyers, and professors. Most of all, she knows she played a vital part in their lives.

Reading Instructional Trends

Introduction to Basal Instruction

In the late 1880s, reading research began to shape curriculum development. Researchers in Germany discovered that it took less time to recognize a word than it did to recognize a series of unconnected letters (Dewitz et al., 2010). Instructional material publishers responded, and the alphabetic focus evolved into more of a word focus. In addition, research suggested that teachers needed to be more structured and systematic when teaching reading. This led to the development of manuals offering extensive instructions to guide teachers in their interactions with pupils. In the early 1900s, early reading series used the word "progressive" in their title to indicate the fact that the series was leveled and suitable for readers as they progressed. Hence, the basal was officially born (Dewitz et al., 2010).

The basal text was developed to introduce readers to strictly controlled vocabularies with pictures serving as clues. While some basal reading programs began to include components for comprehension, such as reading questions and vocabulary exploration, the mode of instruction and the content continued to follow a more behaviorist approach which emphasized repetition and capturing correct responses (Dewitz et al., 2010).

The Elson Reader, later known as *Dick and Jane,* was published by Scott, Foresman, and Company in the early 1940s. In many ways, this series was the quintessential example of the basal series with its repetitive use of "Look" and "Run, Run, Run." The repetitive use of small, simple words was aimed at building a child's decoding ability. The upper elementary basal text had more complicated fiction passages and less repetition. The instructional mode was teacher-directed with the teacher preparing students to read individual passages. Students were instructed to read silently, and then answer follow-up questions that focused on decoding, skill building, and worksheets (Graves et al., 2011).

The Phonics Approach

Merriam Webster defined phonics as “a method of teaching people to read and pronounce words by learning the sounds of letters, letter groups, and syllables” (“Phonics,” 2013). Interestingly, an early phonics proponent, Rudolph Flesch, author of the 1955 *Why Johnny Can’t Read,* criticized the basal as lacking a sufficient explicit phonics emphasis. He advocated for a return to a phonics approach (early teaching of early correspondences of letters and sounds; as cited in Chall, 1967). Keiser (2011) reported this concern was addressed by Harvard researcher, Jeanne Chall, in her 1967 book, *Learning to Read: The Great Debate*. Her findings suggested that a focus on phonics, rather than a whole word approach, could indeed lead to more student success. The whole word approach does not focus on word recognition, but making sense of texts (Tierney & Readence, 2005). The basal publishers listened to these researchers and responded by increasing their emphasis on phonics. This bottom up approach established decoding as a primary objective and was later given the term *phonics-based*. The bottom up theory, described by Gough (1972), hypothesized that learning to read progresses from children learning parts of language, which are letters, to understanding whole texts (meaning; Reutzel & Cooter, 2005). As described by Marzano, with a bottom up approach, a reader begins with nothing, but keeps adding pieces until constructing a whole (Marzano & Paynter, 1994).

Now stressing phonics more than whole words, this bottom up approach became controversial in the 1970s in the context of the development of open classrooms and student-centered learning. The basal’s emphasis on controlled vocabulary, artificial segmentation of words, and white, middle-class families, was viewed as prescriptive and exclusive. In addition, a concern was raised about the abundance of practice sheets related to sub-skills lacking any clear alignment with the actual skills required of a strong reader. Critics of strictly phonics-based instruction also pointed to the reality that more than half of English words serve as an exception rather than an example of phonetic rules. Concern was expressed about the overprogrammed and overscripted instructional model that the basal approach demanded from teachers (Graves et al., 2011). A call was issued for a more literature-based and *whole language* approach.

Whole Language

Early whole language advocate Ken Goodman wrote passionately about the need for a more constructivist, top down, and whole language approach to teaching reading which focused on individual students and their interests so that a teacher was tapping into a child's innate motivation to learn to read rather than forcing memorization of word chunks and vowel sounds (Goodman, 2006). Goodman identified the role of the reader as making meaning from a text, not simply decoding a series of words or sounds. Ruddell (1992) provided a list of selected principles for language and literacy acquisition which served to define the whole language perspective and guide the development of the instructional methodology. Instead of offering a prescription for practice, educators focused on whole language development for literacy learning environments based on the needs and experiences of students. Careful guidance was given to respond to each child's needs (Tierney & Readence, 2005). This recognition was critical to the distinction between a phonics-based versus whole language curricular approach.

Advocates for a whole language view expressed concern that students needed access to authentic literature to spend time reading, not merely practicing reading's subskills. The whole language approach embraced student choice, free reading time, and teachers reading aloud. Reed and Ward (1982) compared whole language to a decoding emphasis. Dahl and Freppon (1995) and Dahl, Sharer, Grogan, and Lawson (1999) provided significant support for whole language teaching versus more phonics-based teaching. The necessity of students reading only in books with carefully controlled, decodable vocabulary was disavowed.

Basal Bashing

The early 1980s witnessed an increase in basal bashing (Keiser, 2011). Publishers again changed course and began to include in basal texts more quality, multicultural literature reflective of all American school children. There was a loosening of the strictly controlled, leveled vocabulary and an integration of writing and other language arts processes (Keiser, 2011).

Concurrently, the skills-based and mastery-learning approaches were growing in popularity and would exert an influence on the basal readiness series. Mastery learning stemmed from Benjamin Bloom in 1971. Basal reading publishers also helped develop mastery learning to align with their product (Fuchs, Fuchs, & Tindal, 1986). Bloom outlined a strategy, referred to as mastery learning, to describe an educational process in which students worked with a certain instructional limit of learning in a process of assessing and correcting until objectives were mastered (Guskey, 2010). Keiser (2011) indicated that the basal began to expand its reach into assessment materials by including numerous tools for assessing student progress. The criterion-referenced tests and worksheets assessing multiple reading skills could, in fact, assess more than 30 skills in one story unit (Dewitz et al., 2010). Criterion-referenced tests were tests tied to performance levels. Robert Glaser's work in the 1960s led to an important movement in education as he initiated the idea of the criterion-referenced tests to be used to measure the mastery of instructional objectives, describing what students know and can do (University Times, 2012). This thinking fueled the idea that if a student's reading progress could be measured and documented, then perhaps it could be accelerated. The dilemma of balancing a teacher's need to assess and a reader's need to develop habits of a life-long reader can be appreciated in today's milieu of high stakes accountability. An examination of the actual content of the basal series found that only 6% of the content in teacher manuals focused on teacher instruction to guide students in how to understand or comprehend the texts (Keiser, 2011). The majority of the manual, in fact, included directions and materials for the teacher to use while students read independently.

The move away from the basal series to a less structured, more student-centered reading environment was opposed for several reasons. Critics such as Sykes (1995) and Pressley (2006) were concerned by the apparent lack of structure and absence of a clear scope and sequence. They also questioned the underlying assumption that reading skills would naturally appear if students were exposed to rich, literate environments. The critics of the whole language approach voiced concerns that reading instruction was being left to chance.

Reading Wars

The Reading Wars (Lemann, 1997) pitted the phonics-based and whole language proponents against one another. On the one hand, research suggested that students at risk for reading failure benefited from explicit, systematic phonics instruction (Adams & Bruck, 1995). Also, advocates for phonics-based instruction claimed that the shift from systematic phonics-based instruction towards more constructivist whole language practices led to a decline in reading achievement (Sykes, 1995). On the other hand, the whole language camp suggested that reading achievement issues more likely stemmed from issues of poverty and a "drill and kill" mentality that caused student disengagement (Reyhner, 2008). Pressley (2006) concluded neither extreme is optimal for student learning. Therefore, balanced or integrated instructional approaches were more apt to improve overall reading achievement.

In 1985, the Commission on Reading published *Becoming a Nation of Readers*, a document that provided insight as to how students read and what best-practice and research-based reading instruction might look like. The report recommended the use of phonics, but with a caveat: for most students, phonics instruction should be reserved for the early primary years, particularly before third grade (Scherer, 2004). Another recommendation was that students needed exposure to texts written in natural language and authentic material. The report highlighted the need for less emphasis on worksheets and, finally, asserted the need for students to spend more time reading and for teachers to spend more time modeling the reading process.

In the past 30 years, approximately 40% of the nation's fourth graders performed in the "below basic" category, while approximately 5% ranked in the "advanced" category or at the other end of the distribution (Reyhner, 2008). Despite this national study and apparent bridging of a divide, the feuding sides began to use data from national achievement rates to escalate the conflict. Each side pointed to the other as the reason for the decline in reading abilities for American children. Sadly, according to the National Assessment of Educational Progress, there has been little documented change in student fourth-grade reading achievement from 1992 to 2005. With this staggering achievement gap as a backdrop, a new way to teach reading needed to be forged. While both sides argued about which approach was better, an unacceptably large percentage of children continued to fail at reading (Wren, 2003).

As the reading wars debate continued, a new approach to reading instruction, balanced literacy, emerged. This approach relied on the premise that a beginning reader needed a balance of both phonics and enriched whole language instruction. A group of reading experts pointed to research suggesting that at-risk students needed exposure and opportunities both to build their comprehension and decoding skills (Cunningham & Shagoury, 2005). With balanced literacy, a solution was forming that might capitalize on the important aspects offered from both approaches and both sides of the debate.

A Balanced Literacy

The term "balanced literacy" can be found in numerous studies and papers. Spiegel (1998) defined balanced literacy as a decision-making approach through which the teacher makes thoughtful choices each day about the best way to help each child become a better reader and writer. A growing consensus suggested that balanced literacy may resolve the Reading Wars. A survey conducted by the National Institute of Child Health and Human Development found that 63% of elementary teachers believed that phonics should be taught directly and 89% believed that skills instruction should be combined with literature and language-rich activities (National Reading Panel, 2000). Spiegel (1998) asserted that avoiding instructional extremes was at the heart of providing a balanced program of reading instruction. He described balanced literacy as an instructional approach built on solid research, not public reaction or false promises. If balanced literacy is not a "silver bullet," perhaps it is a "dove carrying an olive branch between the warring sides." Regardless of the metaphor, it is important to understand how this approach works in a classroom for both the teacher and student.

The appearance and design of a balanced literacy approach may vary according to implementation, but there are several key components that must be present. The multi-layered instructional approach includes the following:

- extensive authentic reading and writing,
- use of semantic and syntactic contextual cues,

- self-monitoring and self-regulation, and
- practice in reading with fluency, speed, and accuracy (International Reading Association, 2004).

The basic components of a balanced literacy approach included read aloud and shared, independent, and guided reading (Pinnell & Fountas, 2006). The emphasis was on the student developing habits of a reader while teachers offer skills-based instruction that good readers are able to master. This includes the use of phonics knowledge and skills to decode and comprehension strategies to make meaning. In order for students to become proficient, lifelong readers, they need the following instructional activities:

- time to read,
- access to books that match their reading ability and interest,
- time for experiences with making words,
- authentic exposure to phonemic awareness and phonics activities,
- encouragement to connect what they know from their lives to a text, and
- blocks of uninterrupted explicit instruction of comprehension strategies (Calkins, 2001).

Curricular models that allowed teachers to maintain some autonomy in literature selection, methods, and materials were found to yield higher results in reading comprehension (Wilson, Martens, & Poonam, 2005). Capturing the impact of balanced literacy on students, Taylor, Pearson, Peterson, and Rodriguez (2005) studied the different teaching practices in urban, high-poverty classrooms. They determined that when teachers used active instruction that encouraged higher-order thinking skills as opposed to passive responding to literacy activities (as found in packaged curricula), students experienced significant reading growth. However, it must be noted that balanced literacy is not without its critics. Strong phonics advocate Chester Finn suggested that whole language is now simply “wearing the fig leaf of balanced instruction” (Moats, 2007).

Federal Influences Shape Reading Initiatives

To prepare Americans for future jobs in a global market, education and training will be paramount. Evidence from international studies suggested that students in the U.S. are trailing behind students in other developed countries, including Finland, China, Hong Kong, and Canada in the application of key subjects such as reading, mathematics, and science. Currently, the U.S. is ranked 17th in the world in reading, 23rd in science, and 31st in mathematics in Programme for International Student Assessment (PISA; Munson, 2011).

National studies frequently report disturbing research about rising problems of illiteracy. Politicians, business leaders, community organizations, and parents are struggling to cope with its adverse and growing negative effects on society. Recently, the U.S. Department of Education issued a National Reading Report Card that showed 68% of our nation’s fourth graders are not able to read proficiently at grade level. At-risk youth, low-income children, and minorities lag even further behind and test at lower levels. The inability to read, write, and learn effectively does more than put disadvantaged children behind in school. Children with low literacy skills often feel self-conscious, are emotionally upset, and act out in ways that are harmful to themselves and others. In fact, a Department of Justice study found that 85% of all juvenile offenders have reading problems (NCES, 2008).

Federal, state, and local politics have played a very important role in the adoption of methods, philosophies, and trends concerning reading and literacy instruction. The National Educational Policy, first enacted over 200 years ago, instilled the concept that the control and operation of public schools were reserved to the individual states. Although this policy remains in force, the allocation of federal funding to the states has steadily set specific federally-mandated educational targets over the last 25 or 30 years (Cooper, Fusarelli, & Randall, 2008).

Since Sputnik, the initial "no-strings-attached" concept of federal funds dramatically changed to one of multiple strings. Federal involvement has targeted funding to improve educational opportunities for the disadvantaged, as well as for minorities, women, and the disabled. There have been dramatic increases in the regulation of federal funds in monitoring, reporting, auditing and compliance. During the last quarter-century, the focus of educational policy-making in America has shifted dramatically from the local level to state and federal governments.

The decisions by the Supreme Court in the landmark case *Brown v. Board of Education* (1954) and the Great Society Social Reform programs of the 1960s are examples of how traditional roles in educational decision-making have been reformed. Wong (2008) does an excellent job explaining how the federal government's role in education has shifted through the years. Today, it is viewed as one that oversees accountability in education and addresses the challenges of income inequities. Wong further explained that this has become necessary because many of the schools in the nation have over 60% of students eligible for the free and reduced school lunch program.

Schools having the highest concentrations of minority and low-income students are less likely to recruit qualified teachers, offer rigorous curricula, and maintain high academic performance. One can clearly see the presence of equality and accountability in the following federal programs, court cases, and policy initiatives:

- *Brown vs. Board of Education of Topeka* (1954)
- The Civil Rights Act of 1964
- The Individuals with Disabilities Education Act (IDEA)
- Title I, Part A of the Elementary and Secondary Education (ESEA) Act
- The No Child Left Behind (NCLB) Act of 2001
- Race To The Top (RttT) Funding

Brown v. Board of Education

In the 1950s, schools across the country began feeling the effects of laws and initiatives developed on the federal level to ensure equal education for all students. The most dramatic factor influence came from the judicial branch, specifically the U.S. Supreme Court. The Supreme Court handed down the landmark decision *Brown v. Board of Education* in 1954, declaring state laws that had established separate public schools based on race were unconstitutional. The Court has taken an activist role in education since the 1954 Brown decision, especially in the area of school desegregation and affirmative action (Dudley, 1994).

Civil Rights Laws

The anti-poverty and civil rights laws of the 1960s and 1970s dramatically increased the role of the federal government in public education. Laws passed included Title VI of the Civil Rights Acts of 1964, Title IX of the Education Amendments of 1972, and Section 504 of the Rehabilitation Act of 1973 prohibiting discrimination based on race, sex, and disability (Gilchrist, 2004). Not until 1969, with the passage of the Children with Specific Learning Disabilities Act (included in *Education of the Handicapped Act of 1970*, Public Law 91-230, Part G), did federal law mandate support services for students with learning disabilities. Even then, it took six years for Congress to pass the Education for All Handicapped Children Act (EHA) in 1975.

A Nation at Risk

Public education was ranked high on the national agenda when the U.S. entered the Cold War. In 1983, the publication *A Nation at Risk* was a reminder that the nation's longstanding interest in academic achievement and education standards was being renewed. It was also a reminder of the ever-growing federal role in public education to provide an equal educational opportunity for all, as well as an interest in developing citizens capable of performing effectively in a global economy (Good, 2010).

During the 1950s, when the Soviet Union launched Sputnik, this presented a perceived threat to the U.S. that created a major shift of nationwide school curriculum reform. This threat became the grounds for the National Defense Education Act of 1965, which focused on math and science education to bolster national defense (Gilchrist, 2004). In the 1980s, the nation experienced a change to education reform—the standards reform movement. The publication, *A Nation at Risk,* sparked many standards reform initiatives in a number of states. According to Clune (2001), the theory behind standards-based reform is as follows:

> *Systemic reform* (SR), through its purposeful activities, leads to *Systemic policy* (SP), which leads to . . . *rigorous implemented curriculum* (SC) for all students, which leads to measured *high student achievement* (SA) in the curriculum as taught. (p. 2)

The assumption was that for the U.S. to stay economically competitive, it would have to adopt policy-level curriculum approaches similar to that of its international competitors. Furthermore, policymakers assumed that high stakes reform efforts would naturally lead to better classroom instruction and, therefore, better student performance (Riddle Buly & Valencia, 2002). Both states and local school districts initiated multiple systemic changes. Additionally, there was a shift to hold schools accountable for student learning (Clune, 2001). More recent attempts to hold schools accountable were seen in the reenactments of the Elementary and Secondary Education (ESEA) Act, which was first authorized in 1965 and the No Child Left Behind (NCLB) Act of 2001. Both federal legislative acts addressed setting national standards and mandating assessments to determine whether students were meeting those standards (Gilchrist, 2004).

IDEA

The Individuals with Disabilities Education (IDEA) Act is a federal law originally enacted in 1975 and reauthorized in 1990, 1997, and 2004. It was designed to protect the rights of students with disabilities by ensuring all students received a ***free appropriate public education*** (FAPE), regardless of ability (U.S. Department of Education, 2013a). Furthermore, IDEA strove not only to grant equal access to students with disabilities, but also to provide additional special education services and procedural safeguards.

Title I

Title I, Part A of the Elementary and Secondary Education (ESEA) Act, is the largest federal education funding program for schools. It provides funding for high poverty schools to help students who are behind academically. The requirements of the No Child Left Behind Act include adequate yearly progress, highly qualified teacher standards, accountability, sanctions for schools designated for improvement, achievement standards and assessments, annual state report cards, professional development, and parent involvement (U.S. Department of Education, 2013b).

How do schools qualify to receive Title I funds? Schools qualify by demonstrating that enrollment consists of a high percentage of economically disadvantaged students. Title I regulations require school districts to provide services to all schools where at least 75% of students qualify for free or reduced price meals (U.S. Department of Education, 2013b).

Why are Title I funds allocated exclusively to high poverty schools? Research studies conducted over the past 30 years show conclusively that schools with high concentrations of economically disadvantaged students generally demonstrate lower levels of achievement than do schools with lower concentrations of economically disadvantaged students. As a result, Congress, in the reauthorization of Title I under the No Child Left Behind Act of 2001, now requires districts to allocate Title I funds to those schools with the highest concentrations of such students, particularly those schools above 75% free/reduced lunch (U.S. Department of Education, 2013b).

Closing the Achievement Gap

> The “achievement gap” is a matter of race and class. Across the U.S., a gap in academic achievement persists between minority and disadvantaged students and their White counterparts. This is one of the most pressing education-policy challenges that states currently face. . . . For decades, policymakers, researchers, and school reformers have sought ways in which schools could address the gap. Strategies have focused on school funding, teacher quality, student interventions and motivation, school organization, management, and climate, market competition, and school accountability to the public. Between 1970 and 1988, the achievement gap between African American and White students was cut in half, and the gap separating Latinos and Whites declined by one-third. That progress came to a halt around 1988, however, and since that time, the gaps have widened. “Closing The Achievement Gap: Principles For Improving The Educational Success Of All Students” . . . developed by the ERIC Clearinghouse on Urban Education briefly reviews the educational policies and practices whose effectiveness in closing the achievement gap has been shown. (Muir, 2003, p. 1)

“Closing the Achievement Gap” now becomes as much an economic obligation as a moral one. As the nation becomes more diverse, the nation’s economic well-being and world ranking will depend upon reaching students from underserved groups since minorities now account for half of all births in the U.S. Traditionally, White and relatively affluent students from all ethnic groups have had opportunities for deeper learning and better exposure to 21st century learning. By contrast, instruction for students of color from low-income families has focused almost exclusively on basic skills and knowledge (Oakes, 1986). In other words, one group of students has been afforded the chance to engage in more meaningful learning experiences, while instruction for the other group tended to focus on lower level thinking skills, such as rote memorization tasks.

By 2050, the U.S. is expected to shift to a majority-minority country (Pollard & Mather, 2010). This simply means that more than half the population will be people of color or from ethnic minority groups. The U.S. economy will only continue to grow if the entire population, not just a portion, is equipped with the necessary literacy skills needed to thrive in the 21st century.

Keep in mind, the federal government reserves the right to restrict funding to state and local school systems that are not successfully meeting federal mandates and requirements. This clearly explains the panic and confusion experienced by school systems everywhere. Therefore, a need exists for schools to close achievement gaps, effectively utilize technology, and provide early academic intervention.

North Carolina continues its efforts to close the achievement gap and implement strategies aligned with 21st century skills. Dr. June Atkinson, North Carolina State Superintendent, addressed this gap in North Carolina (see Appendix A).

Research studies have provided insight about the achievement gap. As problems continue to exist, North Carolina will analyze findings from previous and current studies to make future decisions about improving reading achievement. Current state policies and reforms have used major studies as a building block to help accomplish this goal. For example, a new policy, Read to Achieve (2013), was adopted in North Carolina and includes an assessment, mClass:

Reading 3D, which addresses the components of reading provided by the National Reading Panel.

The National Reading Panel

In 1997, Congress formed the National Reading Panel (NRP) to conduct a meta-analysis of reading research to determine the most effective forms of reading instruction. The 2000 report, *Teaching Children to Read: An Evidence-based Assessment of the Scientific Research Literature on Reading and its Implications for Reading Instruction* was published and widely disseminated by the National Institute of Child Health and Human Development (NICHHD). In 2000, the NRP released their findings to conclude that the most effective reading instruction included the following instructional practices:

- teaching children to break apart and manipulate sound in words,
- teaching that sounds are represented by letters of the alphabet which can be blended together to form words (phonics),
- having students practice reading aloud with guidance and feedback (guided oral reading), and
- applying comprehension strategies that guide and improve reading.

The NRP Report identified five major components for reading instruction including phonemic awareness, phonics, fluency, vocabulary, and comprehension. These were identified as essential components of reading instruction. The term scientific-based reading instruction (SBRI) was also established as well as scientifically-based reading research. The following excerpts were taken from the summary report of the National Reading Panel (2000). They provide a brief description of each of the five essential components of reading instruction and the evidence for their impact on learning to read: phonemic awareness, phonics, fluency, vocabulary, and text comprehension.

Phonemic awareness. The National Reading Panel (2000) stated that phonemes are the smallest units composing spoken language. For example, the words “go” and “she” each consists of two sounds or phonemes. Instruction in phonemic awareness involved teaching children to focus on and manipulate phonemes in spoken syllables and words. Overall, the findings showed that teaching children to manipulate phonemes in words was highly effective under a variety of teaching conditions with a variety of learners across a range of grade and age levels. Teaching phonemic awareness to children significantly improved their reading more than instruction that lacked any attention to phonemic awareness (National Reading Panel, 2000).

Phonics. The same source also indicated the primary focus of phonics instruction is to help beginning readers understand how letters are linked to sounds (phonemes) to form letter-sound correspondences and spelling patterns and to help them learn how to apply this knowledge in their reading. The meta-analysis (2000) conducted by the National Reading Panel revealed that systematic phonics instruction produced significant benefits for students in kindergarten through sixth grade and for children having difficulty learning to read. The ability to read and spell words was enhanced in kindergartners who received systematic beginning phonics instruction. First graders who were taught phonics systematically were better able to decode and spell, and showed significant improvement in their ability to comprehend text. Older children receiving phonics instruction were better able to decode and spell words and to read text orally, but their comprehension of text was not significantly improved (National Reading Panel, 2000).

Fluency. Fluent readers are able to read orally with speed, accuracy, and proper expression. Fluency is one of several critical factors necessary for reading comprehension. The panel concluded that guided repeated oral reading procedures that included guidance from teachers, peers, or parents had a significant and positive impact on word recognition, fluency, and comprehension across a range of grade levels (National Reading Panel, 2000).

Vocabulary. There are two types of vocabulary—oral and print. A reader who encounters a strange word in print can decode the word to speech. If it is in the reader's oral vocabulary, the reader will be able to understand the word. If the word is not in the reader's oral vocabulary, the reader will have to determine the meaning by other means if possible. Consequently, the larger the reader's vocabulary (either oral or print), the easier it is to make sense of the text (National Reading Panel, 2000).

The findings on vocabulary yielded several specific implications for teaching reading. First, vocabulary should be taught both directly and indirectly. Repetition and multiple exposures to vocabulary items are important. Learning in rich contexts, incidental learning, and use of computer technology all enhance the acquisition of vocabulary (National Reading Panel, 2000).

Text comprehension. The panel also stated comprehension is an active process that requires an intentional and thoughtful interaction between the reader and the text. Thus, readers derive meaning from texts when they engage in intentional, problem solving thinking processes. The evidence suggested that teaching a combination of reading comprehension techniques was the most effective strategy. When students use them appropriately, they assist in recall, question answering, question generation, and summarization of texts. When used in combination, these techniques can improve results on standardized comprehension tests (National Reading Panel, 2000).

No Child Left Behind (NCLB)

In 1998, a significant report was issued entitled *Preventing Reading Difficulties in Young Children* (Snow et al., 1998). Following this report was the National Reading Panel Report (NRP, 2000) findings. These two historical initiatives led to passage of the No Child Left Behind Act (Israel & Duffy, 2009). The No Child Left Behind (NCLB) Act of 2001 is the most recent reauthorization of the Elementary and Secondary Education Act of 1965. This reauthorized law added strict new accountability changes and mandates that every child be taught by a highly qualified teacher. The law emphasizes new standards for teachers and new consequences for Title I schools that do not meet student achievement standards for two or more consecutive years. The law's major goal was for every school to be at 100% proficiency by the 2013–14 school year as measured by state tests. NCLB requires states to adopt academic standards for students (Learn NC, 2013).

The purpose of NCLB is to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging state academic achievement standards and state academic assessments. This purpose can be accomplished fulfilling the following goals outlined by Sec. 1001 of the No Child Left Behind Act of 2001:

> (1) ensuring that high-quality academic assessments, accountability systems, teacher preparation and training, curriculum, and instructional materials are aligned with challenging State academic standards so that students, teachers, parents, and administrators can measure progress against common expectations for student academic achievement;
>
> (2) meeting the educational needs of low-achieving children in our Nation's highest-poverty schools, limited English proficient children, migratory children, children with disabilities, Indian children, neglected or delinquent children, and young children in need of reading assistance;

> (3) closing the achievement gap between high- and low-performing children, especially the achievement gaps between minority and nonminority students, and between disadvantaged children and their more advantaged peers;
>
> (4) holding schools, local educational agencies, and States accountable for improving the academic achievement of all students, and identifying and turning around low-performing schools that have failed to provide a high-quality education to their students, while providing alternatives to students in such schools to enable the students to receive a high-quality education;
>
> (5) distributing and targeting resources sufficiently to make a difference to local educational agencies and schools where needs are greatest;
>
> (6) improving and strengthening accountability, teaching, and learning by using State assessment systems designed to ensure that students are meeting challenging State academic achievement and content standards and increasing achievement overall, but especially for the disadvantaged;
>
> (7) providing greater decision making authority and flexibility to schools and teachers in exchange for greater responsibility for student performance;
>
> (8) providing children an enriched and accelerated educational program, including the use of school-wide programs or additional services that increase the amount and quality of instructional time;
>
> (9) promoting school-wide reform and ensuring the access of children to effective, scientifically based instructional strategies and challenging academic content;
>
> (10) significantly elevating the quality of instruction by providing staff in participating schools with substantial opportunities for professional development;
>
> (11) coordinating services under all parts of this title with each other, with other educational services, and, to the extent feasible, with other agencies providing services to youth, children, and families; and
>
> (12) affording parents substantial and meaningful opportunities to participate in the education of their children. (U.S. Department of Education, n.d., para. 1)

With the reauthorization of No Child Left Behind, the work of the Common Core State Standards Initiative further raised expectations for what American children need to know and be able to do (Annie E. Casey Foundation, 2013a).

National Assessment of Educational Progress

The National Assessment of Educational Progress (NAEP), considered the "Nation's Report Card," serves as the measure of student achievement in the U.S. The performance of students can be compared across the nation or to other states (NCDPI, 2013c). Millions of children reach fourth grade without learning to read at a proficient level. Reading proficiency by the end of grade three is a crucial point in a child's educational development (Annie E. Casey Foundation, 2013a). The first NAEP data collection was the 1969 trial assessment of the citizenship, science, and writing performance of 17-year-old in-school students in the spring of that year (NCES, 2013a). Considering the many changes and growth of NAEP over the years, the Elementary and Secondary Education Act Amendments of 1988 led to the authorization of an independent National Assessment Governing Board, signaling change in the governance of NAEP (NCES, 2013a). With No Child Left Behind, state testing programs were to be informally monitored by state NAEP results in mathematics and reading in grades 4 and 8. As the role of NAEP results has continued to increase in the educational field, the primary challenge has been to "keep up to date in assessment technology while maintaining an accurate record of student progress" (NCES, 2013a, "The National Assessment Governing Board Era," para. 15).

Much discussion has arisen as to why so much variance exists in the percentage of students scoring proficient or above on state assessments across the country. Although this dissertation does not specifically focus on cut scores or performance descriptors, this section is included for readers to understand the concerns about these variations in NAEP scores.

Some research indicates the variations are due to the leniency or rigor of cut scores. A cut score is the minimum score required for performance at each NAEP achievement level. These minimum scores define the lower boundaries of basic, proficient, and advanced reading levels (NCES, 2013b). Cut scores are developed in a standard-setting process that depends heavily on the definition for each level of performance. Good performance level descriptors can serve as the foundation of an assessment program, driving everything from item development to cut scores and reporting (Perie, 2007).

Some researchers argue that the descriptors are instrumental to the validity and defensibility of the standard-setting process (Cizek & Bunch, 2007; Hambleton, 2001). Some research studies showed that reading cut scores appear very lenient in some states and stringent in others, particularly when compared to the reading cut scores on NAEP (Braun & Qian, 2007; McLaughlin, 2006; McLaughlin & Bandeira de Mello, 2005). Other researchers provide a wealth of information on the importance of using performance descriptors to set cut scores (Berk, 1996; Impara, Giraud, & Plake, 2000; Livingston & Zieky, 1982). Perie (2007) argued that the best work on developing performance level descriptors was described by Loomis and Bourque (2001) in their work on NAEP achievement levels. Since each state sets its own standards and uses its own tests to measure proficiency, children in some states may be found to be proficient, but still lack the necessary skills needed to read at the minimal level required for fourth grade and beyond (Annie E. Casey Foundation, 2013a). Loomis and Bourque's work led to the framework of developing performance level descriptors by specifying numbers and names of levels, drafting policy definitions, and then fleshing out the policy definition with full descriptors for each subject and grade level. As a result, NAEP serves as a strong indicator of where students are performing across the nation.

Individual and school-wide scores are not provided in NAEP reports. Since 1990, scores have been available for state and national comparisons (McKenna & Stahl, 2003). These scores are reported in two different ways. First, the average scale score is reported for the states and the nation (McKenna & Stahl, 2003). Figure 1 displays North Carolina's statewide average for Grade 4 reading. An analysis of these data indicated that students in Grade 4 have an overall average that is not significantly different from the national average. The results from years 2002 and 2003 showed a state average that is higher than the national average.

Results are also reported by periodic benchmarks; NAEP's governing board divides performance into three levels: basic, proficient, and advanced. These levels are translated into specific benchmarks for each grade (McKenna & Stahl, 2003). Figure 2 provides the NAEP performance level definitions and descriptions for the one way results are reported. Figure 3 demonstrates the achievement-level percentages and average score results for North Carolina Grade 4 students.

As shown in Figure 3, the 2013 average score for fourth-grade students in North Carolina was 222, which is not significantly different from the national average of 221 for public school students. The following highlights additional NAEP data from the 2013 State Snapshot Report (U.S. Department of Education, 2014):

- The average score for students in North Carolina in 2013 (222) was not significantly different from their average score in 2011 (221) and was higher than their average score in 1992 (212).

- The score gap between higher performing students in North Carolina (those at the 75th percentile) and lower performing students (those at the 25th percentile) was 46 points in 2013. This performance gap was not significantly different from that in 1992 (50 points).

- The percentage of students in North Carolina who performed at or above the NAEP proficient level was 35 percent in 2013. This percentage was not significantly different from that in 2011 (34 percent) and was greater than that in 1992 (25 percent).

- The percentage of students in North Carolina who performed at or above the NAEP basic level was 69 percent in 2013. This percentage was not significantly different from that in 2011 (68 percent) and was greater than that in 1992 (56 percent). ("Overall Results," paras 2–5)

Assessment			Average Scale Score				Achievement Level						
			State		National public		at or above Basic		at or above Proficient		at Advanced		
Subject	Grade	Year	Avg.	SE	Avg.	SE	Pct.	SE	Pct.	SE	Pct.	SE	
Reading	**4**	2013	222	(1.1)	221	(0.3)	69	(1.2)	35	(1.2)	8	(0.7)	Compare
		2011	221	(1.2)	220	(0.3)	68	(1.2)	34	(1.4)	8	(0.8)	Compare
		2009	219	(1.1)	220	(0.3)	65	(1.3)	32	(1.3)	7	(0.6)	Compare
		2007	218	(0.9)	220	(0.3)	64	(1.2)	29	(1.1)	6	(0.5)	Compare
		2005	217	(1.0)	217	(0.2)	62	(1.5)	29	(1.4)	7	(0.6)	Compare
		2003	221	(1.0)	216	(0.3)	66	(1.2)	33	(1.2)	8	(0.7)	Compare
		2002	222	(1.0)	217	(0.5)	67	(1.4)	32	(1.3)	7	(0.7)	Compare
		1998	213	(1.6)	213	(1.2)	58	(1.8)	27	(1.5)	6	(0.6)	Compare
		1998[1]	217	(1.3)	215	(0.8)	62	(1.6)	28	(1.4)	6	(0.7)	Compare
		1994[1]	214	(1.5)	212	(1.1)	59	(1.5)	30	(1.7)	8	(0.8)	Compare
		1992[1]	212	(1.1)	215	(1.0)	56	(1.4)	25	(1.3)	5	(0.7)	Compare

[1]Accommodations were not permitted for this assessment.
Note: Standard Errors (SE) are shown in parentheses.

Higher than National public
Not significantly different from National public
Lower than National public

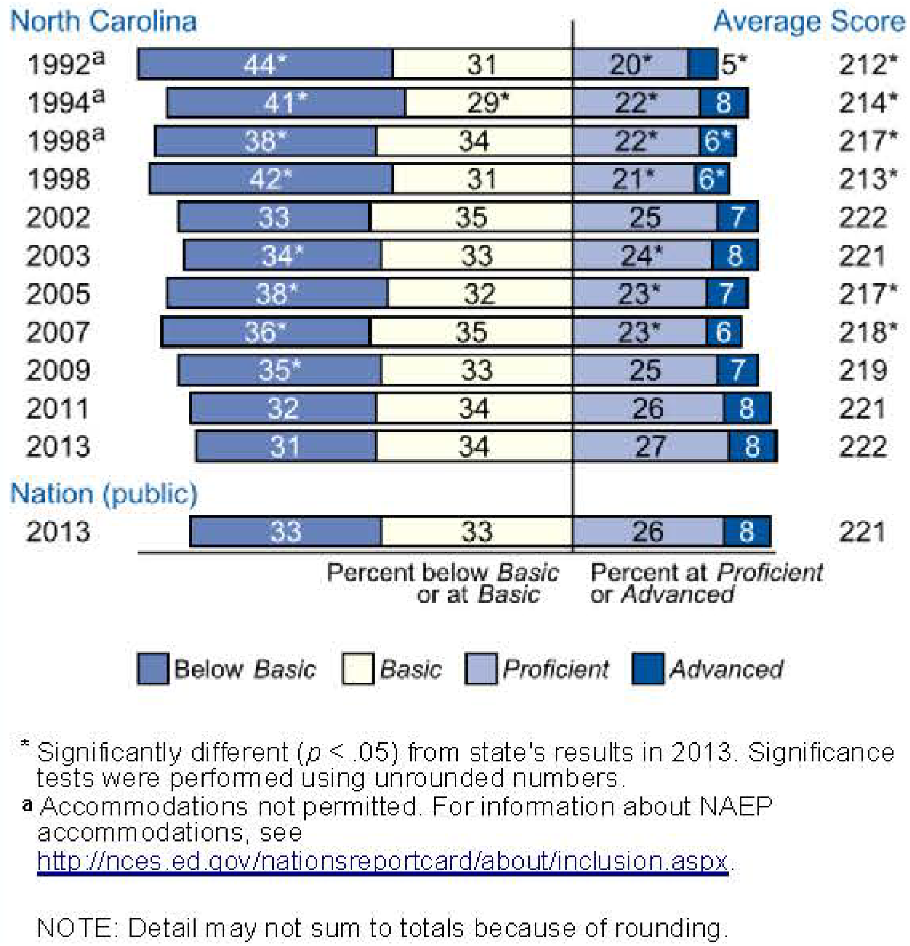
Source: http://nces.ed.gov/nationsreportcard/states/Default.aspx

Figure 1. Summary of NAEP results for North Carolina

Achievement-Level Policy Definitions
Basic: Partial mastery of prerequisite knowledge and skills that is fundamental for proficient work at each grade.
Proficient: Solid academic performance for each grade assessed. Students reaching this level have demonstrated competency over challenging subject matter, including subject-matter knowledge, application of such knowledge to real-world situations, and analytical skills appropriate to the subject matter.
Advanced: Superior performance
Fourth-Grade Descriptions
Basic: Fourth-grade students performing at the basic level should demonstrate an understanding of the overall meaning of what they read. When reading text appropriate for fourth-graders, they should be able to make relatively obvious connections between texts and their own experiences and extend the ideas in the text by making simple inferences.
Proficient: Fourth-grade students performing at the proficient level should be able to demonstrate an overall understanding of the text, providing inferential as well as literal information. When reading text appropriate to fourth grade, they should be able to extend the ideas in the text by making inferences, drawing conclusions, and making connections to their own experiences. The connection between the text and what the student infers should be clear.
Advanced: Fourth-grade students performing at the advanced level should be able to generalize about topics in the reading selection and demonstrate an awareness of how authors compose and use literary devices. When reading text appropriate to fourth grade, they should be able to judge text critically and, in general, to give thorough answers that indicate careful thought.

Source: McKenna and Stahl (2003)

Figure 2. NAEP's achievement-level policy definitions and fourth-grade descriptions.



Source: U.S. Department of Education (2014)

Figure 3. Achievement-level percentages and average score results.

NAEP benchmarks were designed as high standards for children to accomplish (McKenna & Stahl, 2003). For example, if second-grade students performing on grade level experience three years of no growth during any of the next eight years, they will score three years behind on the college entrance Scholastic Aptitude Test (SAT). A year without reasonable growth puts the children at risk for academic failure (Fielding, Kerr, & Rosier, 2007). Considering this information, North Carolina must understand the importance of the accountability model and the Read to Achieve Policy to ensure that every student can read at or above grade level by the end of third grade (NCDPI, 2012).

Race to the Top

The American Recovery and Reinvestment Act of 2009 (ARRA) provided $4.35 billion for the Race to the Top (RttT) Fund. This competitive grant program was designed to encourage and reward states that were creating the conditions for education innovation and reform; achieving significant improvement in student outcomes, including making substantial gains in student achievement, closing achievement gaps, improving high school graduation rates, and ensuring student preparation for success in college and careers; and implementing ambitious plans. North Carolina is a recipient of RttT funding.

> Race to the Top (RttT) marks a historic moment in American education. The American Recovery and Reinvestment Act of 2009 offers bold incentives to states willing to spur systemic reform to improve teaching and learning in America's schools. RttT has ushered in significant change in our education system, particularly in raising standards and aligning policies and structures to the goal of college and career readiness. RttT has helped drive states nationwide to pursue higher standards, improve teacher effectiveness, use data effectively in the classroom, and adopt new strategies to help struggling schools.
>
> To date, President Obama's RttT initiative has dedicated over $4 billion to 19 states that have created robust plans that address the four key areas of K-12 education reform as described below. These states serve 22 million students and employ 1.5 million teachers in 42,000 schools, representing 45% of all K-12 students and 42% of all low-income students nationwide. The Joint Education Appropriations Subcommittee (2013) outlined the four key areas of reform to include:

- Development of rigorous standards and better assessments
- Adoption of better data systems to provide schools, teachers, and parents, with information about student progress
- Support for teachers and school leaders to become more effective
- Increased emphasis and resources for the rigorous interventions needed to turn around the lowest-performing schools (Race to the Top, 2013, paras. 1–6).

> [T]he Race to the Top Fund Assessment Program provides funding to consortia of States to develop assessments that are valid, support and inform instruction, provide accurate information about what students know and can do, and measure student achievement against standards designed to ensure that all students gain the knowledge and skills needed to succeed in college and the workplace. These assessments are intended to play a critical role in educational systems; provide administrators, educators, parents, and students with the data and information needed to continuously improve teaching and learning; and help meet the President's goal of restoring, by 2020, the nation's position as the world leader in college graduates. (U.S. Department of Education, 2010b, p. 18171)

> Forty-six states and the District of Columbia submitted comprehensive reform plans to compete in the Race to the Top competition. While 19 states have received funding so far, 34 states modified state education laws or policies to facilitate needed change, and 48 states worked together to create a voluntary set of rigorous college- and career-ready standards. (Race to the Top, 2013, para. 7)

Race to the Top rewards states that have demonstrated success in raising student achievement and have the best plans to accelerate their reforms in the future. These states will provide the best reform ideas and models for others to replicate across the nation (U.S. Department of Education, 2009).

North Carolina Education Initiatives and Policies

> A great public education system is one that prepares all students for postsecondary education, careers, citizenship and lifelong learning. It sets high standards and fosters the critical thinking and other skills needed in today's global economy. A great state education system must evolve over time in response to changes in the state's economic, technological, and social contexts as well as in response to development in other states and the world. (North Carolina State Board of Education [NCSBE], 2012b, p. 1)

North Carolina, a large and diverse southeastern state with 9.3 million people, has actively pursued reading policies throughout history. The vision for literacy in North Carolina is for all students to graduate from high school with the skills necessary for personal success and lifelong learning.

The implementation of mClass: Reading 3D is the result of policies and initiatives developed in North Carolina to meet federal and state educational reading mandates. For example, the North Carolina Budget Act of 2009–10, Section 7.18(b) stated that ". . . the State Board of Education shall investigate and pilot a developmentally appropriate diagnostic assessment for students in elementary grades during the 2009–10 school year" (General Assembly of North Carolina, 2009, p. 33). This assessment will enable teachers to do the following: (a) determine student learning needs and individualize instruction, and (b) ensure that students are adequately prepared for the next level of coursework as set out by the *North Carolina Standard Course of Study*.

North Carolina State Board of Education policy (1999) required schools and school districts implement assessments at grades K, 1, and 2 that included documented, ongoing individualized assessments throughout the year and a summative evaluation at the end of each school year. These assessments monitor the achievement of benchmarks established in the *North Carolina Standard Course of Study*. The assessments may take the form of state-developed materials, adaptations, or unique assessments adopted by the local school board. The policy required grades K, 1, and 2 assessments to be implemented by all schools no later than the 2000–2001 school year. The intended purposes of these assessments were to (a) provide information about the progress of each student for instructional adaptations and early interventions, (b) provide next-year teachers with information about the status of each of their incoming students, (c) inform parents about the status of their children relative to grade-level standards at the end of the year, and (d) provide the school and school district information about the achievement status and progress of groups of students (e.g., by school and grade level) in grades K, 1, and 2. However, the policy has changed.

