

THE RELATIONSHIP BETWEEN TEACHERS' UNDERSTANDING AND  
IMPLEMENTATION OF DIFFERENTIATED READING INSTRUCTION AND  
THIRD-GRADERS' READING ACHIEVEMENT SCORES

by

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Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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## ABSTRACT

The purpose of this correlational study was to determine whether the predictor variables, teachers' perceived understanding and implementation of differentiated instruction, as measured by the Understanding and Implementation of Differentiated Instruction survey, had a relationship to the criterion variable, third-grade students' reading achievement, as measured by the mClass: Reading 3D Text Reading and Comprehension Test. Using convenience sampling, third grade teachers from six rural North Carolina counties were invited to participate in the study. Data from 54 third grade teachers who consented to participate were analyzed using a Pearson product moment correlation. The results of this study indicated that a statistically significant relationship did not exist between teachers' understanding and implementation of differentiated instruction and third-grade students' reading achievement scores.

*Keywords:* differentiated instruction, reading proficiency, differentiation, mClass

## **Dedication**

I dedicate my dissertation to three kings (Henry, Henry, Jr., and Darius) and my Destiny.

## Acknowledgements

I give all glory and honor to my Lord and Savior, Jesus Christ, who allowed me this privilege and opportunity to accomplish such a major achievement in my life. Along with this opportunity, I am grateful to God for my Liberty University professors, family, friends, and colleagues who were instrumental in helping me achieve this endeavor. Therefore, I sincerely thank Dr. Amy Jones, my Committee Chair, for her timeless effort and grace and never-ending patience, encouragement, and dedication. Each interaction with her resulted in an increased level of motivation and renewed determination.

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**List of Abbreviations**

Collaborative Strategic Reading (CSR)

Common Core State Standards (CCSS)

Text and Reading Comprehension (TRC)

## CHAPTER ONE: INTRODUCTION

### Overview

Chapter one provides a foundation for this correlational study. Six sections are included in chapter one: (a) background, (b) problem statement, (c) purpose statement, (d) significance of the study, (e) research questions, and (f) definitions.

### Background

“Millions of American children get to fourth-grade without learning to read proficiently” (Fiester, 2010, p. 1). According to Vaughn and Bos (2015), more than 80% of American students have struggled to read proficiently. Over time, these numbers and percentages have created a major concern for an increase in the high school dropout rate, and such steep numbers have resulted in the possibility of colleges lacking a strong and scholarly applicant pool. Additionally, United States military recruiters have noticed a deficit in their potential soldier draw, and employers have had a shortage in qualified and prospective employees (Bailey, 2007). Consequently, the increase in the dropout rate has resulted in a large number of individuals who have been unable to contribute effectively to society. Students who drop out or do not read on grade level by the end of third-grade have influenced the statistics in the prison pipeline. Growing numbers and percentages of non-proficient third graders enter or are promoted to fourth grade. Consistent with the National Conference of State Legislature (2019), roughly two out of three fourth graders failed to score proficient in reading. The percentages of specific racial and ethnic groups consist of 82% African American, 79% Latino, and 78% American Indian fourth grade students who read below proficiency. With such major gaps in reading proficiency, state legislation requires retention of students who do not proficiently read by the end of third grade. According to the National Adult Literacy Survey, 70% of all incarcerated adults cannot read at a

fourth-grade level, meaning they have lacked the reading skills to navigate many everyday tasks or hold down anything but lower paying jobs (Troyatms, 2016). Lack of proficiency in reading has created a “wide academic achievement gap” (Fiester, 2010, p. 1).

Reading, and the development of language skills, is important. The development of language skills has been essential to students’ success in school. Reading has been one of the most critical skills students acquire within their education. It has served as the basis for all other academic subjects (Marchand-Martella, Martella, Modderman, Petersen, & Pan, 2013).

Children’s language and reading development has consisted of a sequence of phases: (a) awareness and exploration, (b) experimental, (c) early, (d) transitional, and (e) independent and productive. Children have matured as early readers from birth to preschool, and this has extended through the end of third grade. As children have matured in reading, they have graduated from the awareness and exploration phase to the independent and productive phase. Early readers have obtained reading abilities through increasingly significant applications as they have interacted in focused, relevant, and worthwhile tasks. Reading and language support has been provided across all subject areas in integrated activities, which have involved speaking, listening, viewing, and writing. These practices have supported the basis for learning to read (Hali, 2017; Vacca et al., 2006).

According to Snow, Burns, and Griffin (1998), learning to read has taken on a more formal nature throughout the primary grades as teachers have attempted to balance systematic instruction in phonemic awareness and phonics with many opportunities for fluency and comprehension development. Upon entering third grade, literacy instruction has highlighted the early and intermediate phases of reading (i.e., awareness and exploration, experimental, early,

and transitional) to develop students into independent and productive readers by the end of the school year.

In 1998, a joint effort occurred between the International Reading Association and the National Association for the Education of Young Children to develop a position statement detailing the phases of children's reading development. It was determined that children's reading development spans from awareness and exploration to independent and productive from birth through the primary grades. Early on, children have become aware of their environment and have established a basis for learning to read. In this awareness and exploration phase, while at home or prior to school attendance, children have appreciated listening to stories and having conversations about stories. Children have recognized that words from a story convey a message. Additionally, through early learning experiences, children have discovered environmental print from product labels, logos, and signs. According to Vacca et al. (2006), parents and teachers should make a conscious effort through teachable moments to create awareness of print in meaningful and functional ways. It has been within this early phase of awareness and exploration that children have begun to recognize letters and their sound associations.

The experimental phase has usually begun around the time that children enter kindergarten. In the experimental phase, children have begun to comprehend the basic ideas of print, including the left to right flow and top-down direction. From prior knowledge, experience, or immersion from read-alouds, children have learned that print in books conveys a message. According to Vacca et al. (2006), children have continued to identify letters and letter-sound relationships, develop knowledge with rhyming, start to write letters of the alphabet, and read

high-frequency words. Within the experimental phase, children have been exposed to a visual representation of words as a string of letters.

In the first grade, teaching has become more formal. Vacca et al. (2006) recorded that children have begun to read and retell simple or familiar stories, develop comprehension strategies, and develop accurate word identification through their increasing knowledge of letter sound patterns. Within this phase, children have embraced the sounds of the language, or phonemes, and have developed decoding strategies. In addition, during this phase, children's fluency has improved as they have learned to read high-frequency words.

The transitional reading phase has included a shift from reading simple stories to more complicated literacy activities. Vacca et al. (2006) documented that children begin to read with enhanced fluency and develop comprehension skills utilizing cognitive and metacognitive processes. By utilizing word identification practices, sight word recognition, reading fluency, conventional spelling, and proofreading, children have developed an ever-increasing ability with reading and language. A semantic process has become evident in this phase with children learning new words and enhancing their vocabularies.

Following the transitional reading phase, children have matured into independent and productive readers. This phase has aligned with the efforts of third graders. In the third grade, children have activated their prior knowledge by incorporating various reading strategies during independent reading. In this phase, children have been more attentive to the grouping and organization of words in phrases and complete thoughts. The intention at this phase has been to comprehend the author's intent of the text. Consequently, children have continued to broaden and improve to become proficient readers (Vacca et al., 2006).



In the third grade, students have made the conversion from learning-to-read to reading-to-learn (Hernandez, 2012; Kel-Artinian & Parisi, 2018). The third-grade experience has been considered as either a positive or a negative pathway toward academic success. Over 30 states have passed regulations that emphasize third-grade reading proficiency. Specifically, in the state of North Carolina, there has been an increased interest in the number of children who have been promoted to fourth-grade and are unable to read proficiently (Snow, Morris, & Perney, 2018).

According to Kel-Artinian and Parisi (2018), third-grade has been a pivotal year for reading proficiency. They recorded that 75% of students who struggle with reading in third grade never catch up. Students included in this percentage are four times as likely to become part of the dropout rate before or during high school. With such statistics, it has been critical to identify at-risk students and their needs as early as possible. After third grade, skills, concepts, and information have become more complex, and students have to be prepared to encounter the ever-challenging academic demands as they advance through the grades.

Differentiation has been an effective instructional practice to implement in the general education classroom when students have demonstrated at-risk characteristics with specific skills, concepts, or information. According to Tomlinson and Allan (2000), differentiated instruction has occurred when teachers proactively modify curricula, teaching methods, resources, learning activities, and student assignments to address the diverse needs of individual students and small groups of students to maximize the learning opportunities in the classroom. Roy, Guay, and Valois (2015) have stated that differentiated instruction is a varied and adapted teaching approach to match students' abilities or readiness levels.

Classrooms' instructional climates have been situated around students' academic needs. Classroom settings should be student-centered, in which the teacher has concentrated on the

varied needs of students by implementing various instructional strategies and practices (Van Tassel-Baska & Hubbard, 2016). Differentiation has been found effective due to teachers' emphasis on students' academic needs. With differentiated instruction, teachers have analyzed data about students' progress and have used it to impact instruction. Faber, Glas, and Visscher (2018) stated that in order to address the needs of an academically diverse student population, teachers must differentiate an individual student's learning goals, instructional content, instruction time, assignments, and learning materials to highlight a student's various learning needs.

Differentiated instruction has benefitted teachers and students. According to Van Kuijk, Deunk, Bosker, and Ritzema (2016), when teachers have identified students' learning needs, they have strived to learn new instructional skills. Teachers have obtained an increased sense of flexibility. Additionally, teachers have not felt confined or limited to teaching routines, which have often become cumbersome (Layton, 2016).

Students have benefitted from differentiated instruction in multiple ways. Faber et al. (2018) has recorded how students profit from collaboration among heterogeneous groups. According to Lou et al. (1996) and Saleh, Lazonder, and De Jong (2005), on-grade-level students have received and conveyed explanations in homogeneous groups, while above-grade-level students have obtained skills, knowledge, and abilities by serving as a peer helper in heterogeneous groups. Below-level students have received additional learning time.

As there have been teacher and student benefits to implementing differentiated instruction, there have been disadvantages, also. Differentiation has been viewed as a time-consuming practice. Teachers have been required to participate in continuous and consistent professional development (Van Kuijk et al., 2016). Additionally, Renzulli (2012), Tomlinson

(2014), and Winstanley (2016) have recorded that differentiation has included the use of multiple approaches to modify instruction. With the use of differentiated instruction, research studies have shown variations in student achievement results (Faber et al., 2018; Marsh, 2012). Faber et al. (2018) have found a significant positive effect on the academic impact of differentiated instruction within specific groups of students. Conversely, Cordray, Pion, Brandt, Molefe, and Toby (2012) have recorded no effects to student achievement when implementing differentiated instruction.

In spite of the disadvantages, one advantage to implementing differentiated instruction has been that there are focused interventions for all students and not just one group. Another advantage has included student achievement. Several researchers have documented an overall significant improvement in student achievement by effectively incorporating differentiated instructional practices (Carlson, Borman, & Robinson, 2011; Konstantopoulos, Miller, & Van der Ploeg, 2013; Van Geel, Keuning, Vissher, & Fox, 2016; Van Kuijk et al., 2016).

### **Historical Context**

Differentiated instruction has been present in elementary classrooms for many years. It has been documented in the early schoolhouse classroom days and is still being utilized in the large educational institutions of today (Cox, 2017). Early on, teachers taught students of many different ages in a one-room classroom. In addition to multiple ages in one classroom, the students possessed various abilities, which required a teacher's flexibility in instructional techniques and strategies as well as varied curricular knowledge. Despite the many ages and various abilities, the teaching in the classroom was more student-centered. With such a versatile and multiage environment, there was a need for differentiated instruction.

Differentiated instruction has required teachers to adjust their instruction in content, process, or culminating product, or some mixture of the aforementioned elements (Strickland, 2007). Educators should have conformed to students based on students' readiness, profiles, and interests (Ackerman, 2012). Focusing on these elements has resulted in a student-centered learning environment. After establishing this understanding, teachers have grouped students based on their backgrounds, aptitudes, and skills (Valentino, 2000).

Many differentiated instructional delivery methods have made their way in the classroom. Differentiated instruction has progressed to offer an abundance of exploration and educational opportunities for students (Strickland, 2007). As various methods and strategies have become more apparent, educators have begun using them more frequently with their students.

### **Social Context**

Without the use of differentiated instruction in the classroom, particularly in reading, students are at a disadvantage. Reading has been an essential skill for school and everyday living. When teachers have not responded to students' reading needs, the students have tended to have a performance deficit with diminishing returns. Complications in reading have been associated with students' lack of social skills (Parhiala et al., 2015; Turunen, Poskiparta, & Salmivalli, 2017). Students with reading difficulties have tended to experience frustration when confronted with reading opportunities. Their frustration has resulted in externalizing and acting out behaviors, as well as bullying (Vaughn & Bos, 2015). Students' reading difficulties have also resulted in them being defenseless or susceptible to ill-treatment (Turunen et al., 2017). Consequently, it has led to low reading scores, and low reading scores have affected students' academic success (Lauermann, Eccles, & Pekrun, 2017).

With the use of differentiated instruction in reading, there have been academic, social, and behavioral benefits for the students. According to Strickland (2007), the fundamental concept of differentiated instruction has recognized and responded to students' varied needs. When teachers have understood and effectively implemented differentiated instruction, it has fulfilled academic gaps and deficits (Tomlinson, 2001). Differentiated instruction has not been a one-size-fits-all activity. It has been instructional approach that reaches all learners by appealing to their varying differences, abilities, and interests.

### **Theoretical Context**

There has been a strong theoretical basis connected to the relationship between teachers' understanding and implementation of differentiated instruction and students' reading achievement. Differentiation, as a teaching practice, has been aligned to the scaffolding theory, originating from Jerome Bruner (Wood, Bruner, & Ross, 1976). Differentiation has been linked to the aforementioned theory due to its relationship with the practices, methods, and strategies embedded in the instructional approach. Studies about differentiated instruction in the classroom have strongly revealed the association and connection to scaffolding (Ankrum, Genest, & Morewood, 2017; Gonzalez-Calero, Arnau, Puig, & Arevalillo-Herraez, 2015).

### **Problem Statement**

Many researchers have attempted to address the effectiveness of differentiated instruction in elementary classrooms (Reis, McCoach, Little, Muller, & Kaniskan, 2011; Roy et al., 2015; Shaunessy-Dedrick, Evan, Ferron, & Lindo, 2015; Simpkins, Mastropieri, & Scruggs, 2009; Tobin & Tippett, 2014; Valiandes, 2015). However, according to Williams et al. (2014), the problem has been that there is an increasing need to analyze data to drive instruction and best address the needs of all students. When differentiation has been implemented to address

students' academic needs in conjunction with data-driven instruction, teachers are mindful of students' continuous progress, and this has promoted students' learning (Douglas, 2016). Upon reviewing related literature, a gap was identified which indicated a discrepancy in teachers fully grasping the reasoning behind differentiation and classroom implementation of this instructional method (Good, Simmons, & Kame'enui 2009; Whipple, 2012; Williams et al., 2014).

### **Purpose Statement**

The purpose of this correlational study was to determine whether a relationship exists between teachers' understanding and implementation of differentiation and third-grade students' reading achievement. A correlational design was implemented to analyze data using two predictor variables—teachers' understanding and implementation of differentiated instruction—in relation to the criterion variable, mClass reading proficiency scores. Understanding of differentiated instruction has been defined as “differentiating content, process, or (culminating) product, or some combination of these three and major ways students seem to vary by interest, learning profile, and readiness” (Strickland, 2007, p. 7). Implementation of differentiated instruction has been defined as “good teaching that attends as often as possible to differences in student readiness, interest, and learning profile with the intent of maximizing student growth, motivation, and efficiency of learning” (Strickland, 2007, p. 8). The criterion variable was third-grade students' reading achievement as measured by the mClass: Reading 3D Text Reading Comprehension (TRC). The purpose of the TRC instrument was to measure the third-grade “students' instructional reading level” (Center on Response to Intervention, 2017, p. 1).

### **Significance of the Study**

Sparks, Patton, and Murdoch (2014), Kurz et al. (2014), and Pomortseva (2014) have emphasized the importance of teachers implementing differentiated instruction to respond

effectively to students' reading deficits. Turunen et al. (2017) concluded that adequate support and strategies targeting students' specific reading skills in earlier grades have been effective to redirect a students' reading trajectory. Missett, Bruner, Callahan, Moon, and Arzano (2014) have determined that teachers' understanding of differentiated instruction has been more helpful when they have customized learning to the profiles of varied learners in the classrooms.

The implementation of differentiated instruction within reading activities and curriculum has not been limited to one group of students. Many students have been impacted by such practices within differentiated instruction. There has been an implication that it has been suitable for at-risk, typical, and gifted and talented students, but it has also been applicable to students with learning disabilities and those who are socioeconomically disadvantaged. Whipple (2012) has recorded that this was especially true for English Language Learners, students who received special education services, students from ethnic minority backgrounds, and economically disadvantaged students (Tomlinson & Allan, 2000). In short, differentiated instruction has been appropriate for all students and at any age.

Pomortseva (2014) recorded that flexible grouping has been an extremely productive strategy for progressively enhancing students' reading skills. The constant, periodical regrouping, modifying, and teaching of students at their improved levels has created guided, incremental growth. Missett et al. (2014) stated that ability grouping and acceleration have been practices that have provided strategies to create learning opportunities matched to the learning needs of students. Kurz et al. (2014) recorded that the provisions of visual representation for students has been beneficial to organize information, communicate attributes, and explain relationships. Cultivating reading skills and engagement in reading activities has been significant to improving education. Generally, it had been recognized that the enhancement of

teachers' understanding and implementation of differentiated instruction had been essential to responding to students' reading achievement.

With insightful understanding and effective use of differentiated instruction in the classroom, equality for all students was emphasized (Yang, Lai, Yao, & Huang, 2014).

Differentiated instruction has been aimed at "responding to individual learner needs" (Tomlinson & Allan, 2000, p. 1). Teachers should meet students where they are currently performing in the classroom and grow them from there.

### **Research Questions**

**RQ1:** Is there a relationship between teachers' perceived understanding of differentiated instruction and third-grade students' reading achievement scores as measured by the mClass?

**RQ2:** Is there a relationship between teachers' perceived implementation of differentiated instruction and third-grade students' reading achievement scores as measured by the mClass?

### **Definitions**

The following terms that were relevant to this study.

1. *Differentiation/Differentiated Instruction* – "Classroom practice with a balanced emphasis on individual students and course content" (Tomlinson & Imbeau, 2010, p. 14).
2. *Flexible Grouping* – "Purposeful reordering of students into working groups to ensure that all students work with a wide variety of classmates and in a wide range of contexts during a relatively short span of classroom time" (Tomlinson & Strickland, 2005, p. 352).



3. *High Preparation Differentiation* – “More creative ideas (class-wide tutoring, multiple texts, independent studies, tiered centers, products, activities and labs, learning contracts, literature circles, multiple intelligence options, group investigations, tic-tac-toe, learning strategies, teams, games, RAFT assignments, tournaments, etc.) that require a little more planning in which a teacher can differentiate instruction” (Ackerman, 2012, p. 28).
4. *Implementation of Differentiated Instruction* - “Good teaching that attends as often as possible to differences in student readiness, interest, and learning profile with the intent of maximizing student growth, motivation, and efficiency of learning” (Strickland, 2007, p. 8).
5. *Low Preparation Differentiation* – “Quick and easy ways (choice of books, homework options, reading buddies, varied journal prompts, pacing, computer programs, modes of expression, notetaking and graphic organizers, think-pair-share, work alone/together, jigsaw, open-ended activities, flexible seating, collaboration, independence, cooperation, etc.) a teacher can differentiate instruction” (Ackerman, 2012, p. 23).
6. *Scaffolding* – “Any support system that enables students to succeed with tasks they find genuinely challenging” (Tomlinson & Strickland, 2005, p. 356); and “the process that enables a child or a novice to solve a problem, carry out a task, or achieve a goal which would be beyond his unassisted efforts” (Wood et al., 1976, p. 90).

## **CHAPTER TWO: LITERATURE REVIEW**

### **Overview**

Chapter two examines the theory and literature related to differentiated instruction. After the theoretical context, there is a literature review, which provides a critique of related literature regarding differentiated instruction and students' achievement. Two sections are explored in this chapter: (a) theoretical framework and (b) related literature.

### **Theoretical Framework**

Differentiated instruction has been directly linked to Bruner's (1996) scaffolding learning theory. Originally, differentiated instruction and student achievement were grounded in the sociocultural theory of learning and emphasized the principles of learning through social interaction and the development of cognition (Subban, 2006). It was believed that achievement was obtained with direction and assistance from someone with knowledge and understanding of the concept or skill; however, Bruner (1996) believed that learners should be effectual and functional in the educational process. The practical knowledge had enabled students to improve their newly acquired skills and understanding. He believed that learners built their knowledge on prior experiences and that problem solving and analytical thinking played significant roles in the educational development.

According to Wood et al. (1976), the scaffolding learning theory has been described as the process that enables a child or a novice to solve a problem, carry out a task, or achieve a goal that would be beyond the individual's unassisted efforts. It has been an organized intervention, which consists of an open dialogue of learning patterns or templates. It is developed with instruction; essential to the idea of systematic, arranged student experience utilizing a spiral course of study where the learner responds to progressively difficult sections of a subject. In the

differentiated instructional setting, teachers support students through a guided, structured questioning process, which aids students in reaching a solution to a problem. According to the scaffolding theory, there are five levels of support that a teacher may have used throughout the aforementioned questioning process: (a) general verbal encouragement, (b) specific verbal instruction, (c) assistance with students' choices of material or strategies, (d) preparation of material for student assembly, and (e) demonstration of tasks (Winstanley, 2016). Within these scaffolding learning support levels, there has been clear indication of systematic support for the learner, which is significant in the learner-centered classroom setting.

Past and present knowledge are released as the student generates new ideas or concepts throughout scaffolding. Bruner's (1996) belief had been that the teacher's direct communication of scaffolding diminished as the student showed progress. The comprehension of information includes active rebuilding of knowledge by practice and the student choosing and converting information. Additionally, the acquisition of knowledge includes generating educated guesses and forming a choice that is contingent upon an emerging cognitive structure.

Bruner (1996), the father of cognitive psychology, was known as the originator of the scaffolding learning theory. The term *scaffolding* was metaphorically used in an educational framework describing an intentional examination of a collaborative, instructional connection between a developing child and his or her teachers for ability, achievement, and problem solving. The purpose of Bruner's work entitled *The Role of Tutoring in Problem Solving* was to investigate and explain the scaffolding process, which enabled students to finish an assignment without assistance. The students produced outcomes and progressed in competence and steps that exceeded unaided attempts (Wood et al., 1976).

Bruner (1996) was fascinated with the scaffolding learning theory and how individuals reached higher order learning, competence, and achievement. Bruner continued his belief in the scaffolding learning theory and extended it in another book, *The Culture of Education*. In this particular book, Bruner went beyond the issue of individual achievement or competence. Bruner focused upon educational practice and educational theory and how it equipped individuals to make positive contributions within society. In other words, he emphasized how individual achievement or competence produced quality citizens in society. Bruner shared that the mind obtained its full potential only by involvement in the culture through means of observing, discerning, touching, and executing discourse. He specifically highlighted how education prepared people to contribute in the culture on the basis of survival and livelihood.

As Bruner continued to develop his research, other researchers aligned their studies to his scaffolding learning theory. Scaffolding learning theory advanced in differentiated instruction (Brevik, Gunnelfsen, & Renzulli, 2018; Fien et al., 2018; Savage, Georgiou, Parrila, & Maiorino, 2018). Researchers emphasized that scaffolding is imperative for developing differentiation competence in future teachers (Brevik et al., 2018). One assertion of the scaffolding learning theory is that differentiated instruction improves reading (Savage et al., 2018), which in response, improves student achievement (Fien et al., 2018). Improved reading achievement for struggling readers is evident from the intensity of differentiated reading interventions matched to students' needs from their score on the Oregon Assessment of Knowledge and Skills (OAKS) Reading/Literacy Subtest and Passage Reading Fluency (PRF) Test. Students' low OAKS or PRF scores are determined by intervention frequency, duration, and length of higher order reading or foundational reading instruction (Fien et al., 2018).

In addition to the advancement in differentiated instruction, the scaffolding learning theory advances students' reading achievement (Fien et al., 2018; Razalli, Thomas, Mamat, & Yusuf, 2018; Van de Pol, Volman, Oort, & Beishuzen, 2015). One assertion is when accountability for a task is progressively shifted to the students, and fading of support is a steady progression, it results in improved achievement. According to Van de Pol et al. (2015), low contingent support results in improved achievement when students work independently for short periods of time. To determine the meaning of content, the use of pictures with words helps students obtain and improve overall knowledge (Koura & Zahran, 2017). As a result, students exercise critical thinking and reasoning, as higher order thinking skills, when the instructional intentionality is directed towards reading achievement (Razalli et al., 2018). Another assertion is that clear coaching and guidance are an essential basis for reading interventions with at-risk readers. According to Fien et al. (2018), explicit and systematic instruction involves a series of sequential instructional steps that include: (a) teachers explaining and modeling strategy use, (b) teachers guiding students in using the strategy or strategies, and (c) students demonstrating their ability to independently use the strategies under the supervision of the teacher.

While the scaffolding learning concept is relatively a longstanding theory in education (Wood et al., 1976), the idea that differentiated instruction and reading achievement impacts a student's learning process is nothing new. Bruner based his work on the premise that it is essential to provide students with adequate support in the beginning stages of acquiring knowledge about a new skill or concept; however, the significance of the scaffold is to ensure that the teacher minimizes the direct support as the student develops an understanding of the skills or concepts (Winstanley, 2018). As scaffolding is used to develop knowledge in the learning process, according to Wan (2017), differentiated instruction is an effective research-

based strategy that caters to learners' diversity, provides multiple ways to structure a lesson, and offers opportunities for students to work at moderately challenging levels. With an effective blended implementation of the scaffolding learning theory and differentiated instruction in reading, students acquire an increase in reading achievement (Fien et al., 2018; Savage et al., 2018; Wan, 2017).

## **Related Literature**

### **Differentiated Instruction**

Differentiated instruction in the learning process is an influential and compelling concept (Brevik et al., 2018). It is described as an approach to teaching and learning that gives students multiple options for taking in information and making sense of ideas (Tomlinson & Imbeau, 2010). It is beneficial for all students. Differentiated instruction emphasizes attention given to students' readiness (Forster, Kawohl, & Souvignier, 2018; Stone, 2018), interests, and learning profiles (Stern, Dubeck, & Dick, 2018) which contributes to increased motivation and effectiveness in the learning process (Brevik et al., 2018). According to Stone (2018), differentiated instruction is described as an attempt to reform or adapt a curriculum-centered approach into a learner-centered approach situated within the factory model graded system.

Effective differentiated instruction involves the teacher having knowledge of the students. It requires teachers understanding the curriculum. Additionally, differentiation entails providing multiple pathways to learning. It demands sharing responsibility with students. Additionally, differentiated instruction encompasses taking a flexible and reflective approach (Melesse, 2015).

## **Varied Approaches to Differentiated Instruction**

Teachers approach differentiated instruction in the classroom through students' readiness, interests, and learning profile within the process, product, and content of learning. Input is considered the content of learning. Tomlinson (2017) describes the content of learning as what students will learn. The process of learning focuses upon the steps and procedures students use to formulate ideas and obtain information. Product is defined as the output. According to Tomlinson, product is how students demonstrate what they have learned. Content, process, and product are all differentiated according to students' readiness, interest, and learning profiles (Stone, 2018).

As noted, readiness is one of the student characteristics for which teachers differentiate instruction. Readiness is implemented to differentiate the content, product, and process. Content readiness consists of the diverse levels of reading proficiency. Teachers ensure that multiple tiered assignments are offered on students' ability levels. Product readiness includes several differentiated stages of assignment projects for students. Process readiness entails a variety of tasks with paces of varying difficulty for different students. Some students require additional time to complete specific tasks in comparison to other students (Stone, 2018).

Interest is another student characteristic for which teachers differentiate instruction. Student interest is assessed to differentiate the content, product, and process. Throughout the content of an instructional unit, students are permitted to seek subjects which captivate their interests (Stone, 2018). Within the process, students are provided the option to independently or collaboratively complete a task. For product, the teacher gives students permission to choose from a variety of products and rubrics for successful task completion. As student interest is

provided as a classroom option throughout the required curriculum guidelines, Tomlinson (2017) suggests that the goals of student interest and the curriculum can be served simultaneously.

A learning profile is one of the student characteristics for which teachers differentiate instruction. Students vary in learning profiles that are designed by gender, culture, learning style, or multiple intelligences. It is a new approach for directly categorizing students to their particular instructional needs (Stern et al., 2018). According to Tomlinson (2017), when utilizing learning profiles in differentiation, the teacher devises instruction that enables a greater number of students to comfortably, efficiently, and effectively learn in school. Tomlinson believes that meeting the needs of a learner's profile impacts a student's attitude towards engagement in various types of activities. Stone (2018) records that using learning profiles to differentiate content, process, and product is another way to accomplish curricular goals. With the use of learning profiles, students have full authority of their own education, in their own special way, and teachers capitalize on them for students' success.

### **Differentiated Instruction and Readiness Studies**

Differentiated instruction, in the forms of readiness, learning profile, and interest, are directly related to student achievement. Forster et al. (2018), Puliatte and Ehri (2018), and Stone (2018) examined readiness as a form of differentiated instruction. Forster et al. (2018) used a learning progress assessment (LPA) along with a variety of materials to address different levels of reading proficiency. After administration of a LPA in German third-grade classrooms ( $n = 28$ ), Forster et al. (2018) found that students who received differentiated instruction showed higher growth in reading fluency than students in the control groups who did not receive differentiated instruction. Throughout the two-year study, the effect remained stable. Additionally, the results indicated that students who had low reading skills advanced more from



the differentiated instruction (i.e. treatment group). There was not any significant long-term or short-term difference between the growth of reading comprehension in the two groups (those who received differentiated instruction and those who did not). The predictive model that the researchers developed from the study provided a representation for end of year outcomes.

Forster et al. (2018) had not expected the results for reading fluency but expected positive results for reading comprehension. The reading fluency results supported the notion that differentiated instruction is directly related to student achievement. Although there was not growth in either of the reading comprehension groups, Forster et al. (2018) believed that a replication of their study would help strengthen their conclusions and that the intervention increased third-grade student learning.

In another study, Puliatte and Ehri (2018) explored the relationship between second ( $N = 16$ ) and third-grade ( $N = 16$ ) teachers' linguistic knowledge and spelling instructional practices and their students' (second,  $N = 331$ ; third,  $N = 305$ ) reading achievement. Although, the study's focus was spelling, this study was an extension of previous research by Doyle, Zhang, and Mattatall (2015) on student reading achievement. Additionally, third grade data was extracted from the correlation study about second and third grades. Third grade teachers' spelling instructional practices were implemented in a developmental method by differentiating spelling words to teach in alignment with students' spelling skills. By qualitatively analyzing data from six public elementary schools in New York, the researchers utilized student achievement data in a 40-item spelling dictation test from fall to spring (a span of eight months). The test measured spelling ability, which ranged from first to fifth grade. Within the test, researchers assessed decodable and non-decodable words from the primary and elementary spelling inventories of the *Words Their Way* and the Boder Test of Reading-Spelling Patterns. The objective of this

qualitative study emphasized the spelling strategy, knowledge, and application of the phonology, orthographic patterns, morphology, and the relationship between word form and word meaning to encoding words. Differentiated instruction through readiness (abilities and levels) was examined in specific spelling strategies such as recognizing visual patterns, generating analogies, decoding words, applying spelling rules, chunking, searching for word families across words, and investigating word structure for prefixes, suffixes, and roots. Such spelling strategies were addressed in the reading development and exhibited a bridge between spelling and reading. The results indicated that the correlation between pretest scores and gain scores was negative for Grade 3. This was an indication that students who correctly spelled words on the pretest showed smaller improvement from pretest to posttest. Additionally, Grade 3 results did not disclose significant relationships between teachers' instructional practices and weaker spellers' improvement. The sample size of the third grade weaker spellers was smaller than the second graders. Third grade teachers did not provide as much spelling instructional time as second grade teachers. The predictive model that researchers generated from the study depicted connections that tied spelling to their pronunciation and definitions in memory to accurately read words. The results support the notion that the overall use of the differentiated instructional time and research-based practices are beneficial to the components of reading development and student gains in reading. Puliatte and Ehri (2018) were not surprised with the results but reported that it is important for teachers to assess how varied their students are in spelling ability to determine the need for differentiated instruction in generating analogies; investigating word structure of prefixes, suffixes, and root words; and other areas of reading development. Furthermore, acquiring spelling skills in the early grades was contingent upon learning the

representation of phonemes and utilizing this information to either produce unknown spellings or remember correct spellings of words.