General Statute G.S. 115C-174.11(a) mandates that students in grades K-3 must be given a diagnostic reading assessment. Difficulty with reading development must be addressed with instructional supports and services. Local education agencies (LEAs) are encouraged to partner with community organizations and businesses to identify volunteers, mentors, and tutors to help enhance reading development and proficiency in students to improve their overall achievement. The law states that "kindergarten, first, second, and third grade students shall be assessed with valid, reliable, formative, and diagnostic reading assessments made available to local school administrative units by the State Board of Education pursuant to G.S. 115C-174.11(a)." Research is available which suggests formative assessments impact student achievement. According to Rollins (2014), "formative assessment achieves such strong gains because it provides a vehicle to give students timely feedback on their work and enables teachers to make immediate adjustments to instruction" (p. 57). Davies (2007) revealed when the frequency of descriptive feedback goes up and evaluative feedback goes down, students learn more. In another study, Hattie and Timperley (2007) revealed that feedback has the potential to influence student achievement, specifically when it is about how to perform a task more effectively. Black and William (1998) indicated students who receive rich formative assessment can learn in six or seven months what would take other students an entire year to learn. The intent of the new law is to increase student reading achievement in grades K–3.

North Carolina was one of only 12 recipients of the 2010 federal RttT grants, which brought nearly $400 million to the state's public school system for use over a four-year period (NCDPI, 2012). North Carolina used the RttT Grant to fund the implementation costs of mClass: Reading 3D because this assessment aligns with many requirements related to benchmark standards, assessments, and student achievement. The North Carolina Department of Public Instruction (NCDPI) mandated that school districts with the lowest achieving schools, as measured by reading proficiency, undergo a "school transformation" process and implement mClass: Reading 3D in grades K-3. In other words, implementation of mClass: Reading 3D became a requirement for many schools, not an option.

Career and College: Ready, Set, Go!

North Carolina's Career and College: Ready, Set, Go! Initiative is designed to help the North Carolina State Board of Education reach its mission: "Every public school student will graduate ready for postsecondary education and work, prepared to be a globally engaged and productive citizen" (North Carolina State Board of Education, n.d., "Vision," para. 1). Tools and support have been provided for teachers and students to focus on learning to reach one goal: to graduate students who are career and college ready (NCDPI, n.d.a). As part of the Ready, Set, Go! Initiative, Carolyn Guthrie, Public Schools of North Carolina Academic Services and Instructional Support Director for K-3 Literacy Program, informed the North Carolina State Board of Education the mCLASS: Reading 3D assessment tool would meet the requirements of the Budget Act. The influence of federal laws and guidelines in North Carolina's Career and College: Ready, Set, Go! Initiative was implemented in 2008 and encompassed four "pillars" of work:

- Teachers and Principals (Accountability)
- Standards and Assessments
- School Turnaround
- Data Systems

Read to Achieve Policy

One of the latest North Carolina programs that has generated much attention to the need of getting students reading on grade level before the third grade has been Read to Achieve. The Read to Achieve program is part of the Excellent Public Schools Act, which became law in July 2012. This program became applicable to all schools at the beginning of the 2013–2014 school year (NCDPI, 2012). Seven components are addressed in the Read to Achieve program and are continuously being updated. As of April 2013, the following components were addressed: Comprehensive Reading Plan Process, Developmental Screening and Kindergarten Entry Assessment Process, Facilitating Early Grade Reading Proficiency Process, Elimination of Social Promotion Process, Successful Reading Development for Retained Students Process, Parent and Guardian Notification Requirements Process, and Accountability Measures Process. The mCLASS: Reading 3D assessment tool was chosen by the State of North Carolina to address the legislative component of facilitating early grade reading proficiency.

On August 2, 2013, the North Carolina State Board of Education adopted the State-Wide Implementation of Formative and Diagnostic Reading Assessments in Grades K–3. “Pursuant to the provisions of G.S. 115C-174.11 (a), the State Board of Education shall provide all local school districts a valid, reliable, formative and diagnostic reading assessment for kindergarten, first, second, and third grade, effective the 2013–2014 school year” (NCSBE, 2012a). Table 1 includes information related to the policy described above, summarizing a breakdown of North Carolina’s Read to Achieve Facilitating Early Grade Reading Proficiency Process.

mCLASS: Reading 3D was adopted as the state-wide formative, diagnostic assessment system to be used by all K–3 classroom teachers to assess students during benchmarking and progress monitoring in accordance with the State Board policy. Students are assessed to measure

Table 1

North Carolina's Read to Achieve Facilitating Early Grade Reading Proficiency Process

Component	Proficiency
Legislative	Facilitating Early Grade Reading Proficiency: • K-3 students shall be assessed with valid reliable, formative and diagnostic reading assessments • Assessments and instructional supports shall address the National Reading Panel's research on the Big 5 ideas of reading • LEAs are encouraged to partner with volunteers, mentors, tutors
Action Plan (for LEAs)	• Ensure that all schools in all districts are trained and have correct materials and devices • Check fidelity of implementation of benchmarking and progress monitoring after schools begin using the assessment system • Maintain communication with Regional Consultants about needs, questions, and successes • Analyze data to develop schedules, identify professional development needs, guide and change instruction • Provide instructional supports and intervention strategies to teachers • Develop relationships with community organizations, businesses, and volunteer groups for providing mentors and tutoring
Process (for DPI)	mCLASS Reading 3D is adopted as the state-wide formative, diagnostic assessment system to be used by all K-3 classroom teachers. • Train schools not currently using this system during the 2012-2013 school year with the goal of all training completed by April of 2013 • Allocate funding for assessment devices for schools by April of 2013 • Implement mCLASS Reading 3D state-wide Beginning of Year (BOY) assessment in 2013-2014 for schools by April of 2013 • Deliver student assessment materials by June 2013 • Develop State Board Policy – rules of expectations for this system • Provide access to intervention and instructional strategies to all stakeholders • Utilize universal screening, progress monitoring and data-based decision making as critical components of Responsiveness to Instruction (RtI) framework

Table 1 (continued)

Responsibilities of Stakeholders	State	LEA	School	Teachers
	• Provides funding for devices • Provides funding for subscriptions • Provides funding for student assessment materials • Provides funding for training • Provides funding for “Train the Trainer” substitutes	• Sends two Trainers for each district school to training sessions • Uses allocation funding to choose and purchase devices • Supports implementation of the program	• Allows the two Teacher Trainers at each school to train all K-3 teachers on the system • Uses the administrative reports to inform school decisions	• Implement the full system with fidelity following benchmarking and progress monitoring expectation • Analyze date to develop schedules, identify professional development needs, guide and change instruction

progress, diagnose difficulties, and inform instruction and remediation needs (NCDPI, 2012). Along with the beginning of year (BOY), middle of year (MOY), and end of year (EOY) assessments, progress monitoring assessments shall be given between each benchmark according to the state progress monitoring schedule. The policy intends for teachers and administrators to analyze assessment data results and modify instructional practices to meet the individual needs of students. As shown in Marzano's (2007) research, a positive correlation exists between the frequency of formative assessment and student achievement. School administrators are given the responsibility to review a variety of data reports for the purpose of providing instructional leadership and professional development opportunities to ensure effective implementation of mCLASS: Reading 3D. District administrators are expected to review data to ensure fidelity of assessment implementation and identify trends to make necessary adjustments in instruction for maximum student results. To include collaboration with parents/guardians, schools will provide families with program-generated written notification of their child's progress.

Wireless Generation

Wireless Generation was founded in 2000 by Larry Berger and Greg Gunn, two Rhodes Scholars who shared a passion for technology and what it could do for educators. Wireless Generation was the first company to introduce classroom assessments for wireless devices to enhance K–12 learning (W. K. Kellogg Foundation, 2013).

Larry Berger was Founder and Executive Chairman of Wireless Generation. Berger led the invention of Wireless Generation's mCLASS® system, which enabled educators to administer early reading and math formative assessments using handheld computers and then immediately receive results, analysis, and support for differentiated instruction. In a 2012 report, Wireless Generation indicated it served more than 3 million children and hosted one of the largest databases of longitudinal student data in the country (Wireless Generation, 2012a).

New instructional programs were created that allowed teachers to record assessment data electronically. Many districts and schools were looking to implement programs that would change student outcomes and the “teaching-learning” process. State and local school districts all across America were continuously looking for the perfect technology program that promised to do the following:

- Increase equity and access for students to help reduce the dropout rate and address the achievement gap
- Improve effectiveness and productivity of teachers and administrators and improve student achievement and outcomes

Wireless Generation Changes to Amplify

News Corporation (2013) credited Wireless Generation for being the pioneer that brought mobile assessments, along with instructional analytics to schools in America. News Corporation Chairman and CEO Rupert Murdoch stated, “Wireless Generation is at the forefront of individualized, technology-based learning that is poised to revolutionize public education for a new generation of students” (as cited in News Corporation, 2010, p. 1).

Wireless Generation changed to Amplify, an independent subsidiary of News Corporation. Amplify was founded in 2011, soon after News Corporation’s acquisition of Wireless Generation. According to News Corporation (2013), Amplify is “reimagining the way teachers teach and students learn” (para. 1), enabling teachers to manage whole classrooms and, at the same time, empower them to offer more personalized instruction so that students become more active, engaged learners.

History of DIBELS

Dynamic Indicators of Basic Early Literacy Skills (DIBELS) is “an outcome-driven model, the purpose of which is to identify early, who may need additional support, evaluation and modified instruction in an ongoing formative basis to ensure that all children achieve high stakes reading goals” (Good, Gruba, & Kaminski, 2002, p. 700).

Beginning research and development of DIBELS was conducted in the late 1980s and early 1990s. The DIBELS program of research built upon measurement procedures from Curriculum-Based Measurement (CBM; Deno, 1985; Deno & Fuchs, 1987), and General Outcome Measurement (GOM; Fuchs & Deno, 1991). The DIBELS measures were created to be economical and efficient indicators of a student’s progress toward achieving a literacy skill such as reading or phonemic awareness, and to be used for benchmark assessment and progress monitoring. Initial research on DIBELS focused on examining the technical adequacy of the measures for these primary purposes (Good & Kaminski, 1996; Kaminski & Good, 1996). The DIBELS measures were developed to serve as indicators of the essential early literacy skills a student must master to become a good reader. The five essential skill areas of early literacy outlined in the NRP (2000) report include:

- Phonemic Awareness
- Alphabetic Principle and Phonics
- Accurate and Fluent Reading
- Vocabulary
- Comprehension

Since initial publication in 2002, DIBELS has become known for its widespread use for monitoring progress in acquisition of early literacy skills (Dynamic Measurement Group, 2011).

An extensive body of research has continued to document the reliability and validity of DIBELS as well as its sensitivity in measuring changes in student performance over time.

DIBELS measures were designed to quickly and efficiently assess reading and pre-reading skills in Kindergarten through sixth grade (Dynamic Measurement Group, 2013). These measures serve as indicators of the skill area designed to be assessed. The use of DIBELS assisted teachers in identifying students who needed additional instruction to become good readers and allowed the teacher to monitor those students to ensure they made academic progress.

When using DIBELS, students should be tested three times per year, at the beginning, middle, and end of the year. Scores can be compared to empirically derived decision categories for a student's grade level. *Low risk* performance from assessment results indicates that students have an 80% chance of achieving future proficiency. *Some-risk* performance indicates students have a 50% chance of achieving future proficiency. Those students falling into the at-risk performance category have an 80% chance of not achieving future proficiency (Goffreda, DiPerna, & Pedersen, 2009). With the results provided from DIBELS, teachers can determine which students are "on track" for learning to read and those who may need additional instruction and support to meet reading goals. With results from DIBELS assessment measures, teachers are able to monitor progress of all students. Instructional strengths and weaknesses are easier to identify when data are available on student performance. As noted from Good and Kaminski, the original authors of DIBELS, DIBELS measures are not used to grade children or to make decisions about retention.

DIBELS Next

The DIBELS assessment provides outcome measures for screening and progress monitoring. DIBELS 6th edition has been replaced with DIBELS Next. According to Dynamic Measurement Group (2013), DIBELS Next includes a series of research-based enhancements to increase the ease of use, reliability, and validity of the assessment (Dynamic Measurement Group, 2009). The 2000 NRP report and the 1998 National Research Council report outlined the essential early literacy domains. Assessing students on the basic early literacy skills, which are also known as foundational skills, can help distinguish students who are on track to become successful readers from students who are likely to struggle. Research has shown that these skills are the basic building blocks that every child must master in order to become a proficient reader (Adams, 1990; NRP, 2000; National Research Council, 1998). Evidence also shows that these skills can be improved with instruction (Kame'enui, Carnine, Dixon, Simmons, & Coyne, 2002; Simmons & Kame'enui, 1998; Torgesen et al., 1999).

The Dynamic Indicators of Basic Early Literacy Skills Next (DIBELS Next) assessment consists of a set of brief, standardized, individually administered measures of early literacy designed to predict the literacy growth of children from kindergarten through sixth grade. The six DIBELS Next measures reflect the essential early literacy domains described in the National Reading Panel (2000) and National Research Council (1998) reports. The measures address the key domains: phonological awareness, graphophonemic knowledge, word reading, oral reading accuracy, and comprehension of text (Wireless Generation, 2012c).

The DIBELS Next measures were developed to serve as *indicators* of the basic early literacy skills. An indicator is a brief, efficient index that provides a fair degree of certainty about a larger, more complex system or process (Dynamic Measurement Group, 2011). As indicators, DIBELS measures are not designed to be comprehensive, in-depth assessments of each and every component of a basic early literacy skill. The measures are designed to assess students on key components that are representative of that skill area, and are predictive of overall reading competence. Table 2 provides the alignment of DIBELS Next measures with basic literacy skills.

DIBELS Next is the current version of DIBELS, which replaces the previous version, DIBELS 6th edition. The new version has retained the best of DIBELS, but has been updated to increase ease of use and accuracy of results (Dynamic Measurement Group, 2012). DIBELS Next still uses repeated indicators of foundational early literacy skills and can still be used for universal screening, benchmark assessment, and progress monitoring. "*DIBELS Next* represents a breakthrough revision, based on new research conducted over 4 years on over 25,000 students in 90 schools throughout the United States, as well as consumer feedback" (Dynamic Measurement Group, 2011, p. iv). Specific changes and benefits from DIBELS to DIBELS Next measures are outlined in Table 3.

DIBELS Research

Advantages and disadvantages of the use of DIBELS are noted in research studies (Hoffman, Jenkins, & Dunlap, 2009). Advantages relate to the speed of administration, identification of at-risk learners, and informing instruction. Disadvantages include the overemphasis on speed, administrative issues, and use of non-sense words. Other disadvantages documented included no comprehension test, like state-mandated tests and the limited amount of information provided by DIBELS.

Table 2

Alignment of DIBELS Next Measures with Basic Literacy Skills

Basic Early Literacy Skills	DIBELS Indicators
Phonemic Awareness	First Sound Fluency (FSF) Phoneme Segmentation Fluency (PSF)
Alphabetic Principle and Basic Phonics	Nonsense Word Fluency (NWF) –Correct Letter Sounds –Whole Words Read
Advanced Phonics and Word Attack Skills	DIBELS Oral Reading Fluency (DORF) –Accuracy
Accurate and Fluent Reading of Connected Text	DIBELS Oral Reading Fluency (DORF) –Correct Words Per Minute –Accuracy
Reading Comprehension	Daze DIBELS Oral Reading Fluency (DORF) –Correct Words Per Minute –Retell Total/Quality of Response
Vocabulary and Language Skills	Word Use Fluency-Revised (WUF-R) (Available as an experimental measure from http://dibels.org/)

Note. DIBELS Next® Assessment Manual (Amplify, 2011a; Dynamic Measurement Group, 2011).

Table 3

Modifications and Benefits from DIBELS to DIBELS Next Measures

Measures	Modifications	Benefits
First Sound Fluency (FSF)	First Sound Fluency replaces Initial Sound Fluency as a measure of early phonemic awareness	• No pictures, no guessing • Continuous timing • Increased reliability FSF is easier to administer and eliminates the issues with ISF that were caused by the pictures, students guessing at the answers, and the assessor starting and stopping the stopwatch for each item.
Phoneme Segmentation Fluency (PSF)	• New directions and layout to facilitate student understanding of the task and scoring • New arrangement of items (test words) • Checklist of common response patterns to facilitate linkages to instruction • No longer administered at the middle and end of first grade	• Increased ease of administering and scoring • Increased consistency of scores • Enhanced intervention planning
Letter Naming Fluency (LNF)	• New font that may be more familiar to younger students • New directions and layout to facilitate student understanding of the task • New arrangement of items (letters) • Checklist of common response patterns to facilitate linkage to instruction	• More student-friendly • Increased ease of administering and scoring • Increased consistency of scores • Enhanced intervention planning

Table 3 (continued)

Measures	Modifications	Benefits
Nonsense Word Fluency (NWF)	• New font • New directions and layout to facilitate scoring • New arrangement of items (nonsense words) • Checklist of common response patterns • New score: Whole Words Read (WWR) to replace Words Recoded Completely and Correctly (WRC)	• More student-friendly • Increased ease of administering and scoring • Increased consistency of scores • Enhanced intervention planning • Enhanced interpretation of scores
DIBELS Oral Reading Fluency (DORF)	• All new passages developed using new procedures to ensure overall equivalent difficulty with DIBELS 6th Ed., but with a more consistent difficulty within each grade level • New font • New directions and layout • Checklist of common response patterns • New scores: errors and retell	• More student-friendly • Increased ease of administering and scoring • More equivalent passages • Enhanced intervention planning • Enhanced interpretation
Daze	A new DIBELS maze measure of reading comprehension for Grades 3-6, which can be group or individually administered	• Additional measure of comprehension • Provides additional information for intermediate students
Retell	Retell is now included as a component of DIBELS Oral Reading Fluency to indicate that the end-goal of reading is to read for meaning.	• Reading for meaning

Note. Dynamic Measurement Group (2011).

mCLASS: Reading 3D

mClass: Reading 3D is an observational reading assessment software for students in grades K–5 (Amplify Education, 2014a). When using the software, assessors are able to obtain a complete picture of each student's ability to read with comprehension. The State of North Carolina adopted mClass: Reading 3D to meet state mandates to ensure all students are able to read by third grade (Read to Achieve, 2013).

The two assessment tools, DIBELS Next and Text Reading and Comprehension (TRC), combine information to provide teachers with each student's instructional reading level (Collaborative Center for Literacy Development, 2013). The six DIBELS measures include first sound fluency (FSF), letter naming fluency (LNF), phoneme segmentation fluency (PSF), nonsense word fluency (NWF), DIBELS oral reading fluency (DORF), and Daze. The FSF measure assesses a student's ability to identify, isolate, and pronounce the first sound of an orally presented word. LNF records the student's ability to name uppercase and lowercase randomly mixed letters. On the PSF measure, students identify individual sounds that make up a word. The NWF assesses the ability to decode and blend letters into words. The next measure, DORF, measures the student's ability to read connected text accurately and fluently. Using the Daze measure, the student is presented with a reading passage in which some words are replaced by a multiple choice box that includes the original word and two distractors. The student reads the passage silently and selects the word in each box that best fits the meaning of the sentence (Amplify, 2011).

The TRC measures text reading and comprehension with concepts about print, reading behaviors, oral comprehension, and written comprehension. Skills assessed include the ability to read connected text accurately, fluently, and with comprehension from authentic literature. This combination of assessments measures five important reading skills all children must develop to become proficient readers:

- hearing and using sounds in spoken words (phonemic awareness),
- knowing the sounds of letters and sounding out written words (alphabetic principle),
- reading words in stories easily, quickly, and correctly,
- reading with comprehension, the ultimate goal of reading, and
- understanding and using a variety of words and learning new words.

Teachers gather this reading skill data about their students by administering the DIBELS Next and TRC assessments. They then enter the information into mClass Reading: 3D software via Net Books, Palm Pilots, or IPADS. The software disaggregates the data, provides individualized assessment information about each student's reading progress, and tracks the student's progress during the school year. This 21st century assessment tool is designed to efficiently determine students' reading progress quickly by providing immediate feedback from the mClass: Reading 3D software. This timely feedback allows teachers to modify classroom instruction to help meet student needs.

Nuts and Bolts of mCLASS: Reading 3D

Understanding the mClass: Reading 3D components is important to this study as findings will indicate how the tools are or are not used. Using mCLASS: "Now What? Tools," educators extend the functionality of the program in practical ways to translate class and student reports into individualized instruction for each student. The mCLASS: Item-Level Advisor tool extends reading assessment functionality by automatically highlighting important patterns, which provides a detailed analysis, and suggesting the next steps to be taken for targeted instruction. The mCLASS: Small Group Advisor is another option under the "Now What? Tools." This component “uses results from the reading assessments to help teachers create optimal groups of students with similar needs and select targeted instructional activities at the appropriate level of challenge and intensity” (Wireless Generation, 2013b, para. 3). Students are sorted into one of nine intervention groups according to mCLASS: DIBELS Next and TRC benchmark assessment results. Measure 1 determines the horizontal placement. Well below benchmark and far below proficient students are at the left of the group block. Students at or above benchmark and proficient/ above proficient students are at the right. Measure 2 determines the vertical placement of the student. Well below benchmark and far below proficient students are on the top, whereas, at or above benchmark, and proficient/above proficient students are on the bottom. If the educator feels students should be grouped in another way, new sets of groups can be created. Students who fall into a category alone may be grouped with others, using the “tidy” option.

The mCLASS: Home Connect component allows educators to provide parents with progress reports and specific instructional activities to help improve student learning at home. The report visually outlines assessment levels on specific skills and provides an explanation of progress.

The Reporting and Analysis Suite helps educators keep track of saved reports in one specific place. A variety of reports are accessible to review data and navigate between mCLASS: DIBELS and TRC. Icons are visible in the “reports” section of the program for a common visual language. When viewing the “Comparing Population Report,” educators are able to view the history of academic development and use color codes to visualize and understand performance. Educators are able to drill down to detailed information to improve student reading achievement. Areas of strength and concern can be identified through reports to help make informed decisions concerning student performance. When using the “Correlation Effectiveness Report,” educators have the ability to cross-reference and analyze data points. Measures can be correlated for a period of time to see how instruction in one area may impact outcomes in another (Wireless Generation, 2013a).

Feedback provided through the assessment tools are compared to research-based benchmark proficiency cut points to provide educators with an indication of students’ reading skills and predict literacy outcomes. With immediate feedback, educators have the opportunity to make effective, informed instructional decisions to improve student reading achievement.

The mobile device is used during assessment to gather and store detailed student responses. Once assessments are completed, the educator has the ability to sync data using the handheld device. Data is stored and is accessible through the mCLASS: Reading 3D website through Amplify. The educator logs into the data system to gain access to a variety of reports with student data.

The data stored are available for educators to monitor students for risk on the foundational literacy skills of phonological awareness and phonics with adaptive, deeper diagnostics available for students at a higher risk (Wireless Generation, n.d.). Educators are able to screen and progress monitor students.

Along with progress monitoring, the software assessment tool provides historical profiles and various reports of each student and classroom through the website. This enables educators to track student progress from year to year and class to class.

Last of all, Amplify provides embedded professional development to expand educators’ knowledge with a deeper understanding of the reading process. As the educators spend more time observing how students use cues to make meaning from texts, they are able to differentiate instruction to improve students' reading skills.

Why mClass: Reading 3D?

The mCLASS: Reading 3D program was developed

> through a unique partnership with the authors of Dynamic Indicators of Basic Literacy Skills (DIBELS), Montgomery County Public Schools, University of Chicago Center for Urban School Development (USI) in collaboration with Chicago Public School teachers, and Wireless Generation. (Wireless Generation, 2010, as cited in Collaborative Center for Literacy Development, 2013, p. 1)

Results from mClass: Reading 3D are compared to research-based benchmarks to immediately provide individualized instructional activities in the classroom. The detailed reporting and analysis from the software includes features that use book sets from Rigby, Mondo Publishing, and the University of Chicago (STEP). More than 5,800 leveled readers from over 20 different publishers are used for progress monitoring. The administration of the assessments, along with progress monitoring, help teachers determine the strengths and weaknesses of skills accessed and inform instruction. Teachers are also more likely to identify the types of errors each student makes and adjust instruction using tools from the software such as mClass: Now What? Tools. The small-group advisor, which uses student DIBELS Next scores, will assist the teacher in creating groups for targeted intervention. Additionally, the item-level advisor offers observations explaining patterns of significance in the student's skill development (Amplify Education, 2013b).

Preliminary studies of mCLASS: Reading 3D solutions have reported 50% of time savings in assessment administration, which gives teachers three to five instructional days back per year (Wireless Generation, n.d.). As teachers are provided formative feedback on student assessments, they are able to differentiate instruction in efforts to have a greater impact on student achievement. The use of DIBELS Next, combined with reading records, provides a balance to measure student reading skills. Based on over 30 years of research, reading records are derived from the theory that by understanding the types of errors made by a student, educators can better diagnose the specific skills needed to improve student achievement.

On June 2, 2010, the National Governors Association Center for Best Practices (NGA) and the Council of Chief State School Officers released the K-12 Common Core Standards. Wireless Generation and Amplify aligned mCLASS: Reading 3D components to the Common Core English Language Arts Standards for Grades K–5, specifically pertaining to Reading Standards for Literature K–5, Reading Standards for Informational Text K–5, and Reading Standards: Foundational Skills. The alignment with K-3 Common Core ELA standards is shown in Appendix B. As students continue to be assessed with mClass: Reading 3D software in efforts to improve student reading achievement, the focus of assessment using technology will continue to be reviewed to ensure the process is aligned with 21st century technology.

Technology and Student Assessment

A strong and dramatic change is sweeping through our schools. Students are using cell phones to answer questions and survey each other. Kindergarten students are using the iPad to read stories and complete number lines to explain the process to the teacher. High school students are communicating across many countries and learning hybrid style. Professor Sherwood Thompson from Eastern Kentucky University summarized hybrid teaching as a process designed to incorporate the best techniques and advantages of face-to-face and digital technology. This instructional module discussed strategies for teaching with online course materials, blogs, Twitter, texting, iPod, podcasting, digital textbooks, and computer PowerPoint presentations (Thompson, 2009). These students are not the same 21st century students who used computers to play games, watch videos, and simply search the web. These new 21st century learners are highly relational and demand quick access to new knowledge. More than that, they are capable of engaging in learning at a whole new level. With the world literally at their fingertips, today's students need teachers and administrators to re-envision the role of technology in the classroom (Blair, 2012).

In the 2010 National Education Technology Plan, Secretary of Education Arne Duncan clearly stated, "The challenge for our education system is to leverage the learning sciences and modern technology to create engaging, relevant, and personalized learning experiences for all learners that mirror students' daily lives and the reality of their futures" (INACOL, 2008). As educators know, teaching is a complicated practice that requires an interweaving of many kinds of specialized knowledge. In this way, teaching is an example of an ill-structured discipline, requiring teachers to apply complex knowledge structures across different cases and contexts (Mishra et al., 2012; Spiro & Jehng, 1990). Teachers practice their craft in highly complex, dynamic classroom contexts (Leinhardt & Greeno, 1986) that require them constantly to shift and evolve their understanding. Thus, effective teaching depends on flexible access to rich, well-organized and integrated knowledge from different domains (Glaser, 1984), including knowledge of student thinking and learning, knowledge of subject matter, and increasingly, knowledge of technology.

At the heart of good teaching with technology are three core components: content, pedagogy, and technology, plus the relationships among and between them. The interactions between and among the three components, playing out differently across diverse contexts, account for the wide variations seen in the extent and quality of educational technology integration (Koehler & Mishra, 2009; Koehler, Mishra, & Yahya, 2007).

It is time to shift mindsets away from the notion that technology provides a supplemental teaching tool and assume, as with other professions, that technology is essential to successful performance outcomes (i.e., student learning; Arnold, 1998; Ertmer & Ottenbreit-Leftwich, 2010). To put it simply, effective teaching requires effective technology use. Recent research resulting from both large- and small-scale efforts (Bauer & Kenton, 2005) suggested that we have yet not achieved high levels of effective technology use, either in the U.S. or internationally (Kozma, 2003). Furthermore, if and when technology is used, it typically is not used to support the kinds of instruction (e.g., student-centered) believed to be most powerful for facilitating student learning (Cuban, Kirkpatrick, & Peck, 2001). The computer is no longer "the new kid in school." Since the early 1980s, when computers were first used in schools, more than $3 billion has been spent on hardware, software, teacher training, and connections (Fulton, 1997).

Technology and Early Literacy Assessment

It is no secret that children learn differently. Some need visual experiences. Others respond to auditory cues. Still others need hands-on familiarity. Some need all three. The same is true when children learn to read. Technology gives teachers exciting new ways to accommodate individual differences among students while motivating them to accomplish the difficult cognitive work involved in becoming phonemically aware and literate. Using appropriate technologies, children can see, hear, and feel the concepts of reading and writing spring to life. Children are highly motivated as they learn to manipulate letters and words in an interactive, multisensory environment.

The use of technology can be an effective support tool in differentiating reading instruction by (a) presenting information and activities to students, (b) assessing students' work, and (c) being a scaffold or support to reading successfully (Leu, 2000). In 2000, the National

Reading Panel issued a report on effective, research-based reading instruction. The panel concluded that, “Effective reading instruction implements phonemic awareness, phonics, fluency, vocabulary and text comprehension” (Leu, 2000). Teachers who are knowledgeable and effective cannot be replaced with technology. However, technology can be used to support students struggling in the above mentioned areas (Leu, 2000). Technology allows students to see, hear, and do. It also supports the teacher with resources to meet those needs in a timely and effective manner. To achieve the kinds of technology uses required for 21st-century teaching and learning (Lai, 2008; Law, 2008), we need to help teachers understand how to use technology to facilitate meaningful learning, defined as that which enables students to construct deep and connected knowledge, which can be applied to real situations. Although “technology can make it quicker or easier to teach the same things in routine ways,” it also makes it possible to “adopt new and arguably better approaches to instruction and/or change the content or context of learning, instruction, and assessment” (Lawless & Pellegrino, 2007, p. 581). mClass: Reading 3D uses technology to assess, and teachers are able to adapt instruction based on the needs of the students.

Technology tools can provide an easy, efficient way to help teachers facilitate and customize learning for each student. Using sight, touch, and sound, teachers can directly address diverse learning styles and ability levels, provide unlimited opportunities for practice, and make learning to read fun and engaging.

Technology should be viewed as a way to assist the learning process by providing an easier way to collect and analyze reading assessment data. Research is providing valuable information on the implementation and application of a technology-based reading assessment program, mClass: Reading 3D, offered through Amplify. Literacy expectations, too, have advanced from the basic paper and pencil assignments to publishing with technology (Clay, 2001b). The American Association of Colleges for Teacher Education Committee (2008) commented, “Literacy will constantly be redefined as new technologies emerge and as expectations change for what it means to be literate” (p. 63). Herrington, Hodgson, and Moran (2009) predicted that “by 2011, it would be hard to argue for the validity of an assessment in writing that did not provide for digital composing” (p. vii).

Technology and Formative Assessment

In 1913, Thomas Edison predicted in the *New York Dramatic Mirror* that “books will soon be obsolete in the schools . . . It is possible to teach every branch of human knowledge with the motion picture. Our school system will be completely changed in ten years” (as cited in Sadler, 1989, p. 98). Throughout the 1920s and 1930s, the availability of radio broadcasting and movies with sound launched audiovisual instruction movement (Reiser, 2001). In 1926, the Scholastic Aptitude Test (SAT) was first administered. In the 1950s and 1960s, the revolution was to be led by television and film, and since the 1970s, it was to be computers (Chambers, 2005). In fact, televisions and computers are now commonplace in education at all levels (NCES, 2002). Although technological applications began in the early 20th century, educational technology research and theory did not begin until the 1960s (Ross, Sullivan, & Tennyson, 1992).

Technology has led to vast improvements in formative assessments. Formative assessment (Assessment for Learning) is the most important type of assessment done in the classroom. Formative assessment is an active and intentional learning process that includes the teacher and the student continuously and systematically gathering evidence of learning with the ultimate goal of improving student achievement (Moss & Brookhart, 2009). The process of helping students moves forward from their present learning state to their expected learning goal. Thomas R. Guskey suggested that for assessments to become an integral part of the instructional process, teachers need to change their approach in three important ways. They must "1) use assessments as sources of information for both students and teachers, 2) follow assessments with high-quality corrective instruction, and 3) give students second chances to demonstrate success" (Guskey, 2007, p. 107). Assessments in schools are a necessity. Assessing students' learning takes time and in some cases creates anxiety for both teachers and students.

In the past, Jonassen, Howland, Marra, and Crismond (2008) found computer-based testing was used to simplify the testing process for teachers and administrators and to enable, through scan sheets and tests actually completed by students on a computer, a faster turnaround on scoring students' work. Computer-based tests can have meaningful applications in learning. Teachers are challenged to ensure that students meet a myriad of required national, state, and local standards. Students must develop skills necessary for success on any and all assessments. According to Wang and Algozzine (2008), "Formative assessments play an important role in both the traditional learning environment and the e-Learning environment" (p. 1249). Traditionally, this has been a paper-pencil type of data collection. However, Amplify offered a way to collect this data electronically, which speeds up the delivery of that data analysis for each child. For this study, formative assessment, also called progress monitoring, is defined as "a probe used between benchmarks to target specific content areas for remediation" (Reaves & Sullivan, 2010, p. 38).

Technology and Implementation

Some researchers agreed that educators should not assume that just because a program is adopted, it would be implemented as intended (Desimone, 2002; Klein & Sorra, 1996; Mills &

Ragan, 2000). Educators adopt programs and without further research, assume that it will yield positive results. Klein and Sorra (1996) echoed, "implementation is the critical gateway between the decision to adopt the innovation and the routine use of the innovation within an organization" (p. 1057). In order to yield expected results, implementers must ensure that the program has been implemented with fidelity.

Fidelity of implementation is described as the comparison between the programs as intended with its actual use (Mills & Ragan, 2000). Patton (2002) believed, "it is important to know the extent to which a program is effective after it is fully implemented, but to answer that question it is important to learn the extent to which the program was actually implemented" (p. 161). Most often, studying the implementation of educational programs offers valuable information regarding the influence of programs. In a program, "the implementation part is where the real action occurs" (Grammatikopoulos, Tsigilis, & Koustelios, 2007, p. 107). Monitoring these programs after implementation can also provide valuable information about the targeted population, program activities, and the overall validity and success of the program.

Teachers and administrators often implement programs and are disappointed with the results, assuming the program was flawed. In many cases, once a review is complete they realize it may simply be the implementation process that was flawed. Pressman and Wildavsky (1984) believed that "implementation and evaluation are the opposite sides of the same coin, implementation providing the experience that evaluation interrogates and evaluation providing the intelligence to make sense out of what is happening" (p. xv). Organizations often find that the reason for inability to achieve results is dependent upon implementation of the program rather than the innovation of the program (Klein & Sorra, 1996). There are three possible established benchmarks that reflect implementation of a program: partial, moderate, and full (Desimone, 2002).

Some studies use benchmarks to set targets for successful implementation; however, some implementation studies established their own empirical benchmarks (Berends, 2000). Desimone (2002) believed that an effective implementation was not always a defined standard. However, he went on to share that researchers have given full implementation a meaningful definition. These established benchmarks give researchers more details about whether the program was implemented with fidelity or with failure.

Relevant, personalized, collaborative, and connected learning experiences enhance student engagement, which in turn drives student achievement. Although these learning experiences were available in a more limited way before the advent of technology, digital conversion has taken them to an entirely new level (Allington & Gabriel, 2012).

Real-time data from benchmarks gives teachers precise information to provide personalized interventions, to extend help to individual students, and to assign students to work in flexible collaborative groups—groups that can change as students progress at different rates or redirect their learning focus. Several researchers have concluded that the digital environment allows a collective of students and talents to come together, with an enhanced impact on learning. Thomas and Brown (2011), in *A New Culture of Learning*, reported that learning communities, facilitated by technology, allow students—both individuals and groups—to deepen and broaden their conceptual understanding of curriculum topics and also provide valuable information about the targeted population, program activities, and the overall validity and success of the program (Allington & Gabriel, 2012).

After reviewing research relating to technology and literacy assessments, several common themes emerged: immediate feedback to students, progress monitoring, cost effectiveness, and changes in education.

Revolutionized Education

Using technology in early literacy assessments could revolutionize education. Wang (2008) shared that with technology, there is no real time or space constraint. It allows for spontaneity and opportunities for students to learn. Wang (2008) stated that virtual performance-based assessments allow for more triangulation of student accomplishment. It increases engagement and allows for more authentic inquiry. MacDonald (2007) believed that mobile technology allows for better documentation of observations. He also discussed how technology helps students better meet learning objectives. Researchers agreed that use of technology in assessments helped students.

The Impact of Professional Development

"We Learn . . .
10% of what we read
20% of what we hear
30% of what we see
50% of what we see and hear
70% of what we discuss
80% of what we experience
95% of what we teach others."
- William Glasser, M.D.

Few policymakers dispute that high-quality professional development is a central component in nearly every modern proposal for improving education. Therefore, it is no surprise that a vast amount of funds from the federal, state, and local level is devoted to professional development each year (Putnam & Borke, 2000). Clearly, schools can be no better than the teachers and administrators who work within them. A common purpose of professional development is to alter the professional practices, beliefs, and understanding of school persons toward an articulated end (Griffin, 1983). In most cases, that end is the improvement of student learning (Laczko-Kerr & Berliner, 2002; Snow et al., 1998). Researchers have previously agreed that teacher quality and expertise consistently and accurately predict student achievement (professional development has been a part of teaching since the early days of formal education). It has evolved throughout time; nevertheless, debates over content and implementation of teacher education programs have been waged for years within conclusive results.

A World Cat search conducted on January 4, 2010 revealed a pattern. From the onset of formal public education through the 1970s, teacher training was generally referred to by the public as "teacher education" or "in-service." By the 1980s, with education under closer scrutiny, it became "staff development." In the 1990s, a push to "professionalize" teaching careers gave birth to the term "professional development."

Guskey (2000) defined professional development as those processes and activities designed to enhance the professional knowledge, skills, and attitudes of educators so that they might, in turn, improve the learning of students.

In his book, *Evaluating Professional Development*, Guskey (2000) stated that in order for professional development to be effective, the following characteristics must be present:

- It must be an intentional process. In other words, it is consciously designed to be purposeful to bring about positive change and improvement. Random goals and unrelated activities cannot exist.
- It must be an ongoing process. Educators on all levels must be continuous learners. This requires constant analyzing of the effectiveness of what they do. Educators must

be willing to make adaptations when necessary and explore new alternatives and practices for the sake of student achievement.

It is a systematic process. Guskey explained that when professional development is viewed systemically, it is not seen just in terms of individual improvement, but also in terms of improvements in the capacity of the organization to solve problems and renew itself. Past experiences have taught educators that fragmented, piecemeal approaches do not work for professional development. One-shot workshops based on the most current educational fad also do not work due to the lack of guidance and support.

The purpose of professional educational development programs is to create effective teachers. High-quality professional development is a central component in nearly every modern proposal for improving education. Some researchers argue that it is the quality of professional development offered to teachers that affects teacher knowledge, beliefs and practices, and student achievement (Anders, Hoffman, & Duffy, 2000; Duffy, 2004; Richardson, 1996). Wiggins (1989) contended the truest assessments must always help learners—whether they are students or teachers—and they must always include something purposeful. He further claimed such tests should provide forward movement, not just reflectivity of prior learning. His assertion sustained what educators have been saying for decades—professional development needs to lead them toward becoming better instructors, not just fill their heads with new information. Teachers attending professional development programs are, in essence, the students—the learners—attending with the sole intent of becoming the best teachers they can for their own students. For this reason, it is critical for presenters of professional development sessions to exemplify excellent teaching strategies and serve as role models for attending teachers. Teachers know best what they need in the classroom. The more they are involved in the planning and implementing stage of professional development, the more effective it will be.

New views on professional development have led to new models and designs. Sparks and Loucks-Horsley (1989) described the seven major models that present educators with a wide variety of options and opportunities to enhance skills and knowledge. They include the following: (a) training, (b) observation/assessment, (c) involvement in a development/ improvement process, (d) study groups, (e) inquiry/action research, (f) individually guided activities, and (g) mentoring. Policymakers increasingly recognize that schools can be no better than the teachers and administrators who work within them. While these proposed professional development programs vary widely in their content and format, most share a common purpose: to alter the professional practices, beliefs, and understanding of school persons toward an articulated end (Griffin, 1983).

Professional Development Reform

Effective professional development is a necessary component in all educational improvement efforts. Every proposal to reform, restructure, or transform education emphasizes the role of the classroom teacher as the main conduit in efforts to bring about needed change. To meet the goals of reform, including standards, assessments, and accountability, teachers must make changes that involve much more than learning new teaching techniques. The changes form the core of what it means to teach and learn.

The history of American education is filled with numerous attempts at reform. The National Commission on Excellence in Education presented a report to the public titled *A Nation at Risk* in April of 1983. This report documented the needs of the public education system. The opening paragraphs of this document stated:

> Our nation is at risk. Our once unchallenging preeminence in commerce, industry, science, and technological innovation is being overtaken by competitors throughout the world. This report is concerned with only one of the many causes and dimensions of the problem, but it is the one that under girds American prosperity, security, and civility. We report to the American people that while we can take justifiable pride in what our schools and colleges have historically accomplished and contributed to the United States and the well-being of its people, the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and as a people. What was unimaginable a generation ago has begun to occur—others are matching and surpassing our educational attainments. (U.S. Department of Education, 1983, p. 5)

The most recent federal legislation promoting standards-based educational reform of our nation's schools was signed into law in January 2001 by President George W. Bush. This initiative, No Child Left Behind (NCLB), was designed to ensure that "all children have a fair, equal, and significant opportunity to obtain a high quality education and reach, at a minimum, proficiency on challenging state academic achievement standards and state academic assessments" (No Child Left Behind, Sec. 1001, 2002). No Child Left Behind is a law of good intentions. It demanded that every child meets state standards with 100% proficiency by the 2013–2014 school year, although not accomplished, and requires more rigorous standards in reading, math and science. The policy mandates districts to employ highly qualified teachers and to provide professional development based on proven educational methods and strategies.

Leadership in Professional Development

Administrators, as educational leaders, have a responsibility to provide the best professional development they can for their teachers. Of all the duties the administration team is required to perform, providing instructional leadership is by far the most important (Newmann, 1992). They must never lose sight of the fact that everything done in schools should benefit students. Making teachers effective instructors and training them to develop strong, lifelong learners, is of utmost importance (Trehearn, 2010).

One of the most effective ways for administrators to lead is to promote lifelong learning in their teachers. Administrators who encourage educators to look at their instructional practice and really analyze it provide them with vital information to improve. School principals have the great responsibility and privilege of helping teachers learn. The administrator's job is to act as a liaison between teachers and professional development coordinators. Administrators must ensure that presenters will dignify and empower teachers. They need to allow teachers to tell them what they need to grow professionally. When teachers understand how a program is meaningful, resistance is usually diminished. Paul Mack, former Associate Director of the Regional Professional Development Center in St. Louis, Missouri stated, "I've seen the most stressed out educators take on something new because it had meaning for them, when it tapped into the energy and calling that brought them into schools to begin with" (as cited in Senge et al., 2000, p. 383).

Administrators must be experts on collaborative learning and know how to promote it among their professional members. By recognizing that staff members need materials that support their learning and work in the classroom, administrators have the opportunity to create a culture of adult learning (National Association of Elementary School Principals [NAESP], 2001). Carroll (2009) believed in order for quality teaching to occur, administrators must provide "a collaborative culture that empowers teachers to team up to improve student learning beyond what any of them can achieve alone" (p. 8). According to Joyce and Showers (2002), teachers who receive support generally practice new strategies more frequently. Follow up should be connected into classroom instruction (Fullan, 1995). Blasé and Blasé (2001) noted that administrator support will enhance teacher motivation, self-esteem, sense of security, and morale.

In some cases, schools are able to hire instructional coaches to help provide lifelong learning for teachers. Parsloe (1995) noted coaching focuses on the immediate improvement of performance and development of skills by a form of tutoring or instruction. Joyce and Showers (2002) concluded coaching provides the most effective means of helping teachers transfer newly acquired knowledge and skills into classroom instruction. They also indicated teachers and principals who receive coaching practiced new strategies more frequently than others who had the same training opportunities without a coach. Kretlow and Bratholomew (2010) identified three components of effective coaching:

1. Highly engaged instructive group training sessions
2. Follow-up observations
3. Specific feedback, including sharing data and modeling

In research conducted by Vanderburg and Stephens (2010) and Denton, Swanson, and Mathes (2007), the researchers concluded that the students of teachers who had received coaching performed better on measures of phonological awareness, timed and untimed word reading, phonemic decoding, passage comprehension, and spelling. The research shows administrator leadership and effective coaching can have a positive impact on student achievement.

Professional Development Models

Professional development models provide a variety of opportunities to enhance professional skills (Guskey, 2000). Guskey determined that training is the most efficient and cost-effective professional development model for sharing ideas and information with large groups of educators. The best training sessions outline clear objectives and participant outcomes. Exploration of theory, demonstrations or modeling of skills, simulated practice, feedback about performance, and coaching in the workplace (Joyce & Showers, 1983) should be evident in effective training sessions.

Professional Learning Communities

During the last 20 years, researchers have promoted the professional learning community (PLC) model as an organizational framework for school reform. This model has been gaining momentum as an increasing number of organizations and schools have gained success with this model (Schmoker, 2004). The idea of learning organization was brought to the forefront in the business world by Senge's (1990) work *The Fifth Discipline*. He believed that the five dimensions of systems: thinking, personal mastery, mental models, shared vision, and team learning can build organizations that "truly 'learn' and can continually enhance their capacity to realize their highest aspirations" (Senge, 1990, p. 6). As business leaders and researchers investigated the potential of the learning organization model to support organizations in a rapidly changing environment, the educational community began to forge its definition of the professional learning community.

In *The Fifth Discipline*, Peter Senge (1990) stated:

> shared vision is not an idea. . . . It is, rather, a force in people's hearts, a force of impressive power. It may be inspired by an idea, but once it goes further—if it is compelling enough to acquire the support of more than one person—then it is no longer an abstraction. It is palpable. People begin to see it as if it exists. Few, if any, forces in human affairs are as powerful as shared vision. (p. 206)

DuFour, Eaker, and DuFour (2005) defined professional learning communities as environments created by educators that foster mutual cooperation, emotional support, and personal growth as they work together to achieve what they cannot accomplish alone. The cornerstone of an effective PLC is the unwavering focus on improving student learning and the commitment of teachers to work collectively toward achieving this outcome. DuFour (2004) outlined the main actions of a successful PLC:

1. commit and contribute to collaborative teams;
2. clarify purpose and priorities of learning;
3. gather continual data on student achievement;
4. identify areas of concern and generate interventions;
5. create common, formative assessments;
6. assess the impact of the identified interventions; and
7. support each other through this process.

DuFour (2004) and DuFour et al. (2005) further explained that when educators remained persistent and focused on improving the achievement for ALL students, the likelihood of sustained and substantive success was increased.

PLC work requires school staff to focus on learning rather than teaching. In *Getting Started: Reculturing Schools to Become Professional Learning Communities*, Eaker, DuFour, and DuFour (2002) identified characteristics of a professional learning community. Schools described had collaborative teams, demonstrated collective inquiry, had an action orientation and willingness to experiment, desired continuous improvement, were results-oriented, and exhibited a shared mission, vision, and values. DuFour et al. (2005) suggested that teams collaborate on matters related to learning and hold each other accountable for the kind of results needed to sustain continual improvement. Their collective commitments assist students in raising their levels of achievement. DuFour and Marzano (2011) report "ongoing monitoring of student learning is one of the most powerful tools available to PLC collaborative teams for enhancing student achievement" (p. 139). Additionally, they added that monitoring requires a collective analysis of results and implications for changes in instruction. Schools that do not display the discipline to initiate and sustain this work have an increased chance of not becoming as effective as schools who do display the discipline. Schools can narrow the achievement gap right now by using what they already know about instruction and by what they choose to do within learning communities. The benefits for students and for educational professionals would be immeasurable. DuFour (2004) stated the importance of this work best with the quote, “The rise and fall of the professional learning community depends not on the merits of the concept itself, but on the most important element in the improvement of any school—the commitment and persistence of the educators within it” (p. 11).

Observation/Assessment

The observation/assessment model of professional development is one of the best ways to learn. It allows for analyzing and reflecting on information as a means of professional growth. Peer coaching and clinical supervision are examples of the observation/assessment model. Showers and Joyce (1996) explained that the major advantage of this model is that it provides important benefits to both the observer and the one being observed. However, care must be taken to separate the observation/assessment process from evaluation issues. Coordination of time and schedules must take place to accommodate both the observer and the one being observed.

Involvement in Development/Improvement Process

This model brings educators together to develop or review a curriculum, design a new program, plan strategies to improve instruction, or solve a particular problem (Guskey, 2000). Processes such as these generally require participants to read, research, discuss, and observe to acquire new knowledge and skills. When teachers, administrators, noncertified staff, parents, community, and others get together to collaborate, more appreciation and awareness develop for individual differences and perspectives. On the contrary, some settings may allow for argued opinions to take precedence over research and best practices. Involvement must not be restricted to a relatively small portion of staff members.

Study Groups

Effective study groups are those that are well organized, focused, and have sufficient time to accomplish their tasks. This model usually involves the entire staff of a school in finding solutions to common problems. Murphy (1997) stated the major functions of study groups are to facilitate implementation of curricular and instructional innovations, collaboratively plan school improvement efforts, and study research on teaching and learning. Members can be divided into groups of four or six. Groups usually select a different aspect of a specific problem on which to concentrate. By involving all staff members, a breakdown of "isolation" felt by many educators will frequently occur. Study groups reinforce the idea of schools as learning communities for students and educators alike (Guskey, 2000).

Inquiry/Action Research

The inquiry/action research model of professional development helps educators become more reflective practitioners, more systematic problem solvers, and more thoughtful decision makers (Guskey & Sparks, 1996). This model helps to narrow the gap between research and practice. Here, educators are required to (a) select a problem or questions of a common interest; (b) collect, organize, and interpret information related to the problem; (c) study the relevant professional literature and research; (d) determine possible actions that are likely to achieve commonly valued goals; and (e) take action and document results (Calhoun, 1994). The inquiry/action research model is based on the belief that educators have the ability to create valid questions about their own practice and pursue answers to those questions. Depending on the complexity of the problem, this process may require a substantial amount of time and commitment.

Individually Guided Activities

In the individually guided activities model, educators determine their own individual development goals and then select the activities that they believe will result in the achievement of those goals (Guskey, 2000). The model is based on the assumption that individuals can best judge their own learning needs and are capable of self-direction. Major advantages are afforded to participants using the individually guided activities model. For example, educators are allowed a generous amount of flexibility, choice, and individualization. Excellent opportunities are provided for self-analysis, personal reflection, and thoughtful decision making (Guskey, 2000). The model assumes that individuals are more likely to learn when they are given the opportunity to be a part of the initiating and planning process.

Mentoring

"The mentoring model of professional development typically involves pairing an experienced and highly successful educator with a less experienced colleague" (Guskey, 2000, p. 28). Mentoring allows for highly individualized professional development that benefits all individuals involved. Opportunities are provided for on-the-job observations, in-depth discussions for improvement and goals, sharing of ideas and strategies, and reflection on current methods. Mentors need to have great credibility and the ability to initiate curriculum and school change. Mentors need to be highly competent and respected by peers and students. The mentoring process can form lifelong, highly productive professional relationships (Drago-Severson, 1997). As with the other models, there are disadvantages associated with this model.

For example, unless paired with other forms of professional development, mentoring may limit opportunities for a broader range of collaboration and collegial sharing.

Five Critical Levels of Professional Development Evaluation

Never has the importance of quality professional development been of greater importance than today. Educational reforms and plans everywhere are constantly emphasizing the need for high quality education. Guskey (2000) identified four reasons for the growing interest in professional development. The first is that educators have a better understanding of the dynamic nature of professional development. No longer can professional development be seen as "something done to educators" for three or four days during the school year. There is a focus in measuring progress in better and more meaningful ways. Therefore, professional development cannot be excluded from evaluation and measurement of knowledge, skills, and student achievement.

A second reason for the growing interest in evaluation is the fact that professional development is recognized as an intentional process to bring about change—but not just for the sake of change (Guskey, 2000). Educators recognize that if their efforts are to be counted as successful, relevant information related to the goals must be gathered, analyzed, and meaningfully presented. Hence, the impact, as well as the effectiveness of professional development received by educators cannot be overlooked or minimized.

A third and equally important reason for the emphasis on the evaluation of professional development is the need for better information to guide reforms in professional development specifically and educational programs generally (Guskey, 2000). Current evidence indicates that false claims of success are the basis of many school reform strategies. This is due to the lack of better and timelier evaluations of new practices and programs as well as their implementation.

Potential users need to know about the effects, conditions of success, costs, and unanticipated problems and concerns.

Lastly, a fourth reason for the growing interest in program evaluation is the increased pressure at all levels of education for greater accountability (Guskey, 2000). No longer can teachers and school administrators continue to do things just because "we've always done it this way." Educators at all levels are coming to realize that they must be able to offer clear and understandable evidence to all interested parties to show that professional development makes a difference. As in other professions such as medicine and engineering, improved understanding of the processes and procedures that lead to success allow the artistry, judgment, and reflection to become more valid and effective in reaching our ideals (Gagne, 1997).

Meaningful and effective evaluations of professional development, however, require more detail. Guskey (2000) presented a five-level evaluation model designed to resolve inadequacies and address a broad range of "what" and "why" questions. The model includes these five critical levels of professional development evaluation:

1. Participants' Reaction—This level analyzes the participants' reactions to the experience. The questions address whether or not participants liked the professional development.
2. Participants' Learning—This level focuses on measuring the knowledge, skills, and perhaps attitudes that participants gained. A common question may be, "Can participants describe the critical attributes of mastery learning and give examples of how these might be applied in common classroom situations?"
3. Organization Support and Change—In this level, the focus shifts to the organization and to information on organization support and change. They also can hinder or

prevent success, even when the individual aspects of professional development are done right (Sparks, 1996). Organizational policies that are incompatible with implementation efforts can interfere with implementation efforts.

4. Participants' Use of New Knowledge and Skills—This level focuses on whether participants are using their new knowledge and skills on the job. A central question is, "What did participants learn to make a difference in their professional practice?" In other words, how can you tell if what participants learned is being used and being used well?
5. Student Learning Outcomes—This is typically referred to as "the bottom line" in education at Level 5. What was the impact on students? Did the professional development program benefit students in any way? Measures of student learning typically include indicators of student performance and achievement. A variety of measures of student learning are important at level 5 (Joyce, 1993). Evidence can be gathered from assessment results, portfolio evaluations, grades, study habits, school attendance, homework completion rates, and classroom behaviors, among others.

mClass: Reading 3D Professional Development

Professional development is at the center of all education reform strategies. Without it, such strategies are merely good ideas that cannot find expression. More districts today are recognizing that they cannot improve student achievement without well-designed staff development initiatives.

During the 2009–2010 school year, the North Carolina Department of Public Instruction piloted reading diagnostic assessment systems across all regions in the state. Professional development played an important part in the implementation process. Twenty-seven schools were involved in the reading pilots (NCDPI, 2010a). The reading assessment piloted was mClass: Reading 3D from Wireless Generation. Schools were trained in the late fall, and teachers began benchmarking students with the Middle of Year (MOY) assessments. Teachers formatively assessed students throughout the spring of the year and used the assessment results to guide their instruction in the classroom. End of Year (EOY) assessments were administered in early May (NCDPI, 2010a).

During the 2010–2011 school year, 235 more schools were trained to assess students utilizing mClass: Reading 3D. The number of schools participating in the implementation of mClass: Reading 3D has consistently grown each year. As of June 2013, all elementary schools in the district chosen for the study were utilizing mClass: Reading 3D for formative and summative student assessments and making decisions concerning instruction.

North Carolina's goal was to begin, continue, and upgrade the assessment system in one-fourth of the elementary schools starting with the 2009–2010 school year. During professional development sessions, the following goals were displayed:

- Provide developmentally appropriate diagnostic assessment in elementary grades.
- Determine student learning needs and individualize instruction.
- Ensure that students are adequately prepared for the next level of coursework.
- Use technology to assess students and record information.
- Facilitate more frequent formative assessment for struggling students.
- Provide interventions for students in a timely manner.
- Bottom line—Students must get meaning from reading. This will bring success on the EOG.

The state covered the cost of licenses, kits, training, substitutes, and technology for schools without devices (Amplify Education, 2010). The North Carolina Department of Public Instruction worked directly with Wireless Generation to procure all services. Professional development was to be ongoing. Also, there was to be ongoing support from the North Carolina Department of Public Instruction, North Carolina Technology Association (NCTA), and Wireless Generation. Train the Trainer models were conducted first. Every participating school sent a designated person to be trained to ensure every school would have a "go to" person for advice, troubleshooting, implementation issues, and other concerns related to mClass: Reading 3D. Tech training also took place prior to the implementation of the product at the school level to ensure proper installation and enrollment of devices. After devices were properly installed at the school level, teachers began training sessions with their colleagues at their respective schools using a turnkey training model (Amplify Education, 2010). In training, a turnkey is an employee who has been sent off campus to learn a specific skill. The turnkey is expected to return and share what they have learned with other employees. The turnkey becomes a trainer who turns the keys (of knowledge) over to someone else.

To help further improve the process and bring about understanding and support from such an initiative, the University of North Carolina at Chapel Hill conducted an evaluation of the schools undergoing the implementation process in 2009–2010 (NCDPI, 2010a). Data were collected from surveys, consulting visits, focus groups, and diagnostic system reports. The purpose of the study was to evaluate the use of Personal Digital Assistants (PDAs) in the classroom as assessment tools to guide instruction through formative assessment. PDAs were distributed to teachers who received training in how to use the device in November 2009 and were then encouraged to practice with the technology in December 2009. These teachers were asked to use the PDAs in lieu of paper and pencil assessments they had been using to collect literacy information on their students. Specifically, did they use DIBELS assessment information as well as *Text and Reading Comprehension* (TRC) information? Training sessions were coordinated by the North Carolina Department of Public Instruction and conducted by Wireless Generation. The sessions familiarized trainees with the use of the PDA, how to encode and decode data, how to conduct assessments, and how to use that data to guide instruction. Training assisted teachers in developing confidence using the PDAs and allowed them to practice with trainers using actual student level data. Following the training, teachers were asked to use the PDAs to assess students throughout the remainder of the school year, which allowed teachers access to results immediately following assessments. Teachers then were asked to use these data to monitor students based on risk levels calculated by the PDA and to adjust instruction to meet students' needs (NCDPI, 2010a).

The evaluation had both outcome and process components. The outcome evaluation involved assessing the extent to which the project objectives were accomplished, which focused on improvement in teachers' assessment practices using the PDAs. The process evaluation entailed gathering information from project stakeholders to improve project operations. Data from Wireless Generation surveys, summaries from focus groups conducted by staff, and observations were used to compile the information for project operation improvement.

The following questions were developed in collaboration with North Carolina Department of Public Instruction staff responsible for the project and were used to guide the external evaluation process; questions with asterisks (*) were identified by the North Carolina State Board of Education (2010a):

A. Outcome Evaluation:

1. * Will the use of technology increase the fidelity of the assessment?
2. * Will teachers use the information and data to guide their daily instruction?
3. How widely and regularly was the assessment administered?
4. Were teachers highly qualified to administer the assessment?
5. How comfortable were the assessors with assessing and using assessment results?
6. * Is formative assessment/progress monitoring being used and how?
7. * How do teachers use the data generated from the assessments?

B. Process Evaluation

1. What support do teachers need to implement an assessment system using PDAs?

A portion of Guskey's theories and ideas associated with professional development and evaluation was practiced in the study described above using focus groups.

Technology is one area that cannot continue to be overlooked, in conjunction with both budgetary issues and the pure necessity of incorporating it into educational opportunities. Many teachers admit to being uncomfortable with using instructional technology as a method of teaching. They do, however, concede that with proper training, they would be interested in implementing it into their classrooms (Davis, Preston, & Sahin, 2009). Careful planning, prioritizing, inclusion of teachers as presenters, professional learning teams, research-based decision making, use of local experts, termination of costly district teacher assemblies, collaboration with and visitation to other local schools, and shared reading—especially with low-cost Internet sources—are not only viable, but potentially valuable options for providing effective, inexpensive professional development for teachers (Hirsh, 2009). Schools want to get a good product for the money they spend. Involving teachers in professional development presentations is one of the most certain ways to achieve this. By empowering teachers and capitalizing on their professional specialties, money spent on professional development is minimized while results are maximized.

Professional Development Summary

The push to provide exemplary teachers for every student in every school across the nation is an ongoing goal—and concern—among parents, the educational community, and lawmakers. In order to achieve success in this mission, professional development provided to educators must be of the highest possible standard. Professional development must be transformed through rigorous inspection, dissection, and reconfiguration with the intent of making it the vital agent it should be to enhance teachers' effectiveness. Teachers can execute change when they are provided the tools for them to do so. Money, planning time, and control issues must be considered by administrators when professional development is conducted. This will assist educators in truly becoming master teachers.

If the purpose of school is to truly ensure high levels of learning for all students, professional development must first clarify what each student is expected to learn. The primary purpose of professional development, also known as staff development, is to empower educators to approach their responsibilities from a different standpoint, and/or utilize new strategies. Hayes Mizell, the first distinguished senior fellow of the National Staff Development Council and former director of the Program for Student Achievement at the Edna McConnell Clark Foundation stated, "It is not a matter of getting more money or days for professional development, though both would be helpful. Rather, the change required is to make professional development responsive to the objective learning needs of teachers and their students" (Mizell, 2010, p. 23). Bray-Clark and Bates's (2003) analysis of ways to improve teacher effectiveness stated, "The bottom line is that teachers want and need practical in-service activities that address their genuine needs in the classroom, make them better teachers, and that improve student outcomes" (p. 14). Bray-Clark and Bates go on to say, "We believe that using teacher self-efficacy as an organizing concept around which teacher in-service training can be designed and evaluated presents a viable and promising means for advancing toward this end" (p. 14).

Professional development should be embedded in a school's practices including time built in for teachers to work together to discuss pedagogy, analyze data, plan lessons, and share best practices. Guskey (2000) warned that a successful change effort is not an event that is removed from the teachers' day-to-day responsibilities, but instead a part of their daily activities that are both natural as well as recurring.

With a national focus on quality instruction as exhibited by federal legislation such as PL 107-110, also known as No Child Left Behind Act (NCLB), the spotlight has been placed upon schools to adequately hire, train, and maintain highly qualified teachers. The literature on effective approaches to professional development suggested that they are ongoing, job-embedded, focused on collaboration, and have commitments to dependent learning environments, along with inquiry and reflection (Darling-Hammond & McLaughlin, 1995; Hord, 1997; Senge, 1990). In addition, effective professional development has a structured, collaborative culture with a focus on learning (Eaker, DuFour, & Burnette, 2002), where stakeholders are engaged in an ongoing commitment to continuous improvement (DuFour, 2012) and where content knowledge and practice are shared among participants (Darling-Hammond & McLaughlin, 1995; Eaker, DuFour, & DuFour, 2002; Hord, 1997). Effective professional development induces educators to improve their instructional practices (Mizell, 2010).

Program Evaluation

In the early development of evaluation, Scriven (1967) defined evaluation as judging the worth or merit of something. Fitzpatrick, Sanders, and Worthen (2011) concurred that evaluation is defined as determining the worth or merit of an evaluation object. Scriven (2007) discussed the importance of evaluation in pragmatic ethical, social and business, and intellectual terms. He developed a Key Evaluation Checklist to use as a guide for evaluating program evaluation. The checklist was intended to be used in designing and evaluating programs, plans, and policies; writing evaluation reports on them; assessing their evaluability; and assessing evaluations (Scriven, 2007). Throughout the checklist, Scriven addressed values that may be relevant to an evaluation.

The current study made use of a program evaluation research design to collect data that would facilitate decision making and make determinations regarding the extent the implementation of mClass: Reading 3D has on students' reading achievement among second grade students, the extent the data have been used to modify instruction, and the extent to which mClass: Reading 3D professional development has impacted student reading achievement.

Data collection and analysis from this study will help the selected school district evaluate the impact and implementation of mClass: Reading 3D on reading achievement. Results have provided evidence of how teachers have used student data to determine instructional practices to impact student achievement. A detailed analysis revealed the extent to which continuous and ongoing professional development associated with mClass: Reading 3D provided teachers with the necessary skills to impact students' reading achievement. This study sought to learn the role mClass: Reading 3D should play in the future as it pertains to reading development in K–3 classrooms. The results can also help the district assess the time, money, and effort they have designated for the mClass: Reading 3D program. The results added to the body of research related to the topic. The study also contributed to the research in literacy and technology as the state and district move forward in 21st century learning and globalization. Results are relative to universities as the Education Department prepares perspective teachers for future roles in education.

Summary

A decline in reading scores at the federal, state, and local level has increased the need to improve student academic reading achievement (NCDPI, 2013d). As a result, federal, district, and school mandates have placed a sense of urgency on improving students' reading abilities. The adoption of mClass: Reading 3D has been the result of a "perfect storm" type situation that has been brewing in the field of education after a period of status quo. Here education experiences a turbulent meeting of the following punctuations:

- Strenuous policies and mandates from all levels
- The influence of technology in a changing society
- Poor student rankings and results from international and national testing
- Higher teacher accountability and standards
- The need to improve reading assessments

These events have led North Carolina to search for a program that provides early intervention and diagnostics of reading skills, and improves test scores. Much attention, time, and energy is now placed on mClass: Reading 3D forming partnerships with the program and hundreds of schools across the state.

Amidst all the chaos associated with the many directions and educational shifts taking place in America's classrooms, educators need reassurance that mClass: Reading 3D will bring about some hope for the literacy problems existing in our country today. Educators wonder about the quality of mClass: Reading 3D reading diagnostics and assessments in K–3 classrooms. One does not dispute the potential of technology to assess students and recording information helps to improve validity and reliability in the results. However, research is needed to determine mClass: Reading 3D program effectiveness as it relates to student reading achievement and cost.

A small number of surveys and research studies have been conducted that show teachers have a favorable perception of the program (North Carolina General Assembly, 2010). Data shown in the North Carolina General Assembly report (2010) indicated teachers have been complimentary of the training and support they have received and continue to receive with mClass: Reading 3D thus far. However, we are only beginning to scratch the surface with the amount of research that needs to be generated. Research remains limited on the implementation practices of mClass: Reading 3D as well as program strengths and weaknesses. Research needs to be conducted to show whether mClass: Reading 3D is sufficiently helping students to read on grade level by third grade. Equally as important, research is needed that shows a positive correlation to mClass: Reading 3D scores and EOG scores.

Valid and reliable assessment is essential in determining how districts are succeeding with early reading intervention. Assessments are needed to help students and teachers understand their own strengths and weaknesses. Identifying and addressing students' academic challenges early will save students years of struggle and isolation. Early reading proficiency scores can identify which students are right for early intervention programs, rather than relying on teacher referral alone.

Snow et al. (1998) found that when children's reading problems are diagnosed and addressed early, their reading achievement improves. They also addressed the importance of literacy for students to be successful in a global and competitive society.

The extensive review of literature in this chapter has addressed the reading instructional trends over the 20th century and the beginning of the 21st century. The educational and political battle has continued to address concerns from what materials and methods should be used to teach reading to whether a phonics-based approach or whole language approach to teach reading is better. While some researchers such as Chall (1967) and Flesch (1955) emphasized the importance of being able to sound out (read) words based on how they are spelled, others such as Goodman (2006), Dahl and Freppon (1995) and Dahl, Sharer, Grogan, and Lawson (1999) push the whole language approach in which the reader gives meaning to texts. Textbook publishers have responded to the research to satisfy the educational demands during time periods. Through the continuous debates and reading wars, Pressley (2006) reported that a single approach was not optimal for improving students' reading achievement. Cunningham and Shagoury (2005) concluded at-risk students needed a balanced approach to build comprehension and decoding skills. Spiegel (1998) goes on to say that balanced literacy is built upon solid research.

Reading debates have had an impact on reading initiatives mandated by the federal government to improve student reading achievement. Funding has been provided to help close the achievement gap that exists among ethnic minorities. Although the National Reading Panel (2000) did not address the achievement gap, it noted that systematic phonics instruction should be integrated with other reading instruction to create a balanced reading program. From this report, the five major components of reading instruction were presented. After the findings from the National Reading Panel (2000), the No Child Left Behind Act was passed in 2001 to address reading concerns.

According to NAEP, reading scores of students in Grade 4 continue to remain relatively flat across the nation. As a result, the federal, state, and local educational agencies have continued to update and develop initiatives and policies to address reading concerns. The State of North Carolina has developed the Career and College: Ready, Set, Go! Initiative with a goal to graduate all students from high school prepared for further education and successful employment (North Carolina Public Schools, 2014). The North Carolina Read to Achieve program addresses reading concerns for primary grades to ensure all students are proficient readers by the end of third grade. The mClass: Reading 3D assessment continues to be used to gather student reading data as teachers use reports to inform reading instruction.

Technology contributes to teachers being able to differentiate instruction. Used to assess or present information to students, technology continues to be used to help improve students' reading achievement. As Wang (2008) indicated, technology provides opportunities for students to learn.

As teachers continue to assess and enhance students' reading achievement, they must be exposed to quality professional development to positively impact professional practices and beliefs. Professional development and teacher preparation make a difference in student reading achievement (Snow, 1998). As outlined in the chapter, Guskey (2000) presented several professional development models, along with five critical levels of professional development, to create effective teachers.

With the statement of the problem, the significance and purpose of this study, and the extensive review of literature, the research helped provide answers to the following question relating to mClass: Reading 3D on the local and state level:

To what extent has mClass: Reading 3D impacted students' reading achievement in second grade?

Other questions that are tied to the research question include the following:

- To what extent, if any, do teachers use student data from the mClass: Reading 3D assessment to determine instructional practices that may impact students' reading achievement?
- To what extent, if any, did continuous and ongoing professional development associated with mClass: Reading 3D provide teachers with the necessary skills to impact students' reading achievement?

CHAPTER 3: RESEARCH DESIGN/METHODOLOGY

Research Methodology

The purpose of this study was to explore the relationship that exists between the history of reading, the impact of mClass: Reading 3D on student achievement in second grade, and the impact of quality professional development associated with the implementation of mClass: Reading 3D through a program evaluation. This chapter specifies the method of research, a description of the research design, a description of participants being studied, the procedures and instrumentation utilized, the data collection process, methodological assumptions, and how the data were analyzed.

A descriptive study using both qualitative and quantitative data collection was used to address the research questions. Greene and Carracelli (1997) found that qualitative and quantitative data were often used to gain a greater understanding of the construct of interest. John Creswell (2009), defined qualitative and quantitative research as

> an approach to inquiry that combines or associates both qualitative and quantitative forms. It involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both approaches in a study. Thus, it is more than simply collecting and analyzing both kinds of data. It also involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research. (p. 4)

Quantitative data includes closed-ended information regarding attitude, behavior, or performance instruments (Creswell, 2009). The data may involve using a closed-ended checklist on which the researcher checks the behaviors seen. Sometimes quantitative information is found in documents, census records, or attendance records. The analysis consists of statistically analyzing scores collected on instruments, checklists, or public documents to answer research questions or to test hypotheses.

In contrast, qualitative data consists of open-ended information that the researcher gathers through interviews with participants. The general, open-ended questions allow the participants to report answers in their own words. Also, qualitative data may be collected by observing participants or sites of research, gathering documents from a private (e.g., diary) or public (e.g., minutes of meetings) source, or collecting audiovisual materials (e.g., videotapes or artifacts; Creswell, 2009). The analysis of the qualitative data (words or text or images) typically follows the path of aggregating the words or images into categories of information or themes and presenting the diversity of ideas gathered during data collection.

Multiple sources provide richer data for a comprehensive analysis (Elliot, 2005). For example, surveys, a traditional quantitative data source, are being used in ethnographic qualitative research. Narrative stories, associated with qualitative research, are being linked to quantitative event history modeling (Elliot, 2005). By mixing the datasets, the researcher provides a better understanding of the problem than if either dataset had been used alone. There are three ways in which mixing occurs: merging or converging the two datasets by actually bringing them together, connecting the two datasets by having one build on the other, or embedding one dataset within the other so that one type of data provides a supportive role for the other dataset (Creswell & Plano Clark, 2007). It is not enough to simply collect and analyze quantitative and qualitative data; they need to be “mixed” in such a way that together they form a more complete picture of the problem than they do standing alone. Using qualitative and quantitative data permits researchers to address more complicated research questions and collect a richer, stronger array of evidence than can be accomplished by any single method alone (Yin, 2009). Thus, the researcher collected qualitative and quantitative data to gather beneficial and rich data to answer research questions.

Statement of the Problem

Reading proficiently by the end of third grade is a crucial marker in a child's educational development (Annie E. Casey Foundation, 2013a). Failure to read proficiently is linked to higher rates of school dropout, which suppresses individual earning potential as well as the nation's competitiveness and general productivity (Annie E. Casey Foundation, 2013a). The decline in third-grade North Carolina End-of-Grade reading scores of students resulted in an increased emphasis on improving academic achievement of students in grades kindergarten through second grade (NCDPI, 2010b). These diminishing student achievement scores, based on state standardized achievement test results, have resulted in a sense of urgency for public school districts to implement a diagnostic reading assessment program to improve student performance.

The National Assessment of Educational Progress benchmarks were designed as high standards for children to reach as teachers push them toward the standards (McKenna & Stahl, 2003). If second-grade students at grade level experience three years of no academic growth during any of the next eight years, the student may score three years behind on the college entrance SAT. A year without reasonable academic growth places the children at risk of academic failure (Fielding et al., 2007). These concerns have led to the mandated adoption of mClass: Reading 3D in the public elementary schools in North Carolina as outlined in the Read to Achieve Policy (NCDPI, 2012), part of the Excellent Public Schools Act, which became law in July 2012. The mClass: Reading 3D observational reading assessment software is designed for students in grades K–5. The assessment obtains a complete picture of each student's ability to read with comprehension. There was a need to explore the relationships that exists between the impact of mClass: Reading 3D on student reading achievement among second-grade students and the impact of quality professional development associated with the implementation of this program. This study attempted to indicate the extent to which mClass: Reading 3D has impacted students' reading achievement in second grade, if any, and how teachers use student data from the program to determine instructional practices that may impact student achievement. Additionally, the researcher analyzed data collected to report if and how continuous and ongoing professional development associated with mClass: Reading 3D provided teachers with the necessary skills to impact students' reading achievement effectively.

Research Question

The following research question was considered for this study:

To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

Other questions considered throughout the study included:

- To what extent, if any, do teachers use student data from the mClass: Reading 3D assessment to determine instructional practices that may impact students' reading achievement?
- To what extent, if any, did continuous and ongoing professional development associated with mClass: Reading 3D provide teachers with the necessary skills to impact students' reading achievement?

Research Design

This study was grounded in program evaluation using a participatory-oriented approach. A program evaluation examines programs to determine the worth and to make recommendations for refinement and success (Lodico, Spaulding, & Voegtle, 2010). Many program evaluation studies are found in the field of education to access the quality of a curriculum, to determine the value of a specific program, or to provide evidence of initiative outcomes for outside funding agencies (Fitzpatrick et al., 2011). As these researchers noted, an evaluation can provide both decision-making and program involvement. A program evaluation report is judged on its data collection methods and whether the information is used by those who are in the position to make programmatic changes (Lodico et al., 2010). Purely quantitative research designs (e.g., correlational designs or experimental designs) were not deemed appropriate for this study because the purpose of the evaluation was not to validate or confirm the relationships between variables and then to generalize that information to the larger population. Rather, the researcher studied selected variables impacting the implementation and outcomes of the literacy initiative, discovered the relationships and themes among those variables, and then used that information to make decisions about and improve the program. Other approaches to qualitative research (e.g., case study research and historical research) were also not deemed appropriate because the study was not conducted simply for the purpose of description or to develop theories that explain educational phenomena. Rather, the researcher was interested in identifying what was working and should be maintained in the initiative and, conversely, what was not working and should be changed as well as to evaluate initial outcomes (e.g., its effects on students and teachers).

Scriven (2007) distinguished between the formative and summative roles of evaluation. Through this program evaluation, formative data were collected to make recommendations to improve the structure and the way mClass: Reading 3D is used to improve instruction and student reading achievement. Data for summative evaluation were collected for the purposes of measuring outcomes and determining how outcomes related to the overall judgment of the program and its successes. These data helped determine if goals and benchmarks were accomplished.

Using a participatory-oriented evaluation approach, the researcher was interested in students who were served by the mClass: Reading 3D program (Lodico et al., 2010). The researcher involved program participants including teachers, administrators, and transformational/instructional coaches, and collected mClass: Reading 3D data for second-grade students enrolled at the three selected schools during the 2012–2013 school year. The focus of the program evaluation attempted to help determine the merit and worth of the program as well as identify the strengths and weaknesses of mClass: Reading 3D. Furthermore, the mixed data sets generated a rich collection of data to yield a more objective and accurate description of the program's goals.

Selection Process

The three participating rural elementary schools were selected through a purposeful (Patton, 1990) or criterion-based (LeCompte & Preissle, 1993) sampling procedure. Purposeful sampling allows the researcher to gain the most insight by using specific criteria which "directly reflect the purpose of the study and guide in the identification of information rich cases" (Merriam, 1998, pp. 62–63). According to Patton (1990), "information rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research, thus the term purposeful sampling" (p. 169).

The purposeful or criterion-based sample included the following criteria: a rural public elementary school in the State of North Carolina that implemented the mClass: Reading 3D program during the 2010–2011 school year, with each racial/ethnic group representative of the community and school district.

According to state guidelines, a student may be identified by the public school district as economically disadvantaged if the student meets the eligibility requirements for the federal free or reduced price lunch programs or if the family receives food stamp benefits (U.S. Department of Education, 2013b).

The three elementary schools included enrollment with 40% or more economically disadvantaged, meeting federal guidelines for a Title I Part A funding to meet the learning needs of all students (U.S. Department of Education, n.d.).

The final criterion for selecting elementary schools focused on major racial/ethnic group percentages within each school population identified by the North Carolina School Report Card (2013). Over the last 10 years, the small rural public school district became more diverse, with the majority of students being Native Americans. Thus, this study identified diverse small rural public elementary schools that represented the major racial/ethnic groups of students tested on the state achievement tests. North Carolina identifies the major racial/ethnic groups for accountability purposes as Native American, Caucasian, African American, Hispanic, Multi-Racial, and Other. Through purposeful sampling, the three selected public rural Title I elementary schools mirrored a diverse school population in the district.

The school district is located in the largest county by land area in the State of North Carolina, including 949 square miles in total (605,100 acres) and two square miles (0.23%) of water. The county was incorporated in 1787 from Bladen County and was named for Col. Thomas Robeson of the Revolutionary War (Robeson County, North Carolina, 2013). Fifteen municipalities serve the county. Located approximately 1 ½ hours from the beaches and 3 hours from the mountains, the county is traversed frequently as Interstate 95 runs directly through the county. Interstate 74 runs East/West through the county, which connects the beaches with the mountains.

According to the 2010 U.S. Census Bureau, the county had a population of 134,168, a significant increase from the 2000 U.S. Census of 123,339 (U.S. Census Bureau, 2013). It started with a population of 5,356 in 1797 and has grown tremendously over the years. A report published in December 2013 by North Carolina Department of Commerce, Labor & Economic Analysis Division showed a 2012 population of 136,657. The county is known for its tri-racial population, mainly consisting of Caucasians, African Americans, and Lumbee Indians. An estimated 62.6% of the county's population lives in "rural residence designation" and 37.4% lives in an "urban residence designation." Table 4 details the racial breakdown of the county.

The school district has approximately 24,000 students enrolled in 44 schools, approximately 2,100 certified staff (including teachers, principals, assistant principals, and counselors) and 1,100 classified employees. The school district has developed partnerships with the two local colleges and gained business and industrial support. Employees serve as mentors and counselors to assist students in making better career decisions. Over 1,600 volunteers devoted over 48,000 hours of service to education in the school district during the 2012–2013 school year (Public Schools of Robeson County, 2013). The district's goal is to provide "students with the knowledge, skills, and attitude that will ensure each one is a strong student, a confident person, a responsible citizen, and a contributing member of our society" (Public Schools of Robeson County, 2013).

The county's Comprehensive Annual Financial Report for fiscal year ending June 30, 2012 showed the net asset for school capital outlay as $11,441,247.00, with a fund balance of

Table 4

Racial Makeup of Robeson County

Race	Selected County	North Carolina
White alone	32.8%	71.9%
Black or African American alone	24.7%	22.0%
American Indian and Alaska Native alone	39.0%	1.5%
Asian alone	0.8%	2.5%
Native Hawaiian and Other Pacific Islander alone	0.1%	0.1%
Two or more races	2.5%	2.0%
Hispanic or Latino	8.2%	8.7%
White alone, not Hispanic or Latino	27.0%	64.7%

Note. (U.S. Census Bureau, 2013).

the same amount. Governmental activities in education totaled $16,113,200, and school current expenditures totaled $12,375,000.

Over 13,000 acres are available for business expansion (Public Schools of Robeson County, 2013). Eleven industrial parks are located throughout the county. Additionally, seven libraries, 26 county parks, and several town parks are available to serve the public (Comprehensive Annual Financial Report, 2012).

The county's economic condition has experienced challenges from the current recession. From 2003 to 2008, the county's financial report (2012) indicated there were 36 announcements for new and expanded industry. Since 2008, the number has declined; however, two of the major industries within the county completed major expansions during 2009–2010. During 2011, Steven Roberts Original Desserts, LLC (SRO) was added to the county's industries, which manufactures and sells frozen desserts and cookies to major restaurant chains, distributors, and retailers (i.e., Red Lobster, Olive Garden, Chili's, Applebee's Domino's, Sara Lee, Kroger, Sam's Club, and Wal-Mart; Comprehensive Annual Financial Report, 2012).

The unemployment rate slightly exceeded 13.9% for most of 2011 (Comprehensive Annual Financial Report, 2012). A report issued by Commerce Economic Development in December 2013 showed an August 2013 unemployment rate of 12.0% and a 2012 annual rate of 13.0%. The same report showed the 2000 Census per capita income of $13,224.00. The county's per capita money income in the past 12 months (2012 dollars) was $15,644.00 compared to $25,285 reported for the State of North Carolina (U.S. Census Bureau, 2013). The median household income, 2008–2012, for the county reported by the U.S. Census Bureau, 2013 was $30,167.00, compared to $46,450.00 for the state. The percentage of persons living below the poverty level, 2008–2012, was 31.9% for the county and 16.8% for the state. Table 5 details a county/state comparison.

Participants

Teachers, Principals, and Transformational/Instructional Coaches

For this study, 44 K–3 teachers were selected from three rural elementary schools. To increase the validity of the findings, the researcher interviewed eight administrators from the selected school district who implemented mClass: Reading 3D. Five additional interviews were conducted with transformational/instructional coaches who worked with the North Carolina Department of Public Instruction and the selected school district. These individuals have a major role in providing support for the public schools in North Carolina implementing the mClass: Reading 3D program (see Table 6).

Students

The selected school district's population of grade K-3 students consisted of 8,555 students during the 2013-2014 school year. The racial breakdown of all elementary schools in the district includes 45% Native American, 30% Caucasian, 20% African American, 3% Multi-Racial, and 2% Other. Seventy-eight percent of the students are economically disadvantaged, which entitles them to receive free or reduced lunch. For this study, Tables 7–9 highlight the participant demographics and mClass Reading: 3D scores from students of selected schools.

Data Collection

Merriam (1998) stated that data are usually derived from interviews and field observations, while Yin (2003) recommended gathering data from the following: online documentation, archival records, interviews, direct observations, participant observations, and/or

Table 5

Robeson County Quick Facts

Quick Facts	Selected County	State of North Carolina
Living in same house 1 year & over (2008-2012)	88.5%	84.4%
Language other than English spoken at home (2008-2012)	8.7%	10.8%
High school graduate or higher, percent of persons age 25+ (2008-2012)	70.9%	84.5%
Bachelor’s Degree or higher, percent of persons age 25+ (2008-2012)	12.9%	26.8%
Veterans (2008-2012)	7,940	738,926
Homeownership rate (2008-2012)	66.1%	67.1%
Housing units in multi-unit structures (2008-2012)	8.7%	17.1%
Median value of owner-occupied housing units (2008-2012)	$69,400	$153,600
Persons per household	2.90	2.51

Note. (U.S. Census Bureau, 2013).

Table 6

Participant Demographics

Participant's Place of Employment	# of Selected Survey Participants	Title	# Agreed to Interview
Pine Brook Elementary	12	K-3 Teachers	12
Forest Lane Elementary	19	K-3 Teachers	19
Sycamore Elementary	13	K-3 Teachers	13
Public Rural School District	8	Administrators	8
NC Department of Public Instruction	7	Transformational/ Instructional Coaches	5

Table 7

Forest Lane Elementary School 2012–2013 mClass: Reading 3D

Time of Year	Far Below	Below	Proficient	Above
BOY (Beginning of Year)	32%	20%	36%	12%
MOY (Middle of Year)	34%	7%	18%	41%
EOY (End of Year)	29%	10%	31%	30%

Table 8

Sycamore Elementary School 2012–2013 mClass: Reading 3D

Time of Year	Far Below	Below	Proficient	Above
BOY (Beginning of Year)	23%	13%	23%	41%
MOY (Middle of Year)	28%	11%	13%	48%
EOY (End of Year)	34%	10%	8%	48%

Table 9

Pine Brook Elementary School 2012–2013 mClass: Reading 3D

Time of Year	Far Below	Below	Proficient	Above
BOY (Beginning of Year)	29%	19%	17%	35%
MOY (Middle of Year)	33%	19%	8%	40%
EOY (End of Year)	31%	9%	20%	40%

physical artifacts. Surveys, interviews, and online documentation were used to gather data for this study.

Surveys

Surveys constitute an important data collection evaluation tool (Braverman, 1996). A clear and simple survey yields sufficient and rich data through a few closed and open-ended questions (Edmonson & Irby, 2008). In order to formulate an appropriate survey, the researcher developed questions regarding the impact of mClass: Reading 3D as it related to student reading achievement, instructional practices, and professional development.