### **Differentiated Instruction and Learning Profiles**

In a recent Indonesian study, Stern et al. (2018) used learning profiles as a form of differentiated instruction, and the abilities were categorized by Grade 3 ready, fluent, instructional, beginner, and nonreader. Within the study, teachers examined the relationship between the students' profile and their reading skills. Although second graders were the sample population, fluent and Grade 3 ready students' data were extracted to support third-grade reading achievement. Fluent students were considered nearly Grade 3 ready when they repeatedly and precisely recognized words. Additionally, fluent students were categorized as demonstrating lesser understanding of reading texts, for they scored below 80% on the comprehension subtask. Fluent students required instructional enhancement in comprehension skills, particularly improved vocabulary, which provided support for understanding the text. Grade 3 ready students were categorized by fluency and could comprehend the text. Furthermore, they scored above 80% on the comprehension subtask.

Teachers measured students' basic reading skills in which they needed to transition from the most basic literacy skills into reading with fluency and comprehension (Dubeck & Gove, 2015). In other words, teachers used the learning profiles to determine the instructional need required to promote students from one profile to the next. To respond to the different learner profiles, the classroom included a mix of instruction. Non-readers focused on letter recognition. Beginner readers practiced acquiring decoding skills. Instructional students were attentive to reading grade level text to increase fluency skills. Fluent readers focused on vocabulary and comprehension skills to enhance their understanding of the selections. Also, Grade 3 ready

students read multiple books that included various levels of difficulty. All classrooms included oral language and vocabulary development.

The results indicated that the beginner and instructional students' scores significantly surpassed the fluent reader category on reading comprehension as verified by accurate responses on attempted questions (Stern et al., 2018). The Grade 3 ready reader category had twice as many same home and school language students (i.e., 42%) in comparison to different home and school language students (i.e., 25%). Also, 46% of the students who represented Grade 3 ready readers attended pre-kindergarten, whereas 21% of non-pre-kindergarteners defined the top profile. The predictive model that the researchers generated from the study provided a representation of improvement based on the emphasized differentiated instructional skills used in the categorized learning profiles. Stern et al. (2018) were not surprised with the outcome of the study but noted how the results justified the idea that students progressing to the third grade who demonstrate fluency in reading required support and enhancement in improving comprehension skills, particularly increased vocabulary. Evidence suggests that there is an association between teacher language and student profiles on third grade reading level.

Differentiated instruction was described by Heitink, Van der Kleij, Veldkamp, Schildkamp, and Kippers (2016) and Prast, Van de Weijer-Bergsma, Kroesbergen, and Van Luit, (2015) as a combination of careful progress monitoring and adapting instruction in response to students' data and was directly associated with third-grade students' reading achievement. Using ability grouping, Deunk, Smale-Jacobse, de Boer, Doolaard, and Bosker (2018) qualitatively analyzed third grade students to explore individualizing student instruction (ISI) in comparison to a vocabulary intervention, *Bringing Words to Life: Robust Vocabulary Instruction*. The results indicated that the ISI intervention had a small significant positive effect on reading

comprehension compared to the general vocabulary intervention. The predictive model that the researchers developed from the study provided a representation of optimal reading instruction for students of all levels. Researchers were not surprised with the results of the study but recorded that investigating the effects of differentiated instruction, when combined with other support systems within a broad structure, was complicated because the components became linked with one another.

### **Hindrances to Using Differentiated Instruction**

Eight perceived hindrances are associated with differentiated instruction in recent studies. Class size and diversity (Strogilos, Tragoulia, Avramidis, Voulagka, & Papanikolaou, 2017), time, and understanding of teaching strategies are considered deterrents in differentiated instruction (Wan, 2017). Other hindrances include the deficit in differentiated instructional training, complications in collaboration between co-teachers, obligation to deliver curriculum, nonexistent space, and stigmatization (Strogilos et al., 2017).

In a mixed methods analysis, Wan (2017) examined in-service Hong Kong teachers' ( $N = 69$ ) readiness for using differentiated instruction strategies and perceived challenges in their implementation. These teachers taught in two Christian Hong Kong schools: P01 (a primary school with extensive history and founded in 1961) and P12 (a primary school with less history and founded in 1984). The results indicated that teachers, in most cases, were responsive to implementing differentiated instruction practices in the classroom. Although, in a student-centered practice, the teachers preferred and were more receptive to using differentiated instruction with a more teacher-centered approach.

Of the two schools studied, there were no major variances in teachers' level of concern toward differentiated instruction. Teachers' perceived challenges and concerns towards

differentiated instruction received similar responses (Wan, 2017). Survey data specified that class size was a stumbling block to accommodate boundless diversity of students for P01 teachers ( $N = 7$ ) and P12 teachers ( $N = 13$ ). Time was a challenge for both P01 teachers ( $N = 6$ ) and P12 teachers ( $N = 4$ ). The survey indicated that teachers felt unequipped with knowledge and skills in executing differentiated instruction. Wan (2017) reported that not every teacher was completely prepared for the use of differentiated instruction strategies; however, the author supported the notion that the teachers were optimistic toward utilizing differentiation strategies. Evidence suggested that teacher professional development was imperative in preparing and training teachers with the appropriate pedagogical skills and knowledge. Also, such findings emphasized the importance of promoting more attention to professional development and learning the use of more intense forms of differentiated instructional strategies. Although the researcher indicated that the study was not recommended to be specific to other schools or countries, additional research could be done in the United States or other Hong Kong schools to strengthen the development for further inquiry regarding teachers' readiness stages and transition from a teacher-centered to student-centered environment with obstacles that dampen differentiation in the classroom.

### **Advantages of Differentiated Instruction**

As there are hindrances, there are advantages to the use of differentiated instruction. Recent studies show that students and teachers benefit from the use of differentiation. One study showed an increase in student-driven classrooms and growth in teachers' mindset of differentiated instruction (Frankling, Jarvis, & Bell, 2017). Another study illustrated growth in Grade 2 spelling (Puliatte & Ehri, 2018). Frankling et al. (2017) found an enhanced engagement and desire to learn. Rijk, Volman, de Haan, and Oers (2017) witnessed higher reading

comprehension scores, stronger scaffolding support, and greater self-efficacy. Strogilos et al. (2017) observed an increase in teachers' understanding of children's deficit-oriented activity. Lastly, Brevik et al. (2018), Doyle et al., (2015), Frankling et al. (2017), Rijk et al. (2017), and Strogilos et al. (2017) verified that differentiated instruction increased reading achievement.

### **Teachers' Understanding of Differentiated Instruction**

Teachers' understanding of differentiated instruction is associated with students' achievement. Frankling et al. (2017) qualitatively analyzed teachers ( $N = 8$ ) to explore their understandings of differentiation, application of differentiation in the classroom, and the role of targeted professional development and mentoring in improving teachers' understanding and practices related to differentiation in Australian middle schools. The results indicated that classrooms became more student-driven. The governance of knowledge increasingly shifted to the learners. A partnership developed between teachers and students throughout emerging learning approaches, tools, and settings beneficial for the classroom. Students monitored their own academic progress and learning. Additionally, the results showed an increase in students' engagement and desire to learn. The predictive model that the researchers created from the study demonstrated a usable approach to teaching that is possible to implement on a daily basis. With such findings, researchers emphasize the importance of endorsing the understanding of differentiated instruction. It promotes the intentionality, explicitness, and purpose for understanding the concept of differentiated instruction. Teachers who possess a distinct understanding of precise differentiated instructional needs for each student in the classroom offer parents and guardians ideas and recommendations for guided support and reinforcement at home (Stern, 2018).

In a recent study, Brevik et al. (2018) qualitatively analyzed Norwegian pre-service teachers' ( $N = 322$ ) understanding of differentiated instruction and its association with students' higher learning potential. The results specified pre-service teachers' everyday practices, commitment, awareness, and intentionality to differentiate instruction. According to Brevik et al. (2018) it was surprising that pre-service teachers did not find the identification of within-group students less challenging but noted that planning and enacting differentiated instruction for them was a challenge. Evidence suggested that it was imperative that teachers' pre-service education programs attended to more opportunities to exercise differentiated instruction.

In a qualitative investigation, Strogilos et al. (2017) explored how Greek co-taught teams ( $N = 34$ ) understood the development of differentiated instruction for students with and without disabilities ( $N = 19$ ). The teams included 34 mainstream education teachers (MET) and 34 special education teachers (SET). The classrooms consisted of 19 students with autism, five students with mild intellectual disabilities, four students with physical disabilities, two students with hearing impairment, two students with visual impairment, and two students with attention-deficit hyperactivity disorder.

Results indicated that teachers understood differentiated instruction as a child's deficit-oriented activity and not an adapted and modified context-oriented approach in the curriculum. Additionally, teachers understood differentiation as a widespread practice of instructional adaptations/modifications in relation to the partial or restricted use of curricular or alternative adaptations (Strogilos et al., 2017). In addition, MET ( $N = 17$ ) and SET ( $N = 17$ ) considered differentiated instruction as a practice that emphasized one-on-one teaching to help students with disabilities meet the objectives in the learning environment. MET ( $N = 2$ ) and SET ( $N = 4$ ) understood differentiated instruction as a flexible practice where there was an emphasis on



modifying the content, methods, and outcomes for all students. Researchers expected the aforementioned results but noted that although teachers support the notion that differentiated instruction is significantly a best practice in educating students with disabilities, their practices did not reflect the principles of inclusion of the practice.

Evidence suggests that teachers need to decompose their observations about inclusive education and to disengage the type of variations they prefer to utilize in their practices with specific impairments. With such findings, researchers emphasize the importance of promoting pedagogical variations in the structure of pre-service and in-service instruction for special education teachers and mainstream education teachers. The emphasis is precise to the development of an effective strategy for all students, not only students with disabilities. Such measures offer improved opportunities for the inclusion of all students in co-taught educational settings. Additional research can strengthen the development of teachers' understanding of differentiated instruction by identifying the co-teachers' misunderstandings of differentiation. A replication of Strogilos et al.'s (2017) study can strengthen or provide an understanding of how co-teachers conceive the term *differentiated instruction*, particularly in other countries that have a history of utilizing the practice. Also, similar studies can add to the body of knowledge by providing the co-teachers with appropriate training on differentiated instruction (Strogilos et al., 2017).

Conversely, in a recent quantitative study, Hodum (2016) analyzed West Tennessee students' ( $N = 157$ ) reading growth in differentiated instructional practices through between-class ability grouping versus heterogeneous grouping. The fifth-grade students were grouped in four classrooms with advanced and proficient scores. The other four groups consisted of below basic and basic scores. Students were not ability grouped in their fourth-grade school year.

Reading teachers ( $N = 4$ ) provided a daily 90-minute differentiated reading block for one assigned low- and one assigned high-performing class. The results indicated that there was no significant difference in reading growth scores for any achievement level when ability grouped. In addition, there was no statistical difference in the reading growth scores for students in the subgroups *economically disadvantaged*, *students with disabilities*, and *minority*. In spite of no increases in reading growth, there were slight positive gains for demographic subgroups.

Evidence suggests that slight gains for the economically disadvantaged counter the claims of some studies that differentiated instruction with ability grouping is detrimental to students from low socio-economic backgrounds (Hodum, 2016). Similarly, the slight gains noted for students with disabilities differ from studies that indicated an adverse effect on low-achieving homogeneously grouped students. With such findings, Hodum (2016) emphasized the importance of promoting further research on the effectiveness and advantages of differentiated instruction in demographic subgroups. Additional research can strengthen the development of teachers' understanding of differentiated instruction and students' reading achievement by expanding the study to include more than one school, grade, and geographical location. A replication of the research can strengthen the understanding of the study by gathering data from a private school. Similar research can enhance the development that determines the relationship between teacher effectiveness, student achievement and growth, and ability grouping to evaluate if there is a variance between groupings based on teacher effectiveness. According to Hodum (2016), consideration must be given to address the academic effect of various kinds of academic groups, while maintaining equitable, effective high-quality differentiated instruction for all students.

In another study, Hill (2015) quantitatively analyzed the impact of differentiated instruction on Grades 3 through 5 students' reading achievement. The results specified that differentiated instruction did not have a statistically significant difference on any of the students' reading achievement. Additionally, there was not a significant difference in the test scores of the male students as compared to the female students. In spite of data not specifying differentiated instruction with a statistically significant difference on students' reading achievement, a positive impact was noted in other studies. With such findings, Hill (2015) emphasized the importance of promoting additional hours and assistance towards the effective implementation of differentiated instruction in the reading classroom. Additional research similar to Hill's (2015) study can help strengthen professional development efforts on differentiation, which enhances teachers' understanding of differentiated instruction. Replication of Hill's (2015) research can provide knowledge and understanding of the professional development initiative that augments teachers' effective implementation of differentiated instruction.

### **Teachers' Implementation of Differentiated Instruction**

Implementation of differentiated instruction is directly related to student achievement (Boardman, Klinger, Buckley, Annamma, & Lasser, 2015; Miciak et al., 2017; Shaunessy-Dedrick et al., 2015; Valiandes, 2015). In a recent study, Suprayogi, Valcke, and Godwin (2017) quantitatively analyzed the relationship among teachers' ( $N = 604$ ) self-efficacy, beliefs, and background characteristics; and classroom size and differentiated instruction implementation. These teachers worked in Grade-A level accredited schools in six regions of the Jakarta Province in Indonesia where the accreditation was granted by the Board of National Accreditation for School and Madrasah (BANSM). The results indicated that teachers' differentiated instruction

self-efficacy and their teaching beliefs were significantly correlated with differentiated implementation. Teachers holding a teaching certificate ( $M = 7.39$ ,  $SD = 1.12$ ) reported significantly higher differentiated instruction implementation levels as compared to teachers without teaching certification ( $M = 7.14$ ,  $SD = 1.06$ ). Additionally, the degree in teaching experience reflected significant differences between teachers with less than five years of experience ( $M = 6.99$ ,  $SD = 1.13$ ) compared to teachers with more than five years of experience ( $M = 7.36$ ,  $SD = 1.10$ ) on differentiated instruction implementation. The predictive model that researchers established from the study provided a representation that teaching experience was projected to impact differentiated instruction implementation. Suprayogi et al. (2017) expected the aforementioned results but noted that a regression analysis did not show a significant relationship between teaching experience and differentiated instruction implementation. The results support the ideas that differentiated instruction is promising for both teacher and students, and teachers' implementation is critical. Evidence suggests that the larger the class population, the greater the need to implement differentiated instruction and address student diversity. Most importantly, the evidence recommends that the implementation of differentiated instruction become increasingly adopted in Indonesia. The country ranked 34 out of 34 countries in the Program for the International Assessment of Adult Competencies (OECD, 2016); 40 out of 40 within the Learning Curve Report, noting cognitive skills and educational attainment (Pearson, 2014); and 64 out of 65 countries in the Program for International Student Assessment (OECD, 2012). According to Suprayogi et al. (2017) teachers' self-efficacy played a paramount contribution in the differentiated instruction implementation. Teachers who had less-developed knowledge and skills learned that implementing differentiation can be difficult (Prast et al.,

2018). Many teachers felt that initial teacher education did not sufficiently prepare them for implementing differentiation (Dixon, Yssel, McConnell, & Hardin, 2014).