Common survey uses include choosing an intended target audience for a program to learn of their perceived needs or their behaviors, knowledge, skills, or attitudes that may be the focus of the program or their characteristics (Fitzpatrick et al., 2011). Edmonson and Irby (2008) explained that "the survey is long enough to gather important information on the topic; however, a follow-up interview may be necessary with some of the respondents for clarification purposes" (p. 72). There are limitations to administering surveys in a qualitative study. Unfortunately, one runs the risk of losing the opportunity to dig deeper into a participant's response when only a survey is used (Edmonson & Irby, 2008). However, "evaluators typically find that directing respondents to a web site that contains the survey make the respondents, particularly if they are employees or clients, feel more anonymous, since their e-mail addresses are not linked to their responses" (Fitzpatrick et al., 2011). Studies have shown that response rates to electronic surveys are somewhat lower than mailed surveys (Fricker & Schonlau, 2002); however, to increase the response rate, the researcher chose a recommendation from Converse, Wolfe, Huang, and Osward (2008). Using a mailed announcement of a web-based survey led to a higher response rate than an email with a link to the web-based survey. Instead of mailing the announcement, a detailed letter was presented to select participants at a meeting, prior to the survey link being provided.

By using surveys and interviews, the first phase of the study was described as qualitative. Participants were asked to voluntarily participate in a survey to help the researcher gather data. The researcher met with each administrator of the three selected schools to explain the study. The purpose of the survey was to determine the extent to which mClass: Reading 3D professional development has impacted teacher preparation with the use of assessment data to improve instruction and to what extent the implementation of the program has impacted instruction relative to student accountability. Documenting and analyzing teacher survey results, online documentation, and focus group interviews results may help the selected school district evaluate the implementation of mClass: Reading 3D and determine the extent to which the program has impacted student reading achievement and instructional practices.

The survey was web-based and accessed through a provided link. One advantage to using the web-based survey was that participants' responses were automatically stored in a database and easily converted to Qualtrics-formatted numeric data. This study was explained in an open meeting to the selected certified teachers. The meeting information provided an explanation of the study, decreasing the response rate error and increasing a relatively high response rate. An informed consent form has been kept on file (see Appendix D). This document detailed the program evaluation, described risks involved, explained that participation in the study was voluntary, and that participants had the right to withdraw at any time without consequences. Participants who agreed to participate in the study had access to the survey link included in the informed consent letter. To ensure a high response rate, the researcher sent an email reminder, including the link to the survey, for all participants who had not completed the survey within five calendar days. For participants who had not completed the survey, ten days later another reminder was sent. Lastly, for those who had not completed the survey, a final reminder was sent through email with a final survey deadline date.

Collected data were stored electronically in a password-protected file. The researcher assigned participants an identifier and collected the data under secure identification to maintain confidentiality.

The teacher survey contained 24 questions (see Appendix E). Various formats were used consisting of multiple choice questions, asking for one or all options that apply; self-assessment items measured on a Likert-type scale; and open-ended written response questions. The first section of five questions collected information concerning the participants' position and teaching experience. The second section had two questions designed to obtain feedback about the impact of mClass: Reading 3D on student assessment. A third portion included three questions relating to data-driven instruction. Eight questions in the next section gathered information regarding teachers' professional development for the mClass: Reading 3D assessment. Last of all, six questions included open-ended responses to provide additional data.

A pilot survey was administered to test the survey questionnaire using a smaller sample. The intention was to eliminate any difficulties that were not anticipated at the survey proposal stage. After developing possible questions for teachers, principals, and transformational/instructional coaches, the researcher discussed the questions with a North Carolina Department of Public Instruction (NCDPI) mClass: Reading 3D specialist (A. Evans, personal communication, February 19, 2014) and drew upon the researcher's experiences with this program to modify the survey questions. Three principals and three mClass: Reading 3D school facilitators of the program reviewed all questions to ensure clarity and proper word usage.

Additionally, the researcher shared the questions with two East Carolina University (ECU) professors from the Educational Department of Graduate Studies to ensure the correct wording. The NCDPI mClass: Reading 3D specialist, three principals, three teachers, and the two ECU professors selected to pilot the survey were asked to comment on the categories, clarity of questions, scale, and provide suggestions to ensure validity. Wording was changed to help clarify questions. Scales were also changed to measure what the researcher intended to measure.

Interviews

To increase the validity of the study, face-to-face interviews were conducted with eight administrators within the selected school district. This same process, which is grounded in the interpretivist paradigm, was used to collect data from five transformational/instructional coaches from the North Carolina Department of Public Instruction and selected school district (Schwandt, 2000). According to Sipe and Constable (1996), the interpretivist attempts to describe and understand the point of view of someone else experiencing the situation. Understanding the subjective meaning of action can be done in an objective manner (Schwandt, 2000).

Appointments were scheduled with the eight administrators who implemented mClass: Reading 3D at their school and the five transformational/instructional coaches employed by the North Carolina Department of Public Instruction and the selected school district. These selected educators received a consent form explaining the purpose and procedures of the study to ensure anonymity. Additionally, the consent form included risks associated with the study and indicated that the participants may withdraw from the study at any time (see Appendix G). Once the researcher obtained consent, focus group interviews were conducted.

To prepare for the interview process, the researcher became familiar with the research on conducting qualitative interviews. Kvale and Brinkmann (2009) and Rubin and Rubin (2012) provided similar steps in conducting interviews. Kvale and Brinkmann (2009) provided seven sequential stages of an interview (see Figure 4). These seven steps helped validate the findings of this study. Additionally, the researcher incorporated Rubin and Rubin's (2012) responsive interview model by modifying questions asked during interviews, as needed, to retrieve data. A pilot interview with three administrators and a transformational coach established reliability and dependability of clearly stated questions and ensured continuous conversations.

Gathering data via interviews is one powerful way to understand our fellow human beings (Fontana & Frey, 2000). Qualitative researchers take pride in discovering and portraying the multiple views from interviews conducted. The interview is the main road to multiple realities (Stake, 1995).

Interview questions were asked in a semi-structured format.

> In semi-structured interviewing, a guide is used with questions and topics that must be covered. The interviewer has some discretion about the order in which questions are asked, but the questions are standardized, and probes may be provided to ensure that the researcher covers the correct material. (RAND, 2009, p. 27)

Kvale and Brinkmann (2009) discussed the power asymmetry in which the research interview should not be regarded as a completely open and free dialogue between the egalitarian partners. This type of interview creates unequal power among the interviewer and the interviewee, is based on the researcher's agenda, leads to the researchers' interpretations, and contains "counter control" elements by the interviewee, who may withhold information. To protect against this asymmetry, the authors suggested more collaborative interviewing, where the interviewer and interviewee approach equality in questions and responding. Eleven questions were developed to conduct principal and transformational/instructional coach interviews (see Appendix F). Questions focused on student data from mClass: Reading 3D, how data reports are used, specific features of the program and if/how they are used to impact student reading achievement, and

Seven Stages of an Interview Inquiry (Kvale & Brinkmann, 2009)
1. Thematizing: Formulate the purpose of an investigation and the conception of the theme to be investigated before the interviews start. The why and what of the investigation should be clarified before the question of how—method—is posed.
2. Designing: Plan the design of the study, taking into consideration all seven stages of the investigation, before interviewing. Designing the study is undertaken with regard to obtaining the intended knowledge and taking into account the moral implications of the study.
3. Interviewing: Conduct the interviews based on an interview guide and with a reflective approach to the knowledge sought and the interpersonal relation of the interview situation.
4. Transcribing: Prepare the interview material for analysis, which generally includes a transcription from oral speech to written text.
5. Analyzing: Decide, on the basis of the purpose and topic of the investigation and of the nature of the interview material, which modes of analysis are appropriate for interviews.
6. Verifying: Ascertain the validity, reliability, and generalizability of the interview findings. Reliability refers to how consistent the results are, and validity means whether an interview study investigates what is intended to be investigated.
7. Reporting: Communicate the findings of the study and the methods applied in a form that lives up to scientific criteria, takes the ethical aspects of the investigation into consideration, and results in a readable product.

Figure 4. Seven stages of interview inquiry.

the strengths and weaknesses of the program. Using the semi-structured interview format assisted the researcher as she delved deeply into responses to understand thoroughly the answers provided.

Interviews took place over a two-week period in January 2015. The researcher had a list of questions to address. During the focus group interviews, a semi-structured process allowed new questions to be explored depending on the situation. This flexible method encouraged the respondents to freely discuss other topics or themes when the opportunity arose. To ensure accuracy, all interviews were tape recorded. This process provides more detail for data analysis and remains to attest to the veracity of the process (Fitzpatrick et al., 2011). By gathering the interview data in a timely manner, the researcher reflected on the collected data and analyzed themes.

To validate the interview questions, a pilot study was conducted with three administrators within the district. Additionally, a mClass: Reading 3D transformational coach employed by the North Carolina Department of Public Instruction reviewed the questions used in the interviews. Questions were shared with two East Carolina University professors in the Department of Educational Leadership. Based on feedback from the pilot study, the wording of questions was changed for clarity purposes.

Assessment Data

The second phase of the research study was based on quantitative data. The mClass: Reading 3D scores for students enrolled in second grade during the 2012–2013 school year were obtained from the Testing Coordinator in the selected school district, with the approval of the Assistant Superintendent of Curriculum and Instruction. Data were analyzed to determine to what extent mClass: Reading 3D has impacted students' reading achievement in second grade and how teachers used the student data to determine instructional practices that may have impacted student achievement.

Data Analysis

Descriptive statistics were used to analyze data from the survey questions. Interviews were audio-recorded. Frequencies and percentage response distributions were presented in various charts and graphs. This provided an overall picture of what the collected data looked like as common patterns and themes emerged. Creswell (2013) discussed the need to display data in visual forms such as charts and graphs. Represented results involved a discussion of emerging themes. Creswell also identified different sources of data to cite multiple items of evidence, including perspectives from individuals in a study to show divergent views. For quantitative research, Creswell discussed the comparison of results with the initial research questions.

The researcher analyzed data to determine the most important factors that emerged from the interviews. Emerging themes were documented. As a result, the researcher ensured questions relating to possible themes were included in the survey distributed to the sample of certified teachers. Frequency distributions were used among the descriptive statistics and summarized.

The quantitative portion of the program evaluation examined student performance. The mClass: Reading 3D scores from the 2012–2013 school year were obtained from second-grade students enrolled at the three identified schools. The Beginning of Year (BOY) data were compared to the End of Year (EOY) data to determine student reading growth. A graph was created to display the data among second-grade students from the three schools.

Interpretive Analysis

Interpretative data analysis provided meaning to the quantitative statistics. The logic of the interpretive model parallels that of the inductive model in that pieces are put together in meaningful relation in order to construct explanations that help readers make sense of what is being examined. Data gathered on surveys and interviews of mClass: Reading 3D as it related to student reading achievement, instructional practices, and professional development allowed the researcher to expand on the findings from the descriptive analysis. An interpretive analysis allows researchers to go beyond data description and give meaning to quantitative statistics (Thomas, 2003).

Construct Validity

Creswell (2013) considered validation to be an attempt to assess the accuracy of findings, as best described by the researcher and participants. Validity was upheld as the survey and interview questions were characteristic of the study's design. The language in the survey was clear and relevant to the intended participants, regardless of the level of expertise. The group of participants in the study was representative of the population being studied. They reflected the overall diversity and range of the entire population of K–3 students in the county. Teachers surveyed were from grades K–3. Principals and transformational/instructional coaches who participated in the focus group interviews shared their experiences based on their involvement in schools implementing mClass: Reading 3D. This process ensured that average survey results closely mirrored the trends of the overall K–3 population. With the considerations mentioned above, the survey was statistically validated. Instrument reliability refers to a survey yielding the same results to repeated responses. Administering the same survey to other groups of participants within the one rural Title I district in North Carolina will likely produce similar results. External validity was guarded by choosing a representative sample, and was strengthened by the gathering of a representative sample.

The researcher used surveys, interviews, and test results to triangulate measures of the research questions, thus increasing the validity. Triangulation involves the careful reviewing of data collected through different methods in order to achieve a more accurate and valid estimate of qualitative results for a particular construct. According to O'Donoghue and Punch (2003), triangulation is a "method of cross-checking data from multiple sources to search for regularities in the research data" (p. 78). The data for this program evaluation were triangulated based on surveys, interviews, and online documentation. According to Creswell (2013), in triangulation, researchers make use of multiple and different sources, methods, investigators, and theories to provide corroborating evidence. As data were collected and analyzed, the researcher looked for themes in different sources of data. This process provided validity to the findings of this study.

Through data analysis and coding methods, emerging themes were documented in the collection to increase validity of findings (Yin, 2009). Using data from the surveys, interviews, research, and the second-grade mClass: Reading 3D results, all information was used to achieve a detailed level of inquiry to help describe the implementation of mClass: Reading 3D and its impact on student reading achievement and instructional practices used by the teacher.

Threats to internal and external validity have been noted. A restriction of range may serve as a threat to external validity in this study. Heterogeneity of the units under study is a limitation to validity, due to the population chosen for the study.

Confidentiality

Participation in this study was voluntary, and participants had the option to withdraw at any time. While it was not the intent of the investigator to ask intrusive questions, some participants may have been sensitive to revealing information. The information gathered was intended to give participants a high degree of control over the information shared. Participation had no impact on teacher performance evaluations.

Documentation collected was confidential. Published reports will not divulge information that may identify a subject or school. All files have been stored at a location outside of the school. Gathered data were used only for analysis, discussions, conclusions, and recommendations. Findings will be disseminated to the school anonymously. After five years, collected data will be destroyed.

Research Permission and Ethical Consideration

Weis and Fine (2000) addressed ethical issues that may occur during the research process:

> They ask us to consider ethical considerations involving our roles as insiders/outsiders to the participants; assessing issues that we may be fearful of disclosing; establishing supportive, respectful relationships without stereotyping and using labels that participants do not embrace; acknowledging whose voices will be represented in our final study; and writing ourselves into the study by reflecting on who we are and the people in the study. (Creswell, 2013, p. 56)

In addition, Hatch (2002) indicated that researchers need to be sensitive to vulnerable populations, imbalanced power relations, and placing participants at risk. While no participants were placed at risk, the researcher for this study considered the ethical issues above.

To ensure that familiarity did not skew data collection, the researcher chose not to survey any participants at her respective school. In addition, the researcher chose five transformational/instructional coaches employed by the North Carolina Department of Public Instruction and the selected school district to obtain helpful information when collecting data. Participants were cognizant of the classification of each participant, including (a) certified teachers who administered the mClass: Reading 3D assessment, (b) administrators who served a school with grades K–3, and (c) the transformational/instructional coaches who have an in-depth knowledge of mClass: Reading 3D. Findings were reported based on data collected from participants and the quantitative data from mClass: Reading 3D scores from second-grade students enrolled in the selected schools during the 2012–2013 school year.

Compliance with Institutional Review Board

The researcher was in compliance with Institutional Review Board (IRB) regulations. Equally important, permission to conduct the study in the small rural public school district in North Carolina was obtained from the district superintendent and the assistant superintendent of curriculum and instruction.

Hatch (2002) summarized major ethical issues that researchers need to anticipate and consider during research studies. “Giving back to participants for their time and efforts in our projects—*reciprocity*—is important, and we need to review how participants will gain from our studies” (p. 55). Once findings are disseminated to the school district, they will also be forwarded to the eight administrators who participated as well as the administrators at the three elementary schools. Results will also be shared with the five transformational/instructional coaches who participated in the study and the local education agency.

Conceptions/Assumptions of Chosen Methodology

Qualitative research focuses on understanding how participants construe their experiences and how they theorize their environment (Merriam, 2009). Lodico et al. (2010) indicated that qualitative research targets social phenomena and allows participants to explain their perceptions and experiences with an identified topic. They also explained that a program evaluation is designed to observe programs to determine the strengths and weaknesses and to make recommendations for improvements of the program.

During the program evaluation, the researcher worked closely with participants, identified decisions made about mClass: Reading 3D, and collected information about the relative advantages and disadvantages of the program. Using a participative approach, relevant stakeholder groups were identified and information was obtained on individual views of the program. Data collection focused on qualitative measures to provide multiple perspectives. To uphold the validity of the results, stakeholders at various stages of program implementation were included to help build evaluation capacity and to ensure the methods used, the interpretation of the results, and the final conclusions reflected the multiple perspectives of the stakeholders (Fitzpatrick et al., 2011). Students of the participants were comparable. Taking into consideration the academic ability, socio-economic status, and geographic location, data collected can be generalized to other schools in the same small rural school district in North Carolina implementing the mClass: Reading 3D program. The final methodological assumption was that participants who completed the survey have had professional development relating to mClass: Reading 3D prior to the administration of the assessment.

Summary

The decline in third-grade North Carolina End-of-Grade reading scores placed an increased emphasis on improving academic achievement of students in grades kindergarten through second grade. This information led to the statement of the problem. Chapter 3 provided the rationale for the selected research methodology. Qualitative and quantitative data allowed a strong array of evidence to be collected and analyzed (Yin, 2009). This study used collected data to address the research questions. The selection process consisted of a purposeful sample which met the following criteria: a rural public elementary school in the State of North Carolina that implemented mClass: Reading 3D during the 2010–2011 school year, with each racial/ethnic group representative of the community and school district.

A rich description of the county provided the geographic location and total population. Chapter 3 highlighted the county's racial make-up, economic conditions, unemployment rate, and quick facts.

The three schools chosen to participate in the study were Forest Lane, Sycamore, and Pine Brook Elementary. Data were obtained through surveys, interviews, and mClass: Reading 3D assessment results for second-grade students during the 2012-2013 school year. Descriptive statistics were used to analyze data.

Chapter 3 concluded by detailing steps taken to address confidentiality, research permission, and ethical considerations of participants. The roles of the researcher were explained in detail to ensure internal and external validity were protected during the entire process. The benefits of a program evaluation were outlined to provide feedback in regards to the selected research questions.

CHAPTER 4: RESULTS AND CONCLUSIONS

The purpose of this study was to explore the relationship that exists between the history of reading instruction, the impact of mClass: Reading 3D on student achievement in second grade, and the impact of quality professional development through a program evaluation. Data from this study will be used to inform the implementation process of mClass: Reading 3D that may have a positive impact on students' reading achievement. Specifically, the study attempted to address the following question:

To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

As qualitative collected data were analyzed for this study, survey results from second-grade teachers mirrored the results of teachers in grades kindergarten, first grade, and third. As a result, findings were generalized to teachers in grades K–3 throughout the school district. However, the quantitative data specifically related to TRC assessment scores for students enrolled in second grade during the 2012–2013 school year in the selected schools for this study.

North Carolina General Statute G.S. 115C-174.11(a) mandates that students in grades K–3 must be given a diagnostic reading assessment. The law states that "kindergarten, first, second, and third grade students shall be assessed with valid, reliable, formative, and diagnostic reading assessments made available to local school administrative units by the State Board of Education pursuant to G.S. 115C-174.11(a)." The implementation of mClass: Reading 3D is the result of policies and initiatives developed in North Carolina to meet federal and state educational reading mandates. For greater understanding of why this study focused on the implementation of mClass: Reading 3D, a review of the literature provided background information relative to the assessment. The history of reading was presented and included instructional trends, reading initiatives and policies, and the development of the mClass: Reading 3D assessment program. A description of program components was provided for a greater understanding of mClass: Reading 3D. Research on technology showed how student assessment has evolved to meet the demands of 21st century learning. Additionally, an extensive review of professional development research was included to examine the extent to which teachers are equipped with necessary skills to positively impact students' reading achievement.

Qualitative data were collected from teacher survey questions and focus group interviews, while collected quantitative included mClass: Reading 3D scores of students in second grade during the 2012–2013 school year in the selected schools for the study. According to Patton (1990), "information rich cases are those from which one can learn a great deal about issues of central importance to the purpose of research, thus the term purposeful sampling" (p. 169). Purposeful sampling was chosen to obtain data from teachers, principals, and transformational/instructional coaches regarding the impact of mClass: Reading 3D as it relates to student reading achievement, instructional practices, and professional development associated with mClass: Reading 3D. Data were triangulated to provide validity of the findings. Descriptive statistics were used to present the data collected for this study. The program evaluation attempted to provide a detailed analysis that may guide the selected school district and state in considering future recommendations on the implementation and impact of the mClass: Reading 3D assessment to improve student reading achievement.

Data Overview

Both qualitative and quantitative data were collected in this study from several sources. The researcher developed questions for the teacher interview survey and focus group interviews to relate directly to the impact of mClass: Reading 3D on student achievement, instructional practices, and professional development associated with the reading assessment. First, this study analyzed data from an online survey administered to 44 teachers from three rural elementary schools who have implemented mClass: Reading 3D. Gathering data from teachers was vital to this study to highlight experiences and perceptions from those actually inside the classroom who directly implement the program. Secondly, interviews were conducted with eight administrators and five transformational/instructional coaches who have directly facilitated the implementation of mClass: Reading 3D. Gathering data from those who are outside the classroom broadened program perspectives and experiences on a different level. Thirdly, mClass: Reading 3D student scores from the 2012–13 Beginning-of-Year (BOY), Middle-of-Year (MOY), and End-of-Year (EOY) benchmark were analyzed from the three selected schools in an effort to determine the impact mClass: Reading 3D had on student achievement. The collected data were analyzed and presented in charts and tables. Themes were identified to triangulate findings.

Qualitative Data—Teacher Survey

A pilot survey was administered to test the survey questionnaire using a smaller sample. The purpose was to ensure clarity of questions and responses at the survey proposal stage. After developing possible questions for teachers, the researcher discussed the questions with a North Carolina Department of Public Instruction (NCDPI) mClass: Reading 3D specialist (personal communication, Anne Evans, February 19, 2014). Three principals and three mClass: Reading 3D school facilitators of the program reviewed all questions. Additionally, the researchers shared the questions with two East Carolina University (ECU) professors from the Educational Department of Graduate Studies to ensure correct wording. The NCDPI mClass: Reading 3D specialist, three principals, three teachers, and the two ECU professors were asked to comment on the categories, clarity of questions, scale, and provide suggestions to ensure validity.

Recommendations were accepted to change the wording of some questions and scales used for question responses.

Common survey uses include choosing an intended target audience for a program to learn of their perceived needs or their behaviors, knowledge, skills, or attitudes that may be the focus of the program or their characteristics (Fitzpatrick et al., 2011). Forty-four teachers were asked to complete a web-based survey that focused on the impact of mClass: Reading 3D on student achievement, utilization of data to drive instruction, and professional development. These selected educators received a consent form explaining the purpose of the study and procedures to ensure anonymity. Once the researcher obtained consent, the survey was administered. All 44 teachers responded to the survey (100%). These teachers taught in three rural schools that shared the similar demographic data relative to the student population, free and reduced lunch rate, and the time frame of implementation of mClass: Reading 3D. The survey consisted of 18 multiple choice type questions and six open-ended questions.

Different scales were used to obtain responses from the teacher survey questions. When asking for the responders' current teaching position, response choices included kindergarten teacher, first grade teacher, second grade teacher, or third grade teacher. Other questions asked responders to choose the number of years taught in the current grade level and choose the number of years of experience in education. One question allowed responders to choose the highest degree obtained on a scale using the following choices: BA/BS Degree, Master's Degree, or Doctorate Degree. On a scale ranging from 1 to 4 years, responders indicated the number of years they have been implementing the mClass: Reading 3D assessment. Seven questions allowed responders to rate components of the assessment program using a Likert-type scale including choices such as positive impact, somewhat positive impact, somewhat negative impact, and negative impact. A time scale was used to gather data about the time responders take to administer the mClass: Reading 3D benchmark assessment per student and how much staff development was provided prior to implementation. Responders provided how often the assessment data was used to modify student instruction and how frequent progress monitoring data was used for setting student goals using a scale ranging from daily, weekly, monthly, to never. Frequency tables were used to measure how responders used data to drive instruction and to identify which resources have been used for mClass: Reading 3D support. The survey was created and distributed to teachers using the web-based software program Qualtrics (see Appendix E; East Carolina University, 2015). The first five questions of the survey focused on general information about the responders and their level of education. Questions six and seven focused on student assessment while questions eight through eleven focused on data driven instruction. Next, professional development questions were the focus for questions twelve through eighteen. The survey concluded with open-ended questions that targeted suggestions for improvement and allowed responders to share other comments and information related to the implementation of mClass: Reading 3D.

General Information Teacher Survey Questions

Based on general information questions, results showed that more first-grade teachers (12 out of 44; 27%) participated in this study. The lowest response was from second grade teachers, 10 out of 44 (23%). The general information questions also revealed that 23 out of 44 total responders (52%) have taught in their current grade level 0–3 years. Fourteen out of 44 responding teachers (32%) have 11–20 years of experience. The smallest percentage of responders, 8 out of 44 (18%), have 4–10 years teaching experience.

Most responders, 32 out of 44 (73%), hold a BA/BS degree. Seventy-four percent of responders (32 out of 43) have implemented the mClass: Reading 3D assessment for 3 or more years. Twenty-six percent (11 out of 43) have implemented the assessment 2 or fewer years. Teacher survey question #5 was important to the study since teachers who have implemented the mClass: Reading 3D assessment 4+ years have received the most mClass: Reading 3D professional development offered in the district. Teachers who have implemented the assessment less than three years have not received the face-to-face professional development on mClass: Reading 3D as those who have implemented the assessment 4+ years. Thomas and Brown (2011), in *A New Culture of Learning*, reported that learning communities, facilitated by technology, allow students—both individuals and groups—to deepen and broaden their conceptual understanding of curriculum topics and also provide valuable information about the target population, program activities, and the overall validity and success of the program (Allington & Gabriel, 2012). In this case, the teachers were the students during the professional development offered on mClass: Reading 3D. Teachers had to learn about the technology assessment tool, components of mClass: Reading 3D, including reading activities and assessments offered, and goals related to how the assessment was intended to improve student reading achievement. When implemented with fidelity, the goal of the assessment is to improve student reading achievement. Based on collected data for teacher survey question #5, teachers who have implemented the mClass: Reading assessment for 4+ years have been exposed to more professional development activities related to the assessment and have a greater chance of improving student reading achievement by using the program with fidelity. Figure 5 highlights the number of years responders have implemented the mClass: Reading 3D assessment.

Survey Questions about Student Assessment

Formative assessment is an active and intentional process that includes the teacher and the student continuously and systematically gathering evidence of learning with the ultimate goal of improving student achievement (Moss & Brookhart, 2009).

The next set of questions focused on the use of mClass: Reading 3D as a formative and diagnostic assessment. Teacher survey question #6 asked responders to rate the effectiveness of mClass: Reading 3D on student achievement. The provided scale allowed responders to determine whether the assessment had a positive impact, somewhat positive impact, somewhat negative impact, or a negative impact on student achievement. A total of 26 out of the 44 responders (59%) indicated mClass: Reading 3D had a somewhat positive impact on student achievement, while 11 of 44 responders (25%) chose a positive impact. Six out of 44 teachers (14%) reported the assessment had a somewhat negative impact on student achievement, while one responder out of 44 (2%) chose a negative impact. Based on responses received from open-ended questions, which will also be discussed, the negative impact associated with student achievement related to the time it takes to administer the assessment to each student.

The mClass: Reading 3D program uses two assessment tools, DIBELS Next and Text Reading and Comprehension (TRC) to combine scores, providing teachers with each student's instructional reading level. DIBELS Next measures reflect the essential early literacy domains described in the National Reading Panel (2000) and National Research Council (1998). The panel concluded that, "Effective reading instruction implements phonemic awareness, phonics, fluency, vocabulary, and text comprehension" (Leu, 2000). Evidence showed these skills can be improved with instruction (Kame'enui et al., 2002; Simmons & Kame'enui, 1998; Torgesen et

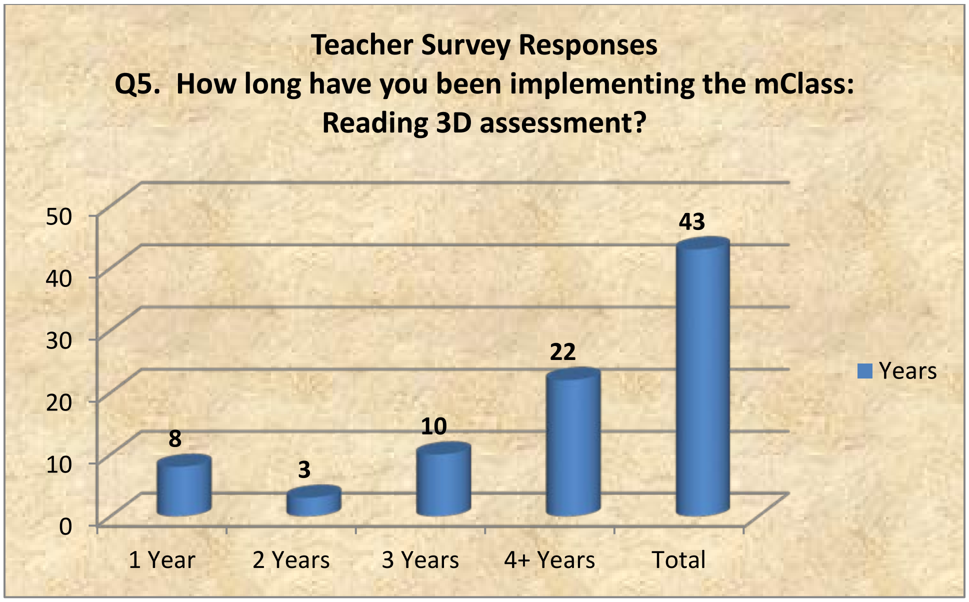
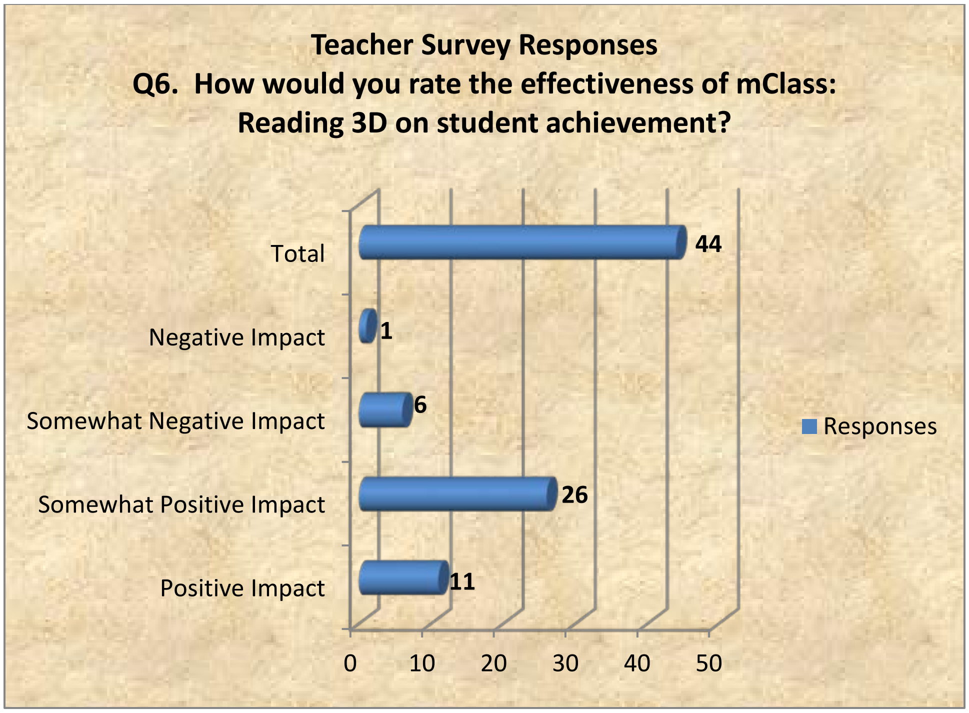


Figure 5. Number of years responders have implemented the mClass: Reading 3D assessment.

al., 1999). Based on the research, mClass: Reading 3D includes assessment tools to have a positive impact on student reading achievement. Teacher survey question #6 is important to this study as the collected data revealed 37 out of 44 teachers (84%) rated the effectiveness of mClass: Reading 3D as having a somewhat positive to positive impact on student achievement. These data add to the body of research indicating mClass: Reading 3D has positively impacted student reading achievement. Figure 6 describes the statistics reported for survey question #6.

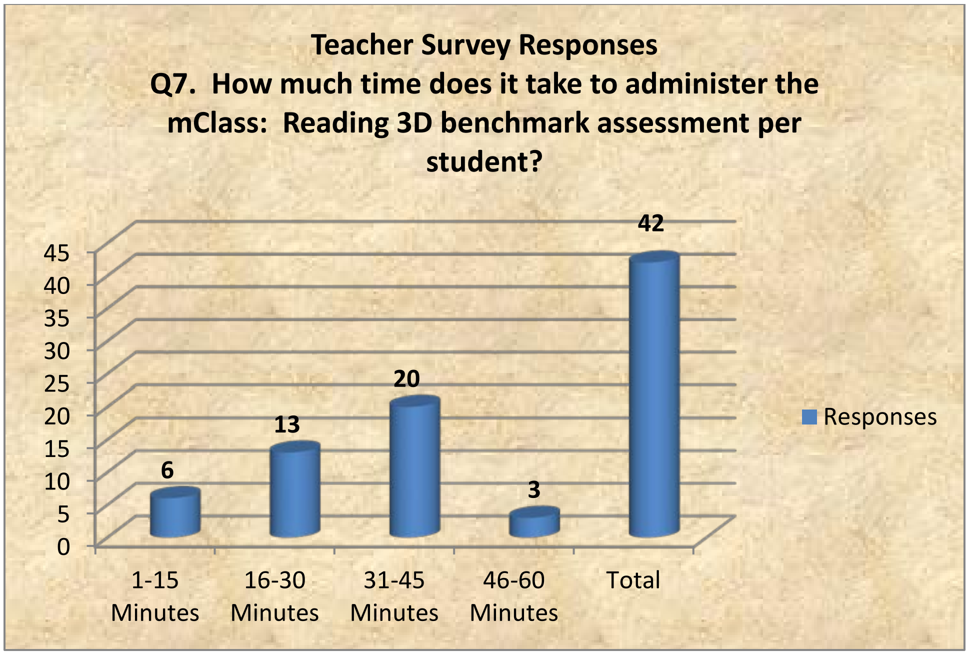
Teacher survey question #7 asked responders about the time it takes to administer the mClass: Reading 3D benchmark assessment per student. Twenty out of 42 teachers (48%) responded the assessment takes between 31 and 45 minutes to administer. Three out of 42 responders (7%), representing the lowest response rate, indicated the benchmark assessment takes 46–60 minutes per student to administer. Six of 42 responders (14%) reported it takes between 1 and 15 minutes per student to administer the assessment, while 13 of 42 responders (31%) reported it takes between 16 and 30 minutes to administer the assessment per student (see Figure 7).

Preliminary studies of mClass: Reading 3D solutions show 50% of time savings in assessment administration, which gives teachers three to five instructional days back per year (Wireless Generation, n.d.). While enough information was not gathered in this study to align results to these mClass: Reading 3D preliminary studies, the variations in time may have an effect on the extent the assessment impacts student reading achievement. A question raised from the collected data is based upon teachers who assess 1-15 minutes versus the amount of time chosen by the most responders, 31-45 minutes. This question is important to the study because administration time may affect other instructional activities in a classroom. Responses falling on either side of the spectrum pose a concern with implementation. Are the benchmark assessments



Note. Eighty-four percent (37 of 44 respondents) indicated mClass: Reading 3D has had a somewhat positive to positive impact on student achievement. Sixteen percent (seven of 44 responders) indicated mClass: Reading 3D has had a somewhat negative to negative impact on student achievement.

Figure 6. Respondents' ratings of the effectiveness of mClass: Reading 3D on student achievement.



Note. Survey results showed 19 of 42 responders (45%) indicated it takes less than 31 minutes to administer the assessment.

Figure 7. Respondents' perceptions of the time it takes to administer the mClass: Reading 3D benchmark assessment per student.

being implemented with fidelity? Why does it take some teachers a shorter period of time or a longer period of time than other teachers to administer the benchmark assessment? Based on the variations, ongoing professional development and effective professional learning communities may provide some answers to the time variations.

Survey Questions about Using Data to Drive Instruction

The next set of questions focused on the extent to which teachers utilize available data to drive instruction. Teacher survey question #8 asked responders how often mClass: Reading 3D data were used to modify student instruction. Forty-eight percent of teachers (20 out of 42) indicated they modified student instruction on a weekly basis based on data. Thirty-one percent of K–3 teachers (13 out of 42) utilized mClass: Reading 3D data to modify instruction on a monthly basis. Nineteen percent of the responders (8 of 42) used the data to modify instruction on a daily basis, while one responder of 42 (2%) indicated mClass: Reading 3D data were never used to modify student instruction (see Figure 8).

For this study, formative assessment, also called progress monitoring was defined as, "a probe used between benchmarks to target specific content areas for remediation" (Reaves & Sullivan, 2010, p. 38). Moss and Brookhart (2009) added formative assessment is an active and intentional learning process that includes the teacher and the student continuously and systematically gathering evidence of learning with the ultimate goal of improving student achievement. Although "technology can make it quicker or easier to teach the same things in routine ways," it also makes it possible to "adopt new and arguably better approaches to instruction and/or change the content or context of learning, instruction, and assessment" (Lawless & Pellegrino, 2007, p. 581). Teachers use a technology device to assess and are able to adapt instruction based on the needs of the student. Formative assessment data gathered from

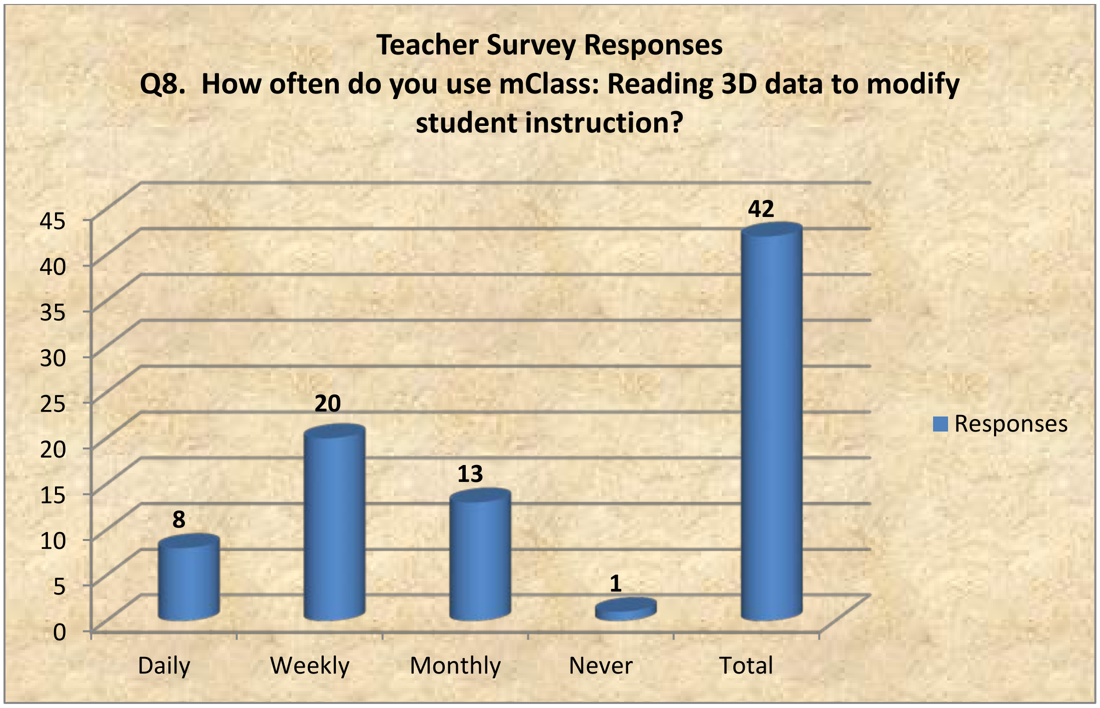


Figure 8. Frequency that respondents use mClass: Reading 3D data to modify student instruction.

mClass: Reading 3D assisted teachers in gathering evidence of student learning and evaluating the classroom instruction used to improve student reading skills. When children's reading problems are diagnosed and addressed early, their reading achievement improves (Snow et al., 1998). Teachers who use formative assessment data from mClass: Reading 3D daily, weekly, or monthly have a greater chance of improving student reading achievement. As shown in Marzano's (2007) research, a positive correlation exists between the frequency of formative assessment and student achievement. Teacher survey question #8 was important to the study as it related to how often data were used to modify instruction. With the responses for teacher survey question #8, the data from the assessment were used to modify student instruction to positively impact student reading achievement.

Teacher survey question #9 asked teachers how their data was used to drive instruction. Choices were provided that included "all of the above" and "none of the above" responses. Teachers were also given the opportunity to specify other ways data were used to drive instruction. The most popular choices among responders included small group instruction, differentiating instruction, and parent conferences. Seventy-four percent of responders (31 out of 42) chose small group instruction, while 67% responders (28 out of 42) selected differentiated instruction. Parent conferences was the next most selected response reflecting 26 out of 42 teachers (62%). With the exception of "none of the above," the least chosen response was the purchase of classroom materials. Five out of 42 teachers (12%) used the data for purchasing materials. No responders specified other ways the data were used to drive instruction (see Figure 9).

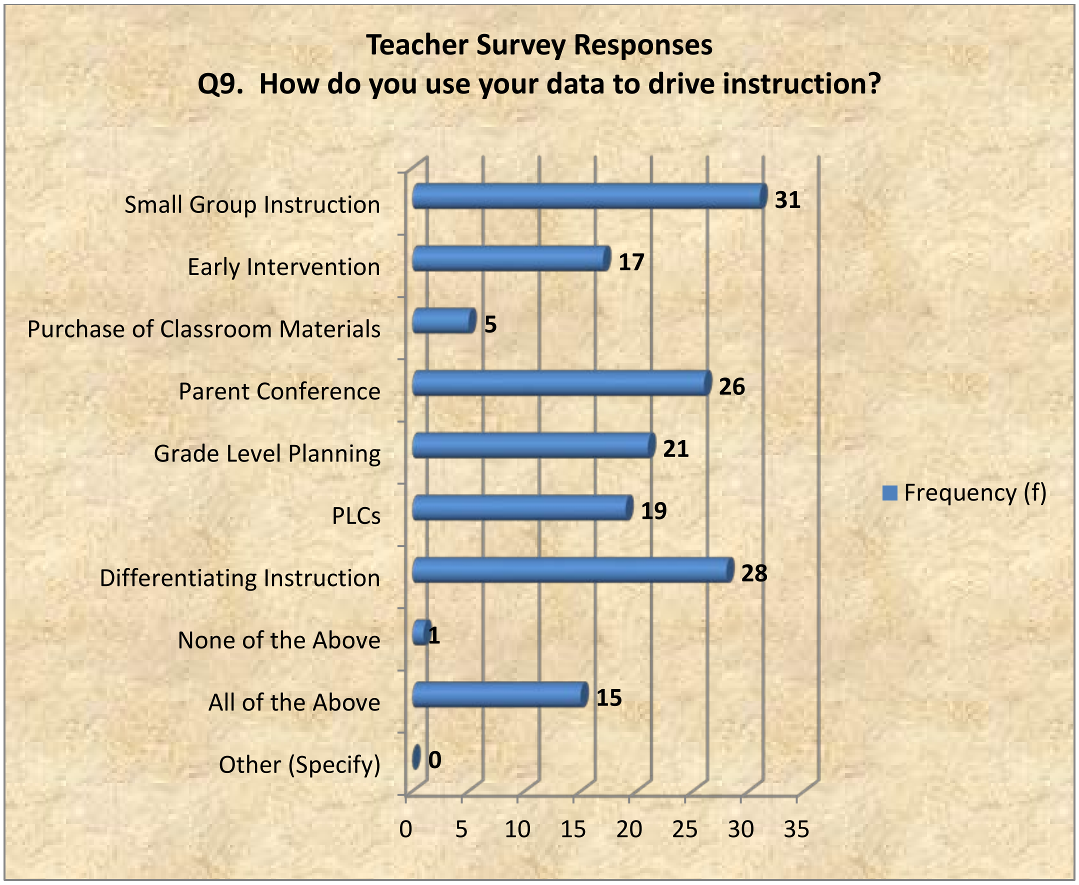


Figure 9. Methods by which respondents use data to drive instruction.

As noted above, Lawless and Pellegrion (2007) indicated technology makes it possible to adopt new and arguably better approaches to instruction. Technology is used to administer the mClass: Reading 3D assessment, and teachers are able to adapt instruction based on the needs of the students. Research has shown the basic literacy skills identified by the National Reading Panel (2000) are the building blocks every child must master in order to become a proficient reader (Adams, 1990; National Research Council, 1998). The data also supported the research relating to basic skills being improved with instruction (Kame'enui et al., 2002; Simmons & Kame'enui, 1998; Torgesen et al., 1999). Results from teacher survey question #9 are summarized in a frequency table (see Figure 9). The table reports the different ways teachers are using mClass: Reading 3D data to drive instruction. Based on the research, the data available from the mClass: Reading 3D assessments have the potential to drive classroom instruction to positively impact student reading achievement.

Teacher survey question #10 asked responders how frequent progress monitoring data are used for setting student goals. Forty-five percent of responders (19 out of 42) indicated they used progress monitoring data to set student goals weekly, whereas the same percentage indicated they used the data monthly to set student goals. Seven percent (3 out of 42) reported they used the progress monitoring data for setting student goals daily, while one responder (2%) never used the data to set student goals. Note that the percentages do not add up to 100% because of rounding (see Figure 10). As shown in Marzano's (2007) research, a positive correlation exists between the frequency of formative assessment and student achievement. Data collected for this teacher survey question related to Moss and Brookhart's (2009) definition of formative assessment. This question focused on the active and intentional learning process that included the teacher and the student continuously and systematically gathering evidence of

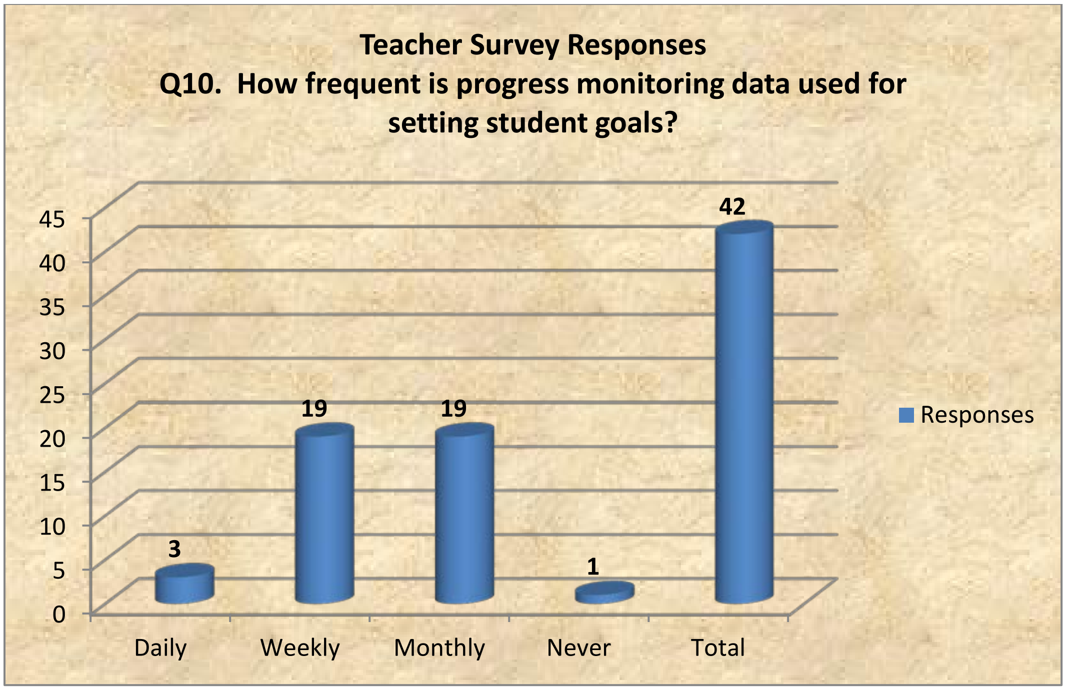
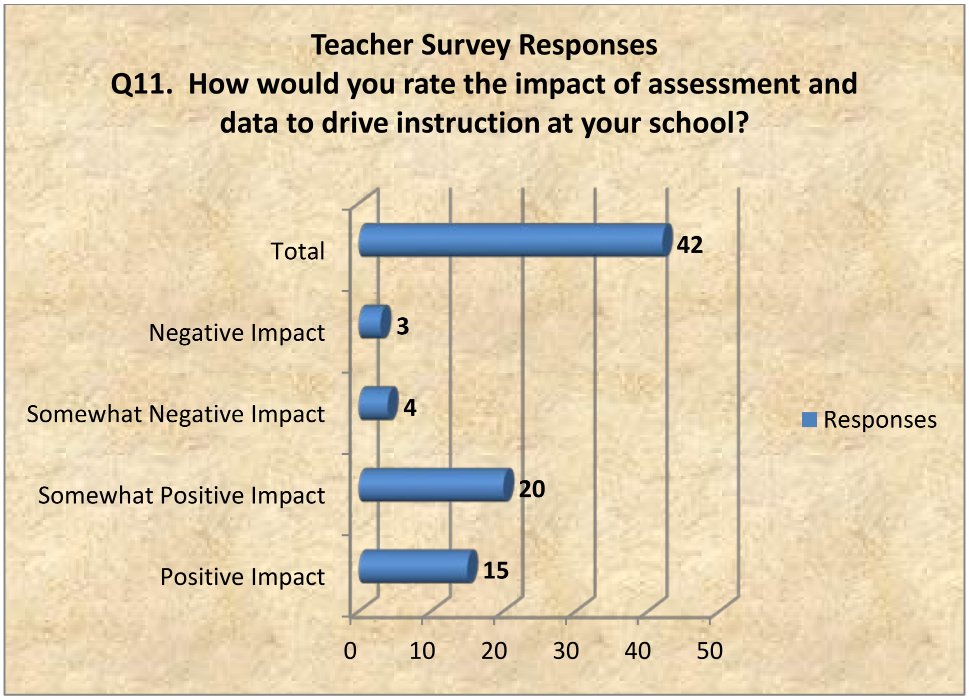


Figure 10. Frequency with which respondents use progress monitoring data in setting student goals.

learning with the ultimate goal of improving student achievement. Teachers who use the mClass: Reading 3D progress monitoring data daily, weekly, or monthly have an increased chance of positively impacting student reading achievement.

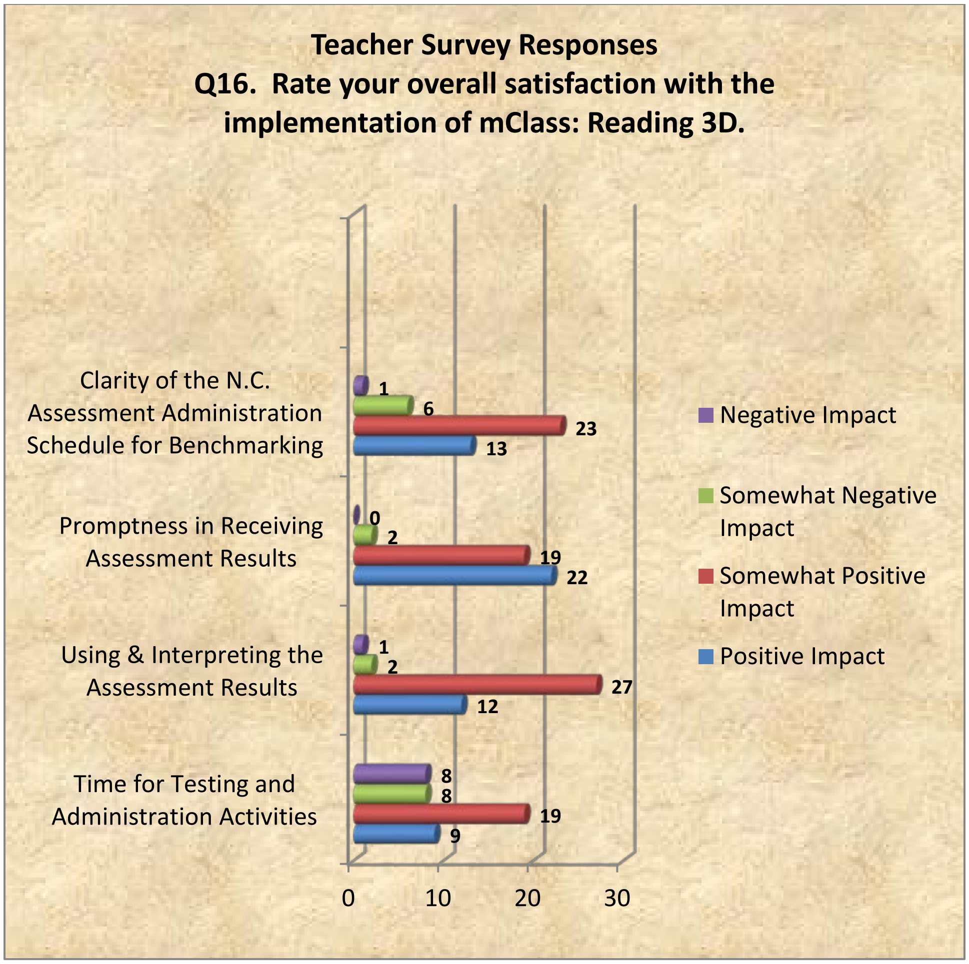
Teacher survey question #11 asked responders to rate the impact of assessment and data to drive instruction at their respective school. The scale allowed responders to rate the impact using the following choices: positive impact, somewhat positive impact, somewhat negative impact, or a negative impact. A total of 20 out of the 42 responders (48%) indicated the impact of assessment and data to drive instruction was somewhat positive, while 15 responders (36%) reported positive impact. Four teachers (10%) rated the impact of assessment and data to drive instruction as having a somewhat negative impact, while 3 responders (7%) chose negative impact. Note that the percentages do not add up to 100% due to rounding to whole number percentages. As results revealed in teacher survey question #6, based on responses received from open-ended questions, the negative impact associated with the impact of assessment and data to drive instruction related to the time it takes to administer the assessment to each student (see Figure 11). With the high percentage of teachers (83%) rating the impact of assessment data to drive instruction at the school as having a somewhat positive to positive impact on student reading achievement, results add to the body of knowledge related to the use of formative assessments to drive instruction. Based on the collected data, the implementation of mClass: Reading 3D has a positive impact on student reading achievement.

Seven topics were provided in teacher survey question #16 for responders to rate their overall satisfaction with the implementation of mClass: Reading 3D relating to program requirements, resources, and technology (see Figure 12). The survey choices allowed responders



Note. Eighty-three percent of the responders (35 out of 42) rated the impact of assessment and data to drive instruction on a somewhat positive to positive scale. Seventeen percent of the responders (7 out of 42) rated the impact of assessment and data to drive instruction on a somewhat negative to negative scale.

Figure 11. Respondents' ratings of the impact of assessment and data to drive instruction at their schools.



Note. Eighty-four percent of the responders rated the overall satisfaction with the clarity of the N.C. schedule for benchmarking on a somewhat positive to positive scale. Ninety-five percent positively rated the promptness in receiving assessment results. Ninety-three percent rated using and interpreting the assessment results on a somewhat positive to positive scale. Sixty-four percent were positively satisfied with the time for testing and administration activities.

Figure 12. Respondents' overall satisfaction with the implementation of mClass: Reading 3D.

to choose among four ratings: positive impact, somewhat positive impact, somewhat negative impact, or negative impact. Twenty-three out of 43 responders (54%) indicated that mClass: Reading 3D had a somewhat positive impact as it related to the clarity of the N.C. assessment administration schedule for benchmarking. Twenty-two out of 43 responders (51%) rated their overall satisfaction with the promptness in receiving assessment results as having a positive impact on the implementation of mClass: Reading 3D. Twenty-seven out of 42 responders (64%) rated using and interpreting assessment results as having a somewhat positive impact on the implementation of mClass: Reading 3D. The purpose of teacher survey question #16 was to obtain a general overview of the teachers' overall satisfaction with the implementation of mClass: Reading 3D as it specifically related to program requirements, resources, and technology. It is important to note that these items shown in Figure 13 can have an impact on student reading achievement. Overall, the factors associated with mClass: Reading 3D have a positive impact on student reading achievement. However, the time for testing and administrative activities poses a problem for some teachers. To improve the responses for this area, additional professional development may be useful to assist teachers in structuring the classroom and working on time management to maximize student reading achievement.

When analyzing the data for the time for testing and administrative activities, 19 out of 44 responders (43%) rated this choice as having a somewhat positive impact on the implementation of mClass: Reading 3D. Technical difficulties, ease of syncing, and the ease of assessment devices relate to the technology components of mClass: Reading 3D. Ten out of 43 responders (23%) indicated technical difficulties had a somewhat negative impact on the implementation of mClass: Reading 3D. Twenty-one out of 43 responders (49%) rated the ease of syncing as having a somewhat positive impact on program implementation. Last of all, 25 out

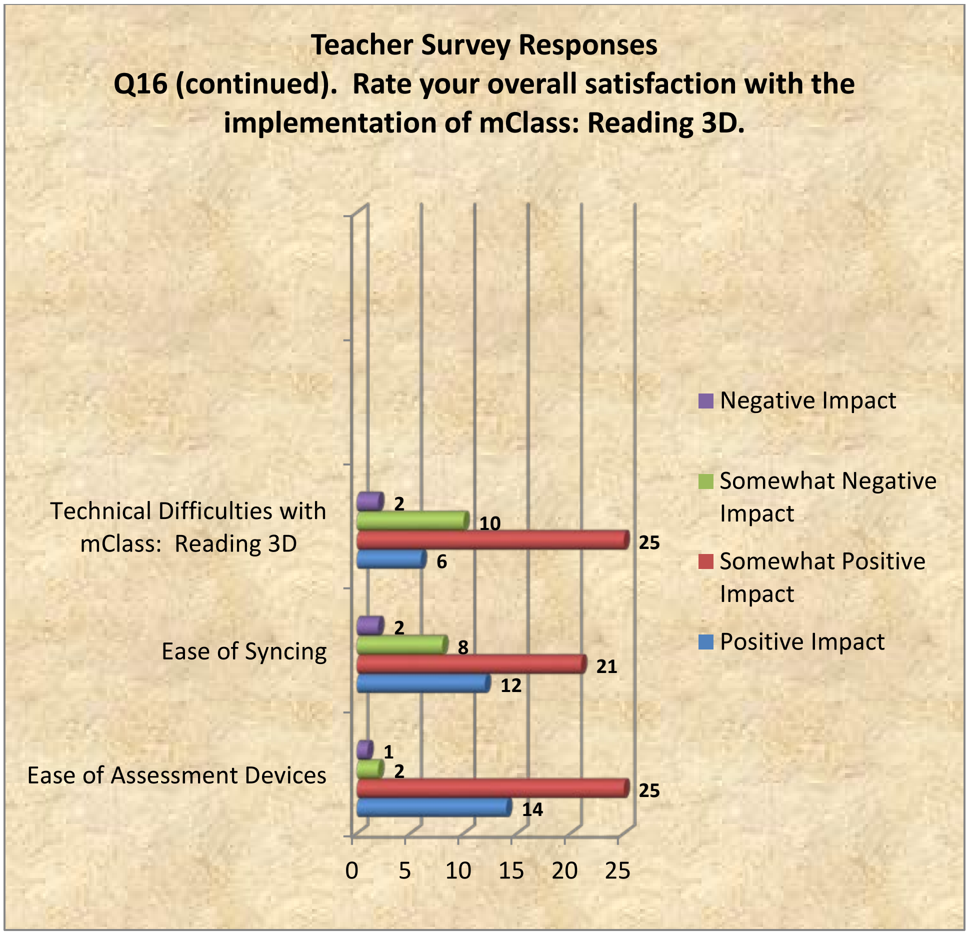


Figure 13. Teacher survey responders rate their overall satisfaction as a favorable experience with technology.

of 42 responders (60%) rated the ease of assessment devices as having a somewhat positive impact on implementation. In conclusion, 300 responses were recorded for question #16. Eighty-two percent of the responses (247 out of 300) revealed a somewhat positive to positive impact on the implementation of mClass: Reading 3D, whereas 18% of the responses (53 out of 300) highlighted a somewhat negative impact to negative impact on the implementation process.

Teacher survey question #17 provided a list of available resources for mClass: Reading 3D support. The most utilized resource was the "Train the Trainer", which has been the main source of staff development used in the selected school district. A total of 21 out of 34 responders (62%) have used this resource for support. Twelve out of 34 responders (35%) indicated the district coach was used as a support resource, whereas 11 of 34 responders (32%) have used Amplify Customer Care. The resource used the least by responders (3 out of 34; 9%) was the mClass: Reading 3D monthly newsletter. Four out of 34 responders (12%) chose "other" as an answer choice for question #17. Other responses included on-site training and observing other teachers (see Figure 14). Important to note, 34 out of 44 responders who took the survey answered question #17.

The research posed a question relating to the response rate for teacher survey question #17. With the frequency of responses for "Train the Trainer," this was the most utilized resource by the responders. A conclusion drawn from the collected data for this question was the available resources for mClass: Reading 3D are not being utilized to their fullest potential. This conclusion adds to the body of research collected by Wilson (2012), who reported support resources were underutilized. According to Joyce and Showers (2002), teachers who receive support generally practice new strategies more frequently. Follow up should be connected into classroom instruction (Fullan, 1995). Perhaps, additional professional development provided on

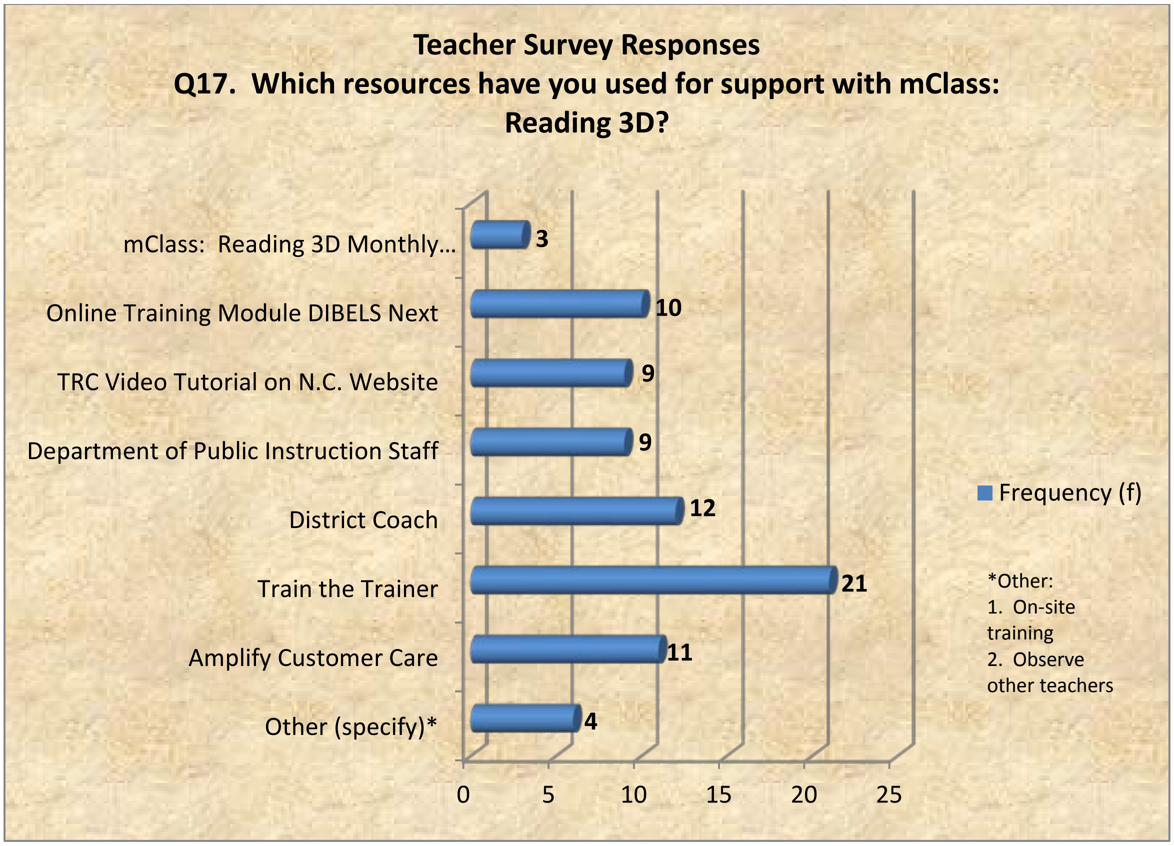


Figure 14. Resources respondents have used for support with mClass: Reading 3D. Other resources specified included on-site training and observing other teachers.

available resources to support mClass: Reading 3D could increase the response rate for the other resources provided in Figure 14. This question was important to this study as the underutilization of support resources may negatively impact student reading achievement in some aspects.

Summary

Surveys constitute an important data collection evaluation tool (Braverman, 1996). The survey yielded sufficient and rich data through closed and open-ended questions (Edmonson & Irby, 2008). The teacher survey responses were an integral part of the qualitative data collection. After reviewing the data, a 100% response rate was obtained (44 out of 44 selected teacher participants); however, not all responders answered every question in the survey. The first general information question gathered data on the current grade level taught. Of 44 total responders, 11 (25%) currently teach kindergarten, 12 (27%) currently teach first grade, 10 (23%) teach second grade and 11 (25%) teach third grade. Fourteen out of 44 teachers (32%) have 11–20 years of experience in education, 12 out of 44 (27%) have 0–3 years of experience, 10 out of 44 (23%) have 21+ years of experience, 4 out of 44 (9%) have taught 4–6 years, and 4 out of 44 (9%) have 7–10 years of experience. Thirty-two out of 44 teachers (73%) have obtained a BA/BS Degree, and 12 (27%) have obtained a Master's Degree. Twenty-two out of 43 teachers (51%) have implemented the mClass: Reading 3D assessment for 4+ years. Ten out of 43 (23%) have implemented the assessment for 3 years. Eight teachers (19%) have implemented the assessment for 1 year, whereas 3 teachers (7%) have implemented mClass: Reading 3D for 2 years.

Closed questions 6–18 helped provide data on how benchmarking and progress monitoring data are used to drive instruction, the amount of time it takes to administer the benchmark assessment, and how the time taken to progress monitor has an impact on the implementation of mClass: Reading 3D. Eighty-four percent of responders (37 out of 44) rated the effectiveness of mClass: Reading 3D as having a somewhat positive to positive impact on student achievement. Sixteen percent of responders (7 out of 44) revealed mClass: Reading 3D had a somewhat negative to negative impact on student achievement. Based on the collection of data, the negative impact related to the time it takes to administer the benchmark assessment per student. Thirty-one percent of responders (13 out of 42) spent 16–30 minutes administering the benchmark assessment per student, and 48% (20 out of 42) spent 31–45 minutes on benchmark administration. Fourteen percent of the responders (6 out of 42) spent 1–15 minutes administering the assessment per student, whereas 7% (3 out of 42) spent 46–60 minutes to administer the benchmark assessment per student. Forty-eight percent of teachers (20 out of 42) used mClass: Reading 3D data to modify student reading instruction mostly on a weekly basis and 31% (13 out of 42) used the data to modify the instruction on a monthly basis. Nineteen percent of responders (8 out of 42) used the data weekly, while one responder (2%) never used the data to modify student reading instruction. Teacher survey question #9 focused on how teachers used data to drive instruction. Seventy-four percent of responders (31 out of 42) chose small group instruction, while 67% responders (28 out of 42) selected differentiated instruction. The "parent conference" option was the next most selected response reflecting 26 out of 42 teachers (62%). When using the data to drive instruction, the progress monitoring must be completed with fidelity to have the greatest impact on student reading achievement. Forty-five percent of teachers (19 out of 42) indicated they used the progress monitoring data to set student goals weekly and the same percentage indicated they used the data to set student goals monthly. By using the data to drive reading instruction, teacher survey question #11 revealed 35 out of 42 teachers (83%) rated the impact of assessment and data to drive instruction as somewhat positive to positive. Seven out of 42 teachers (17%) indicated the impact of assessment and data to drive instruction was somewhat negative to negative. To summarize the overall satisfaction with the implementation of mClass: Reading 3D, 247 out of 300 responses (82%) revealed a somewhat positive to positive impact on the implementation of mClass: Reading 3D, whereas 53 out of 300 responses (18%) highlighted a somewhat negative impact to negative impact on the implementation process. With the high percentages relating to a somewhat positive to positive impact of the implementation of mClass: Reading 3D, teachers have used the resources available for program support; however, the resources are not being utilized to their maximum potential. The most utilized resource was the “Train the Trainer” (*n* = 21). Additional information was provided in the teacher open-ended questions.

Teacher Responses to Open-Ended Survey Questions

The purpose of the open-ended questions/comments portion of the teacher survey was to obtain more extensive data to improve the implementation process of mClass: Reading 3D. A “T-table” has been used to display the data (see Table 10). The left side of the “T-table” displays the question or comment, and the right side shows the teacher responses. The researcher was interested in collecting data from the teacher open-ended questions/comments to examine the impact responses may have on positively impacting student reading achievement. Collected data responses helped provide suggestions on how to improve mClass: Reading 3D to ensure continued reading success among students, what additional support or tools are needed to positively impact student reading achievement, how the assessment is currently being used to improve student achievement, and to identify factors that may be having a negative impact on student reading achievement.

Table 10

Responses to Teacher Open-Ended Survey Questions

Teacher Open-Ended Questions/Comments	Responses
What suggestions would you offer to improve mClass: Reading 3D to ensure continued success?	• Move Beginning of Year (BOY) assessment to the third week of school so students can become acclimated to learning environment • Hire reading specialist to assess to increase fidelity across grade levels • Re-examine student levels of achievement (ESL, EC, etc.) • Provide testing environment more aligned to NCEOG setting • Improve syncing process • Fidelity since others are testing at EOY
What additional support do you need for the mClass: Reading 3D program?	• Need a mClass: Reading 3D testing team • Brief BOY training each year to discuss updates and concerns • Remove 3rd grade from mClass: Reading 3D testing
Please share additional comments regarding positive aspects of mClass: Reading 3D.	• Good assessment tool for assessing a variety of skills such as letter knowledge, segmentation fluency, reading levels, and comprehension • Helps examine weaknesses in instruction based on student achievement • Helps to differentiate student learning in reading centers • Provides reading data on a wide variety of skills • Tracks student progress
Please share additional comments regarding constructive feedback for mClass: Reading 3D improvement.	• Rich data provided by mClass: Reading 3D • Lack time needed to effectively utilize data to drive instruction • Lack of time for progress monitoring • Difficult to assess ESL students due to limited English proficiency with NWF

Table 10 (continued)

Teacher Open-Ended Questions/Comments	Responses
Select your preference for the type of additional training and/or support you feel would be beneficial in the future. (Choose a maximum of 3, and rank in order of preference 1=highest).	___Benchmark and/or progress monitoring administration _1_Benchmark and/or progress monitoring data to inform instruction _2_Now What? Tools (i.e. Home Connect, Item Level Advisor and/or Small Group Advisor _3_Reporting and Analysis Suite ___Technology (PDAs, netbook, etc.)
How have you used the Home Connect Parent Letters (found within Now What? Tools) this school year? (Check all that apply.) *The top three choices are ranked numerically. 1=most frequently chosen.	__2___Sent home to parents as individual report __3___Shared at Parent/Teacher Conference __1___Used in conjunction with student report card __4___Used in conjunction with student progress report ___0__Did not use ___0__Other___________________________

Based on the collection of qualitative data, emerging themes have arisen among teachers, principals, and transformational/instructional coaches. The distinctive common themes include the responses relating to the positive impact of mClass: Reading 3D. Even though a list of choices was not provided, the groups of participants highlighted some of the same positive aspects associated with mClass: Reading 3D, which are summarized. The data showed the participants indicated the program served as a good assessment tool for assessing a variety of skills related to reading and comprehension. Additionally, responders indicated the assessment effectively determined student reading weaknesses based on results of student data. By tracking student progress, the data assisted the teacher in providing differentiated reading instruction in the classroom. The wealth and richness of data are strengths of the program.

Qualitative Data—Principal and Transformational/ Instructional Coach Interview Questions

A pilot study was conducted with three administrators within the district in efforts to validate the questions. Additionally, the mClass: Reading 3D transformational coach employed by the North Carolina Department of Public Instruction reviewed the interview questions. These questions were shared with two East Carolina University professors in the Department of Educational Leadership. Based on feedback from the pilot study, the wording of questions was changed for clarity purposes.

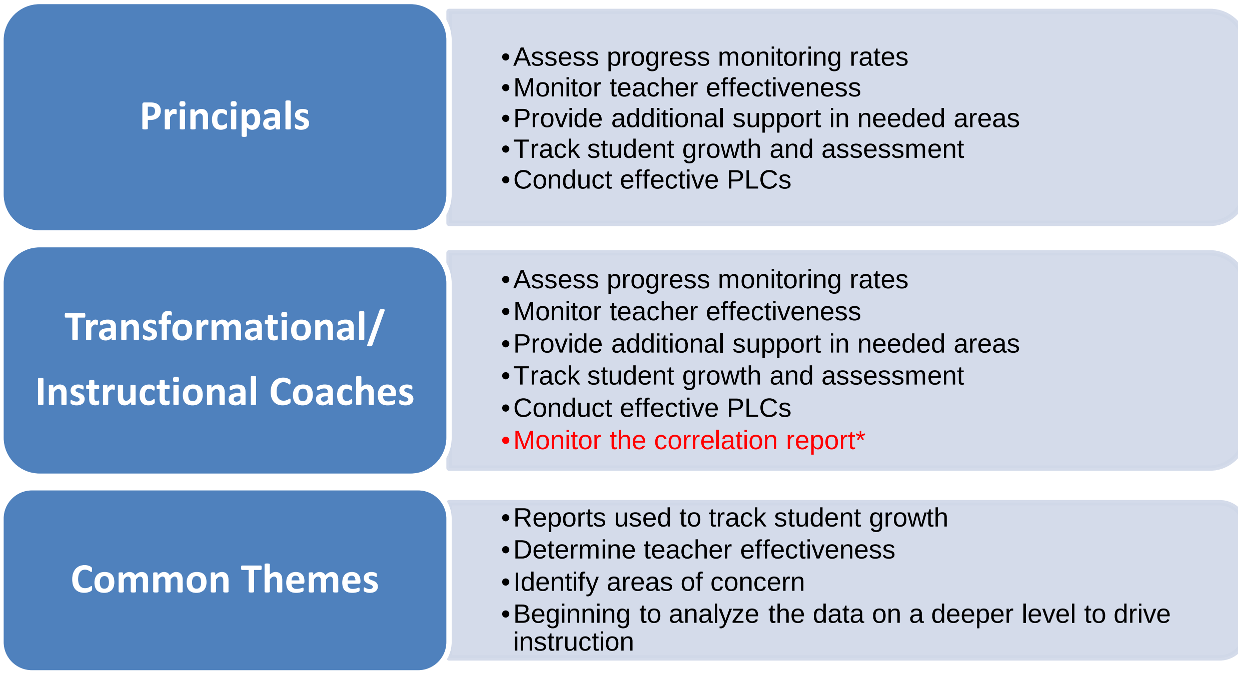
To increase the validity of the study, face-to-face interviews were conducted with eight administrators within the selected school district. This same process was used to collect data from five transformation/instructional coaches from the North Carolina Department of Public Instruction and the selected school district. According to Sipe and Constable (1996), the interpretivist attempts to describe and understand the point of view of someone else experiencing the situation. Understanding the subjective meaning of action can be done in an objective manner (Schwandt, 2000).

Appointments were scheduled with the eight administrators who facilitated mClass: Reading 3D at their school and the five transformational/instructional coaches. These selected educators received a consent form explaining the purpose of the study and procedures to ensure anonymity. Once the researcher obtained consent, the focus group interviews were conducted. The following data summarizes the results of the focus group interviews from the selected participants. The data are organized by question number and responses from each of the groups.

The first question of the principal and transformational/instructional coach interview focused on the Reporting and Analysis Suite that generates the vast amount of data utilized to improve student reading achievement. A variety of reports are accessible to review data and navigate between mCLASS: DIBELS and TRC results. When viewing the “Comparing Population Report,” educators are able to view the history of academic development and use color codes to visualize and understand performance. Educators are able to view and analyze detailed information. Areas of strength and concern can be identified through reports to help make informed decisions concerning student performance. When using the “Correlation Effectiveness Report,” educators have the ability to cross-reference and analyze data points in numerous ways. The “Progress Monitoring Report” shows the rate at which students are being progress monitored and the student achievement level from one assessment to another. Measures can be correlated for a period of time to see how instruction in one area may impact outcomes in another (Wireless Generation, 2013a). The reports mentioned above, along with other reports available through the Reporting and Analysis Suite, help educators determine how students are performing, which classrooms and teachers need additional support, and how to use the data to improve student reading achievement, which relate to the research question chosen for this study. Question #1 identified how principals and transformational/instructional coaches used the available reports from mClass: Reading 3D (see Figure 15).

Quantitative data from principal and transformational/ instructional coach interview questions are displayed in figures throughout the next portion of the chapter for greater understanding. Common themes among principals are displayed at the top of each SmartArt figure. Underneath are common themes discovered among transformational/ instructional coach interviews. The last portion of the SmartArt figure provides the common themes among principals and transformational/ instructional coach responses, which help add validity to the findings of this study.

The administration of mClass: Reading 3D assessments, along with progress monitoring, assist teachers in determining the strengths and weaknesses of skills accessed and allow teachers to use the data to inform reading instruction. Teachers are also more likely to identify the types of errors each student makes and adjust instruction using tools from the software such as mClass: Now What? Tools. The small-group advisor is available, which uses student DIBELS Next scores, to create groups for targeted intervention. Additionally, the item-level advisor offers observations explaining patterns of significance in the student's skill development (Amplify Education, 2013b). As teachers use the formative feedback from the mClass: Reading 3D assessments, they are able to differentiate instruction in efforts to have a greater impact on student reading achievement. Research has shown the basic building blocks that every child must master (Adams, 1990; NRP, 2000; National Research Council, 1998) to become proficient readers, which are covered in the mClass: Reading 3D assessment, can be improved with instruction (Kame'enui et al., 2002; Simmons & Kame'enui, 1998; Torgesen et al., 1999).



*Red highlights difference in responses.

Figure 15. How respondents use the reports found on the Reporting and Analysis Suite.

Principals and transformational/instructional coaches have noticed a positive change in instructional practices since the implementation of mClass: Reading 3D, which leads to increased chances of positively impacting student reading achievement. Results of the collected data for question #3 are summarized in Figure 16. The importance of the data displayed in the figures was to show common themes among each group of participants in the focus group interviews. Reoccurring themes have been documented to triangulate the data.

Research shows that foundational skills are the basic building blocks that every child must master in order to become a proficient reader (Adams, 1990; NRP, 2000; National Research Council, 1998). Evidence also indicates these skills can be improved with instruction (Kame'enui et al., 2002; Simmons & Kame'enui, 1998; Torgesen et al., 1999). The six DIBELS Next measures reflect the essential early literacy domains described in the National Reading Panel (2000) and National Research Council (1998) reports. The measures address the key domains: phonological awareness, graphophonemic knowledge, word reading, oral reading accuracy, and comprehension of text (Wireless Generation, 2012c). The TRC component of mClass: Reading 3D determines a student's instructional reading level, which can include oral comprehension, written comprehension, recalling, and retelling. With the implementation of mClass: Reading 3D, principals and transformational/instructional coaches have begun to observe teachers analyzing the data more effectively to drive instruction and are seeing a positive impact on student reading achievement. However, transformational/instructional coaches indicated the impact on student reading achievement varies from school to school and building to building. Principals who understand the components of mClass: Reading 3D and are knowledgeable of the reports from the assessment results are more likely to monitor teacher data,

Principals	• Yes: More small group instruction, differentiation, better instructional planning, more rigorous classrooms*, hightened awareness of the importance of phonics , and more teacher accountability with a sense of urgency*
Transformational/ Instructional Coaches	• Yes: Better instructional planning, better utilization of teacher assistants*, better literacy-structured centers, and hightened awareness of phonics
Common Themes	• Better instructional planning • Small group instruction and differentiation in centers • Hightened awareness of phonics

*Red highlights difference in responses.

Figure 16. Respondents' responses as to whether instructional practices have changed in grades K-3 since the implementation of mClass: Reading 3D.

therefore, having a greater positive impact on monitoring student reading achievement. Transformational/instructional coaches have observed trends and concluded students who are progress monitored at rate are making expected reading growth, according to the cut scores of mClass: Reading 3D. However, concerns have arisen about the progress monitoring being completed at rate. Figure 17 summarizes collected data for question #4.

Fidelity of implementation is described as the comparison between the programs as intended with its actual use (Mills & Ragan, 2000). Patton (2002) stated, “it is important to know the extent to which a program is effective after it is fully implemented, but to answer that question it is important to learn the extent to which the program was actually implemented” (p. 161). Researching the implementation of educational programs offers valuable information regarding the influence of programs. Monitoring educational programs such as mClass: Reading 3D can provide valuable information about the targeted population, program activities, and the overall validity and success of the program. Figure 17 summarized collected data to describe the impact of mClass: Reading 3D on student achievement. mClass: Reading 3D is beginning to have a positive impact on student reading achievement; however, fidelity issues remain a concern.

Question #6 focused on the challenges to the implementation of mClass: Reading 3D. Organizations often find that the reason for inability to achieve results is dependent upon implementation of the program rather than the innovation of the program (Klein & Sorra, 1996). Collected data served as an important piece of information to improve the implementation process of the program, which positively impacts student reading achievement. Common themes emerging from the collected data included the transition of teachers, a lack of ongoing and effective professional development on the program, a lack of reading coaches in the schools, and

Principals	• Beginning to see positive impact • Teacher attitudes are getting better* • Teachers are learning to analyze student data on a deeper level.
Transformational/ Instructional Coaches	• Positive impact, but depends on the classroom teacher and environment • Only about 2-3 teachers out of 20 are actually utilizing all components of the program with fidelity and as the program was intended. Reports show teachers are not progress monitoring at rate. • Looking at trends, students who are progress monitored at rate are making expected student growth. • Teachers are learning to analyze student data on a deeper level.
Common Themes	• Positive impact • Teachers are learning to analyze student data on a deeper level.

*Red highlights a difference in responses.

Figure 17. Respondents' beliefs about the impact of mClass: Reading 3D on student achievement.

the “Train the Trainer” approach not being the most effective training in the district. A challenge low-performing schools face is the high number of students who should be progress monitored every two weeks (see Figure 18). Teachers at low-performing schools need more time to progress monitor at rate than teachers at high-performing schools. Guskey (2000) stated educators must be willing to make adaptations when necessary and explore new alternatives and practices for the sake of student achievement. This involves ongoing and effective professional development. Research conducted by Joyce and Showers (2002) concluded coaching provides the most effective means of helping teachers transfer newly acquired knowledge and skills into classroom instruction. They also indicated teachers and principals who received coaching practiced new strategies more frequently than others who had the same training opportunities, but did not have an instructional coach. The data collected in Figure 18 shows factors that may negatively impact the implementation of mClass: Reading 3D, including student reading achievement.

The purpose of professional educational development programs is to create effective teachers. High-quality professional development is a central component in nearly every modern proposal for improving education. Some researchers argue that it is the quality of professional development offered to teachers that affects teacher knowledge, beliefs and practices, and student achievement (Anders et al., 2000; Duffy, 2004; Richardson, 1996). Effective professional development has a structured, collaborative culture with a focus on learning (Eaker et al., 2002), where stakeholders are engaged in an ongoing commitment to continuous improvement (DuFour, 2012). In this study, the researcher obtained information regarding the staff development associated with the implementation of mClass: Reading 3D. Figure 19 summarizes the concerns principals and transformational/instructional coaches have about the

Principals	• Transition of teachers • Lack of ongoing and effective training • Lack of instructional coaches • Train the Trainer approach not effective at every school • Technology issues with syncing, slow systems, and late emails about problems*
Transformational/ Instructional Coaches	• Transition of teachers • Lack of ongoing and effective training • Lack of instructional coaches • Train the Trainer approach not effective at every school • Time management* • Progress monitoring at rate in low performing school (not enough time)*
Common Themes	• Transition of teachers • Lack of ongoing and effective training • Lack of instructional coaches • Train the Trainer approach not effective at every school

*Red highlights difference in responses.

Figure 18. Respondents' beliefs about the challenges to the implementation of the mClass: Reading 3D program.

Principals

- Train the Trainer approach is not effective at every school
- Need ongoing training for principals and teachers
- New teachers need mClass: Reading 3D training at the beginning of school year.
- All K-3 teachers and principals need Reading Foundations training.

Transformational/ Instructional Coaches

- Train the Trainer approach is not effective at every school
- Need ongoing training for principals and teachers
- New teachers need mClass: Reading 3D training at the beginning of school year.
- All K-3 teachers and principals need Reading Foundations training.

Common Themes

- Train the Trainer approach is not effective at every school
- Need ongoing training for principals and teachers
- New teachers need mClass: Reading 3D training at the beginning of school year.
- All K-3 teachers and principals need Reading Foundations training.

Figure 19. Concerns respondents have about the staff development for the implementation of mClass: Reading 3D.

staff development for teachers and principals in the selected school district. Although teachers indicated in the survey they have used the “Train the Trainer” approach the most, a common theme among the principals and transformational/ instructional coaches indicated this approach is not effective at every school. Additional ongoing training on the implementation of mClass: Reading 3D is needed for principals and teachers throughout the district. The data are important in order to understand how professional development has affected the implementation of mClass: Reading 3D, specifically on improving student reading achievement. Although training has been provided, the collected data indicated a need for ongoing mClass: Reading 3D professional development to have a greater positive impact on student reading achievement.

An extensive amount of resources are available to support the implementation of mClass: Reading 3D. Question #9 asked principals and transformational/instructional coaches to identify the resources they have used for support with mClass: Reading 3D. The “Train the Trainer”, district coach, and the Department of Public Instruction staff were utilized the most among those who participated in the focus group interview. The least used resource was the mClass: Reading 3D monthly newsletter. Although the North Carolina website resource was not widely used, the North Carolina Read to Achieve livebinder does provide useful information for the implementation of mClass: Reading 3D. It is important to note that Figure 20 provides a list of some resources available for mClass: Reading 3D support; however, it does not include all available resources. Collected data were important to the research question as it showed the listed resources were not used effectively to maximize student reading achievement.

Guskey (2000) identified five critical levels of professional development evaluation:

1. Participants’ Reaction—This level analyzes the participants’ reactions to the experience.

Principals	• Amplify Customer Care* • Train the Trainer • District Coach • Department of Public Instruction Staff
Transformational/ Instructional Coaches	• Train the Trainer • District Coach • Department of Public Instruction Staff
Common Themes	• Videos and monthly newsletters were not utilized effectively.