Boardman et al. (2015) quantitatively investigated the fidelity of implementation of differentiated instruction and its relationship to student achievement in large urban district middle schools. Teachers ( $N = 19$ ) received ongoing Collaborative Strategic Reading (CSR) professional development and classroom support which reflected a theoretical foundation of scaffolding for middle school students ( $N = 1,074$ ). The results showed that students who received differentiated instruction in science and social studies scored higher on standardized reading comprehension assessment in comparison to their classmates in other classrooms. Specifically, the students who obtained the full CSR received significantly higher reading comprehension scores on the Gates MacGinitie Reading Test (GMRT) than students in the business as usual (BAU) classes with CSR (Boardman et al., 2015). In addition, the state-mandated reading and writing examinations were not influenced by CSR. According to Boardman et al. (2015) the unintended partial CSR students did not earn significantly higher GMRT scores than comparison students. Additionally, from previous studies using CSR in language arts, low readers or students with learning deficits derived greater benefit from CSR instruction when compared to students who did not have a reading deficit. The researchers' predictive model provided a representation in which the CSR treatment might be more effective for students with a lower initial level of reading ability than those with a higher initial reading level. Researchers were not surprised with the results but supported the notion that the improvement in student reading achievement was associated with the implementation of CSR. Evidence suggested that when differentiated instruction was offered through the use of CSR twice a week throughout the school year, it was imperative to extend professional development

for middle school social studies and science teachers. It promoted reading comprehension improvement in readers. Additional research can strengthen the development of studies that provide a better understanding of how student subgroups utilize CSR strategies in content areas to reinforce reading comprehension skills as well as the types of professional development opportunities that help teachers maximize student learning in those settings.

Melesse (2015) used a mixed methods approach to explore primary school teachers' ( $n = 232$ ) implementation of differentiated instruction. The results indicated that the teachers' conception of differentiated instruction was low. Of the 11 selected differentiated instruction strategies, 67% of primary school teachers were acquainted with students' independent study, 62% were aware of interest centers, and 56% had exposure to flexible grouping. On the contrary, the primary school teachers were least familiar with pre-assessment at 13%, curriculum compacting at 17%, tiered assignments at 18%, varying questions at 21%, learning centers at 27%, varying instructional materials at 28%, and curriculum contracts at 34%. Although teachers' perception of differentiated instruction was low, with an obtained mean (2.44) and expected mean (2.50), recent political reform showed a greater responsibility to state and national standards placing an increased emphasis on differentiation for teachers. With pre-assessment having the least familiarity, Melesse (2015) emphasized the importance of promoting pre-assessment. Teachers had to be resilient to ongoing assessment knowledge of what and how to plan differentiated instruction. The data from the pre-assessment or ongoing assessment drove the differentiated instruction, flexible grouping, and classroom procedures. According to Melesse (2015), additional research regarding the general practice of differentiated instruction comparisons with a focus on gender strengthened the understanding of teachers' implementation of differentiation.

Contrary to the plethora of studies supporting the direct relationship between teachers' implementation of differentiated instruction and students' reading achievement, some studies suggest otherwise (Starks, 2018; Ward, 2017). In a quantitative research approach, after professional learning, Starks (2018) analyzed teachers' ( $n = 6$ ) implementation of differentiated instruction in fourth-grade small reading groups over a 10-week period. In Group One, teachers ( $n = 3$ ) highlighted prediction, making connections, and inference skills in small differentiated reading groups. Group Two teachers ( $n = 3$ ) emphasized questioning, visualizing, and summarizing skills in small differentiated reading groups.

The results indicated an increase in the fourth-grade assessment data and reading ability in the group where teachers implemented differentiated instruction with fidelity. There were not any positive results for the other group. In fact, Starks (2018) identified an inconsistency of teachers' implementation of differentiated instruction. All teachers participated in the same professional development but elected to implement the components in a different manner. Two teachers utilized one strategy at a time. One teacher changed strategies every two weeks. Three teachers changed strategies once a week and verified proficiency after each cycle. Within the fourth week of the study, there was a decrease in teachers' degree of implementation in groups one and two. Evidence suggested that teachers' implementation of differentiated instruction was not related to student achievement. With such findings, Starks (2018) emphasized the importance of promoting consistency in the implementation of differentiated instruction in small groups. Also, Starks (2018) highlighted the significance of encouraging administration to monitor the implementation on a regular basis or set schedule.

Additional research can strengthen the development of teachers' implementation of differentiation and its direct relationship to student achievement by fidelity in the entire process.

Replication of Starks's (2018) research with different grade level students can provide further understanding of the implementation of differentiated instruction and student achievement. Similar research with different subgroups of students can strengthen the development of teachers' implementation of differentiated instruction in small reading groups.

Along with Starks (2018), another study highlighted how there was not a direct relationship between teachers' implementation of differentiated instruction and students' reading achievement. In a quantitative, quasi-experimental, post-hoc analysis, Ward (2017) explored middle school eighth grade Georgia students who received differentiated instruction ( $N = 32$ ) compared with those who received direct instruction ( $N = 32$ ). The study encompassed a foundation of differentiation, direct instruction, and scaffolding for two academic school years.

The overall results of Ward's (2017) study indicated that there was no significant difference in academic achievement with the implementation of differentiated instruction or direct instructional pedagogy. Achievement scores for the differentiated instructional group ( $M = 801.88$ ,  $SD = 27.62$ ) and direct instructional group ( $M = 799.25$ ,  $SD = 22.90$ ) did not show statistical significance. Mean scores for direct instruction ( $M = 11.09$ ,  $SD = 22.11$ ) and differentiated instruction ( $M = 11.69$ ,  $SD = 18.54$ ) showed a difference; although it was insufficient justification to determine whether differentiation was better than instructional pedagogy. Also, through the timeframe of the study, there was no significant difference in the Criterion Referenced Competency Test (CRCT test scores between differentiated instruction ( $M = 11.69$ ,  $SD = 18.54$ ) and direct instruction ( $M = 11.09$ ,  $SD = 22.11$ ).

Ward (2017) was surprised that some of the differentiated scores had an increased score in comparison to the direct scores prior to the change calculation. Ward (2017) expected the differentiated instruction group to have a statistically significant difference than direct instruction



on the CRCT assessment scores, primarily because differentiation was highlighted in various literature as highly notable for student achievement.

Evidence suggests that the participating school implemented a before- or after-school tutorial for students who required additional literacy assistance. The tutorial initiative would be instrumental to all grades and not limited to eighth graders. Additional research can strengthen the development of teachers' implementation of differentiated instruction and student achievement by widening the participants in a study. To address the problem, similar research could include comparison over the course of three years. A replication of the study may include a mixed methods approach. Structured interviews, teacher observations, and detailed surveys on preferred instruction could strengthen the understanding of how teachers' implementation of differentiated instruction directly relates to students' reading achievement (Ward, 2017).

Multiple influences affected how teachers' implementation of differentiated instruction impacted student achievement. Lacking knowledge of the students and their academic levels had a negative impact on student achievement. Teachers were unable to meet students at their current reading level. In addition, it resulted in unsuitable or inappropriate lesson planning. Consequently, teachers' lack of knowledge about students' academic levels hindered the conception of learning activities and scaffolding to support students' individual needs (Starks, 2018).

In addition to not knowing the students, the inability to address students' learning styles impacted student achievement. The lack of suitable resources to address students' learning styles posed a negative outcome to student achievement. Most importantly, teachers' lack of implementation of differentiated instruction with fidelity prevented growth in student achievement (Starks, 2018).

In order to impact student achievement, a simple introduction to differentiated instructional material is insufficient. Educators must be skillfully qualified, reinforced, and assessed in the implementation of these approaches and paradigms if they are to be effective in assisting students. Discrepancies in reading skills have hindered progress in closing the achievement gap, as reading is embedded in every content area (Starks, 2018).

### **Reading Achievement in the Third-grade**

North Carolina English Language Arts/Reading Grade 3 Achievement encompasses Levels One, Two, Three, Four, and Five, with specific range scores. Level One identifies students who score less than 431. These students do not meet grade level or the College and Career Readiness Standard. Level Two categorizes students who score from 432 to 438. These students do not meet grade level or the College and Career Readiness Standard. Level Three classifies students who score from 439 to 441 and meet grade level but not the College and Career Readiness Standard. Level Four groups students who score from 442 to 451 and meet both grade level proficiency and College and Career Readiness Standards. Level Five identifies students who score more than 452 and meet both grade level proficiency and College and Career Readiness Standards (North Carolina Department of Public Instruction, 2014).

At Achievement Level One, students perform at a limited command of knowledge and skills in the Common Core State Standards (CCSS) Reading Standards for Literature on a third-grade assessment. At this particular level, students successfully meet the assessment requirements when inquiring and responding to interrogative sentences; describe stories and define a theme; report how the information is delivered through significant facts in the selections; give character details and descriptions and justify how their actions are instrumental to the events in the selections; and establish the meaning of words and phrases as they are

utilized in the selections, specifically literal and nonliteral language. Students require academic assistance to successfully interact and participate in this content area. According to the North Carolina Department of Public Instruction (2014), students who have limited command of informational text illustrate discrepancy denoting the text when inquiring and responding to interrogative sentences; define the main idea and locate the most important information that reinforces it; recount the relationship between actions, thoughts, terms or stages using appropriate language; provide definitions of words and phrases as they are utilized in selections; display comprehension through details acquired from pictures and concepts; and explain the associations between sentences and passages. Students exhibit a limited command of language when defining words within the context of a sentence and differentiating between literal and non-literal meanings. They infrequently articulate grade-appropriate terminology and require academic assistance to successfully interact and participate in this content area. At this particular level, students require academic assistance to successfully interact and participate in this content area in the fourth grade (North Carolina Department of Public Instruction, 2014).

At Achievement Level Two, third-grade students perform at a partial command of knowledge and skills in the CCSS Reading Standards for Literature on a third-grade assessment. At this particular level, students successfully meet the assessment requirements when inquiring and responding to interrogative sentences; describe stories and define a theme; report how the information is delivered through significant facts in the selections; give character details and descriptions and justify how their actions are instrumental to the events in the selections; and establish the meaning of words and phrases as they are utilized in the selections, specifically literal and nonliteral language. Students likely require academic assistance to successfully interact and participate in this content area. According to the North Carolina Department of

Public Instruction (2014), students who have partial command of informational text illustrate discrepancy denoting the text when inquiring and responding to interrogative sentences; define the main idea and locate the most important information that reinforces it; recount the relationship between actions, thoughts, terms, or stages using appropriate language; provide definitions of words and phrases as they are utilized in selections; display comprehension through details acquired from pictures and concepts; and explain the associations between sentences and passages. Students exhibit a partial command of language when defining words within the context of a sentence and differentiating between literal and non-literal meanings. They infrequently articulate grade appropriate terminology. Also, students potentially require academic assistance to successfully interact and participate in this content area (North Carolina Department of Public Instruction, 2014).

At Achievement Level Three, third-grade students perform with a sufficient command of knowledge and skills in the CCSS Reading Standards for Literature on a third-grade assessment. At this particular level, students are not on trajectory for College and Career Readiness but are equipped for the fourth grade. Additionally, students possibly require supplementary academic assistance (North Carolina Department of Public Instruction, 2014).

At Achievement Level Four, third-grade students perform at a solid command of knowledge and skills in the CCSS Reading Standards for Literature on a third-grade assessment. At this particular level, students successfully meet the assessment requirements when inquiring and responding to interrogative sentences; describe stories and define a theme; report how the information is delivered through significant facts in the selections; give character details and descriptions and justify how their actions are instrumental to the events in the selections; and establish the meaning of words and phrases as they are utilized in the selections, specifically

literal and nonliteral language. Students are academically prepared to engage successfully in this content area. This is a reading achievement level that ranges from 439 to 441 for the English Language Arts/Reading Grade 3. According to the North Carolina Department of Public Instruction (2014), students who have solid command of informational text illustrate uniformity denoting the text when inquiring and responding to interrogative sentences; define the main idea and locate the most important information that reinforces it; recount the relationship between actions, thoughts, terms, or stages using appropriate language; provide definitions of words and phrases as they are utilized in selections; display comprehension through details acquired from pictures and concepts; and explain the associations between sentences and passages. Students exhibit a solid command of language when defining words within the context of a sentence and differentiating between literal and non-literal meanings. They consistently articulate grade appropriate terminology and are academically equipped to effectively participate in this content area (North Carolina Department Public Instruction, 2014).

At Achievement Level Five, students perform at a superior command of knowledge and skills in the CCSS Reading Standards for Literature on a third-grade assessment. At this particular level, students successfully meet the assessment requirements when inquiring and responding to interrogative sentences; describe stories and define a theme; report how the information is delivered through significant facts in the selections; give character details and descriptions and justify how their actions are instrumental to the events in the selections; and establish the meaning of words and phrases as they are utilized in the selections, specifically literal and nonliteral language. Students are academically well-equipped to successfully engage in this content area. According to the North Carolina Department of Public Instruction (2014), students who have superior command of informational text illustrate uniformity denoting the text

when inquiring and responding to interrogative sentences; define the main idea and locate the most important information that reinforces it; recount the relationship between actions, thoughts, terms or stages using appropriate language; provide definitions of words and phrases as they are utilized in selections; display comprehension through details acquired from pictures and concepts; and explain the associations between sentences and passages. Students exhibit a superior command of language when defining words within the context of a sentence and differentiating between literal and non-literal meanings. They consistently articulate impeccable grade appropriate terminology and are academically well-equipped to effectively participate in this content area (North Carolina Department of Public Instruction, 2014).

### **Importance of Reading Achievement in the Third-grade**

Student achievement in reading is important to the success of third-graders (Durance, 2017; Lansing State Journal Editorial Board, 2018; Zakariya, 2015). Their proficiency in reading is directly correlated to reading achievement. According to the National Reading Panel and National Institute of Child Health and Human Development (2000), proficiency in reading is important for student achievement in every academic subject. In addition, it is vital for continuous, lifelong learning (Durance, 2017).

In a recent mixed methods study, Brown, Mohr, Wilcox, and Barrett (2018) analyzed third-grade students' ( $N = 142$ ) oral-reading practice with the support of a stronger peer, using materials at various levels, and how the practice produced greater learning benefits for lead and assisted readers and student achievement. The oral reading practice, paired with a lead (strong) reader and an assisted (weak) reader, encouraged side-by-side read aloud with a peer. Using the same book, the lead reader read aloud and simultaneously touched each word, while the assisted reader repeated as many words as possible. The peer and assisted readers viewed the words as

they read them. This dyad approach was used in Groups A, B, and C. Group A students read two grade levels above the assisted readers' reading levels within the dyad approach. Group B students read three grade levels above the assisted readers' reading levels within the dyad approach. Group C students read four grade levels above the assisted readers' reading levels within the dyad approach.

The results indicated that lead readers started and concluded the study with the greatest average Lexile levels. The assisted readers' Scholastic Reading Inventory (SRI) scores doubled the achievement gains of the lead readers. Also, the assisted readers' SRI scores tripled the achievement gains of the control group by day 95. The control group increased on accuracy but slightly increased on reading rate, fluency, and comprehension. On the pretest, the mean Lexile score for the treatment group was 494.4, and the control group mean was 497.8, suggesting no significant difference between the groups. On the posttest, the mean Lexile score for the treatment group (all dyad readers) was 676.7 and the control group was 583. Comparably, the dyad readers received a larger gain of 94 Lexile points, a score which equaled to at least a 6-month growth. Their gain in Lexile scores equaled growth differential for students paired in oral reading in half a year of third-grade (Brown et al., 2018).