*Red highlights difference in responses.

Figure 20. Resources respondents have used for support with mClass: Reading 3D.

2. Participants' Learning—This level focuses on measuring the knowledge, skills, and perhaps attitudes that participants gained.
3. Organization Support and Change—The focus shifts to the organization and to information on organization support and change. They also can hinder or prevent success, even when the individual aspects of professional development are done right (Sparks, 1996).
4. Participants' Use of New Knowledge and Skills—This level focuses on whether participants are using their new knowledge and skills on the job.
5. Student Learning Outcomes—This is typically referred to as "the bottom line" in education at Level 5. What was the impact on students?

The principals and transformational/instructional coaches have reflected on the five critical levels of professional development evaluation outlined above. These data were important to the study. Based on observations and analysis of reports, the principals and transformational/instructional coaches have chosen the top three areas of additional mClass: Reading 3D staff development needed in the future. This mClass: Reading 3D professional development may have a positive impact on improving student reading achievement. Figure 21 outlines the top three choices for each group of participants in the focus group interviews and documents common themes among the groups. Common themes included mClass: Reading 3D professional development related to benchmark and/or progress monitoring data being used to inform instruction and on the reporting and analysis suite.

Principals	•1. Benchmark and/or progress monitoring data to inform instruction •2. Reporting and Analysis Suite (for school & district admins only) •3. Benchmark and/or progress monitoring administration*
Transformational/ Instructional Coaches	•1. Benchmark and/or progress monitoring data to inform instruction •2. Reporting and Analysis Suite (for school & district admins only) •3. Now What? Tools (i.e., Home Connect, Item Level Advisor and/or Small Group Advisor*)
Common Themes	•Benchmark and/or progress monitoring data to inform instruction •Reporting and Analysis Suite (for school & district admins only)

*Red highlights difference in responses.

Figure 21. Respondents' preferences for the type of additional training and/or support they feel would be beneficial in the future.

Summary

During the focus group interviews, the semi-structured process allowed new questions to be explored depending on responses provided by principals and transformational/instructional coaches. This flexible method encouraged the respondents to freely discuss other topics or themes as the opportunity arose. Through data analysis, the emerging themes were documented in the collection to increase validity of findings (Yin, 2009).

The qualitative data collected from principals and transformational/instructional coaches provided an overall picture of mClass: Reading 3D implementation. Responses were presented in figures to help the reader understand common themes among principals and those common among transformational/instructional coaches. It is important to note that some responses differed among each group of focus group participants. However, the figures provided common themes among both groups for a greater understanding of the data.

Data Triangulation

Using data from the surveys, interviews, research, and the second-grade mClass: Reading 3D TRC scores, all information was used to achieve a detailed level of inquiry and triangulation to help describe the implementation of mClass: Reading 3D and its impact on student reading achievement and instructional practices used by the teacher.

Validation is an attempt to assess the accuracy of findings, as best described by the researcher and participants (Creswell, 2013). Language in the survey and interview questions was clear and relevant to the intended participants, regardless of the level of expertise. To uphold the validity of the results, stakeholders at various stages of program implementation were included. This helped build evaluation capacity and ensure the methods used, the interpretation of the results, and the final conclusions reflected the multiple perspectives of the stakeholders.

According to Fitzpatrick et al. (2011), this increases the validity of a study's findings. The participants in the study were representative of the population being studied. With the selection of the teachers, principals, and transformational/instructional coaches, they all were directly involved with the implementation of mClass: Reading 3D. Administering the survey and interview questions to other groups of participants within school districts across North Carolina will likely produce similar results.

Qualitative data were collected from teacher surveys and focus group interviews. Once each of the data sources had been analyzed separately, the researcher combined all the information to develop themes. Triangulation of the data was an important factor during the data analysis. According to Worthen, Fitzpatrick, and Sanders (1997), triangulation involves examining the consistency of results from different sources and methods for measuring the same construction (p. 391). O'Donoghue and Punch (2013) defined triangulation as a "method of cross-checking data from multiple sources to search for regularities in the research data" (p. 78). Through data analysis, emerging themes, along with the triangulation process, helped provide validity of the findings. Multiple data sources were used to answer questions related to the implementation of mClass: Reading 3D. Identified similarities and differences were noted in responses. Emerging themes have been identified above among the teacher surveys and focus group interviews with principal and transformational/instructional coaches.

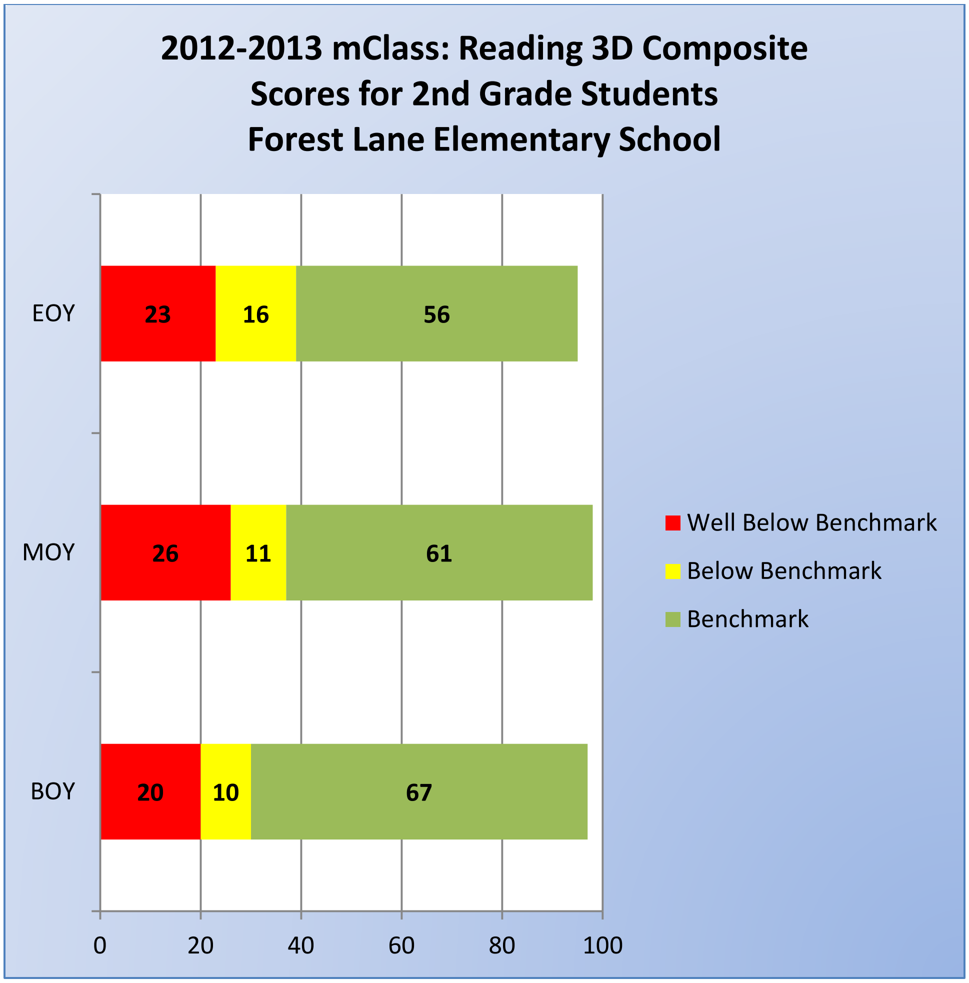
Quantitative Data—2012–2013 mClass: Reading 3D Second-Grade Assessment Results

The mClass: Reading 3D data for students enrolled in second grade during the 2012–2013 school year were obtained upon approval from the selected district. The Beginning of Year (BOY) data were compared to the End of Year (EOY) data. Additionally, data were analyzed to determine to what extent, if any, mClass: Reading 3D has impacted students' reading achievement in second grade (see Figures 22–24).

The three participating rural elementary schools were selected through a purposeful (Patton, 1990) or criterion-based (LeCompte & Preissle, 1993) sampling procedure. Purposeful sampling allowed the researcher to gain the most insight by using specific criteria which "directly reflect the purpose of the study and guide in the identification of information rich cases" (Merriam, 1998, pp. 62–63). According to Patton (1990) "information rich cases are those from which one can learn a great deal about issues of central importance to the purpose of the research, thus the term purposeful sampling" (p. 169).

The purposeful or criterion-based sample included the following criteria: a rural public elementary school in the State of North Carolina that implemented the mClass: Reading 3D program during the 2010-2011 school year, with each racial/ethnic group representative of the community and school district. The three elementary schools included enrollment with 40% or more economically disadvantaged, meeting federal guidelines for a Title I Part A funding to meet the learning needs of all students (U.S. Department of Education, n.d.).

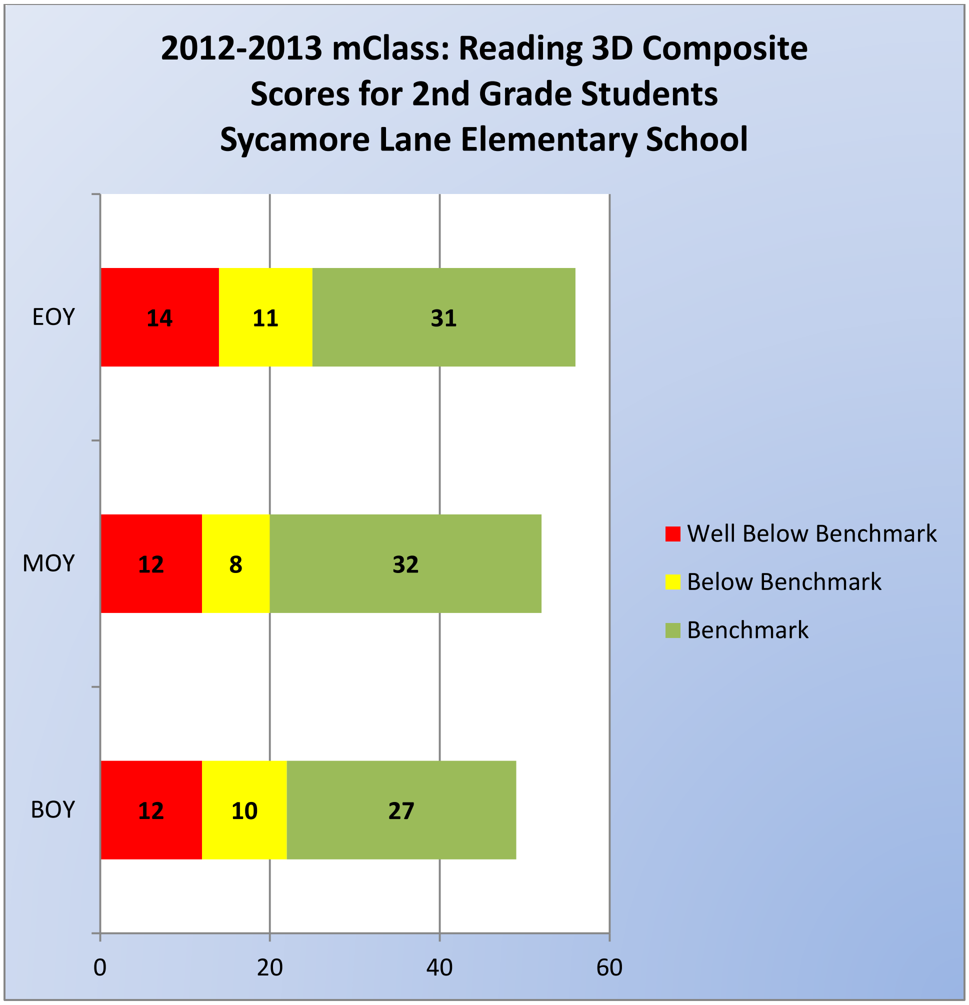
The collected quantitative data were received from the Testing Coordinator of the selected school district, with the approval of the Assistant Superintendent of Curriculum and Instruction. Figures 22–24 show the mClass: Reading 3D composite scores of second-grade students at the BOY, MOY, and EOY benchmarking periods. Descriptive statistics were used for data analysis. The composite scores were analyzed by viewing each selected school's mClass: Reading 3D data for second-grade students for the 2012–2013 school year. A graph was created to display the number of students from each selected school performing at the benchmark



Note. The graph shows the number of students enrolled during each benchmarking period. At the BOY, a total of 97 second-grade students were tested using the mClass: Reading 3D assessment. Twenty students (21%) scored well below benchmark, 10 students (10%) were below benchmark, and 67 students (69%) scored at the benchmark rate. At the EOY, a total of 95 second-grade students were tested. Twenty-three students (24%) scored well below benchmark, 16 students (17%) were below benchmark, and 56 (59%) were at benchmark rate.

Figure 22. 2012–2013 mClass: Reading 3D composite scores for 2nd grade students at

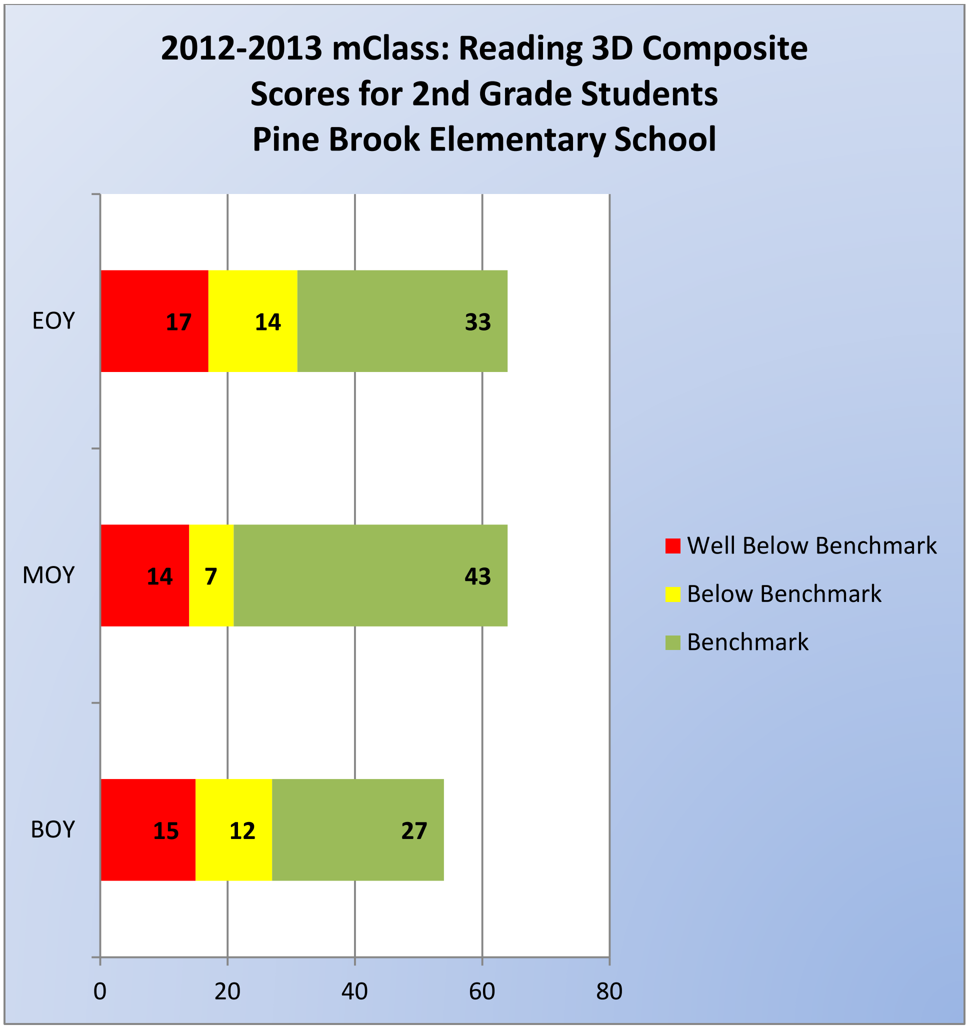
Forest Lane Elementary School.



Note. The graph shows the number of students enrolled during each benchmarking period. At the BOY, a total of 49 second-grade students were tested using the mClass: Reading 3D assessment. Twelve students (25%) scored well below benchmark, 10 students (20%) were below benchmark, and 27 students (55%) scored at the benchmark rate. At the EOY, a total of 56 second-grade students were tested. Fourteen students (25%) scored well below benchmark, 11 students (20%) were below benchmark, and 31 (55%) were at benchmark rate.

Figure 23. 2012–2013 mClass: Reading 3D composite scores for 2nd grade students at

Sycamore Lane Elementary School.



Note. The graph shows the number of students enrolled during each benchmarking period. At the BOY, a total of 54 second-grade students were tested using the mClass: Reading 3D assessment. Fifteen students (28%) scored well below benchmark, 12 students (22%) were below benchmark, and 27 students (50%) scored at the benchmark rate. At the EOY, a total of 64 second-grade students were tested. Seventeen students (27%) scored well below benchmark, 14 students (22%) were below benchmark, and 33 (51%) were at benchmark rate.

Figure 24. 2012–2013 mClass: Reading 3D composite scores for 2nd grade students at

Pine Brook Elementary School.

level, the number of students performing below benchmark, and the number of students performing well below benchmark for the BOY, MOY, and EOY.

Based on the collection of mClass: Reading 3D data from the three selected schools, the number of second-grade students scoring well below benchmark and below benchmark increased from the BOY to the EOY. After two years of implementation, test results revealed mClass: Reading 3D did not have a positive impact on student reading achievement. However, on a positive note, two of the three schools (Sycamore Lane Elementary and Pine Brook Elementary School) grew more students at the benchmark rate from the BOY to the EOY. During this time of implementation, the “Train the Trainer” approach was used for staff development. The results of the quantitative data may be attributed to fidelity issues associated with progress monitoring and benchmark administration.

Since 2012–2013, an emphasis has been placed on consistency of benchmark administration, progress monitoring at rate, and the use of results to drive reading instruction. The researcher notes these scores were generated prior to the connection of mClass: Reading 3D scores to Standard 6 and the Read to Achieve state mandate; thus, placing a sense of urgency throughout the K–2 classrooms. Furthermore, as indicated in the qualitative data, teachers, principals, and transformational/instructional coaches noted an improvement in classroom reading instruction and the use of reports to show the positive impact mClass: Reading 3D is now having on student reading achievement.

Findings

The purpose of this study was to explore the relationship that exists between the history of reading instruction, the impact of mClass: Reading 3D on student achievement in second grade, and the impact of quality professional development through a program evaluation. Data from this study will be used to inform the implementation process of mClass: Reading 3D that will have a positive impact on students' reading achievement. Specifically, the study addressed the following question:

To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

The descriptive study used both qualitative and quantitative data collection to address the research question. Greene and Carracelli (1997) found that mixed data were often used to gain a greater understanding of the construct of interest. Relevant background information was presented in previous chapters.

Program Effectiveness

The mClass: Reading 3D program uses two assessment tools, DIBELS Next and Text Reading and Comprehension, combining information to provide teachers with each student's instructional reading level (Collaborative Center for Literacy Development, 2013). Skills assessed are aligned with the National Reading Panel (2000) research, which indicated that effective reading instruction included phonemic awareness, phonics, fluency, vocabulary, and text comprehension.

Based on the collected data, 37 out of 44 teachers (84%) rated the effectiveness of mClass: Reading 3D as having a somewhat positive to positive impact on student achievement. Seven out of 44 teachers (16%) rated the effectiveness of mClass: Reading 3D as having a somewhat negative to negative impact on student achievement. The negative responses have been attributed to a lack of time to assess and progress monitor at rate.

Thirty-nine out of 42 teachers (93%) rated their overall satisfaction with using and interpreting the assessment results as having a somewhat positive to positive impact on student achievement. Open-ended responses indicated rich data are provided to help examine weaknesses in instruction based on student achievement. Collected data from focus group interviews indicated mClass: Reading 3D is having a positive impact on student reading achievement.

Available Data

Moss and Brookhart (2009) defined formative assessment as an active and intentional learning process in which the teacher and student continuously and systematically gather evidence of learning with the ultimate goal of improving student achievement. Formative assessments provide teachers with frequent data regarding the growth and development of students. The purpose of these data is to allow teachers to plan appropriate instruction to meet the needs of the student.

Qualitative data collected from teacher surveys indicated 35 out of 42 teachers (83%) rated the impact of mClass: Reading 3D assessment and data to drive instruction as having a somewhat positive to positive impact on student achievement. Teachers reported that mClass: Reading 3D was a good assessment tool for assessing a variety of skills such as letter knowledge, segmentation fluency, reading levels, and comprehension. The instructional benefits of this data can be used to empower teachers in the differentiation of student learning in reading centers on a wide variety of skills.

Research has shown that basic literacy skills identified by the National Reading Panel (2000) are improved with instruction (Kame'enui et al., 2002; Simmons & Kame'enui, 1998; Torgesen et al., 1999). Teacher survey responses showed how mClass: Reading 3D data have been used to drive instruction. Thirty-one out of 42 teachers (74%) reported they used their data to drive instruction through small groups, while 17 out of 42 teachers (41%) used the data for early intervention. Other notable ways the data were used to drive instruction included parent conferences, reported by 26 out of 42 teachers (62%), grade level planning, reported by 21 out of 42 teachers (50%), PLCs, reported by 19 out of 42 teachers (45%), and differentiating instruction, reported by 28 out of 42 teachers (67%).

When asked about the overall satisfaction with promptness in receiving assessment results, 41 out of 43 teachers (95%) indicated the promptness had a somewhat positive to positive impact on the implementation of mClass: Reading 3D. The promptness in receiving the assessment results helped teachers differentiate and modify instruction to have a positive impact on student reading achievement.

The available data for mClass: Reading 3D have been used by principals and transformational/instructional coaches to have a positive impact on student reading achievement. Reports have been used to assess progress monitoring rates, monitor teacher effectiveness, note areas of concern, and track student growth and assessment. Principals and transformational/instructional coaches have noted better instructional planning with small group instruction and differentiation in centers. They have also noted heightened awareness of the importance of phonics.

The rich data from mClass: Reading 3D provide the opportunity for teachers to differentiate reading instruction to meet the needs of students. As a result, student reading achievement is enhanced with the implementation of mClass: Reading 3D.

Fidelity

Some researchers agreed that educators should not assume that just because a program is adopted, it would be implemented as intended (Desimone, 2002; Klein & Sorra, 1996; Mills & Ragan, 2000). Fidelity of implementation is described as the comparison between the programs as intended with its actual use (Mills & Ragan, 2000). Based on the qualitative data collected, fidelity continued to surface as a common theme. Data collected on the time it takes to administer the mClass: Reading 3D benchmark assessment per student varied among the teacher survey responses. Six out of 42 teachers (14%) indicated it takes 1–15 minutes to administer the benchmark assessment, 13 out of 42 teachers (31%) responded that it takes 16–30 minutes for administration of the benchmark assessment, 20 out of 42 teachers (48%) chose 31–45 minutes, and 3 out of 42 teachers (7%) indicated it takes 46–60 minutes to administer the benchmark assessment.

Teacher survey responses varied on how often mClass: Reading 3D data are used to modify student instruction. As Marzano's (2007) research showed, a positive correlation exists between the frequency of formative assessment and student achievement. Eight out of 42 teachers (19%) reported they used mClass: Reading 3D data to modify student instruction daily, whereas 20 out of 42 (48%) reported they used the data weekly to modify student instruction. Thirteen out of 42 teachers (31%) indicated they used the data monthly to modify student instruction, while only one teacher (2%) reported never using the data to change student instruction. In the open response questions, a common theme focused on the need for fidelity.

While 98% of the teacher survey data showed the data were being used on a daily, weekly, or monthly basis to modify student instruction, principals and transformational/ instructional coaches indicated teachers were learning to analyze student data on a deeper level. Additionally, data from the focus group interviews indicated principals and transformational/instructional coaches are beginning to see a positive impact with the implementation of mClass: Reading 3D to improve student reading achievement. However, transformational/instructional coaches reported that only 2–3 out of 20 teachers are utilizing all components of the program with fidelity and as the program was intended. mClass: Reading 3D reports show teachers are not progress monitoring at rate, and teachers shared a common theme of lacking time to progress monitor at rate. Looking at trends, transformational/instructional coaches have seen that students who are progress monitored at rate are making expected student growth, according to cut scores provided for the mClass: Reading 3D program.

Quantitative data were collected for second-grade students for the 2012–2013 school year from the three selected school chosen for the study. The mClass: Reading 3D composite scores for BOY, MOY, and EOY scores were obtained to determine the impact mClass: Reading 3D had on reading achievement for second-grade students. It is important to note that the district had implemented mClass: Reading 3D for approximately two years. Teachers and administrators were just beginning to learn about mClass: Reading 3D, along with included components to enhance student reading achievement. Data from Forest Lane Elementary School indicated that a total of 97 second-grade students were tested using the mClass: Reading 3D assessment at BOY. Twenty students (21%) scored well below benchmark, 10 students (10%) were below benchmark, and 67 students (69%) scored at the benchmark rate. At the EOY, a total of 95 second-grade students were tested. Twenty-three students (24%) scored well below benchmark, 16 students (17%) were below benchmark, and 56 (59%) were at benchmark rate.

Data from Sycamore Lane Elementary School showed a total of 49 second-grade students tested using the mClass: Reading 3D assessment at the BOY. Twelve students (25%) scored well below benchmark, 10 students (20%) were below benchmark, and 27 students (55%) scored at the benchmark rate. At the EOY, a total of 56 second-grade students were tested. Fourteen students (25%) scored well below benchmark, 11 students (20%) were below benchmark, and 31 (55%) were at benchmark rate.

Data from Pine Brook Elementary School revealed a total of 54 second-grade students were tested using the mClass: Reading 3D assessment at the BOY. Fifteen students (28%) scored well below benchmark, 12 students (22%) were below benchmark, and 27 students (50%) scored at the benchmark rate. At the EOY, a total of 64 second-grade students were tested. Seventeen students (27%) scored well below benchmark, 14 students (22%) were below benchmark, and 33 (51%) were at benchmark rate.

The quantitative data showed the number of second-grade students scoring well below benchmark and below benchmark increased from the BOY to the EOY. After two years of implementation, test results revealed mClass: Reading 3D did not have a positive impact on student reading achievement. However, on a positive note, two of the three schools (Sycamore Lane Elementary and Pine Brook Elementary School) grew more students at the benchmark rate from the BOY to the EOY. With only two years of implementation when the test scores were collected, fidelity of implementation had an impact on administration of benchmark assessments and on progress monitoring. Although the quantitative does not show an overall positive impact on student reading achievement among all three schools, the qualitative data showed the implementation of mClass: Reading 3D had a positive impact on student reading achievement.

The researcher was interested in other aspects of implementation that related to fidelity such as the resources used for support with mClass: Reading 3D. Underutilization of support resources impact the implementation of mClass: Reading 3D. Data were collected to determine support resources used by teachers. The most utilized resource from the survey list was "Train the Trainer." The low frequency of other resources used included the district coach, Amplify Customer Care, the online training module DIBELS Next, the TRC Video Tutorial on the North Carolina livebinder website, the Department of Public Instruction staff, and the mClass: Reading

3D monthly newsletter. A conclusion drawn from the collected data was that available support resources are not used to their fullest potential. Wilson (2012) also noted resources to support mClass: Reading 3D were underutilized. A common theme among principals and transformational/instructional coaches was support videos for mClass: Reading 3D and monthly newsletters were not utilized effectively. The increased use of support resources may have a positive impact on student reading achievement.

Patton (2002) emphasized the importance of learning the extent to which a program is actually implemented to determine effectiveness. The district is beginning to see the positive impact the implementation of mClass: Reading 3D is having on increased student reading achievement. However, based on collected data for this study, fidelity must be improved during the implementation of mClass: Reading 3D to have a greater positive impact on student reading achievement.

Professional Development

A common purpose of professional development is to alter the professional practices, beliefs, and understanding of school persons toward an articulated end (Griffin, 1983). In most cases, that end is the improvement of student learning (Laczko-Kerr & Berliner, 2002; Snow et al., 1998). In order for a program to be effective, implementation must be evaluated to determine strengths, weaknesses, and needs. When analyzing collected data from teacher open-ended responses, a common theme was a need for brief training at the beginning of each school year to discuss updates and concerns. Principals and transformational/instructional coaches also reported a lack of ongoing and effective training for teachers and principals. One key finding was that teachers were generally satisfied with receiving training from a trainer at the school level; however, a common theme among principals and transformation/instructional coaches indicated the “Train the Trainer” professional development was not effective at every school.

According to Joyce and Showers (2002), teachers who receive support generally practice new strategies more frequently. Follow up should be connected into classroom instruction (Fullan, 1995). Based on data collected for this study, effective professional development should be structured with a collaborative culture focusing on learning (Eaker et al., 2002). Educators should be engaged in an ongoing commitment to continuous improvement (DuFour, 2012), which in this study relates to better instructional practices and a continuous increase in student reading achievement. Collected data indicated a need for teacher and principal mClass: Reading 3D professional development on benchmarking and progress monitoring to inform instruction and on the Reporting and Analysis Suite. Teachers also indicated a need for additional training on Now What? Tools. Effective professional development induces educators to improve their instructional practices (Mizell, 2010). To conclude, ongoing professional development related to mClass: Reading 3D is a need for principals and teachers in the selected school district to improve the implementation of the program in efforts to improve student reading achievement. Effective professional development will provide teachers with skills needed to effectively impact student reading achievement. Principals and transformational/instructional coaches specifically noted Reading Foundations training was needed for all K–3 teachers and principals in the district.

Instructional Coach

Joyce and Showers (2002) concluded coaching provides the most effective means of helping teachers transfer newly acquired knowledge and skills into classroom instruction. Based on collected qualitative data, a common theme emerging from principals and transformational/

instructional coaches included the need to hire a qualified instructional coach to improve the implementation of mClass: Reading 3D in efforts to improve student reading achievement. Vanderburg and Stephens (2010) and Denton et al. (2007) concluded that the students of teachers who had received coaching performed better on measures of phonological awareness, timed and untimed word reading, phonemic decoding, passage comprehension, and spelling.

Although administrators impact the implementation of mClass: Reading 3D at the school level, instructional coaches have the opportunity to have a direct impact on the implementation process. With an administrator and instructional coach working with teachers to improve student reading achievement through the use of mClass: Reading 3D, a greater chance exists for program improvement and fidelity. The cornerstone of an effective professional learning community is the unwavering focus on improving student learning and the commitment of teachers to work collaboratively toward achieving this outcome (DuFour et al., 2005). Based on the research, findings, and common theme of hiring a qualified instructional coach, schools that have been assigned a coach and are implementing mClass: Reading 3D have an increased chance of improving student reading achievement at a higher rate than those schools implementing the program without an instructional coach.

Conclusions

The purpose of this study was to explore the relationship that exists between the history of reading instruction, the impact of mClass: Reading 3D on student achievement in second grade, and the impact of quality professional development through a program evaluation. Data from this study will be used to inform the implementation process of mClass: Reading 3D that may have a positive impact on students' reading achievement. Specifically, the study attempted to address the following question:

To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

Conclusions for this study were based on the results from the qualitative and quantitative data. O'Donoghue and Punch (2013) defined triangulation as a "method of cross-checking data from multiple sources to search for regularities in the research data" (p. 78). Triangulation of the data helped validate the findings of this study to draw conclusions.

1. Eighty-four percent of the responders (37 out of 44) rated the effectiveness of mClass: Reading 3D on student reading achievement as having a somewhat positive to positive impact. The State of North Carolina adopted mClass: Reading 3D to meet state mandates to ensure all students are able to read by third grade (Read to Achieve, 2013). mClass: Reading 3D includes two formative and diagnostic assessment tools, DIBELS Next and Text Reading and Comprehension (TRC), which combine information to provide teachers with each student's instructional reading level (Collaborative Center for Literacy Development, 2013). According to Rollins (2014), "formative assessment achieves such strong gains because it provides a vehicle to give students timely feedback on their work and enables teachers to make immediate adjustments to instruction" (p. 57). Based on the collected data obtained from this study, one can conclude mClass: Reading 3D is having a positive impact on student reading achievement. As teachers use mClass: Reading 3D as a formative and diagnostic assessment, student results are provided to help teachers differentiate and modify instruction. With the continued use of mClass: Reading 3D, student reading achievement will improve as teachers provide effective instruction for continued success.

2. Based on teacher survey responses and focus group interviews, a lack of consistency exists relating to how often the mClass: Reading 3D data are used to modify student instruction. Forty-eight percent of responders (20 out of 42) used the data to modify student instruction on a weekly basis, whereas 31% (13 out of 42) used the data to modify student instruction on a monthly basis. Only 19% (8 out of 42) used the data for modification of student instruction on a daily basis, and 2% (1 out of 42) never used the data to modify student instruction. This indicated students are not being progress monitored at rate, according to the program guidelines, for adequate growth. Additionally, a fidelity issue remains a concern. Patton (2002) believed , "it is important to know the extent to which a program is effective after it is fully implemented, but to answer that question it is important to learn the extent to which the program was actually implemented" (p. 161). In a program, "the implementation part is where the real action occurs" (Grammatikopoulos, Tsigilis, & Koustelios, 2007, p. 107). As shown in Marzano's (2007) research, a positive correlation exists between the frequency of formative assessment and student achievement. Data collected on the use of data to monitor student instruction has an impact on the implementation of mClass: Reading 3D. The good news is the majority of teachers are using mClass: Reading 3D to modify instruction; however, with increased use, the district will see continued growth in reading achievement among students in grades K–3.
3. Teachers, principals, and transformational/instructional coaches indicated mClass: Reading 3D data have been used to drive instruction through the use of small groups, differentiated instruction, and parent conferences. In Wilson's research (2012),

related to mClass: Reading 3D, she concluded all teachers surveyed reported that progress monitoring impacted their classroom instruction and it guided their small group instruction based on their students' needs. Thomas R. Guskey (2007) suggested that for assessments to become an integral part of the instructional process, teachers need to change their approach in three important ways:

a. Use assessments as sources of information for both students and teachers
b. Follow assessments with high-quality corrective instruction
c. Give students second chances to demonstrate success

In the teacher survey responses and focus group interviews, the participants noted data were used to monitor and plan classroom instruction through the use of small groups, differentiated activities, and collaboration with parents in efforts to improve student reading achievement. Teachers are analyzing mClass: Reading 3D data on a deeper level, which is having a positive impact on student reading achievement. However, some teachers are faced with uncertainty of the most effective ways to use the data to the fullest potential.

4. Organizations often find that the reason for inability to achieve results is dependent upon implementation of the program rather than the innovation of the program (Klein & Sorra, 1996). With the implementation of mClass: Reading 3D, students will be assessed to measure progress, diagnose difficulties, and inform instruction and remediation needs (NCDPI, 2012). Participants indicated that data are readily available to drive instruction from the mClass: Reading 3D assessment results. Varying responses highlighted the differing points of view regarding the frequency with which the data are actually used to drive instruction. Forty-eight percent of

teachers (20 out of 42) rated the impact of assessment and data to drive instruction as somewhat positive, whereas 36% (15 out of 42) rated the impact as positive. Nine percent (4 out of 42) rated the impact of mClass: Reading 3D assessment and data to drive instruction as a somewhat negative impact, and 7% (3 out 42) rated the impact as negative. Wilson (2012) noted the data available from mClass: Reading 3D assessments are often impacting how and what teachers are planning. Although 83% of teachers (35 out of 42) rated the impact of assessment and data to drive instruction as somewhat positive to positive, principals and transformational/instructional coaches reported 2–3 out of 20 teachers (15–20%) are effectively utilizing data, with fidelity, to drive instruction to improve student reading achievement. Wilson (2012) reported teacher surveys showed that most participants rarely used the data analysis portion of the program. Based on collected data for this study, mClass: Reading 3D results are being utilized, but not to the maximum potential, with fidelity, to drive instruction and improve student reading achievement. A concern with fidelity continuously surfaced, which can greatly affect student data, instructional practices, and student reading achievement. mClass: Reading 3D professional development must be ongoing and effective to improve program implementation, thus having a greater positive impact on student reading achievement .

5. The six DIBELS Next measures, which are components of the mClass: Reading 3D assessment, reflect the essential early literacy domains described in the National Reading Panel (2000) and National Research Council (1998) reports. The measures address the key domains: phonological awareness, graphophonemic knowledge, word reading, oral reading accuracy, and comprehension of text (Wireless Generation,

2012c). Assessing students on the basic early literacy skills, which are also known as foundational skills, can help distinguish students who are on track to become successful readers from students who are likely to struggle. Research indicated that these skills are the basic building blocks that every child must master in order to become a proficient reader (Adams, 1990; NRP, 2000; National Research Council, 1998). Evidence also indicated that these skills can be improved with instruction (Kame’enui et al., 2002; Simmons & Kame’enui, 1998; Torgesen et al., 1999). Although the research showed reading skills can be improved, collected data from this study indicated fidelity is an issue with the implementation of mClass: Reading 3D. Data obtained from teacher open-ended questions and from principals and transformational/instructional coaches indicated progress monitoring is not completed at rate to have the most impact on instructional practices to improve student reading instruction. Results from transformational/ instructional coaches emphasized the need to implement the program with fidelity by using the data to modify instruction. These results show that mClass: Reading 3D can greatly enhance student reading achievement when the formative assessment is used as intended. This requires the data to be analyzed and reflected upon to support further learning.

6. Eighty-one percent of the teachers (34 out of 42) have received 1–4 hours of staff development prior to the implementation of mClass: Reading 3D. According to the responses from teacher surveys and focus group interviews, ongoing staff development is needed to increase fidelity and validity of assessment results. In his book, *Evaluating Professional Development*, Guskey (2000) indicated that in order for staff development to be effective, it must be an intentional and ongoing process.

This requires educators to continuously analyze the effectiveness of what they do. They must be willing to make adaptations to explore new alternatives and practices for the sake of student achievement. DuFour and Marzano (2011) reported "ongoing monitoring of student learning is one of the most powerful tools available to PLC collaborative teams for enhancing student achievement" (p. 139). Increasing the amount and quality of mClass: Reading 3D professional development will help teachers obtain the knowledge and practices necessary to have a greater impact on student reading achievement. The increase in teacher accountability focuses on the importance of making changes that must occur in the learning environment to improve student reading achievement.

7. Although 73% of teacher survey results (29 out of 40) indicated the "Train the Trainer" approach has a somewhat positive to positive impact to fully prepare teachers to use the mClass: Reading 3D assessment in the classroom, principals and transformational/instructional coaches reported a difference in the level of expertise among the trainers. With fidelity being a concern among all groups of participants, "Train the Trainer" is not the most effective approach for providing staff development. Qualitative data collected for this study indicated more training is needed for teachers and principals in the areas of progress monitoring and using the Reporting and Analysis Suite effectively to guide instruction based on available data. This professional development can build the capacity for teachers and principals to become agents of positive change. The end result is to improve student reading achievement.

8. Ninety-five percent of teachers (41 out of 43) reported a somewhat positive to positive rating for their overall satisfaction with the promptness in receiving mClass: Reading 3D assessment results. This indicated data are available to drive instruction. When used as a formative assessment tool to gather evidence of learning with the ultimate goal of improving student achievement, research has shown the basic literacy skills are improved with instruction (Kame'enui et al., 2002; Simmons & Kame'enui, 1998; Torgesen et al., 1999).

   The responses for the time for testing and administrative activities were important to note. Thirty-six percent of teachers (16 out of 44) had a somewhat negative to negative response to the overall satisfaction of the implementation of mClass: Reading 3D pertaining to time for testing and administration activities. These results indicated a need for teachers to structure the classroom and manage time so assessment can be ongoing, and students can be provided with rigorous reading instruction to meet their individualized needs.

9. Principals and transformational/instructional coaches indicated a strong need for a highly trained and effective instructional coach in every elementary school implementing mClass: Reading 3D. The coach would help facilitate the implementation process, supporting teachers and increasing fidelity to improve student reading achievement. This conclusion can be generalized to other districts in the State of North Carolina with the same demographic background. Carroll (2009) believed in order for quality teaching to occur, administrators must provide "a collaborative culture that empowers teachers to team up to improve student learning beyond what any of them can achieve alone" (p. 8). According to Joyce and Showers

(2002), teachers who receive support generally practice new strategies more frequently. These researchers concluded coaching provides the most effective means of helping teachers transfer newly acquired knowledge and skills into classroom instruction. In research conducted by Vanderburg and Stephens (2010) and Denton et al. (2007), the researchers concluded that the students of teachers who had received coaching performed better on measures of phonological awareness, timed and untimed word reading, phonemic decoding, passage comprehension, and spelling. The research showed administrator leadership and effective coaching can have a positive impact on student reading achievement. With an effective instructional coach assigned to an elementary school implementing mClass: Reading 3D for students in grades K-3, the administrator will witness increased student reading achievement.

10. In teacher survey question #17, resources that support the implementation of mClass: Reading 3D were listed. Data revealed 62% of the teachers (21 out of 34) used the "Train the Trainer" resource as a support with mClass: Reading 3D, which is the most utilized. However, based on the data collected from 34 teachers, the other resources are not used to their fullest potential. The low percentage of teachers using the other resources are indicated below:
    - District Coach (35%)
    - Department of Public Instruction Staff (26%)
    - Online training module DIBELS Next (29%)
    - TRC video tutorial on the NC livebinder website (26%)
    - Amplify Customer Care (32%)

- mClass: Reading 3D monthly newsletter (9%)

In Guskey's five-level evaluation model (2000), two levels are important to note when reviewing the data from the resources available to support the implementation of mClass: Reading 3D: participants' use of new knowledge and skills and student learning outcomes. Teachers need to become familiar with the resources available and determine how they can be used to improve student reading achievement. Additionally, with the use of the available resources, what impact will they have on student reading achievement? With the additional support resources available, these tools can be used to help structure the classroom in a way to maximize reading instruction, which will improve student achievement.

11. Principals and transformational/instructional coaches reported instructional practices in grades K-3 have changed since the implementation of mClass: Reading 3D. Wilson (2012) reported most teachers involved in her study acknowledged that mClass: Reading 3D had the potential to change the way that they teach. Six teachers reported how their perception of teaching has changed as a result of the data provided from this program. Based on the interview data from this study, teachers have become more aware of the importance of phonics when teaching students to read. English Language Arts classes are more structured and focused with literacy centers and small group instruction. A focus and a sense of urgency have been placed on guided reading instruction. These conclusions can be applied to the selected school district and other districts in the State of North Carolina. Collected data revealed teacher assistants are being utilized more effectively in the classroom to improve student reading achievement. However, consistency and structure vary from

classroom to classroom and building to building. As a result, it is of utmost importance that the administrator of the school monitor teacher instructional reading practices that may positively impact student reading achievement.

12. According to responses from principals and transformational/instructional coaches, progress monitoring at rate and with fidelity remains a concern in elementary schools implementing mClass: Reading 3D across the State of North Carolina. The mClass: Reading 3D assessment reports show that teachers who are progress monitoring at rate and with fidelity are growing students at an acceptable rate, according to cut scores, in reading achievement. Wilson (2012) concluded all teachers surveyed in her study admitted that progress monitoring impacted their instruction and appreciated the new technology used for immediate feedback from progress monitoring data. Based on research and data from this study, teachers have the data and opportunity to develop individual or small group activities to build on students' existing strengths and weaknesses.

13. Principals and transformational/instructional coaches would like every K-3 teacher and principal to receive "Reading Foundations" training to develop a strong understanding of phonics and see how it serves as an important foundation in teaching reading. The National Reading Panel (2000) outlined five essential components of reading instruction and the evidence for their impact on learning to read:

    a. Phonemic awareness: Teaching phonemic awareness to children significantly improves their reading more than instruction that lacks any attention to phonemic awareness.

b. Phonics: Systematic phonics instruction produces significant benefits for students in kindergarten through sixth grade and for children having difficulty learning to read.

c. Fluency: Guided repeated oral reading procedures that included guidance from teachers, peers, or parents had a significant and positive impact on word recognition, fluency, and comprehension across a range of grade levels.

d. Vocabulary: The larger the reader's vocabulary, the easier it is to make sense of the text. Learning in rich contexts, incidental learning, and use of computer technology all enhance the acquisition of vocabulary.

e. Text comprehension: Text comprehension involves the reader deriving meaning from text, engaging in intentional and problem solving thinking processes. When combining reading comprehension techniques, results on standardized comprehension tests are improved.

These results are outlined in the National Reading Panel (2000). The given essential components of reading are part of the "Reading Foundations" training. With a strong foundation to teach phonics and reading instruction, teachers are more likely to improve student reading achievement. With knowledge obtained from the "Reading Foundations" training, teachers and principals will have a deeper understanding of strategies and approaches to implement as a means of improving student reading achievement. A solid foundation of knowledge and skills needed to deliver effective reading instruction will help teachers gain a better understanding of the purpose of mClass: Reading 3D in efforts to enhance student reading achievement.

14. The quantitative data from mClass: Reading 3D test results revealed mClass: Reading 3D did not have a positive impact on student reading achievement. However, two of

the three schools (Sycamore Lane Elementary and Pine Brook Elementary School) grew more students at the benchmark rate from the BOY to the EOY. Although the quantitative data does not show a positive impact on reading achievement, qualitative data provided by participants in this study revealed some powerful data to show mClass: Reading 3D has a positive impact on student reading achievement.

Practical Recommendations

The purpose of this study was to explore the relationship that exists between the history of reading instruction, the impact of mClass: Reading 3D on student achievement in second grade, and the impact of quality professional development through a program evaluation. Data from this study will be used to inform the implementation process of mClass: Reading 3D that may have a positive impact on students' reading achievement. Specifically, the study attempted to address the following question:

To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

The following recommendations are provided based on results of this study. They are included in this chapter to help improve the implementation process of mClass: Reading 3D in efforts to enhance student reading achievement.

1. Every elementary school implementing mClass: Reading 3D should be provided a qualified reading instructional coach to help increase fidelity, support teachers, and facilitate the implementation process. Of all the duties the administration team is required to perform, providing instructional leadership is by far the most important (Newman, 1992). Making teachers effective instructors and training them to develop strong, lifelong learners, is of utmost importance (Trehearn, 2010). Vanderburg and

Stephens (2010), along with Denton et al. (2007), reported that students of teachers who had received coaching performed better on measures of phonological awareness, timed and untimed word reading, phonemic decoding, passage comprehension, and spelling. The research shows effective coaching can have a positive impact on student achievement. DuFour and Marzano (2011) reported "ongoing monitoring of student learning is one of the most powerful tools available to PLC collaborative teams for enhancing student achievement (p. 139). With a reading instructional coach at the school, the administrator, working along with the coach, will have the opportunity to collaborate and ensure mClass: Reading 3D is being implemented as it should at the school level to improve student reading instruction.

2. Teacher survey results varied on how often data are being used to inform instruction and how often students are progress monitored (see Appendix H). Progress monitoring reports showed a lack of fidelity and on rate progress monitoring. As a result, ongoing staff development is needed to address the implementation process, including benchmark administration, progress monitoring, using reports and data to drive instruction, and using resources to support implementation. Professional development should be embedded in a school's practices, allowing time for teachers to work together to discuss pedagogy, analyze data, plan lessons, and share best practices. Guskey (2000) warned that successful change effort is not an event that is removed from teachers' day-to-day responsibilities, but instead is a part of their daily activities that are both natural and recurring. Professional development and teacher preparation make a difference in student reading achievement (Snow, 1998).

3. School leaders across the State of North Carolina have noticed a trend of new teachers who lack a strong foundation and understanding of how to teach reading (see Appendix I). Therefore, the public school districts and local universities must collaborate on this concern to better equip new teachers with these necessary skills. Research to note includes the National Reading Panel (2000) findings, which concluded that the most effective reading instruction includes the following instructional practices:
   - teaching children to break apart and manipulate sound in words,
   - teaching that sounds are represented by letters of the alphabet which can be blended together to form words (phonics),
   - having students practice reading aloud with guidance and feedback (guided oral reading), and
   - applying comprehension strategies that guide and improve reading.

The report also identified five major components for reading instruction including phonemic awareness, phonics, fluency, vocabulary, and comprehension. Guskey (2000) defined professional development as those processes and activities designed to enhance the professional knowledge, skills, and attitudes of educators so that they might, in turn, improve the learning of students. With this research in mind, district and university leaders can help provide teachers with the necessary skills to be successful reading teachers, while improving student reading achievement.

4. Professional development and teacher preparation make a difference in student reading achievement (Snow, 1998). Based on data collected from the focus group interviews, a “refresher” training should be provided at the beginning of each school

year to K–3 teachers implementing mClass: Reading 3D (see Appendix I). The staff development will provide updates, reviews, and transparency to ensure fidelity throughout the school year. On the other hand, new K–3 teachers should be provided in-depth training to prepare them for the benchmark assessment and other components for effective implementation. Effective professional development has a structured, collaborative culture with a focus on learning (Eaker et al., 2002), where stakeholders are engaged in an ongoing commitment to continuous improvement (DuFour, 2012) and where content knowledge and practice are shared among participants (Darling-Hammond & McLaughlin, 1995; Eaker et al., 2002; Hord, 1997). Based on data collected from principals and transformational/instructional coaches, the ongoing training should not be conducted using the "Train the Trainer" approach. Effective professional development will provide the opportunity for teachers to improve their instructional practices (Mizell, 2010), which has the potential to improve the implementation of mClass: Reading 3D. Bray-Clark and Bates's (2003) analysis of ways to improve teacher effectiveness stated, "The bottom line is that teachers want and need practical in-service activities that address their genuine needs in the classroom, make them better teachers, and that improve student outcomes" (p. 14).

5. With the accountability of teachers with Standard 6 and principals with Standard 8, principals and transformational/instructional coaches indicated a need for required "Reading Foundations" training for K–3 teachers and principals implementing mClass: Reading 3D. The training will help the teachers develop a strong foundation of phonics and learn how the skills are aligned with teaching reading. The 2000

National Reading Panel report and the 1998 National Research Council report outlined the essential early literacy domains. Research showed that these skills serve as the basic building blocks that every child must master in order to become a proficient reader (Adams, 1990; NRP, 2000; National Research Council, 1998). Other research showed these skills can be improved with instruction (Kame'enui et al., 2002; Simmons & Kame'enui, 1998; Torgesen et al., 1999). Based on this research, the "Reading Foundations" training can equip teachers and principals with the skills and strategies to incorporate into reading instruction to improve student reading achievement.

6. The mClass: Reading 3D TRC assessment results are linked to Standard 8 for principals. The collection of data from principals and transformational/ instructional coaches showed a need for ongoing staff development for principals. A common purpose of professional development is to alter the professional practices, beliefs, and understanding of school persons toward an articulated end (Griffin, 1983). In most cases, that end is the improvement of student learning (Laczko-Kerr & Berliner, 2002; Snow et al., 1998). DuFour (2004) and DuFour et al. (2005) indicated when educators remain persistent and focused on improving the achievement for ALL students, the likelihood of sustained and substantive success is increased. The principals have stressed a need for continuous staff development on benchmark and progress monitoring administration, using the benchmark and progress monitoring data to inform instruction, and using the Reporting and Analysis Suite to converse with the teachers about improving student reading scores and growth.

7. Results show data are available from the mClass: Reading 3D assessment. Reports should be used continuously and effectively to track student growth, determine teacher effectiveness, and identify areas of concern with reading instruction, students, classrooms, and/or teachers. Black and William (1998) indicated students who receive rich formative assessment can learn in six or seven months what would take other students an entire year to learn. As Rollins reported, "formative assessment achieves such strong gains because it provides a vehicle to give students timely feedback on their work and enables teachers to make immediate adjustments to instruction" (p. 57). Reading proficiently by the end of third grade is a crucial marker in a child's educational development. Failure to read proficiently is linked to higher rates of school dropout, which suppresses individual earning potential as well as the nation's competitiveness and general productivity (Annie E. Casey Foundation, 2013a). Based on this research, data available from the mClass: Reading 3D assessments can help teachers differentiate reading instruction, addressing the needs of students to improve reading achievement.
8. With increased pressure at all levels of education for greater accountability (Guskey, 2000), a growing interest in program evaluation has increased. A high emphasis has been placed on K-3 teachers to prepare students to read proficiently by the end of third grade (Race to the Top, 2013). With the Read to Achieve requirements and the North Carolina End-of-Grade reading test, third-grade teachers are continuously testing to monitor student reading growth and achievement. Based on collected data from surveys and interviews, it is recommended that the mClass: Reading 3D assessment not be required in third grade.

Recommendations for Future Research

Based on the collection of data for this study, the mClass: Reading 3D assessment provides rich data to guide teachers in improving student reading achievement. Problems of concerns have been identified and discussed; however, as shown in other mClass: Reading 3D research (Wilson, 2012), steps need to be taken to utilize the data to its fullest potential to differentiate and drive instruction, improve fidelity in the implementation of the program, and to improve student reading achievement. Further research needs to be conducted to determine the impact, if any, reading instructional coaches have on the implementation of mClass: Reading 3D and student reading achievement.

Results from this study can be generalized to other rural school districts in the State of North Carolina who are implementing mClass: Reading 3D in grades K-3. However, future studies need to be completed for urban school districts. Future researchers may wish to conduct similar research studies across other school districts implementing the mClass: Reading 3D assessment to evaluate the consistency of findings. The qualitative portion of this study focused on the impact mClass: Reading 3D had on second-grade students' reading achievement among the three selected schools. Further research should focus on the impact of mClass: Reading 3D, using quantitative data on student reading achievement for students in grades K–3.

Updates to mClass: Reading 3D have been made throughout the time of the research study. As the North Carolina Department of Public Instruction continues to update testing of the North Carolina Public School accountability model, this study does not focus specifically on Common Core and Essential Standards. Future research may also determine the worth of mClass: Reading 3D in third grade in the State of North Carolina.

Summary

In summary, this program evaluation helped answer the following research question:

To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

The statement of the problem addressed a decline in reading proficiency among third-grade students (NCDPI, 2010b) which led to the adoption of the mClass: Reading 3D program. The purpose of the study explored the extent to which the mClass: Reading 3D program impacted students' reading achievement in second grade, the extent teachers used student data to drive instruction, and the extent professional development impacted students' reading achievement. The use of qualitative and quantitative data allowed a strong array of evidence to be collected and analyzed (Yin, 2009). Based on collected data, this study is significant in that conclusions and recommendations have been provided to improve the implementation of mClass: Reading 3D.

Overall, mClass: Reading 3D has had a positive impact on student reading achievement. Eighty-four percent of teachers (37 out of 44) rated the effectiveness of mClass: 3D as having a somewhat positive to positive impact on student reading achievement. According to collected data, the mClass: Reading 3D assessment was viewed favorably by teachers, principals, and transformational/instructional coaches; however, teachers are just beginning to analyze data on a deeper level to inform instruction. Although teachers responded positively to the data, how to successfully manage and effectively utilize all components of the program continue to pose a challenge (see Appendix H). As K-3 teachers and principals in the district continue to collaborate and use the data to drive instruction, staff development should be ongoing to address fidelity issues and to allow educators to utilize the program components to their fullest potential to maximize student reading achievement. This chapter concludes by providing conclusions, recommendations, and information for future research. Findings should be useful to the district and other similar rural, Title I schools in North Carolina. Results and recommendations from this study will be shared with the Superintendent and the administrative cabinet in the selected school district to build on the implementation of mClass: Reading 3D.

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APPENDIX A: THE ACHIEVEMENT GAP IN NORTH CAROLINA

The Achievement Gap in North Carolina

Prepared by the Public Schools of North Carolina

North Carolina Department of Public Instruction

Dr. June St. Clair Atkinson, State Superintendent

The academic achievement gap between and among groups of students continues to be a persistent problem. Data documenting this problem typically highlight the scores by students tested in K-12 schools and the attending markers that accompany this problem. For example, students who score at proficiency levels and above on standardized tests typically populate general education and accelerated studies classes, while those students who score at the basic or below level of proficiency are often described as struggling students for whom instructional and learning interventions are provided.

Determining the causes for the achievement gap among students is not an easy or definitive task because many factors contribute to the achievement gap. However, socio-economic status and race are often associated with academic achievement as evidenced by the findings and conclusions of many research studies and anecdotal reports about different student populations. Many interventions and strategies have been used and continue to be used to decrease this persistent problem.

Several problems and concerns have impacted efforts to eliminate the achievement gap, however. For example, long-term fiscal crises on the global, national, state, and local levels contribute to an erosion of this country's political and economic commitment to fully funding early childhood education. Paired with inadequate early childhood funding is the research data that questions the sustained long-term benefits of programs such as Head Start. Differences in educational philosophies of state and national legislators and other political leaders further diminish the benefits of early childhood education as a funding priority. Intervention strategies to close the achievement gap, therefore, are subject to inconsistent and inadequate funding that does not provide a favorable educational environment in which students most in need of early childhood education can be taught before the achievement gap becomes a resistant reality.

In 2010, State Superintendent Atkinson established the Office of Early Learning to focus on the Pre-K to Grade 3 learning continuum and the alignment of standards, curriculum, instruction, and assessment across the early grades. This move was intended to leverage the extraordinary gains made by children served in the state's pre-kindergarten program by strengthening the educational supports and structures for all children pre-kindergarten through third grade.

The long-term impact of state-funded pre-kindergarten was established in 2010 and reaffirmed in 2011 by two rigorous independent studies.

- In 2010, an evaluation by UNC-Chapel Hill found a significant impact of pre-kindergarten on student achievement at 3rd grade and a narrowing of the achievement gap.

  Peisner-Feinberg, E., & Shaaf, J. (2010). Long-term Effects of the North Carolina More at Four Pre-kindergarten Program: Children's Reading and Math Skills at Third Grade. Chapel Hill, NC: FPG Child Development Institute.

- In 2011, Duke University found a significant impact of pre-kindergarten on student achievement at 3rd grade and reduction in special education placement.

  Ladd, H., Muschkin, C., & Dodge, K. (2012). From Birth to School: Early Childhood Initiatives and Third Grade Outcomes in North Carolina. Durham, NC: Duke Sanford School of Public Policy.

In concert with these interventions and strategies, the North Carolina Department of Public Instruction is providing an annotated bibliography of some of the many documents—research and otherwise—written about this academic issue. This bibliography is provided to users as an alphabetical listing of resources for quick referral as well as an annotated source with brief summaries for more selective study. Updates will be provided periodically. Our goal is to provide a substantive body of literature about the achievement gap to inform and to guide current and future efforts to eliminate it. We welcome your suggestions.

Source: (NCDPI, n.d.b)

APPENDIX B: MCLASS: READING 3D ALIGNMENT

WITH K-3 COMMON CORE ELA STANDARDS

Program Alignment to K-12 Common Core Standards

mCLASS® Reading 3D™

On June 2, 2010 the National Governors Association Center for Best Practices (NGA Center) and the Council of Chief State School Officers (CCSSO) released the K-12 Common Core Standards.

The table that follows illustrates alignment of mCLASS®:Reading 3D™ components to the Common Core in English Language Arts standards for Grades K-5. Specifically, the alignment pertains to the following:

- Reading Standards for Literature K-5 (pages 1–6)
- Reading Standards for Informational Text K-5 (pages 6–10)
- Reading Standards: Foundational Skills (pages 11–14)

Key

TRC	Text, Reading and Comprehension	**ORF**	Oral Reading Fluency DIBELS Measure
ISF	Initial Sound Fluency DIBELS Measure	**WUF**	Word Use Fluency DIBELS Measure
PSF	Phoneme Segmentation Fluency DIBELS Measure	**RTF**	Retell Fluency DIBELS Measure
LNF	Letter Naming Fluency DIBELS Measure	**WR**	Word Recognition
NWF	Nonsense Word Fluency DIBELS Measure		

Reading Standards for Literature K–5

Kindergarten Standard	mCLASS:Reading 3D
Key Ideas and Details	
With prompting and support, ask and answer questions about key details in a text.	TRC
With prompting and support, retell familiar stories, including key details.	ORF, RTF, TRC
With prompting and support, identify characters, settings, and major events in a story.	TRC
Craft and Structure	
Ask and answer questions about unknown words in a text.	TRC
Recognize common types of texts (e.g., storybooks, poems).	Not applicable
With prompting and support, name the author and illustrator of a story and define the role of each in telling the story.	TRC

For more information, please visit www.wirelessgeneration.com/commoncore.

Kindergarten Standard	mCLASS:Reading 3D
Integration of Knowledge and Ideas	
With prompting and support, describe the relationship between illustrations and the story in which they appear (e.g. what moment in a story an illustration depicts).	TRC
With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories	TRC
Range and Level of Text Complexity	
Actively engage in group reading activities with purpose and understanding.	TRC* * Assessment measures individual's ability

Grade 1 Standard	mCLASS:Reading 3D
Key Ideas and Details	
Ask and answer questions about key details in a text.	TRC
Retell stories, including key details, and demonstrate understanding of their central message or lesson.	ORF + TRC
Describe characters, settings, and major events in a story, using key details.	TRC
Craft and Structure	
Identify words and phrases in stories or poems that suggest feelings or appeal to the senses.	TRC
Explain major differences between books that tell stories and books that give information, drawing on a wide reading of a range of text types.	Not applicable
Identify who is telling the story at various points in text.	Not applicable
Integration of Knowledge and Ideas	
Use illustrations and details in a story to describe characters, events, or settings.	TRC
Compare and contrast the adventures and experiences of characters in stories.	TRC
Range and Level of Text Complexity	
With prompting and support, read prose and poetry of appropriate complexity for Grade 1.	TRC

Grade 2 Standard	mCLASS:Reading 3D
Key Ideas and Details	
Ask and answer such questions as *who*, *what*, *where*, *when*, *why*, and *how* to demonstrate understanding of key details in a text.	TRC
Recount stories including fables and folktales from diverse cultures and determine their central message, lesson or moral.	TRC
Describe how characters in a story respond to major events and challenges.	TRC
Craft and Structure	
Describe how words and phrases (e.g., regular beats, rhymes, and repeated lines) supply rhythm and meaning in a story, poem, or song.	Not applicable
Describe the overall structure of a story, including describing how the beginning introduces the story and the ending concludes the action.	Not applicable
Acknowledge differences in the points of view of characters, including by speaking in a different voice for each character when reading dialogue aloud.	Not applicable
Integration of Knowledge and Ideas	
Use information gained from the illustrations and words in a print or digital text to demonstrate understanding of its characters, setting, or plot.	TRC
Compare and contrast two or more versions of the same story (e.g. Cinderella stories) by different authors or from different cultures.	Not applicable
Range and Level of Text Complexity	
By the end of the year, read and comprehend literature, including stories and poetry in the Grade 2–3 text complexity band proficiently, with scaffolding as needed at the high end of the range.	TRC

Grade 3 Standard	mCLASS:Reading 3D
Key Ideas and Details	
Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.	TRC
Recount stories, including fables, folktales, and myths from diverse cultures; determine the central message, lesson or moral and explain how it is conveyed through key details in the text..	TRC
Describe the main characters in a story (e.g., their traits, motivations, or feelings) and explain how they contribute to the sequence of events.	TRC

Grade 3 Standard	mCLASS:Reading 3D
Phonics and Word Recognition	
Know and apply grade-level phonics and word analysis skills in decoding words.	
Identify and know the meaning of the most common prefixes and derivational suffixes.	Not applicable
Decode words with common Latin suffixes.	Not applicable
Decode multi-syllable words.	ORF
Read grade-appropriate irregularly spelled words.	ORF, TRC
Fluency	
Read with sufficient accuracy and fluency to support comprehension.	
Read on-level text with purpose and understanding to support comprehension.	ORF + RTF, TRC
Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.	ORF, TRC
Use context to confirm or self correct word recognition and understanding, rereading as necessary.	TRC

Grade 4 Standard	mCLASS:Reading 3D
Phonics and Word Recognition	
Know and apply grade-level phonics and word analysis skills in decoding words.	
Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.	ORF, TRC
Fluency	
Read with sufficient accuracy and fluency to support comprehension.	
Read on-level text with purpose and understanding to support comprehension.	ORF + RTF, TRC
Read on-level prose and poetry orally with accuracy, appropriate rate, and expression on successive readings.	ORF, TRC
Use context to confirm or self-correct word recognition and understanding, rereading as necessary.	TRC

Range and Level of Text Complexity	
By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.	TRC

Grade 5 Standard	mCLASS:Reading 3D
Key Ideas and Details	
Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.	Not applicable
Determine two or more main ideas and how they are supported by key details; summarize the text.	TRC
Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.	TRC
Craft and Structure	
Determine the meanings of general academic language and domain-specific words and phrases encountered in a text relevant to a Grade 5 topic or subject area.	TRC
Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.	Not applicable
Analyze multiple accounts of the same event or topic, noting important similarities and differences in the point of view they represent.	Not applicable
Integration of Knowledge and Ideas	
Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.	Not applicable
Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).	Not applicable
Integrate information from several texts on the same subject in order to write or speak about the subject knowledgeably.	Not applicable
Range and Level of Text Complexity	
By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 4–5 text complexity band independently and proficiently.	TRC

APPENDIX C: CONSENT FORM

Study: An Analysis of the Impact of mClass: Reading 3D on Students' Reading Achievement in Second Grade

Sheri Dial Herndon
East Carolina University

December 24, 2014

Dr. Linda Emanuel
Dissertation Committee Member
410 Caton Road
Lumberton, NC 28358

Dear Dr. Emanuel,

I am writing to request permission to conduct an evaluation on mClass: Reading 3D in the Public Schools of Robeson County. I am currently enrolled in the Doctoral Program of Educational Leadership at East Carolina University in Greenville, NC. As I prepare for the study, I am interested in the extent, if any, mClass: Reading 3D has had on reading achievement of second-grade students, teacher professional development related to mClass: Reading 3D, and data used from the program to drive instruction in the Public Schools of Robeson County.

What is the Purpose of this Study?

Through this study, the researcher intends to answer the following question:

1. To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

Procedures

If you agree for the Public Schools of Robeson County to participate in this study, I ask permission to do the following:

- Collect survey data, using a stratified random sampling on the teachers' professional development on mClass: Reading 3D and how the data is used to drive instruction
- Collect data from interviews with administrators and transformation coaches knowledgeable of mClass: Reading 3D
- Document analysis of mClass: Reading 3D data of second-grade students during the 2012–2013 school year
- Video and tape record all interviews, with permission of participants at convenient times

Timeline

Interviews and surveys will be conducted in winter 2015. The expected date for data analysis will be February 2015.

Benefits

The results of this study will explore the extent, if any, mClass: Reading 3D has had on student achievement among second-grade students, and the impact of quality professional development through a program evaluation. Data from this study will be used to inform the implementation process of mClass: Reading 3D that may have a positive impact on students' reading achievement. In addition, the information provided from this study may be used to improve existing and future implementation and professional development of mClass: Reading 3D.

While it is not the intent of the investigator to ask intrusive questions, some participants may have a higher level of sensitivity to revealing information than anticipated. The majority of the information gathered is intended to give participants a high degree of control over the information chosen to share with the researcher. Participants will be informed that they may withdraw from the study at any time.

Compensation

No compensation will be provided to any participants.

Confidentiality

Documentation collected during this study will be kept private. Published reports will not include any information that will make it possible to identify a subject or school. Research records, videos, and audio recordings will only be available to the researcher of this study. These files will be kept in the researcher's home under lock and key. The data collected are only intended to be published in the researcher's doctoral dissertation for East Carolina University.

Voluntary Nature of the Study

Participation in this study is voluntary. The Public Schools of Robeson County's decision whether or not to participate will not affect current or future relations with the researcher of this study or East Carolina University. If you decide to participate, you have the option to withdraw from the study or refuse to answer any questions at any time.

Contacts and Questions

If you have any questions at any time, the researcher may be contacted using the information provided below:

Sheri Dial Herndon: sheri.dial@robeson.k12.nc.us 910-522-4994

Feel free to contact the dissertation chairperson, Dr. William Grobe.

Dr. William Grobe: GROBEW@ecu.edu or 252-328-6499

Consent to Participate

I have read and understand the above information. A copy of this form has been provided by the researcher. I agree to participate in this study with the understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled.

LEA Consent Signature Linda Emanuel ____________ December 24, 2014

Researcher's Signature

Sheri Dial Herndon Sheri Dial Herndon December 24, 2014

APPENDIX D: SURVEY COVER LETTER

Dear Participant,

As a doctoral student at East Carolina University in the Educational Leadership Department, I am asking you to take part in my research study titled "*An Analysis of the Impact of mClass: Reading 3D on Students' Reading Achievement in Second Grade.*"

The purpose of this research is to determine to what extent, if any, mClass: Reading 3D has had on reading achievement of second-grade students, teacher professional development, and data used to drive instruction. By conducting this research, I hope to answer the following question:

1. To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

Your participation is completely voluntary.

You are being invited to take part in this research because you have a direct impact on the implementation of the mClass: Reading 3D assessment. The amount of time it will take you to complete this survey is approximately 15 minutes.

If you agree to take part in this survey, you will be asked questions that relate to the implementation of mClass: Reading 3D, professional development, and the use of student data to drive instruction.

This research is overseen by the ECU Institutional Review Board (IRB). Therefore, some of the IRB members or the IRB staff may need to review my research data. However, the information you provide will not be linked to you. Your responses cannot be traced back to you by anyone, including me or the university.

If you have questions about your rights when taking part in this research, call the Office of Research Integrity & Compliance (ORIC) at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, call the Director of ORIC, at 252-744-1971.

You do not have to take part in this research, and you can stop at any time. If you decide you are willing to take part in this study, please check the box below and continue on with the following survey link.

☐ Yes, I agree to participate in this survey questionnaire.

https://ecu.az1.qualtrics.com/SE/?SID=SV_6o3KaFvE3z0Cweh

Thank you for taking the time to participate in my research.

Sincerely,

Sheri Dial Herndon
Principal Researcher

APPENDIX E: TEACHER SURVEY QUESTIONS

General Information

1. What is your current position at the school?
   - Kindergarten Teacher
   - 1st Grade Teacher
   - 2nd Grade Teacher
   - 3rd Grade Teacher

2. How many years have you taught in your current grade level?
   - 0–3 years
   - 4–6 years
   - 7–10 years
   - 11–20 years
   - 21+ years

3. How many years of experience do you have in education?
   - 0–3 years
   - 4–6 years
   - 7–10 years
   - 11–20 years
   - 21+ years

4. What is the highest degree you have obtained?
   - BA/BS Degree
   - Master’s Degree
   - Doctorate Degree

5. How long have you been implementing the mClass: Reading 3D assessment?
   - 1 year
   - 2 years
   - 3 years
   - 4+ years

Student Assessment

6. How would you rate the effectiveness of mClass: Reading 3D on student achievement?
   - Positive Impact
   - Somewhat Positive Impact
   - Somewhat Negative Impact
   - Negative Impact

7. How much time does it take to administer the mClass: Reading 3D benchmark assessment per student?

- 1–15 minutes
- 16–30 minutes
- 31–45 minutes
- 46–60 minutes

Data Driven Instruction

8. How often do you use mClass: Reading 3D data to modify student instruction?
    - Daily
    - Weekly
    - Monthly
    - Never

9. How do you use your data to drive instruction? (Check all that apply.)
    _____Small Group Instruction
    _____Early Intervention
    _____Differentiating Instruction
    _____PLCs
    _____Grade Level Planning
    _____Parent Conference
    _____Purchase of Classroom Materials
    _____All of the above
    _____None of the above
    _____Other (specify): ________________________

10. How frequently is progress monitoring data used for setting student goals?
    - Daily
    - Weekly
    - Monthly
    - Never

11. How would you rate the impact of assessment and data to guide instruction at your school?
    - Positive Impact
    - Somewhat Positive Impact
    - Somewhat Negative Impact
    - Negative Impact

Professional Development

12. How much staff development did you receive prior to the implementation of mClass: Reading 3D?
    - 1–4 hours
    - 5–9 hours
    - 10–14 hours
    - 15 + hours

13. How would you rate the Train the Trainer (TOT) model to fully prepare teachers to use the mClass: Reading 3D assessment in their classrooms?
    - Positive Impact
    - Somewhat Positive Impact
    - Somewhat Negative Impact
    - Negative Impact

14. Rate the staff development you received in the use of benchmark data.
    - Positive Impact
    - Somewhat Positive Impact
    - Somewhat Negative Impact
    - Negative Impact

15. Rate the staff development you received in the use of progress monitoring.
    - Positive Impact
    - Somewhat Positive Impact
    - Somewhat Negative Impact
    - Negative Impact

16. What is your overall satisfaction with the implementation of mClass: Reading 3D?

    Positive Impact, Somewhat Positive Impact, Somewhat Negative Impact, Negative Impact

    ____Time for testing and administration activities
    ____Using and interpreting the assessment results
    ____Promptness in receiving assessment results
    ____Clarity of the N.C. assessment administration schedule for benchmarking
    ____Ease of assessment devices
    ____Ease of syncing
    ____Technical difficulties with mClass: Reading 3D

17. Which resources have you used for support with mClass: Reading 3D? (Check all that apply.)
____Amplify Customer Care
____Train the Trainer
____District Coach
____Department of Public Instruction Staff
____TRC Video Tutorial on NC website
____Online Training Module: DIBELS Next
____mClass: Reading 3D Monthly Newsletter

18. Rate the impact of these mClass: Reading 3D resources.

Positive Impact, Somewhat Positive Impact,
Somewhat Negative Impact, Negative Impact

____Amplify Customer Care
____Train the Trainer
____District Coach
____Department of Public Instruction Staff
____TRC Video Tutorial on NC website
____Online Training Module: DIBELS Next
____mClass: Reading 3D Monthly Newsletter

<u>Other Questions:</u>

1. What suggestions would you offer to improve mClass: Reading 3D to ensure continued success?

2. What additional support do you need for the mClass: Reading 3D program?

3. Please share additional comments regarding positive aspects of mClass: Reading 3D.

4. Please share additional comments regarding constructive feedback for mClass: Reading 3D improvement.

5. Select your preference for the type of additional training and/or support you feel would be beneficial in the future. (Choose a maximum of 3, and rank in order of preference 1=highest).
_____Benchmark and/or progress monitoring administration
_____Benchmark and/or progress monitoring data to inform instruction
_____Now What? Tools (i.e. Home Connect, Item Level Advisor and/or Small Group Advisor
_____Reporting and Analysis Suite
_____Technology (PDAs, netbook, etc.)

6. How have you used the Home Connect Parent Letters (found within Now What? Tools) this school year? (Check all that apply.)
   _____Sent home to parents as individual report
   _____Shared at Parent/Teacher Conference
   _____Used in conjunction with student report card
   _____Used in conjunction with student progress report
   _____Did not use
   _____Other: ____
   ____
   ____

APPENDIX F: PRINCIPAL AND TRANSFORMATIONAL/INSTRUCTIONAL COACH INTERVIEW QUESTIONS

Principal and Transformational/Instructional Coach Interview Questions

1. How do you use the reports found on the Reporting and Analysis Suite to answer the following questions:

   Which classrooms need additional instructional support?
   Which categories of student academic difficulty did you find significant?
   Which data/strategies do you use to show student achievement?

2. Which specific features do you like most about mClass: Reading 3D and why?

   - Staff is able to rapidly screen and progress monitor students
   - Web analysis and reporting for coaches and administrators
   - Tracking student progress from year to year and class to class
   - Correlations to a wide range of instructional materials available in many K-3 classrooms and reading programs
   - Ease of using data to communicate goals and expectations to stakeholders such as parents, vertical planning teams, etc.
   - Use of data to determine where professional development and resources are needed
   - Other?

3. Have instructional practices changed in grades K-3 since the implementation of mClass: Reading 3D? If so, how?

4. Describe the impact of mClass: Reading 3D on student achievement.

5. Are there strengths to the mClass: Reading 3D program? If so, what are they?

6. Are there challenges to the implementation of the mClass: Reading 3D program? If so, what are they?

7. What recommendations do you have for improvements of mClass: Reading 3D?

8. Are there issues with staff development for the implementation of mClass: Reading 3D? If so, what are they?

9. Which resources have you used for support with mClass: Reading 3D?

____Amplify Customer Care
____Train the Trainer
____District Coach
____Department of Public Instruction Staff
____TRC Video Tutorial on NC website
____Online Training Module: DIBELS Next
____mClass: Reading 3D Monthly Newsletter

10. What suggestions would you offer to improve mClass: Reading 3D to ensure continued success?

11. Select your preference for the type of additional training and/or support you feel would be beneficial in the future. (Choose a maximum of 3, and rank in order of preference 1=highest).

_____ Benchmark and/or progress monitoring administration
_____ Benchmark and/or progress monitoring data to inform instruction
_____ Now What? Tools (i.e. Home Connect, Item Level Advisor and/or Small Group Advisor
_____ Reporting and Analysis Suite (for school & district admins only)
_____ Technology (PDAs, netbook, etc.)

APPENDIX G: INTERVIEW QUESTIONNAIRE COVER LETTER

Dear Participant,

As a doctoral student at East Carolina University in the Educational Leadership Department, I am asking you to take part in my research study titled, "*An Analysis of the Impact of mClass: Reading 3D on Students' Reading Achievement in Second Grade*."

The purpose of this research is to determine to what extent, if any, mClass: Reading 3D has had on reading achievement of second-grade students, teacher professional development, and data used to drive instruction. By conducting this research, I hope to answer the following question:

1. To what extent, if any, has mClass: Reading 3D impacted students' reading achievement in second grade?

Your participation is completely voluntary.

You are being invited to take part in this research because you have a direct impact on the implementation of the mClass: Reading 3D assessment. The amount of time it will take you to complete this interview is approximately 30 minutes.

If you agree to take part in this interview questionnaire, you will be asked questions that relate to the implementation of mClass: Reading 3D, professional development, and the use of student data to drive instruction. The interview process will be audio recorded to ensure proficiency of data collection.

This research is overseen by the ECU Institutional Review Board (IRB). Therefore, some of the IRB members or the IRB staff may need to review my research data. However, the information you provide will not be linked to you. Your responses cannot be traced back to you by anyone, including me or the university. If you consent to participate in the interview questionnaire, please check the box below and sign.

☐ Yes, I agree to participate in this interview questionnaire.

☐ Yes, I agree to be audio recorded.

______________________________________ _______________

Participant’s Signature Date

______________________________________ _______________

Researcher’s Signature Date

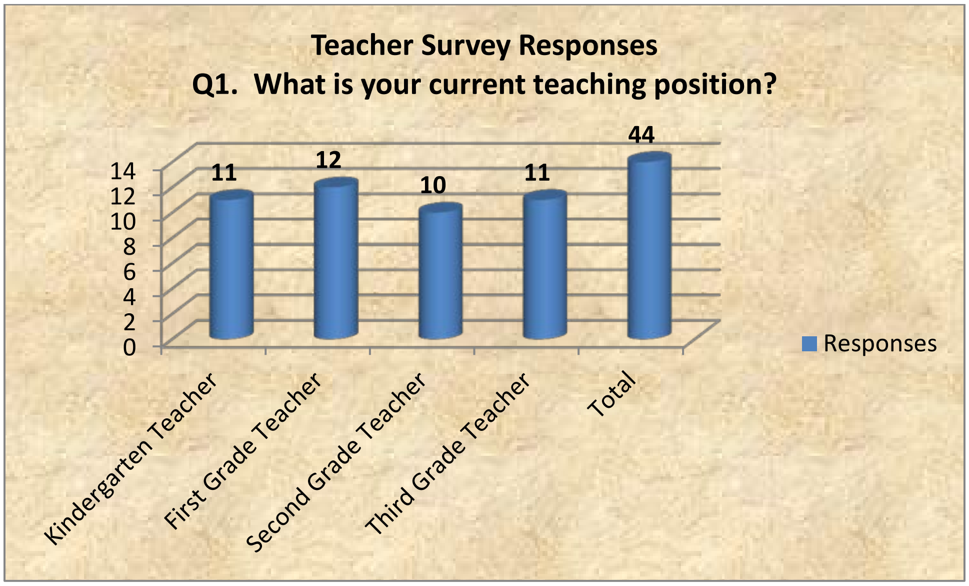
If you have questions about your rights when taking part in this research, call the Office of Research Integrity & Compliance (ORIC) at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, call the Director of ORIC, at 252-744-1971.

Thank you for taking the time to participate in my research.

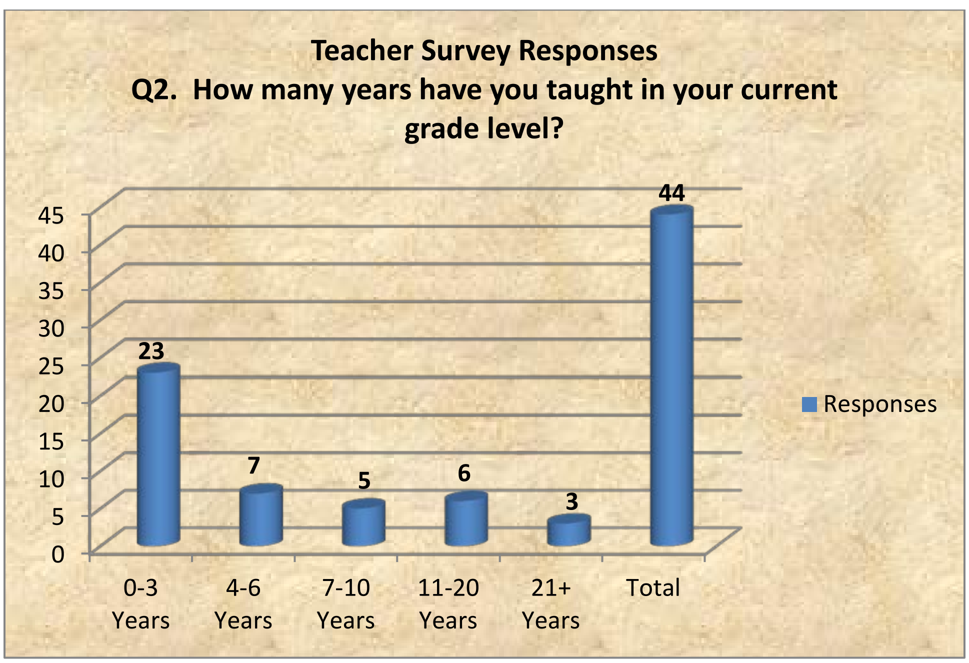
Sincerely,

Sheri Dial Herndon
Principal Researcher

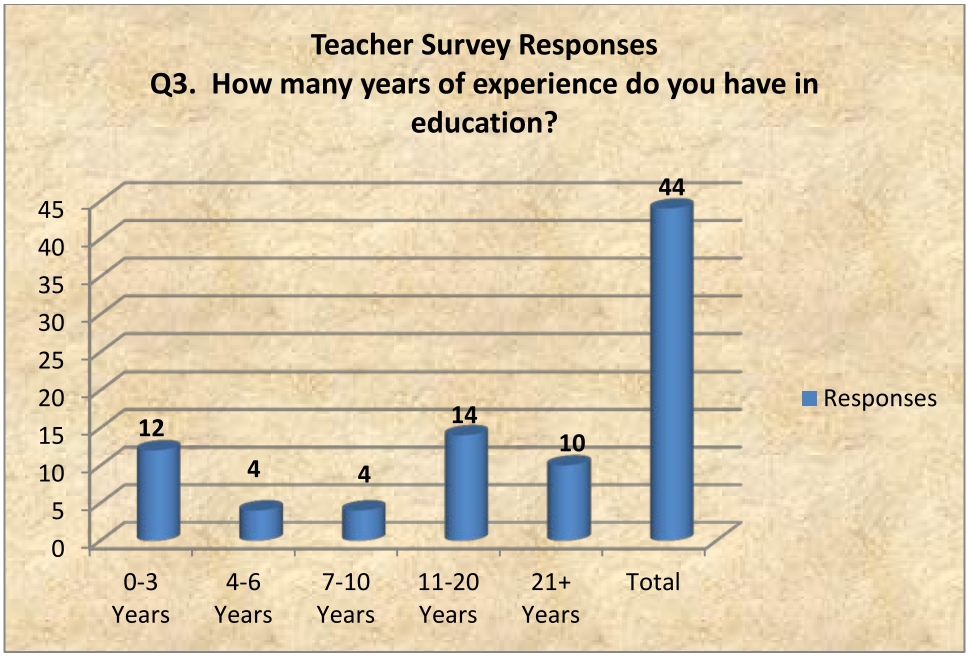
APPENDIX H: TEACHER SURVEY RESPONSE RESULTS



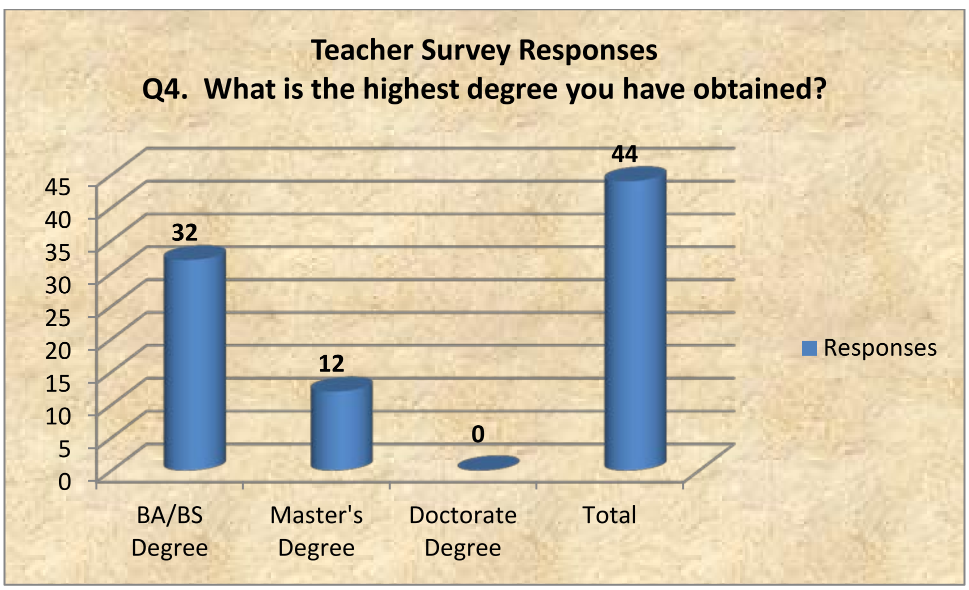
Q1: A total of 44 teachers responded to the teacher survey question regarding the current teaching position. Responses indicated that more first-grade teachers responded to the question. The lowest response was from second grade teachers.