Brown et al. (2018) developed a predictive model that provided a representation that Group A (reading two levels above) maintained the highest increases as the dyad reading was sustained in the study. Brown et al. (2018) were not discouraged with the results and recorded that the use of thought-provoking selections in the dyad reading format, another form of differentiated instruction, supported reading achievement and progress for all readers whether the shared text was two, three, or four levels above the instructional levels of the assisted readers. Additionally, the study supported the claim that students expanded their reading potential when

reading difficult selections, as processed by Lexile level, with peer assistance. Group A received the most progress on comprehension between 80 and 95 days. According to Brown et al., such significant findings contributed to the interest of exchange between fluency and comprehension. Group B acquired the highest increase on the SRI between days 40 and 80. Group C obtained the highest SRI gains between days 0 and 40.

With such findings, researchers emphasized the importance of differentiated instruction through dyad reading. Evidence suggests that implementing dyad reading proves to be an influential contributor to third-grade reading achievement, as noted in the aforementioned study. It provides struggling readers with repetitive pictorial and audio experience to words, thereby increasing word recognition over time (Kaskaya, 2016).

Additional research can strengthen Brown et al.'s (2018) study by calculating word recognition growth as a feature supporting comprehension, fluency, and reading achievement. Brown et al. documented that a replication of the research can strengthen the understanding of third-grade reading achievement, if researchers used diverse schools and populations and larger sample sizes. Similar studies can strengthen the development of third-grade reading achievement by exploring students' interests and attitudes toward dyad reading (Brown et al., 2018; Klvacek, 2015).

### **Benefits of Attaining Reading Proficiency**

Third grade reading is the most important gauge for future success (Lansing State Journal Editorial Board, 2018; Vance, 2016). As measured by National Assessment of Educational Progress at the beginning of fourth grade, reading proficiently by the end of third-grade is noted as a make-or-break benchmark in a child's educational development (Fiester, 2010; Kel-Artinian & Parisi, 2018). When students are proficient in third-grade reading, they pull out and analyze



new evidence and broaden their vocabularies (Zakariya, 2015). Reading proficiency in literacy provides students with so many opportunities (Lansing State Journal Editorial Board, 2018). It is especially essential for students' success in math, science, social studies, and other subjects (Brown et al., 2018).

### **Consequences of Not Attaining Reading Proficiency**

When students do not obtain reading proficiency by the end of the third grade, it is likely that they will struggle with reading in upper grades (Brown et al., 2018; Durance, 2017). Students who do not attain reading proficiency before promotion to fourth grade are at risk of always lagging behind their classmates (Durance, 2017; Lynch & Brekhus, 2015; Zakariya, 2015). In many instances, third graders with low reading proficiency are possibly retained in the third or subsequent grades (Lansing State Journal Editorial Board, 2018; Zakariya, 2015). Oftentimes, they have a higher rate of behavioral and social issues in succeeding grades (Fiester, 2010). It is a strong possibility that they drop out of school (Brown et al., 2018; Durance, 2017; Kel-Artinian & Parisi, 2018; Lynch & Brekhus, 2015; Zakariya, 2015). In addition, they are unequipped to acquire a post-secondary degree in higher education (Brown et al., 2018; Durance, 2017).

Below grade level achievement in reading has significant long-term effects on students. It is a strong possibility that students' low reading skills impact their individual earning potential (Durance, 2017; Zakariya, 2015). As adults, they lack global competitiveness in the workforce (Lynch & Brekhus, 2015). Unfortunately, adult workers who possess low reading skills are unable to attain new expertise and adjust to new requirements in a rapidly fluctuating global society (Fiester, 2010).

### **Prescriptions to Attaining Reading Proficiency**

There is not a silver bullet that improves reading achievement. According to Lynch and Brekhus (2015), it has been a significant problem that requires a comprehensive solution. With multiple long-term effects for reading below grade level, there have been multiple suggestions to improve students' reading proficiency. Brown et al. (2018) records that the prescription to improve students' reading proficiency appears to be simple. Schools need interventions to intentionally and effectively transform students from struggling readers to grade level performance (Brown et al., 2018; Zakariya, 2015). Students should have extensive access to high quality literature and read more books (Brown et al., 2018; Durance, 2017; Lynch & Brekhus, 2015). Intensive remediation encompasses a supportive measure to enhance students' reading proficiency (Durance, 2017).

### **Factors That Negatively Impact Reading Achievement**

There are multiple factors or stressors that impact students' reading achievement. Stern et al. (2018) believes that improved instruction should begin as early in the education cycle as possible in order to address issues at their starting point. Students' reading achievement is negatively impacted by the lack of fluency (Amendum, Conradi, & Hiebert, 2018; Dubeck & Gove, 2015), text complexity (Brown et al., 2018), reading volume, background knowledge, lack of motivation (Lupo, Strong, Lewis, Walpole, & McKenna, 2017), lack of interest, attitude (Parsons et al., 2018), lack of vocabulary (Stern et al., 2018) or decoding and lack of word recognition (Puliatte & Ehri, 2017), environmental influences, lack of parent involvement, anxiety during reading comprehension, medical problems, and lack of early sign language development (Razalli et al., 2018). Along with the aforementioned stressors, poor reading skills are linked to behavioral problems and mental health (Razalli et al., 2018).

### **Factors That Positively Impact Reading Achievement by the End of Third-grade**

Commitment and hard work are mutual factors to obtain reading achievement. Proficient levels of fluency contribute to students' reading achievement in the third grade. These common denominators linked with quickly and accurately decoding words, vocabulary comprehension, and word recognition skills are supporting features that increase students', classroom, and school levels to proficiency. Additionally, students' motivation and interests in literature positively impact reading achievement (Afflerbach & Harrison, 2017; Groenke, 2017; Groenke, Reece, & Varnes, 2015).

### **Summary**

Researchers have determined that there is a relationship between teachers' understanding of differentiated instruction and student reading achievement (Brevik et al., 2018; Frankling et al., 2017; Strogilos et al., 2017). There is a relationship between the implementation of differentiated instruction and student reading achievement (Boardman et al., 2015; Miciak et al., 2017; Shaunessy-Dedrick et al., 2015; Suprayogi et al., 2017; Valiandes, 2015). Hodum (2016) and Hill (2015) determined that there is not a relationship between teachers' understanding of differentiation and students' reading achievement. Ward (2017) determined that there is not a relationship between the implementation of differentiated instruction and student reading achievement. Starks (2018) indicated a relationship, when the implementation is with fidelity, but no relationship with a decrease in teachers' degree of implementation of differentiated instruction. A gap in literature was identified because there were not any studies that determined the relationship between teachers' understanding and implementation of differentiated instruction and students' reading achievement as it existed in rural areas or third grade. The majority of the reviewed studies pertained to differentiated instruction with second grade (Stern

et al., 2018), outside the country (Forster et al., 2018; Stern et al., 2018; Suprayogi et al., 2017), Christian schools (Wan, 2017), urban districts (Boardman et al., 2015), fourth grade (Starks, 2018), middle school (Boardman et al., 2015; Ward, 2017), qualitative research (Melesse, 2015), within small groups (Starks, 2018), and over a course of two years (Ward, 2017).

Pablico, Diack, and Lawson (2017) recommended that further empirical studies should be conducted to determine the effectiveness of differentiated instruction in improving student learning outcomes. Traditional teachers who are used to whole class teaching require support and guidance in acquiring best practices on how to provide a variety of simultaneous instruction (Boardman et al., 2015; Stern et al., 2018). Providing and having access to effective professional development for differentiated instruction is critical to the conversion from a traditional teacher to one who utilizes differentiation (Frankling et al., 2017; Puliatte & Ehri, 2018; Tomlinson & Murphy, 2015).

## **CHAPTER THREE: METHODS**

### **Overview**

This chapter provides an explanation of the procedures used to collect data for this quantitative, correlational study. The data consisted of teachers' understanding and implementation of differentiated instruction in relationship to third-grade students' reading achievement scores. Eight sections are explored in further detail: (a) research design, (b) research questions, (c) hypotheses, (d) participants, (e) setting, (f) instrumentation, (g) procedures, and (h) data analysis.

### **Design**

A correlational design was used to determine whether a relationship exists between teachers' understanding and implementation of differentiated instruction and third-grade students' reading achievement scores. A correlational design was appropriate for the study because it provided a means to "...discover the direction and magnitude of the relationship among variables..." (Gall, Gall, & Borg, 2007, p. 636). Also, the design was appropriate because it enabled the researcher to "assess the degree that quantitative variables were linearly related in a sample" (Green & Salkind, 2014, p. 232).

Two predictor variables were measured in this study. The first predictor variable was teachers' understanding of differentiated instruction. Understanding of differentiated instruction was defined as "differentiating content, process, or (culminating) product, or some combination of these three" (Strickland, 2007, p. 7). The second predictor variable was teachers' implementation of differentiated instruction. Implementation of differentiated instruction "referred to the major ways students seem to vary by interest, learning profile, and readiness" (Strickland, 2007, p. 7).

The criterion variable for this study was third-grade students' reading comprehension achievement scores. Reading comprehension was defined as "the understanding and perception of a written text" (Sabet & Kiaee, 2016, p. 74). Third-grade students' reading comprehension achievement scores were derived from the mClass: Reading 3D Text Reading Comprehension assessment. This assessment, which was based on Lexile reading scores, identified a student as proficient or not proficient at the end of the third grade school year (Gushta, Parisi, Richards, Wang, & York, 2015).

### **Research Questions**

**RQ1:** Is there a relationship between teachers' perceived understanding of differentiated instruction and third-grade students' reading achievement scores as measured by the mClass?

**RQ2:** Is there a relationship between teachers' perceived implementation of differentiated instruction and third-grade students' reading achievement scores as measured by the mClass?

### **Null Hypotheses**

**H<sub>01</sub>:** There is no relationship between teachers' understanding of differentiated instruction and third-grade students' reading achievement scores.

**H<sub>02</sub>:** There is no relationship between teachers' implementation of differentiated instruction and third-grade students' reading achievement scores.

### **Setting and Participants**

#### **Population**

The target population consisted of third grade teachers from six rural North Carolina counties. These counties were in the south-central area of North Carolina. All third-grade general education teachers from the six counties' schools were invited to participate in the study.

The six school districts had diverse ethnicity. There were ranges from 41% to 71.4% White, 22% to 47.4% Black, 0.3% to 3.8% Asian, 1.0 to 9.1% Native American, 0% to 0.4% Other, and 7.8% to 13.6% Hispanic (Best Places, 2018). Within these counties, the average income ranges from \$33,061 to \$36,921. The median household incomes range from \$29,474 to \$50,323 (North Carolina Department of Commerce, 2019) with varied unemployment rates from 5.8% to 8.9% (U.S Department of Labor, 2019). Of these households, 17.5% to 24.9% are single with children, 49.5% to 54.2% are married, and 24.0% to 34.9% are married with children (Best Places, 2018).

Within the schools, there was an average of 18 students per third-grade teacher. In 2016-2017, the expenditures per student ranged from \$7,978 to \$9,133 in the schools. In 2017-2018, the expenditures per student ranged from \$8,209 to \$9,854. While noting the student expenditures, in 2016 to 2017, the free and reduced lunch percentages were as follows: County A -- 99.6%, County B -- 99.4%, County C -- 70.6%, County D -- 61.1%, County E -- 74.3%, and County F -- 99.6% (Annie Casey Foundation, 2018). In 2017 to 2018, the free and reduced lunches were as follows: County A -- 99.8%, County B -- 92.9%, County C -- 74.6%, County D -- 60.4%, County E -- 71.9%, and County F -- 100% (Annie Casey Foundation, 2018). The percentage per county was a calculation of the total number of children on free or reduced lunch divided by average daily membership. Eligibility for free lunch within the guidelines of the National School Lunch Act required students to reside in homes with incomes at or below 130% of the federal poverty parameters. For entitlement for reduced lunch prices, students must reside in households with an income at or below 185% of the federal poverty parameters (Annie Casey Foundation, 2018).

Title I elementary schools also existed in each district. One of the six districts had nine Title I schools; another district had four; and three other districts had 100% Title I participation among all schools (North Carolina Department of Public Instruction, 2018).

### **Sample**

Convenience sampling was utilized for the study, and 57 third-grade general education teachers consented to participate. It was most appropriate to use a convenience sample because “the sample suits the purposes of the study” (Gall et al., 2007, p. 175). The sample consisted of participants who were readily available to the researcher (Warner, 2013). The suggested minimal sample size for this study was 66 participants for a medium effect size with statistical power of 0.7 at the .05 alpha level (Gall et al., 2007). This study was slightly below the estimated sample size with 54 usable data sets. The usable sample demographics included 1 male and 53 female third-grade teachers. The average age of the teachers was 42 years old. The third-grade teachers’ average years of teaching was 17 years. As for the highest education level, 24 held a bachelor’s degree; 14 held a master’s degree; and 8 held degrees higher than a master’s degree. Eight teachers did not indicate their educational attainment.

### **Instrumentation**

There were two instruments used in this study. The first was the Teacher Survey on Differentiated Instruction (Whipple, 2012), and the second was the mClass: Reading 3D Text Reading Comprehension Test (Gushta et al., 2015).

#### **The Teacher Survey on Differentiated Instruction Sections A & B (Predictor Variables)**

The Teacher Survey on Differentiated Instruction was a modified instrument by Sandra Page (2010). She utilized contents from Carol Ann Tomlinson’s Teacher Self-Reflection on Differentiation for Staff Development Planning Survey. This was an instrument used with



permission from Carol Ann Tomlinson, University of Virginia (see Appendix A). It was comprised of three segments—Section A: Understanding of Differentiated Instruction, Section B: Implementation of Differentiated Instruction, and Section C: Background Demographics Data. The appropriate time to complete all parts of the survey and questionnaire was 15 to 20 minutes. The survey, modified by Dr. Page, was utilized in an earlier quantitative study (Whipple, 2012); however, the questions within the background demographics data were modified to include years of teaching experience. Permission to modify the background demographics data was granted by Dr. Tomlinson.

The survey was a valid instrument for this quantitative study. To support its validity, the Teacher Survey on Differentiated Instruction was used in a previous study. According to Whipple (2012), the survey was used in a pilot study with teachers from Leighton Public School to ensure validity. The results indicated clarity and no issues with the survey. Additionally, the original survey was implemented by Page (2010) and Tomlinson and Allan (2000).

**Section A: Understanding of differentiated instruction.** Section A of the instrument consisted of 26 questions and used a four-point Likert scale which ranged from Not Important to Very Important. The possible responses were Very Important = 4, Fairly Important = 3, Somewhat Important = 2, and Not Important = 1. There were six components which addressed the participants' level of understanding about Tomlinson and Allan's (2000) differentiated instruction (i.e., student interest, assessment, lesson planning, content, process, and product). Student interest, content, and process included four statements. Assessment and lesson planning included five statements. The possible score on the Understanding of Differentiated Instruction survey ranged from 26 to 104. A score of 26 was the lowest possible score meaning that it was not important to understand differentiated instruction. A score of 104 was the highest possible

score meaning that it was very important to understand differentiated instruction. (See Appendix B for the Understanding Differentiated Instruction Survey.)

The Differentiated Instruction questionnaire had a Cronbach's alpha coefficient of  $\alpha = .91$  for the entire survey. Section A: Understanding Differentiated Instruction had a reliability measure of  $\alpha = .86$ . With the noted data, the questionnaire had a high level of internal consistency. "Content validity of the questionnaire was established by grounding the items in Dr. Carol Tomlinson's well-established theory of differentiation" (Santangelo & Tomlinson, 2012, p. 315).

**Section B: Implementation of differentiated instruction.** Section B of the instrument consisted of 26 questions and used a four-point Likert scale which ranged from Hardly ever/Never do this to Use intentionally and often. The possible responses were as follows: Use intentionally and often = 4, Frequently use this = 3, Sometimes/Have used on a few occasions = 2, and Hardly ever/Never do this = 1. Participants answered each question with a rating of a 1, 2, 3, or 4.

There were six components that addressed the participants' level of implementation of Tomlinson's (2000) differentiated instruction (i.e., student interest, assessment, lesson planning, content, process, and product). Student interest, content, process, and product included four statements. Assessment and lesson planning sections included five statements. The possible score on the Implementation of Differentiated Instruction ranged from 26 to 104. A score of 26 was the lowest possible score meaning that teachers hardly ever or never implemented differentiated instruction in their classrooms. A score of 104 was the highest possible score meaning that teachers intentionally and often used differentiated instruction in the classroom. (See Appendix B for the Implementation of Differentiated Instruction Survey.)

The reliability and validity were established in a similar manner as the first sub-scale. The scores of the entire survey were  $\alpha = .91$  with the Cronhach's alpha coefficient and  $\alpha = .93$  for Section B: Implementation of Differentiated Instruction. Along with the first subscale, there was a high level of internal consistency for the questionnaire (Santangelo & Tomlinson, 2012).

***Background demographics section.*** In addition to the Understanding of Differentiated Instruction and Implementation of Differentiated Instruction, the teachers completed a background demographics questionnaire. The purpose of the background demographics questionnaire was to obtain teachers' information about their gender, educational attainment, whether they were elementary or secondary teachers, and the grades and subjects they have taught. The questionnaire also included questions about the teachers' years of teaching experience, their descriptions of differentiated instruction experiences, and the types of training they have received for differentiated instruction.

### **Reading 3D Text Reading and Comprehension Test (Criterion Variable)**

The other instrument used in the study was the mClass: Reading 3D Text Reading and Comprehension (TRC) assessment. The purpose of this instrument was to measure the third-grade "students' instructional reading level" (Center on Response to Intervention, 2017, p. 1). The mClass: Reading 3D TRC assessment "was developed based on the running record portion of Marie Clay's Observation Survey which used a leveled-text gradient and focused explicitly on reading accuracy, reading strategies, and reading comprehension" (Gushta et al., 2015, p. 7).

The mClass was created based upon a development "in 2004 by Amplify, then Wireless Generation, in collaboration with the Montgomery County Public School District in Maryland and Drs. Craig and Sharon Ramey of Georgetown University as part of the Assessment Program

in Primary Reading” (Gushta et al., 2015, p. 7). The purpose and goal of the mClass: Reading 3D Text Reading and Comprehension test was to

develop an assessment instrument that was pedagogically balanced (addressing both word reading and comprehension) and vertically integrated (offering materials for kindergarteners through sixth graders) to provide information about all students across the reading spectrum, whether they were barely sounding out letters in second grade or reading third-grade books as a kindergartener. (Gushta et al., 2015, p. 7)

The proficiency levels had a start and endpoint for each grade, and the time periods “(beginning, middle, and end of year) were established by correlating TRC performance levels to performance on external measures of reading, such as the Comprehensive Test of Basic Skills, Terra Nova Second Edition, and the Grade 3 Maryland State Assessment” (Gushta et al., 2015, p. 7).

To support its validity, there were numerous studies which used mClass: Reading 3D TRC. Bowles (2015) used the instrument to

investigate the relationship between results on the North Carolina End of Grade (NCEOG) Assessment of Reading Comprehension and the mClass: Reading 3D TRC assessment, especially examining the degree to which mClass: Reading 3D TRC predicted on the reading comprehension portion of the NCEOG. (p. 4)

Williams et al. (2014) used mClass: Reading 3D TRC to evaluate the outcome of provisional assessment approaches on academic achievement and observe the effects of provisional assessment approaches on differentiated instruction. In a qualitative study, Wilson (2012) used

mClass: Reading 3D TRC to understand how teachers perceived the program implementation and the role of technology in the reading assessment program.

According to the Center on Response to Intervention at American Institutes for Research (2017), the mClass: Reading 3D TRC was a valid and reliable instrument. The marginal reliability of performance level was .96 for the 2014-2015 school year. The concurrent validity was .80 and predictive validity was .87 for the 2011-2012 school year. Additionally, the instrument was aligned with CCSS in English Language Arts. “Content-related validity evidence was particularly important in selecting tests to use in experiments involving the effect of instructional methods on achievement” (Gall et al., 2007, p. 196).

The mClass: Reading 3D TRC was administered based on the directions in the manual. It was an “individually administered assessment using leveled readers from a book set to determine a student’s instructional reading level” (Center on Response to Intervention, 2017, p. 1). Teachers requested that students “read a benchmark book and complete a number of follow-up tasks, which may include Oral Comprehension Retelling, and/or Written Comprehension” (Center on Response to Intervention, 2017, p. 1). According to Gushta et al. (2015), the student read from a physical book while the teacher followed the interactive text on his or her device, observed, and recorded the student’s reading errors (e.g., insertions, omissions, substitutions, hesitations, etc.). Self-corrections were noted by clicking on the word, and the self-corrections and errors were categorized. When appropriate, the teacher would record the word the student actually said during the assessment. The data from the aforementioned areas provided the student’s reading accuracy and rates of error and self-correction. The mClass: Reading 3D TRC reported a score of N meaning that the student was “proficient” for the middle of the third-grade

year. Failure to receive an N score at mid-year of third grade meant the student was not performing proficiently in reading.

For this researcher's quantitative study, each teacher's student scores were calculated as total pass rate divided by possible pass rate. For example, the number of students deemed as grade level proficient were divided by the total number who took the test, which yielded a percentage for those meeting or exceeding the grade level proficiency benchmark. Thus, each teacher had a pass rate percentage calculated for his/her students.

Reading 3D TRC was defined as "proficiency level L to M for beginning of the year, level N for middle of the year, and level O to P for end of the year" (Gushta et al., 2015, p. 50) (see Appendix C for Text and Performance Levels). These aforementioned mClass proficiency levels were aligned with Fountas & Pinnell and Lexile Levels (see Appendix D for Benchmark Goals). The mClass: Reading 3D TRC level L to M was equivalent to the range of a 400 to 475 Lexile score. The mClass: Reading 3D TRC level N was equivalent to the range of a 500 to 550 Lexile score. Lastly, the mClass: Reading 3D TRC level O to P was equivalent to the range of a 575 to 675 Lexile score.

Third grade students had to exhibit proficiency in College and Career Readiness Anchor Standards for Reading. They had to demonstrate fluency in reading and be able to "explain how specific aspects of a text's illustrations contribute to reading and level of text complexity" (North Carolina Standard Course of Study, 2010, p. 11). Third grade students had to be able to use information gained from illustrations (e.g., maps and photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur), and compare and contrast the most important points

and key details presented in two tests on the same topic. (North Carolina Standard Course of Study, 2010, p. 13)

In addition, third-grade students had to be able to “read and comprehend informational text, including history/social studies, science, and technical texts, at the high end of the grades 2-3 text complexity band independently and proficiently” (North Carolina Standard Course Study, 2010, p. 13). According to the reading assessment program adopted by the North Carolina Department of Public Instruction (2014), the mClass: Reading 3D TRC, third-grade students had to possess the “proficiency level L to M for beginning of the year, level N for middle of the year, and level O to P for end of the year” (Gushta et al., 2015, p. 50).

### **Procedure**

The researcher began the study by seeking approvals from Drs. Carol Ann Tomlinson and Sandra Page to use the modified versions of the Teacher Survey on Differentiated Instruction. The researcher obtained written preliminary permissions from several superintendents to conduct the study in their school districts. (See Appendix E for Letters of Request to Superintendents and Letters of Approval from Superintendents.) Institutional Review Board (IRB) approval was sought (see Appendix F.) Once IRB approval was granted, the researcher emailed the superintendents, alerted them that elementary principals were being contacted, and requested that the elementary principals grant permission to place data collection instruments in teachers’ school mailboxes (see Appendix G.) Once permissions were granted from elementary principals, the researcher emailed them two weeks prior to the start of the study as a reminder.

When the data collection began, the researcher visited each elementary school, placed a consent form (see Appendix H), letter (see Appendix I), a copy of the “Teacher Survey on Differentiated Instruction” data collection instrument, and a white letter-sized envelope in all

2017-2018 third-grade teachers' school mailboxes. The researcher met one-on-one with the school secretaries to train them on data collection procedures and ensure security of the information in a locked location. The researcher sent the secretary an email to remind teachers to complete the consent form, survey, and questionnaires (see Appendix J.)

Upon completion of the data collection instrument, participants sealed them in the unmarked white envelopes and submitted them to the school secretary. The school secretary secured completed surveys and questionnaires in large manila envelopes provided by the researcher. Then, the secretary gave each participant a red store-bought numbered raffle ticket for them to have the opportunity to enter into a raffle for one of the following first, second, and third place prizes: a \$100 Target®, \$50 Walmart®, and \$20 Amazon® gift cards. The secretary placed completed raffle tickets in the small manila envelope.

After a week, the researcher returned to each school to retrieve the envelope of completed surveys and submitted raffle tickets. Once all surveys were collected from each elementary school, the researcher entered all information in Statistical Package for Social Sciences (SPSS) for analysis. Within a week of collecting the raffle tickets from each site, the researcher combined the completed tickets for the Target, Walmart, and Amazon gift card drawing. At the researcher's workplace, a co-worker drew the third, second, and first place winners (with two neutral parties). The researcher contacted the first, second, and third place winners based on the provided contact information on the raffle tickets.

The mClass: Reading 3D Text Reading and Comprehension test scores were obtained from the Board of Education for each school district. First, the researcher provided a list of the 2017-2018 third-grade general education teachers who consented to participate to the respective school district representatives. The representative acquired the archived data, a 2017-2018 End



of Year mClass: Reading 3D Text Reading Comprehension Report. Within the report, teachers' names were converted to 3-digit codes to maintain confidentiality. The disaggregated report by coded teacher included each 2017-2018 third-grade teacher's student scores calculated as total pass rate divided by possible pass rate. The calculation was the number of students identified as grade level proficient divided by the total number of those who took the test. The calculation was represented as a proficiency percentage for those meeting or exceeding the grade level proficiency benchmark. In the report, each teacher had a pass rate percentage calculated for his/her class.

### **Data Analysis**

A Pearson product-moment correlation was used to analyze the data. It was utilized to test the two hypotheses and describe the strength and direction of the relationship between the variables. The rationale for the correlational analysis was to "investigate the direction and magnitude of the relationship among variables" (Gall et al., 2007, p. 636). Data screening was conducted to check for missing data and inconsistencies. The assumptions of bivariate outliers, linearity, and bivariate normal distribution were included in the analysis. Scatterplots were used to test these assumptions. The null hypotheses were tested at the 95% confidence level and *r*-statistics were reported. A Bonferroni correction was used to protect against Type I error because there were two measures on the Differentiated Instruction scale, and the alpha level was adjusted to  $(.05/2) = .025$ .

## CHAPTER FOUR: FINDINGS

### Overview

Chapter four presents the findings of this study. It includes the (a) data screening, (b) assumptions, and (c) Pearson product-moment correlation coefficient results.

### Research Questions

**RQ1:** Is there a relationship between teachers' perceived understanding of differentiated instruction and third-grade students' reading achievement scores as measured by the mClass?

**RQ2:** Is there a relationship between teachers' perceived implementation of differentiated instruction and third-grade students' reading achievement scores as measured by the mClass?

### Null Hypotheses

**H<sub>01</sub>:** There is no relationship between teachers' understanding of differentiated instruction and third-grade students' reading achievement scores.

**H<sub>02</sub>:** There is no relationship between teachers' implementation of differentiated instruction and third-grade students' reading achievement scores.

### Descriptive Statistics

Means and standard deviations were obtained for the predictor variables (understanding differentiated instruction and implementing differentiated instruction) and can be found in Table 1. The mean and standard deviation for the criterion variable (third-grade students' reading achievement) can be found in Table 2.

Table 1

*Descriptive Statistics for Predictor Variables*

Variables	<i>N</i>	<i>M</i>	<i>SD</i>
Understanding differentiated instruction	54	91.94	9.04
Implementing differentiated instruction	54	88.46	9.63

*Note.* *N* = number of participants; *M* = mean; *SD* = standard deviation.

Table 2

*Descriptive Statistics for Criterion Variable*

Variable	<i>N</i>	<i>M</i>	<i>SD</i>
End of Year	54	57.30	22.13

*Note.* *N* = number of participants; *M* = mean; *SD* = standard deviation.

## Results

### Data Screening

Fifty-seven surveys were returned and entered into the SPSS statistical analysis program. Screening was conducted to determine missing data, outliers, and inconsistencies among the predictor and criterion variables. Data errors, inconsistencies, and outliers were identified based on the recommended procedures by Warner (2013). One participant (code 057) completed the demographic information and surveys but did not have 2017-2018 mClass: Reading TRC Test results. The participant did not teach in an approved school district during the 2017-2018 school year. The information for the participant was removed from the data set. As a result, the data set was reduced from 57 to 56 participants.

## Assumption Tests

Pearson's  $r$  was used to test the two null hypotheses. Pearson's  $r$  required that four assumptions were met: independence, linearity, bivariate normal distribution, and bivariate outliers. For the assumption of independence, the data for the criterion variables were independent for each case because students were not permitted to jointly or cooperatively complete the mClass: Reading 3D TRC assessment. The data for the predictor variables were independent for each case because the teachers independently administered the assessment with each student using leveled reader booklets.

Scatterplots were created and used to detect additional bivariate outliers for the predictor and criterion variables. See Figures 1 and 2 for scatterplots. Two additional participants' data (codes 013 and 018) were deleted from the data set due to the identification of bivariate outliers. This resulted in the data set being decreased from 56 to 54 participants.

For the assumption of linearity, a scatterplot was used to examine the linear relationship between each predictor variable and criterion variable. From a visual observation, the scatterplot illustrated a positive linear relationship between the predictor variables and criterion variable. Also, there were not any identified curvilinear plots; thereby, the assumption of linearity was acceptable (Warner, 2013). The assumption of bivariate normal distribution was also met. See Figures 1 and 2 for scatterplots.

## Statistical Analysis

Two null hypotheses were analyzed with Pearson product-moment correlations with an alpha level set at .05. With two measures on the Differentiated Instruction scale, a Bonferroni correction was used, and the alpha level was adjusted to .025 (Warner, 2013).

### Null Hypothesis One

For hypothesis one, the researcher investigated whether there was a relationship between teachers' understanding of differentiated instruction and third-grade students' reading achievement scores. Based on data analysis, there was not a relationship between teachers' understanding of differentiated instruction and third-grade students' reading achievement scores. The researcher failed to reject the null hypothesis  $r(52) = -.13, p = .352$ . There was no statistical significance, and the effect size was small. See Figure 1, which identifies the scatterplot for understanding of differentiated instruction and the percentage of third-grade students who were at or above proficiency at the end of the year.