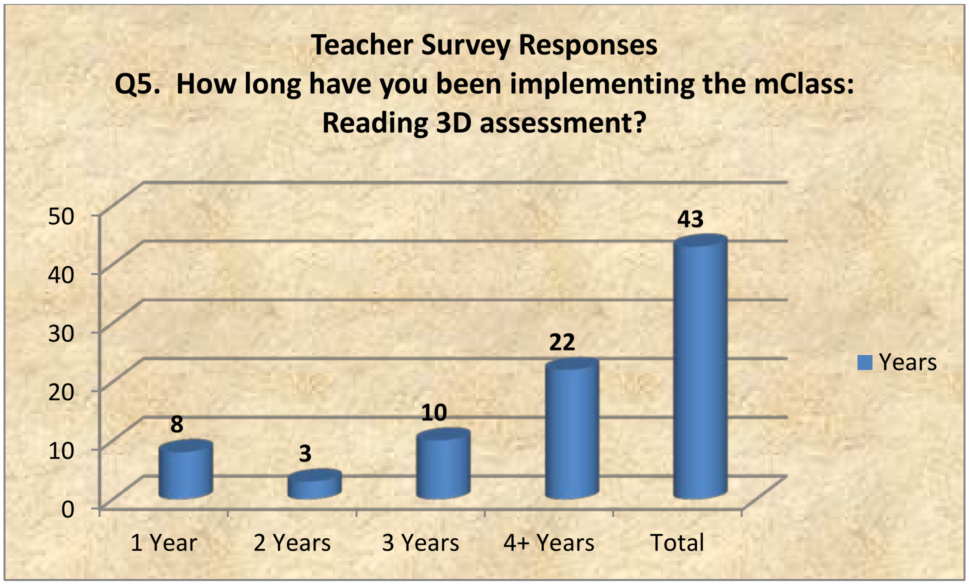
Q2: The majority of responding teachers for this teacher survey question have taught in their current grade level for 0–3 years. Only 3 responders have taught in their current grade level 21+ years.



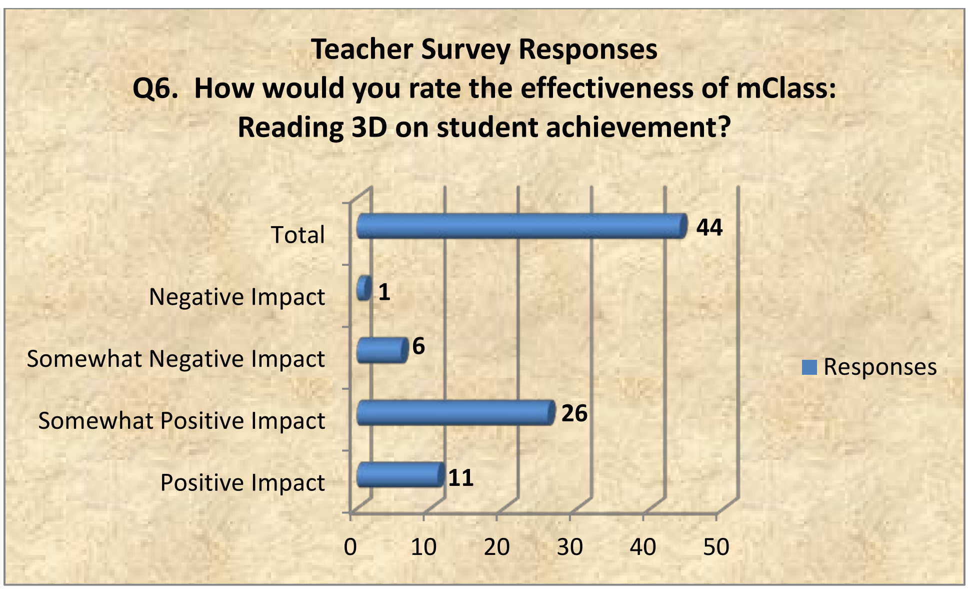
Q3: The majority of responding teachers for this teacher survey question had 11–20 years of experience. The smallest percentage of responders had 4–10 years of teaching experience.



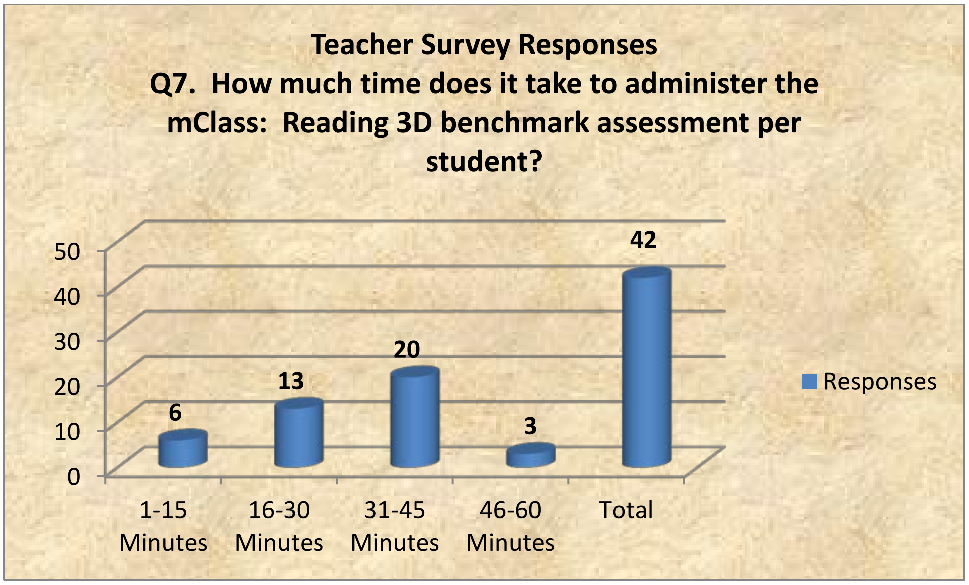
Q4: Thirty-two teachers had a BA/BS Degree, while 12 teachers had obtained a Master's Degree. At the time of the study, no responders had a Doctorate Degree.



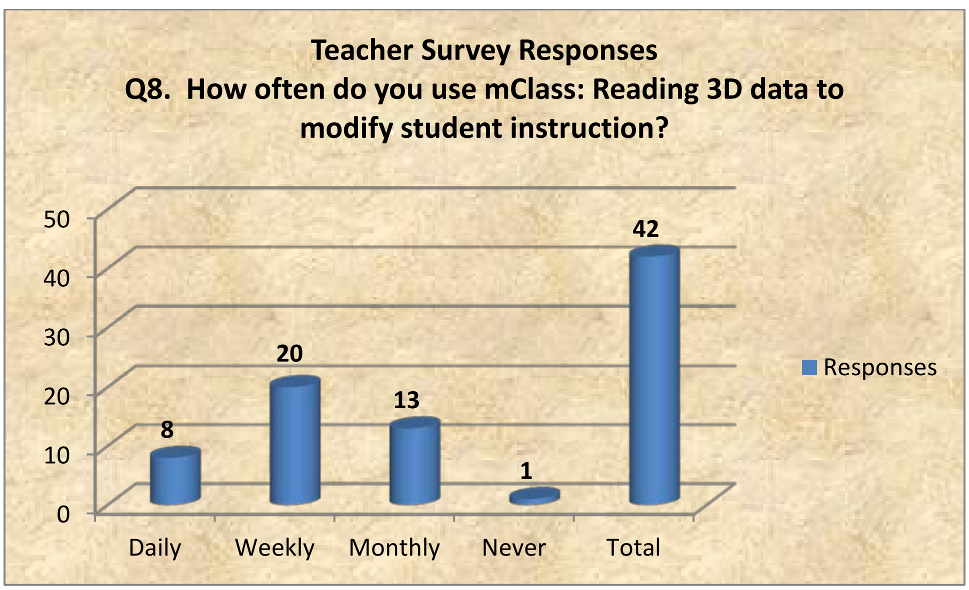
Q5: Thirty-two responders had implemented the mClass: Reading 3D assessment for 3 or more years. Eleven responders had implemented the assessment 2 or less years.



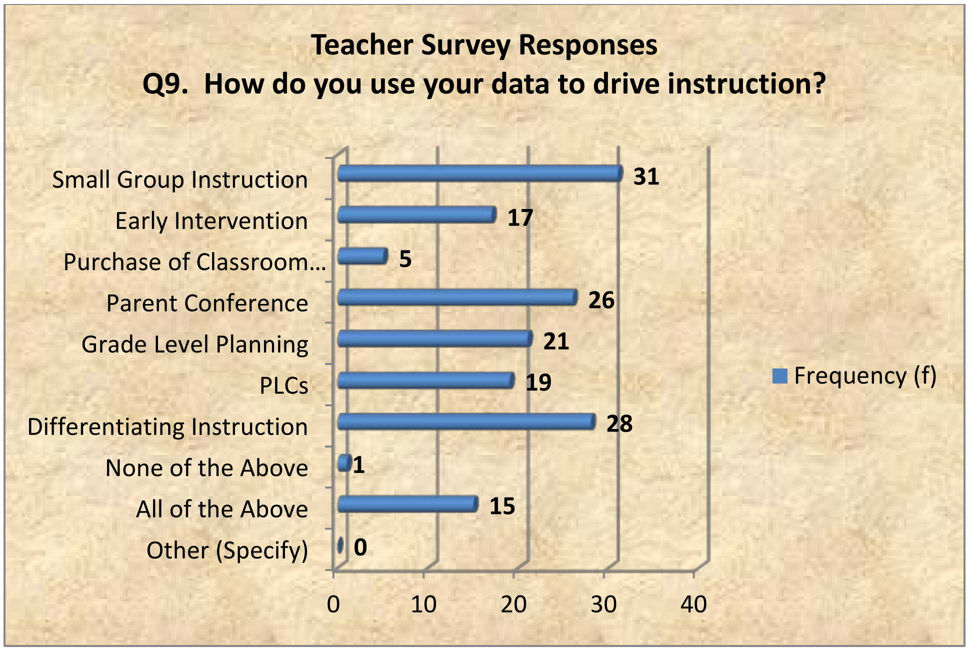
Q6: Eighty-four percent of the responders indicated mClass: Reading 3D has had a somewhat positive to positive impact on student achievement. Sixteen percent of the responders indicated mClass: Reading 3D has had a somewhat negative to negative impact on student achievement.



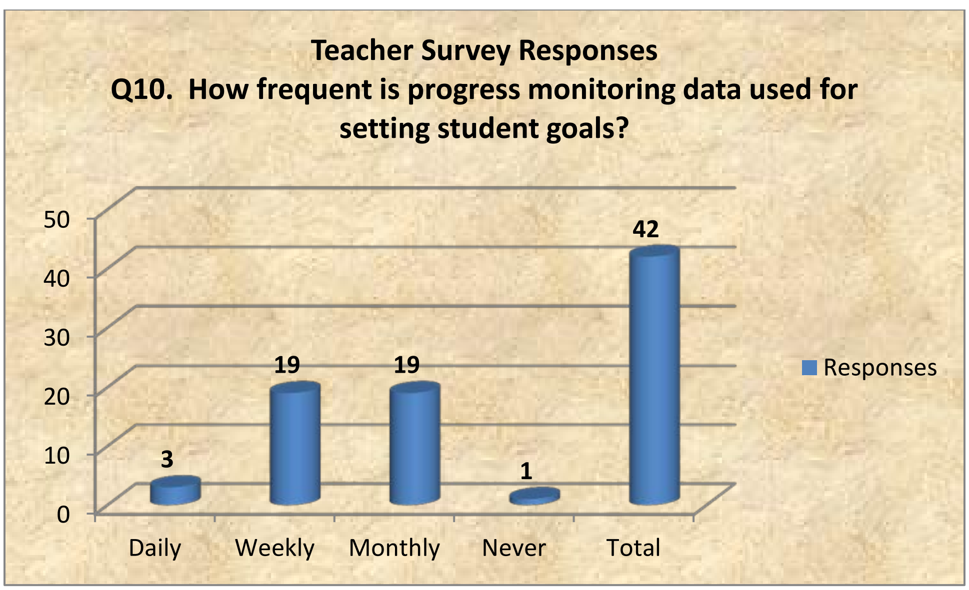
Q7: Survey results indicated 48% of the responders spend 31–45 minutes per student administering the mClass: Reading 3D benchmark assessment. Seven percent of the responders spend 46–60 minutes per student administering the mClass: Reading 3D benchmark assessment, while the remaining responders spend less than 31 minutes per child.



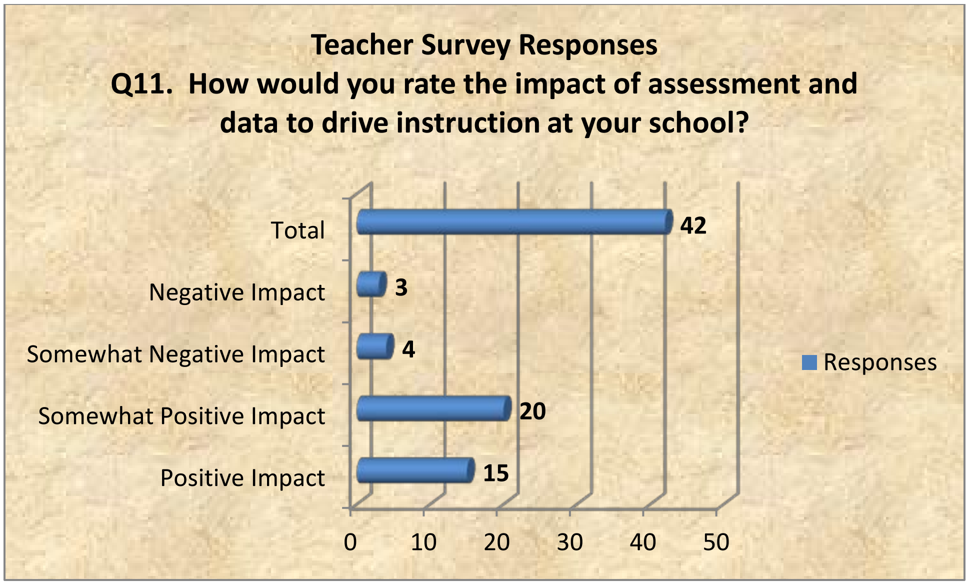
Q8: Twenty responders used mClass: Reading 3D data to modify student instruction on a weekly basis, while 13 responders used the data on a monthly basis. Eight responders used the data daily, and one responder never used the data to modify student instruction.



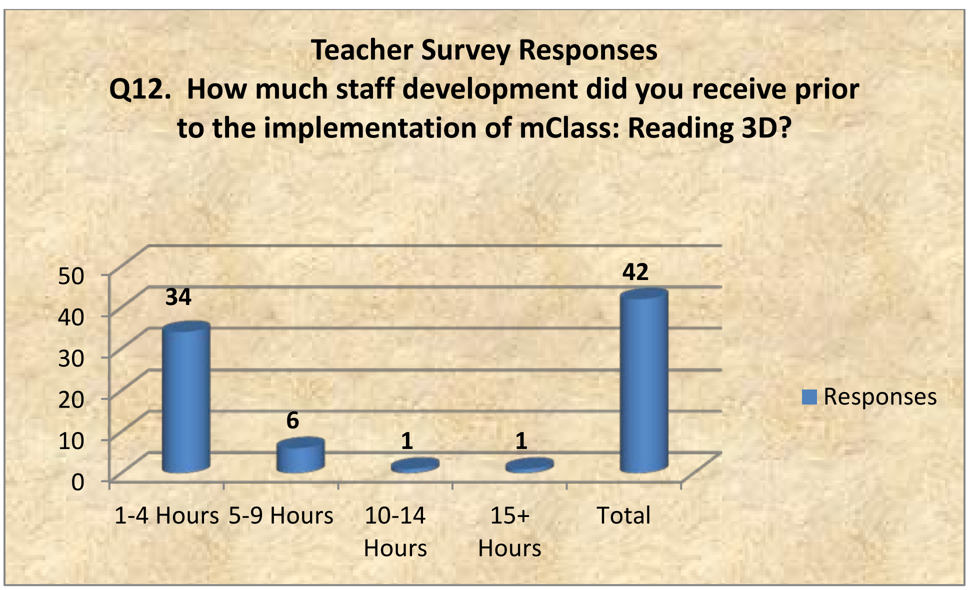
Q9: The most popular responses to the teacher survey question included small group instruction, differentiating instruction, and parent conference. The least chosen responses to drive instruction were the purchase of classroom materials and none of the above.



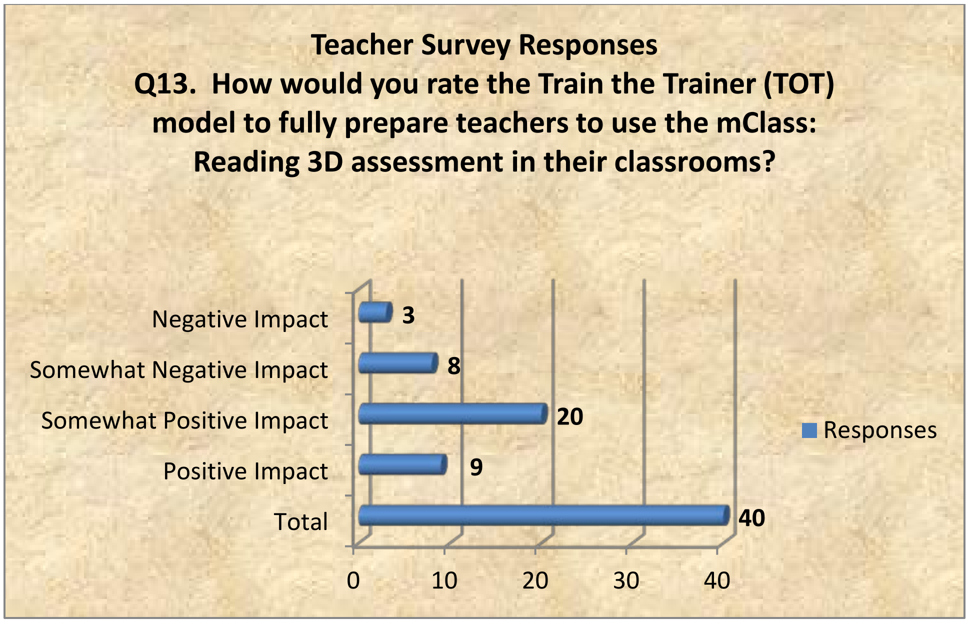
Q10: Nineteen responders used mClass: Reading 3D progress monitoring data to set student goals on a weekly basis, tying with the same number of responders who used the data on a monthly basis to set student goals. A small percentage of responders used the data on a “daily” basis or “never” used the data to set student goals.



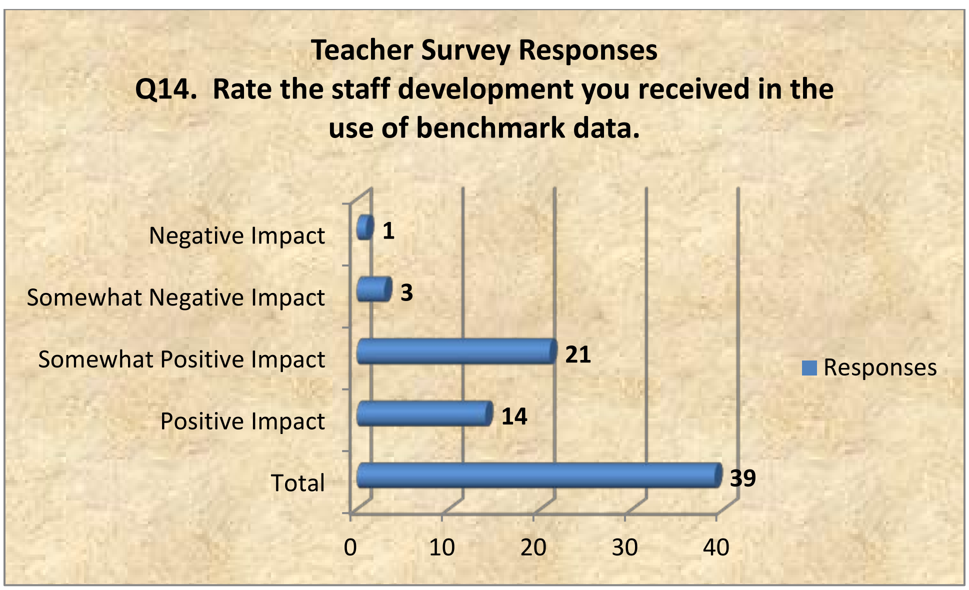
Q11: Eighty-three percent of the responders rated the impact of assessment and data to drive instruction on a somewhat positive to positive scale. Seventeen percent of the responders rated the impact of assessment and data to drive instruction on a somewhat negative to negative scale.



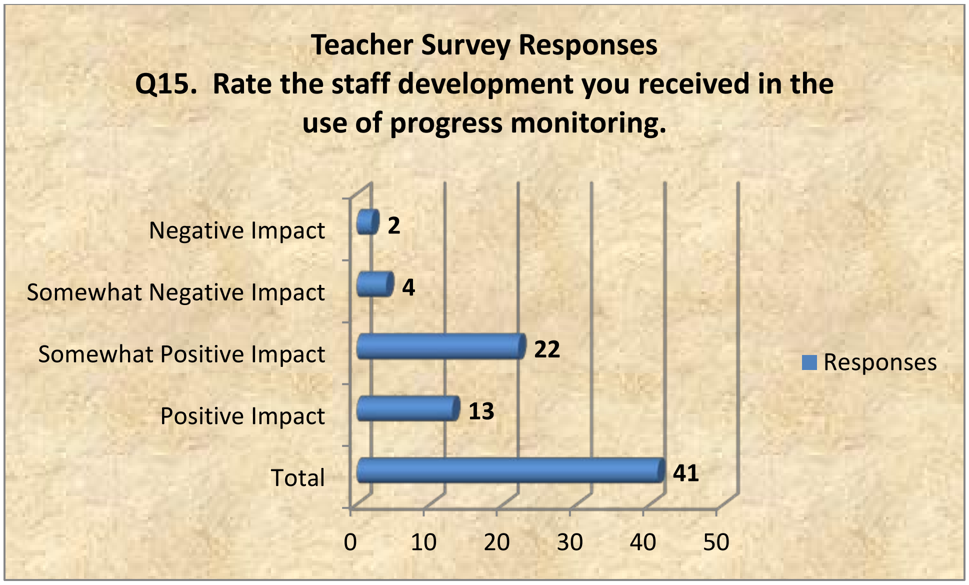
Q12: The vast majority of responders, 81%, have received 1–4 hours of staff development prior to the implementation of mClass: Reading 3D. Five percent of the responders have received 10 or more hours of training on mClass: Reading 3D prior to implementation.



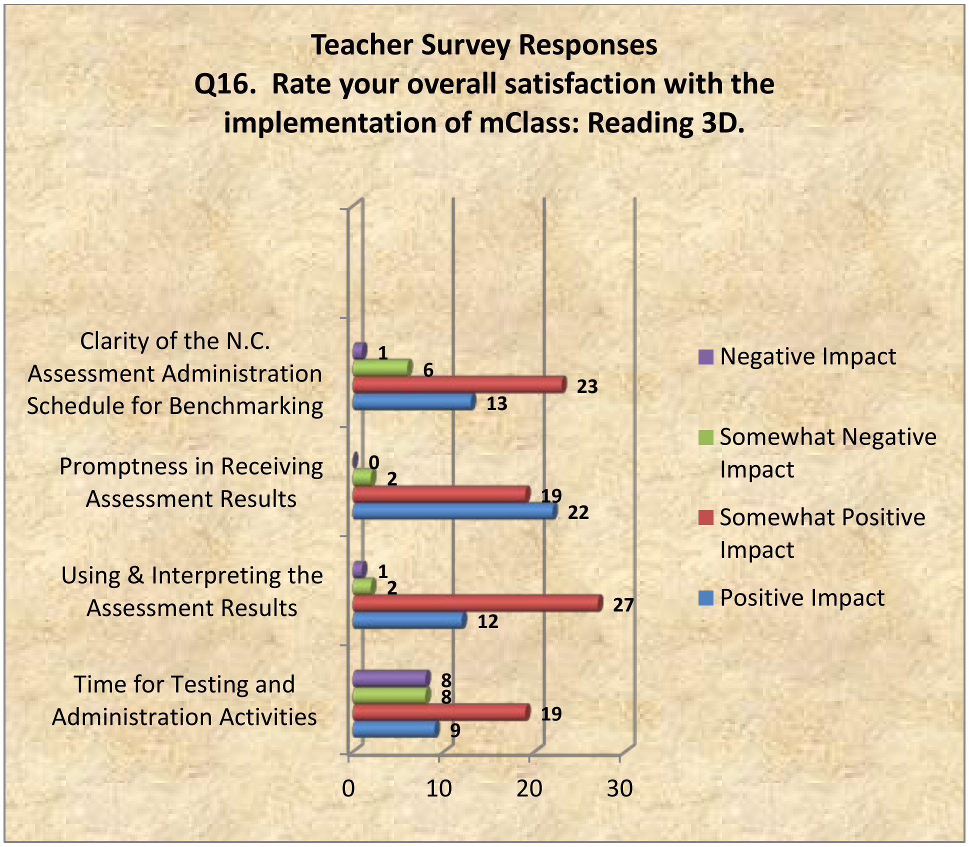
Q13: Seventy-three percent of the responders rated the Train the Trainer (TOT) model to fully prepare teachers to use the mClass: Reading 3D assessment on a somewhat positive to positive scale. Twenty-seven percent of the responders rated the Train the Trainer (TOT) model to fully prepare teachers to use the mClass: Reading 3D assessment on a somewhat negative to negative scale.



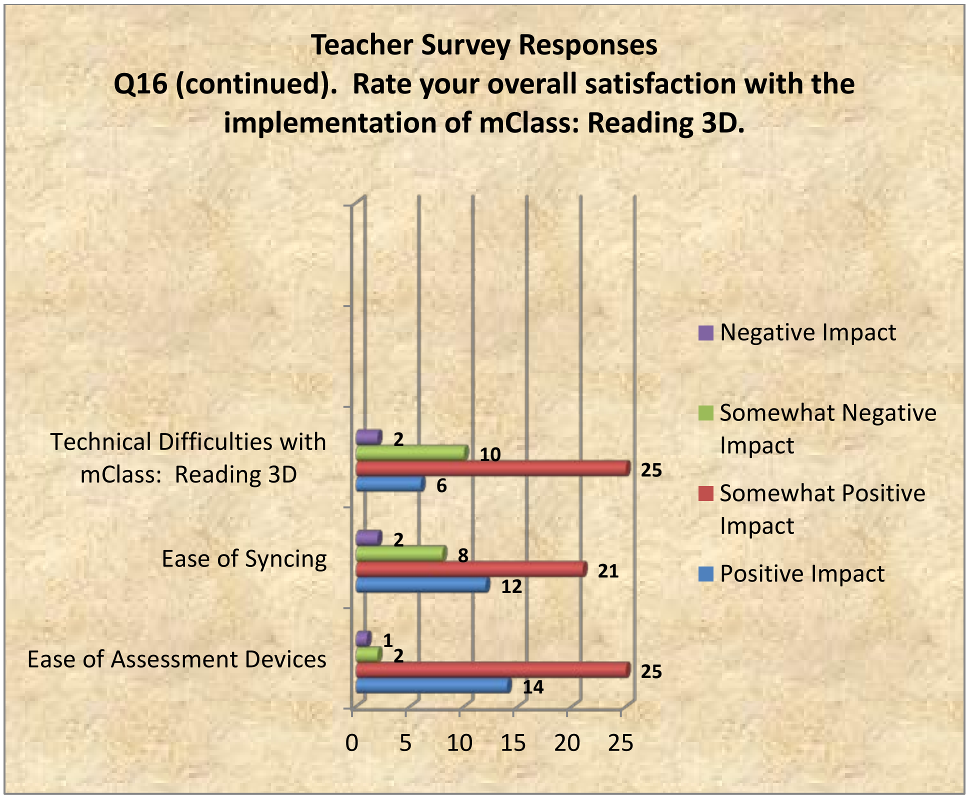
Q14: Ninety percent of the responders rated the staff development they received in the use of benchmark data on a somewhat positive to positive scale. Ten percent of the responders rated the staff development they received in the use of benchmark data on a somewhat negative to negative scale.



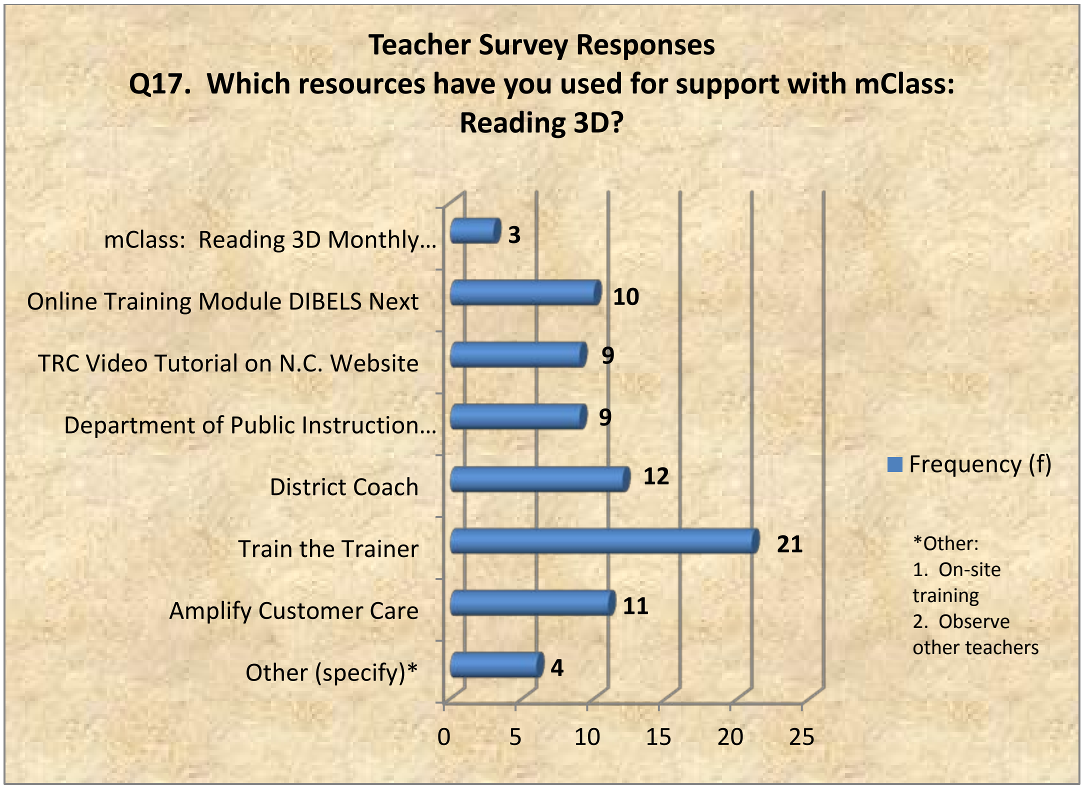
Q15: Eighty five percent of the responders favorably rated the staff development they received in the use of progress monitoring. Fifteen percent of the responders rated the staff development they received in the use progress monitoring on a somewhat negative to negative scale.



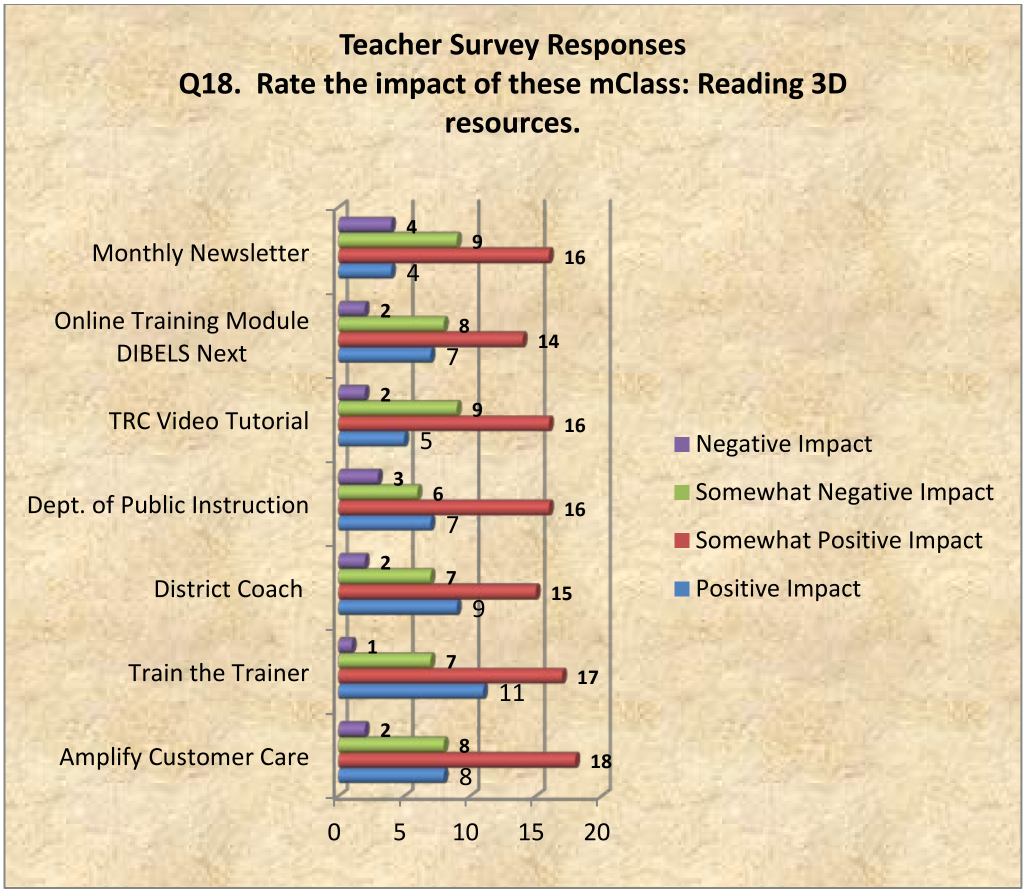
Q16: Eighty-four percent of the responders rated the overall satisfaction with the clarity of the N.C. schedule for benchmarking on a somewhat positive to positive scale. Ninety-five percent positively rated the promptness in receiving assessment results. Ninety-three percent rated using and interpreting the assessment results on a somewhat positive to positive scale. Sixty-four percent were positively satisfied with the time for testing and administration activities.



Q16 (cont.): Teacher survey responders rated their overall satisfaction as a favorable experience with technology.



Q17: The Train the Trainer model was the most utilized resource used to support mClass: Reading 3D, while the mClass: Reading 3D monthly newsletter was the least utilized resource. Other resources specified include on-site training and observing other teachers.



Q18: The majority of responders rated the impact of the listed mClass: Reading 3D resources as having a somewhat positive to positive impact.

APPENDIX I: PRINCIPAL AND TRANSFORMATIONAL/INSTRUCTIONAL COACH INTERVIEW QUESTION RESULTS

Q1: How do you use the reports found on the Reporting and Analysis Suite to answer the following questions:

Which classrooms need additional instructional support?
Which categories of student academic difficulty did you find significant?
Which data/strategies do you use to show student achievement?

Principals	• Assess progress monitoring rates • Monitor teacher effectiveness • Provide additional support in needed areas • Track student growth and assessment • Conduct effective PLCs
Transformational/ Instructional Coaches	• Assess progress monitoring rates • Monitor teacher effectiveness • Provide additional support in needed areas • Track student growth and assessment • Conduct effective PLCs • Monitor the correlation report*
Common Themes	• Reports used to track student growth • Determine teacher effectiveness • Identify areas of concern • Beginning to analyze data on a deeper level to drive instruction • Conduct effective PLCs

*Red highlights difference in responses.

Q2: Which specific features do you like most about mClass: Reading 3D and why?

- Staff is able to rapidly screen and progress monitor students
- Web analysis and reporting for coaches and administrators
- Tracking student progress from year to year and class to class
- Correlations to a wide range of instructional materials available in many K-3 classrooms and reading programs
- Ease of using data to communicate goals and expectations to stakeholders such as parents, vertical planning teams, etc.
- Use of data to determine where professional development and resources are needed
- Other?

Principals

- Staff is able to rapidly screen and progress monitor students--data used to effectively implement ezRtI
- Access drill down reports to track student growth and weaknesses
- Increases accountability among K-3 teachers*

Transformational/ Instructional Coaches

- Staff is able to rapidly screen and progress students
- Access drill down reports to track student growth and weaknesses
- Tracking student progress from year to year and class to class

Common Themes

- Staff is able to rapidly screen and progress monitor students
- Access to reports to track student growth and weaknesses

*Red highlights difference in responses.

Q3. Have instructional practices changed in grades K-3 since the implementation of mCLass: Reading 3D? If so, how?

Principals	• Yes: More small group instruction, differentiation, better instructional planning, more rigorous classrooms*, hightened awareness of the importance of phonics , and more teacher accountability with a sense of urgency*
Transformational/ Instructional Coaches	• Yes: Better instructional planning, better utilization of teacher assistants*, better literacy-structured centers, and hightened awareness of phonics
Common Themes	• Better instructional planning • Small group instruction and differentiation in centers • Hightened awareness of phonics

*Red highlights difference in responses.

Q4. Describe the impact of mClass: Reading 3D on student achievement.

Principals	• Beginning to see positive impact • Teacher attitudes are getting better* • Teachers are learning to analyze student data on a deeper level.
Transformational/ Instructional Coaches	• Positive impact, but depends on the classroom teacher and environment • Only about 2-3 teachers out of 20 are actually utilizing all components of the program with fidelity and as the program was intended. Reports show teachers are not progress monitoring at rate. • Looking at trends, students who are progress monitored at rate are making expected student growth. • Teachers are learning to analyze student data on a deeper level.
Common Themes	• Positive impact • Teachers are learning to analyze student data on a deeper level.

*Red highlights difference in responses.

Q5. Are there strengths to the mClass: Reading 3D program? If so, what are they?

Principals	• Yes • Connection to Standard 6* • Individualized data to target students' strengths and weaknesses* • Quality and quantity of data* • Good components of assessment*
Transformational/ Instructional Coaches	• Yes • Provides data for prescriptive learning* • Highly visual nature* • Allows for transparency* • Supports collaboration* • Shows trends in student learning and teaching*
Common Themes	• Positive impact, but in different aspects • Abundance of data

*Red highlights difference in responses.

Q6. Are there challenges to the implementation of the mClass: Reading 3D program? If so, what are they?

Principals	•Transition of teachers •Lack of ongoing and effective training •Lack of instructional coaches •Train the Trainer approach not effective at every school •Technology issues with syncing, slow systems, and late emails about problems*
Transformational/ Instructional Coaches	•Transition of teachers •Lack of ongoing and effective training •Lack of instructional coaches •Train the Trainer approach not effective at every school •Time management* •Progress monitoring at rate in low performing school (not enough time)*
Common Themes	•Transition of teachers •Lack of ongoing and effective training •Lack of instructional coaches •Train the Trainer approach not effective at every school

*Red highlights difference in responses.

Q7. What recommendations do you have for improvements to mClass: Reading 3D?

Principals

- Elimination of mClass: Reading 3D in 3rd grade*
- Instructional coach in every school to facilitate the learning process and provide support for teachers
- Provide ongoing training to principals and teachers
- Provide district-wide training to new teachers*
- Eliminate Train the Trainer as the primary facilitator (not a classroom teacher)
- Provide Reading Foundations training to every K-3 teacher to obtain background knowledge for teaching phonics

Transformational/ Instructional Coaches

- Provide ongoing training to principals and teachers
- Re-examine benchmark window at beginning of the year*
- Better preparation for new teachers at the university level*
- Improve Now What? Tools to show scope and sequence of instruction*
- Re-examine the wide growth in grade levels (gaps in assessment)*
- Instructional coach in every school to facilitate the learning process and provide support for teachers
- Eliminate Train the Trainer as the primary facilitator (not a classroom teacher)
- Provide Reading Foundations training to every K-3 teacher to obtain background knowledge for teaching phonics

Common Themes

- Provide ongoing training to principals and teachers
- Instructional coach in every school to facilitate the learning process and provide support for teachers
- Eliminate Train the Trainer as the primary facilitator (not a classroom teacher)
- Provide Reading Foundations training to every K-3 teacher to obtain background knowledge for teaching phonics

*Red highlights difference in responses.

Q8. Are there issues with staff development for the implementation of mClass: Reading 3D? If so, what are they?

Principals

- Train the Trainer approach is not effective at every school
- Need ongoing training for principals and teachers
- New teachers need mClass: Reading 3D training at the beginning of school year.
- All K-3 teachers and principals need Reading Foundations training.

Transformational/ Instructional Coaches

- Train the Trainer approach is not effective at every school
- Need ongoing training for principals and teachers
- New teachers need mClass: Reading 3D training at the beginning of school year.
- All K-3 teachers and principals need Reading Foundations training.

Common Themes

- Train the Trainer approach is not effective at every school
- Need ongoing training for principals and teachers
- New teachers need mClass: Reading 3D training at the beginning of school year.
- All K-3 teachers and principals need Reading Foundations training.

Q9. Which resources have you used for support with mClass: Reading 3D?

_____Amplify Customer Care
_____Train the Trainer
_____District Coach
_____Department of Public Instruction Staff
_____TRC Video Tutorial on NC website
_____Online Training Module: DIBELS Next
_____mClass: Reading 3D Monthly Newsletter

Principals	• Amplify Customer Care* • Train the Trainer • District Coach • Department of Public Instruction Staff
Transformational/ Instructional Coaches	• Train the Trainer • District Coach • Department of Public Instruction Staff
Common Themes	• Videos and monthly newsletters were not utilized effectively.

* Red highlights difference in responses.

Q10. What suggestions would you offer to improve mClass: Reading 3D to ensure continued success?

Principals	• Ongoing and consistent training for principals and teachers • Instructional coaches needed in implementing schools • Reading Foundations training needed for K-3 teachers and principals
Transformational/ Instructional Coaches	• Ongoing and consistent training for principals and teachers • Instructional coaches needed in implementing schools • Reading Foundations training needed for K-3 teachers and principals
Common Themes	• Ongoing and consistent training for principals and teachers • Instructional coaches needed in implementing schools • Reading Foundations training needed for K-3 teachers and principals

Q11. Select your preference for the type of additional training and/or support you feel would be beneficial in the future. (Choose a maximum of 3, and rank in order of preference 1=highest).

_____ Benchmark and/or progress monitoring administration
_____ Benchmark and/or progress monitoring data to inform instruction
_____ Now What? Tools (i.e. Home Connect, Item Level Advisor and/or Small Group Advisor)
_____ Reporting and Analysis Suite (for school & district admins only)
_____ Technology (PDAs, netbook, etc.)

Principals

- 1. Benchmark and/or progress monitoring data to inform instruction
- 2. Reporting and Analysis Suite (for school & district admins only)
- 3. Benchmark and/or progress monitoring administration*

Transformational/ Instructional Coaches

- 1. Benchmark and/or progress monitoring data to inform instruction
- 2. Reporting and Analysis Suite (for school & district admins only)
- 3. Now What? Tools (i.e., Home Connect, Item Level Advisor and/or Small Group Advisor*

Common Themes

- Benchmark and/or progress monitoring data to inform instruction
- Reporting and Analysis Suite (for school & district admins only)

*Red highlights difference in responses.

APPENDIX J: IRB APPROVAL LETTER

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** · www.ecu.edu/irb

Notification of Initial Approval: Expedited

From:	Social/Behavioral IRB
To:	Sheri Dial
CC:	Bill Grobe
Date:	1/21/2015
Re:	UMCIRB 14-001882 An Analysis of the Impact of mClass: Reading 3D on Students' Reading Achievement in Second Grade

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 1/21/2015 to 1/20/2016. The research study is eligible for review under expedited category #6, 7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Name	Description
An Analysis of the Impact of mClass: Reading 3D on Teacher Instruction and Student Achievement	Study Protocol or Grant Application
Consent Form from District	Dataset Use Approval/Permission
Principal and Transformation Coach Interview Consent Form	Consent Forms
Principal and Transformation Coach Interview Questions	Interview/Focus Group Scripts/Questions
Survey Cover Letter	Consent Forms
Teacher Survey Questions	Surveys and Questionnaires

The Chairperson (or designee) does not have a potential for conflict of interest on this study.