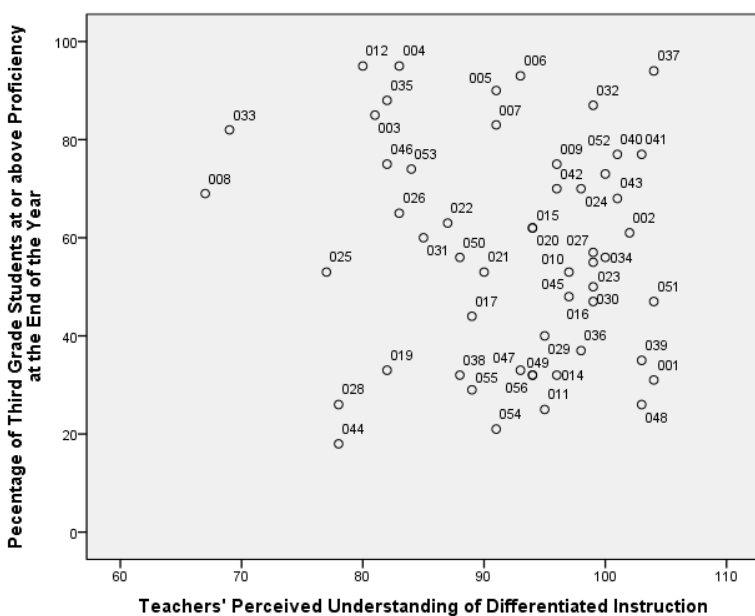
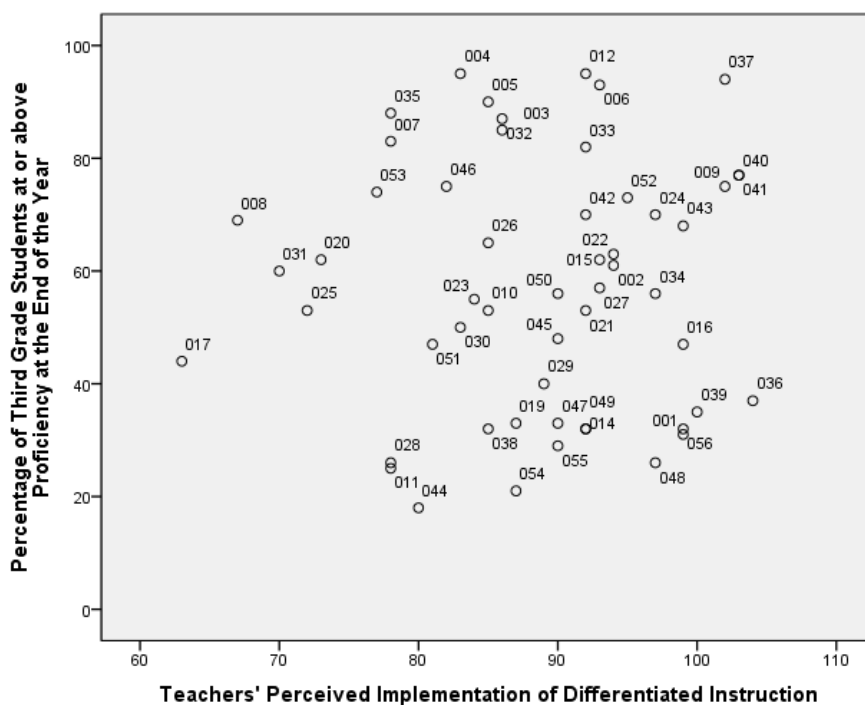


Figure 1. Scatterplot for teachers' perceived understanding of differentiated instruction and percentage of third-grade students who were at or above proficiency on the 2017-2018 End of Year mClass: Reading 3D Text Reading and Comprehension assessment.

### Null Hypothesis Two

For hypothesis two, the researcher examined whether there was a relationship between the implementation of differentiated instruction and third-grade students' reading achievement

scores. There was no significant relationship between the implementation of differentiated instruction and third-grade students' reading achievement scores. The researcher failed to reject the null hypothesis,  $r(52) = .03, p = .850$ . There was no statistical significance, and the effect size was small. See Figure 2, which identifies the scatterplot for implementation of differentiated instruction and percentage of third-grade students who were at or above proficiency at the end of the year.



*Figure 2.* Scatterplot for teachers' perceived implementation of differentiated instruction and percentage of third-grade students who were at or above proficiency on the 2017-2018 End of Year mClass: Reading 3D Text Reading and Comprehension assessment.

## CHAPTER FIVE: CONCLUSIONS

### Overview

Chapter five concludes the research study with the following: (a) discussion, (b) implications, (c) limitations, and (d) recommendations for further research.

### Discussion

The purpose of this study was to determine whether a relationship existed between the predictor variables, teachers' understanding of differentiated instruction and teachers' implementation of differentiated instruction and the criterion variable, third-grade students' reading achievement scores.

### Null Hypothesis One

For null hypothesis one, the researcher failed to reject the null hypothesis. There was not a significant relationship between teachers' understanding of differentiated instruction and third-graders' reading achievement scores on the mClass assessment.

The results of this study were similar to the results of a study by Strogilos et al. (2017) which indicated that even though teachers understand that differentiated instruction is helpful to educating students, their instructional practices do not reflect incorporation into daily classroom practice to potentially impact students' achievement. Teachers' understanding of differentiated instruction has been associated with effective classroom instructional practice (Brevik et al., 2018; Frankling et al., 2017). Frankling et al. (2017) emphasized that when teachers understand differentiation, it encourages intentionality, explicitness, and purpose in their instruction. According to Brevik et al. (2018), although Norwegian pre-service teachers understood differentiated instruction, it was a challenge to plan and enact the practice for identified students.

## **Null Hypothesis Two**

For null hypothesis two, the researcher failed to reject the null hypothesis. There was not a significant relationship between teachers' implementation of differentiated instruction and third-graders' reading achievement scores on the mClass assessment.

The results of this study were in agreement with Ward's (2017) results, which indicated that there was no significant difference in academic achievement with the implementation of differentiated instruction. Achievement scores for Ward's differentiated instructional group and direct instructional group were comparable. Hill (2015) analyzed the impact of differentiated instruction on Grades 3 through 5 students' reading achievement. Differentiated instruction did not appear to have a statistically significant difference on any of the students' reading achievement. Hill's results indicated the importance of encouraging more time and support towards effective implementation of differentiated instruction in reading classrooms to positively impact students' achievement.

In contrast, Suprayogi et al. (2017) and Boardman et al. (2015) quantitatively explored the fidelity of differentiated instruction implementation and its relationship to student achievement in large urban middle schools. Their results showed that students who received differentiated instruction in science and social studies scored higher on standardized reading comprehension assessments in comparison to their peers in other classrooms.

## **Implications**

Although the results of this study did not determine a relationship among the variables, differentiated instruction has been highly effective to positively impact students' reading achievement. Differentiated instruction is one component that can prevent students from being retained due to non-proficient reading skills. While multiple instructional strategies might be



beneficial for teachers to incorporate for students' reading development, differentiated instruction can be advantageous.

Rising and certified teachers have the opportunity to incorporate differentiated instruction at various times in their profession. The most opportune time should begin at the start or pursuit of their teaching certification. Teachers' understanding and implementation of differentiated instruction must begin during the initial stages of teacher pedagogy and student teaching. Based on the third-grade gap in reading proficiency and current studies in student achievement, teachers' differentiated instructional knowledge, skills, and training should begin during their preparatory stages of their professional careers. At that time, rising and certified teachers will have knowledge and experience with the use of incorporating differentiation. Thus, differentiated instruction will not seem like a foreign topic or difficult task for teachers to incorporate in students' education.

Related findings suggest that teaching students in a differentiated small group setting can benefit all students, including those at risk of failure. For differentiated instruction to be highly effective, teachers must adequately analyze itemized skill-based reading diagnostics and prior end-of-year and current beginning-of-year assessment reports. From the reports, teachers can academically meet students where they are so as to strengthen and improve students' skills. The less than proficient standards and skills will drive the differentiated instruction for students. Teachers should establish small group sessions with skill-based lessons aligned to needs. These sessions will be fluid and allow for flexible grouping based on standards, skills, and needs. The use of differentiated instructional flexible grouping in conjunction with a direct target of standards, skills, and needs will move students and promote proficiency and achievement.

The ultimate goal is for these measures to counteract the students' areas of non-proficiency and academically improve in the grade level standards and skills. Early identification of at-risk students will allow teachers to become academically acquainted with students. Most importantly, it can contribute to early interventions that can consist of low or high preparation differentiation and an ongoing learning profile. Differentiation in small groups aligned with students' needs moves them forward and shows student achievement. Differentiation should always remain in place until the gradual release has occurred where students are reading independently. With consistency, the emphasized areas and structure may result in improved academics, life, and social environment.

Along with identifying at-risk students at the very start of their education, this study has implications to benefit teachers. The findings indicate that teachers' professional development must include co-teachers' roles and responsibilities, how to analyze students' data, and general or universal procedures and steps to plan and carry out differentiated instruction. Within this study, teachers in the team-teaching capacity reported high levels of perceived understanding and implementation of differentiated instruction, but their scores did not reflect such practices. Differentiation may be the small factor that helps students; however, teachers' strong understanding and effective implementation of differentiated instruction can be just the right best practice, at just the right time, and within just the right duration to make a positive impact in students' learning. Teachers must be willing to train for a solid understanding and the implementation of differentiated instruction with fidelity, intentionality, and consistency. If teachers lack the willingness to strongly understand and implement differentiated instruction with fidelity and consistency, it stunts the opportunity to close the gap in reading proficiency.

On the contrary, should teachers be willing to fully understand and implement differentiated instruction with fidelity, intentionality, and consistency, findings from this study have implications which are advantageous to the work environment and society. When teachers vehemently understand and implement differentiation with fidelity and consistency, students become more proficient in reading and can eventually become productive citizens of society who are college or career ready. With proficiency in reading, students will have options to choose a better direction, contribute to the decrease in the dropout rate, and avoid the prison system.

### **Limitations**

Several limitations were present in this study. First, the criteria for participants hindered the progress of the study. To become a participant, teachers had to be a 2017-2018 third-grade general education teacher in one of the approved six districts. Such criteria limited the number of participants and potentially affected the response rate. For instance, one district only had 12 teachers who met the criteria. Fortunately, six of the 12 teachers in that specific school district consented to be participants in the research study.

The second limitation of the study was teacher turnover. Since this study was conducted in a region with a large military population, the movement of teachers in and out of the six school districts affected how many present third grade teachers had data from the past school term. In a military vicinity, there can be a high level of transient teachers. Although the study consisted of six North Carolina school districts, the state, as a whole, was identified for being among the top 10 states with the highest teacher turnover rate. It ranks number nine on the Teacher Turnover: State by State List (Graide Network, 2019). According to data from the North Carolina Department of Public Instruction, the state turnover rate in 2015-2016 was 13.4%. Teacher turnover pertained to the attrition (leaving the state public school system

entirely) and mobility (transferring to another location within the state) of teachers. There was an average of 4.4% mobile teachers who relocated to another school within the state.

Unfortunately, an additional 9% of teachers left the state altogether. Along with attrition and mobility, retirement, new careers, and higher pay in other states attributed to teacher turnover. In 2016-2017, 18.7% of North Carolina teachers retired with full benefits. There was a higher percentage of teacher retirement at 19.8% in 2015-2016 (Stanford, 2019).

The third limitation in the study was that one of the six school districts did not allow full access to all of the elementary schools. While the other five school districts permitted research and data collection from all of the elementary schools, one of the school districts limited the research and data collection to 10 of the 52 elementary schools. Consequently, the limited research and data collection resulted in two participants out of 10 schools.

The fourth limitation in the study was that the timing of data collection impacted the number of participants. Data collection took place from March 2019 to June 2019. With third-grade being an end-of-the-year testing grade, teachers were more than likely focused on end-of-grade test preparations and not a research study or the completion of a survey, questionnaire, or consent forms.

### **Recommendations for Future Research**

There were multiple recommendations for further research.

- (a) Obtain a larger sample of teachers and acquire diverse participants, particularly more male teachers.
- (b) Using qualitative methods, investigate how teachers comprehend differentiated instruction and strengthen their instructional opportunities to benefit all students in co-taught educational settings (Strogilos et al., 2017).

- (c) Provide teachers who are accustomed to whole class teaching with the appropriate support, guidance, and professional development on best practices of differentiated instruction and compare them to groups who do not receive support (Boardman et al., 2015; Frankling et al., 2017; Pablico et al., 2017; Puliatte & Ehri, 2018; Stern et al., 2018; Strogilos et al., 2017; Tomlinson & Murphy, 2015).
- (d) Replicate this study using a different testing instrumentation such as the third-grade reading End-of-Grade (EOG) data (North Carolina English Language Arts/Reading Grade 3 Achievement) scores as opposed to third-grade mClass: Reading Comprehension TRC data.

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## APPENDICES

### Appendix A

**From:** [deecapers@aol.com](mailto:deecapers@aol.com) <mailto:deecapers@aol.com>  
**Sent:** Tuesday, July 04, 2017 11:33 PM  
**To:** [REDACTED]  
**Subject:** Approval to Use Teacher Survey of Differentiated Instruction

July 4, 2017

[REDACTED]

Dear Dr. [REDACTED]:

My name is Diedre Capers, and I am a doctoral student at Liberty University. I have completed my coursework to fulfill my degree. My next step is to compose the proposal for my dissertation, *Teachers' Effectiveness in Differentiated Instruction and Third-grade Students' Reading Achievement*. With your approval, I would greatly appreciate utilizing your Teacher Survey on Differentiated Instruction. I would particularly prefer using the Understanding Differentiated Instruction and Implementing Differentiated Instruction sections of the survey. Additionally, I would like to modify the Background Demographics Data section to include a specific age and years of teaching.

Within my procedures, I will ask permission from superintendents and elementary school principals in [REDACTED] to conduct a quantitative study. Additionally, I will seek third-grade teachers' approvals to complete the self-report instrument designed by you. The instrument will help decipher the level of differentiated instruction teachers understand and use in their classrooms. From the teachers' self-report results, I will use the data to determine the relationship between understanding and implementation of differentiated instruction with third-grade students' reading achievement.

Should you have any questions regarding my research study, please feel free to contact me. I can be reached at [REDACTED]. Also, you may contact me by my email, [deecapers@aol.com](mailto:deecapers@aol.com)

I trust that you will consider my request to use your Teacher Survey on Differentiated Instruction in my quantitative study. I am grateful for all of your support in my educational endeavor.

Sincerely,

Diedre Capers

[REDACTED] To:you [Details](#)

Hi Diedre-

I may still not be answering the question you need me to answer. IF that's the case, just let me know what I'm misunderstanding.

As I look at the documents, you seem already to have permission from [REDACTED] and from me to use the survey in your thesis. That's still fine with me. It's also fine with me for you to modify the survey to modify the Background Data Demographics to provide me with specific age and years of teaching.

An appropriate citation would be: Used with permission of [REDACTED]

If you need something different, let me know.

[REDACTED]

**From:** [deecapers@aol.com](mailto:deecapers@aol.com) <mailto:deecapers@aol.com>

**Sent:** Friday, July 07, 2017 7:56 PM

**To:** [REDACTED]

**Subject:** Other Items to Assist in Your Approval

[REDACTED]

Please pardon any confusion in my request. Attached are the items in which I inquire about and seek your approval. You had approved the use of the items for a previous study. I have attached pages of the previous study for your convenience. Those pages are from the previous study (thesis) in which I located in Google Scholar. The last attachment is the thesis.

Again, I appreciate your support and consideration.

Sincerely,

Diedre Capers



## Appendix B

### Background Demographic Data

**Directions:** Please complete the following questions.

1. Was your teaching assignment in the third-grade during the 2017-2018 school year?  
 yes      If yes, proceed to the next question.  
 no      If no, do not continue to the next question. Thank you for considering participation in the research study.
  
2. Current subject area(s) taught (Mark all that apply.)  
 Reading  Writing  Mathematics  Social Studies  Science  Other  
 If other, please specify \_\_\_\_\_
  
3. What type of teacher are you?  
 General Education Teacher                       Special Education Teacher
  
4. Current grade level teaching assignment  
 K  1  2  3  4  5  6
  
5. Gender:                       Male                       Female
  
6. Your age is: \_\_\_\_\_
  
7. Education Level: (Mark your highest degree.)  
 Bachelor's Degree                                       Master's Degree  
 Master Degree plus 15                                       Master's Degree plus 30 hours  
 Doctoral Degree                                       Other Please specify \_\_\_\_\_
  
8. How many years have you been teaching? \_\_\_\_\_
  
9. I would describe my experience with differentiated instruction as:  
 None                                       Some                                       Extensive
  
10. If you have been trained, what type of training have you had (click all that apply)?  
 Course from college or university                       Teleconference  
 Learned on my own through readings                       Mentored by a colleague  
 In-service activity                                       Conferences, meetings, or workshops  
 Other: Please specify in the box below.
  
11. Using the box, please elaborate on the training.

### Section A: Understanding of Differentiated Instruction

- (1) Not Important      (3) Fairly Important  
 (2) Somewhat Important    (4) Very Important

Student Interest		
1.	1 2 3 4	I know individual student interest and can relate it to instruction.
2.	1 2 3 4	I know individual student culture and expectations and can relate to instruction.
3.	1 2 3 4	I know individual student life situations and how it may impact their learning.
4.	1 2 3 4	I am aware of student's learning disabilities and handicaps and how to address them in lessons so as not to impair their learning.
Assessment		
5.	1 2 3 4	I pre-assess students before instructing.
6.	1 2 3 4	I pre-assess readiness to adjust the lesson.
7.	1 2 3 4	I assess during the unit to gauge understanding.
8.	1 2 3 4	I assess at the end of the lesson to determine knowledge acquisition.
9.	1 2 3 4	I determine student's learning styles.
Lesson Planning		
10.	1 2 3 4	I teach up by assuring each student works towards their highest potential.
11.	1 2 3 4	Materials are varied to adjust to students' reading/interest abilities
12.	1 2 3 4	Learners play a role in designing/selecting learning activities.
13.	1 2 3 4	I adjust for diverse learner needs with scaffolding, tiering instruction & provide student choice in learning activities.
14.	1 2 3 4	I provide tasks that require students to apply and extend understanding.
Content		
15.	1 2 3 4	The curriculum is based on major concepts and generalizations
16.	1 2 3 4	I clearly articulate what I want students to know, understand and be able to do.
17.	1 2 3 4	I use variety of materials other than the standard text.
18.	1 2 3 4	I provide a variety of support strategies (organizers, study guides, study buddies).
Process		
19.	1 2 3 4	The pace of instruction varies based on individual learner needs.
20.	1 2 3 4	I use learner preference groups and/or learning preference centers
21.	1 2 3 4	I group students for learning activities based on readiness, interests, and/or learning preferences.
22.	1 2 3 4	The classroom environment is structured to support a variety of activities including group and/or individual work.
Product		
23.	1 2 3 4	I provide multiple modes of expression in the final product.
24.	1 2 3 4	I provide students with the choice to work alone, in pairs or small group.
25.	1 2 3 4	The product connects with student interest.
26.	1 2 3 4	I provide variety of assessment tasks.

### Section B: Implementation of Differentiated Instruction

- (1) Hardly ever/Never do this (2) Sometimes/Have used on a few occasions  
 (3) Frequently use this (4) Use intentionally and often

Student Interest		
1.	1 2 3 4	I know individual student interest and can relate it to instruction.
2.	1 2 3 4	I know individual student culture and expectations and can relate to instruction.
3.	1 2 3 4	I know individual student life situations and how it may impact their learning.
4.	1 2 3 4	I am aware of student's learning disabilities and handicaps and how to address them in lessons so as not to impair their learning.
Assessment		
5.	1 2 3 4	I pre-assess students before instructing.
6.	1 2 3 4	I pre-assess readiness to adjust the lesson.
7.	1 2 3 4	I assess during the unit to gauge understanding.
8.	1 2 3 4	I assess at the end of the lesson to determine knowledge acquisition.
9.	1 2 3 4	I determine student's learning styles.
Lesson Planning		
10.	1 2 3 4	I teach up by assuring each student works towards their highest potential.
11.	1 2 3 4	Materials are varied to adjust to students' reading/interest abilities
12.	1 2 3 4	Learners play a role in designing/selecting learning activities.
13.	1 2 3 4	I adjust for diverse learner needs with scaffolding, tiering instruction & provide student choice in learning activities.
14.	1 2 3 4	I provide tasks that require students to apply and extend understanding.
Content		
15.	1 2 3 4	The curriculum is based on major concepts and generalizations
16.	1 2 3 4	I clearly articulate what I want students to know, understand and be able to do.
17.	1 2 3 4	I use variety of materials other than the standard text.
18.	1 2 3 4	I provide a variety of support strategies (organizers, study guides, study buddies).
Process		
19.	1 2 3 4	The pace of instruction varies based on individual learner needs.
20.	1 2 3 4	I use learner preference groups and/or learning preference centers
21.	1 2 3 4	I group students for learning activities based on readiness, interests, and/or learning preferences.
22.	1 2 3 4	The classroom environment is structured to support a variety of activities including group and/or individual work.
Product		
23.	1 2 3 4	I provide multiple modes of expression in the final product.
24.	1 2 3 4	I provide students with the choice to work alone, in pairs or small group.
25.	1 2 3 4	The product connects with student interest.
26.	1 2 3 4	I provide variety of assessment tasks.

## Appendix C

Table 29. Text and Performance Levels for Amplify Atlas by Grade and Time of Year

Grade	TOY	Far Below	Below	Proficient	Above
K	BOY	< PC	PC	RB	A and above
	MOY	RB or below	A	B	C and above
	EOY	A or below	B	C to D	E and above
1	BOY	A or below	B	C to D	E and above
	MOY	C or below	D to E	F to G	H and above
	EOY	E or below	F to H	I	J and above
2	BOY	E or below	F to H	I	J and above
	MOY	H or below	I	J to K	L and above
	EOY	J or below	K	L to M	N and above
3	BOY	J or below	K	L to M	N and above
	MOY	K or below	L to M	N	O and above
	EOY	L or below	M to N	O to P	Q and above
4	BOY	L or below	M to N	O to P	Q and above
	MOY	N or below	O to P	Q	R and above
	EOY	P or below	Q	R to S	T and above
5	BOY	P or below	Q	R to S	T and above
	MOY	Q or below	R to S	T	U and above
	EOY	S or below	T	U to V	W and above
6	BOY	S or below	T	U to V	W and above
	MOY	U or below	V	W to X	Y and above
	EOY	V or below	W to X	Y to Z	*

\* No cut point set; no books available to classify students at this administration period and performance level.

## Appendix D



### Benchmark Goals

Amplify 3D Reading Levels for Text Reading Comprehension (TRC) with Fountas & Pinnell and Lexile Levels

Grade	Time of Year	Far Below Proficient (Intensive)	Below Proficient (Strategic)	Proficient (Benchmark)	Lexile Equivalent	Above Proficient
		Frustration Level		Independent Level		Instructional Level
K	BOY	<PC	PC	RB	25	A and above
	MOY	RB and below	A	B	50	C and above
	EOY	A and below	B	C to D	75-100	E and above
1	BOY	A and below	B	C to D	75-100	E and above
	MOY	C and below	D to E	F to G	175-200	H and above
	EOY	E and below	F to H	I	275	J and above
2	BOY	E and below	F to H	I	275	J and above
	MOY	H and below	I	J to K	325-375	L and above
	EOY	J and below	K	L to M	400-475	N and above
3	BOY	J and below	K	L to M	400-475	N and above
	MOY	K and below	L to M	N	500-550	O and above
	EOY	L and below	M to N	O to P	575-675	Q and above
4	BOY	L and below	M to N	O to P	575-675	Q and above
	MOY	N and below	O to P	Q	700-725	R and above
	EOY	P and below	Q	R to S	750-825	T and above
5	BOY	P and below	Q	R to S	750-825	T and above
	MOY	Q and below	R to S	T	850	U and above
	EOY	S and below	T	U to V	875-925	W and above
6	BOY	S and below	T	U to V	875-925	W and above
	MOY	U and below	V	W to X	950-1000	Y and above
	EOY	V and below	W to X	Y to Z	1025-1075	

\*Letters level in correlation to the Fountas and Pinnell text reading level gradient.

\*Same reading level gradient is used in "Teachers College Reading and Writing Project (TCRWP)," however level expectations may differ slightly.

\*Same reading level gradient utilized for Amplify's "Text Reading Comprehension" (TRC) leveling.

(Intensive Support and Innovative Center, 2017)

## Appendix E

456 School Road  
City, State 12345  
October 11, 2018

[REDACTED]

Dear [REDACTED]

As a doctoral candidate in the School of Education at Liberty University, I will conduct research as part of the requirements for my degree. My research study's title is *Teachers' Understanding and Implementation of Differentiated Reading Instruction and Third-graders' Achievement: A Correlational Study*. The purpose of my research study is to determine if a relationship exists between the understanding and implementation of differentiated instruction with third-grade students' reading achievement.

With your approval, I would greatly appreciate conducting my study in the [REDACTED]. Upon your written approval, I will contact the elementary school (K-6) principals and provide them with additional information.

I will ask participating teachers to complete two questionnaires: Understanding of Differentiated Instruction and Implementation of Differentiated Instruction. These will be provided in paper/pencil format and should take participating teachers approximately 15 minutes to complete them. Participation in this study is strictly voluntary. Participants are welcome to discontinue participation at any time. The obtained data will be used to test the strength and direction of the relationship between the variables.

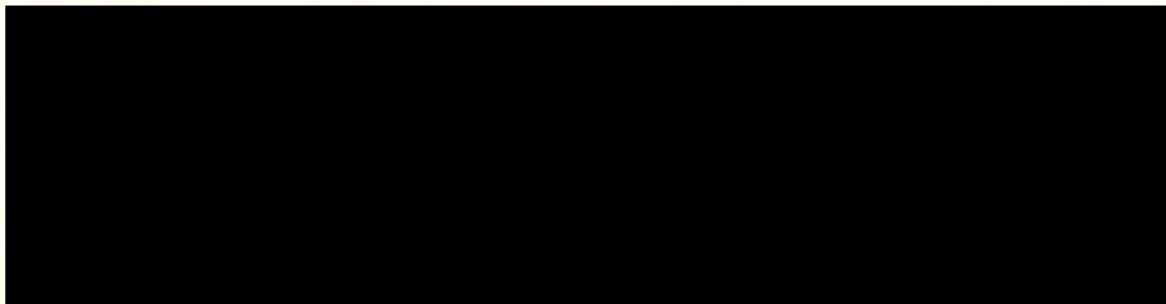
Should you have any questions, please contact me at [REDACTED]. I can be reached at the aforementioned cellphone number after 3:30 p.m.

I greatly appreciate you considering my request to complete research in your elementary schools. If you choose to grant me permission, please provide a signed statement on district letterhead indicating your approval. You can scan and mail it to the above address or email it to [REDACTED]. Formal research will not be conducted until I receive the official Liberty Institutional Review Board permissions.

Sincerely,

Diedre Capers

Response from County A Superintendent

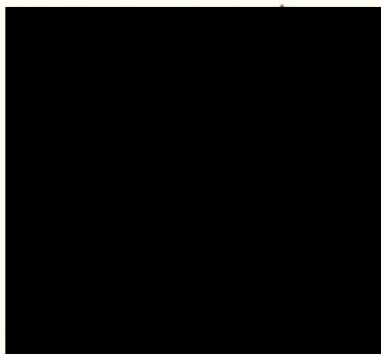


December 12, 2018

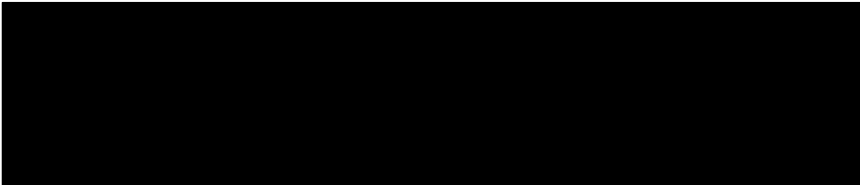
Dear Ms. Capers,

This is to confirm that you do have my permission to conduct your research study in [redacted] Schools.

If there is anything we can do to assist you in this project please feel free to call us at [redacted]



Response from County B Superintendent

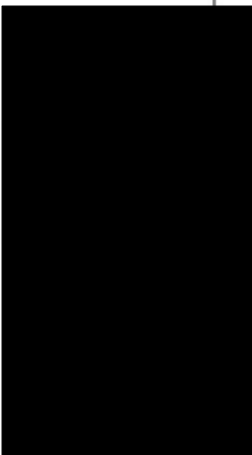
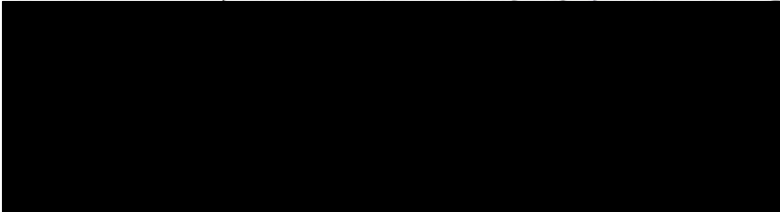


March 12, 2019



Dear Ms. Capers,

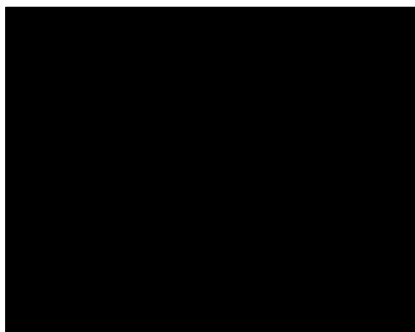
After conferring with the Assistant Superintendent of Curriculum & Instruction, [redacted] and Principals [redacted] we have decided to grant you permission to conduct your research studies at [redacted] Schools. As a district, our mission is to educate all students to their highest level of academic performance and to prepare them to become productive members of society; we look forward to a mutually respectful and rewarding partnership.



[redacted] system is an equal opportunity employer and does not discriminate on the basis of race, color, sex, national origin, religion, age, equal pay, disability or genetic information.



## Response from County C Superintendent



Date: April 23, 2019

To: Diedre Capers

From: [REDACTED]

Study: *Teachers' Understanding and Implementation of Differentiated Reading Instruction and Third Graders' Achievement*

Your human subject research proposal has been reviewed by the [REDACTED] Schools' Research Committee. The project has been approved for participation to be [REDACTED]

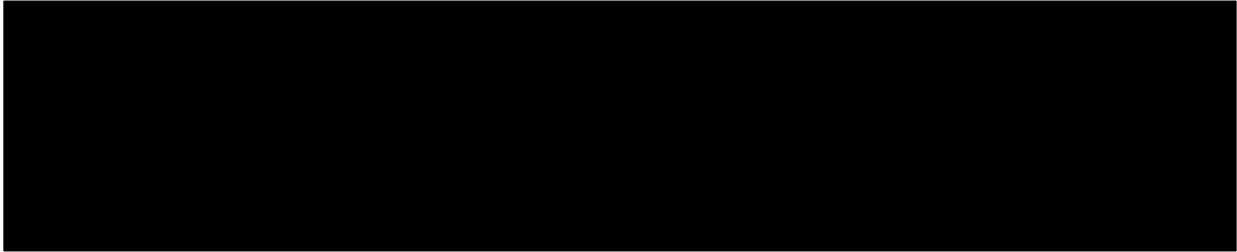
The Research Committee approved your request to conduct your research under the conditions that you comply with [REDACTED] Project Guidelines. Please keep in mind that participation is voluntary and instructional time is not to be interrupted.

Congratulations and best wishes with your research project.

Sincerely,

[REDACTED]

## Response from County D Superintendent



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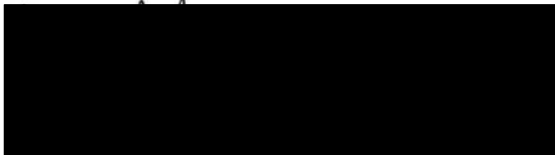
November 27, 2018

Dear Ms. Capers,  
Permission to Conduct Research Study is granted. You may collect data through surveys with our third grade teachers from January 2019 through February 2019.

Please be reminded to clarify to teachers that participation is optional and to only collect information via completed surveys.

If I may be of any further assistance, please do not hesitate to contact me.

Sincerely,



Response from County D Superintendent



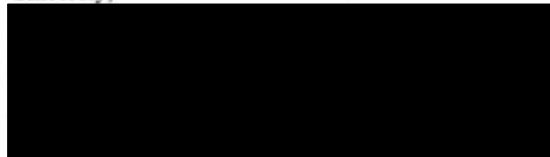
March 8, 2019

Dear Ms. Capers,  
Permission to Conduct Research Study is granted and extended. You may collect data through surveys with our third grade teachers from January 2019 through April 2019.

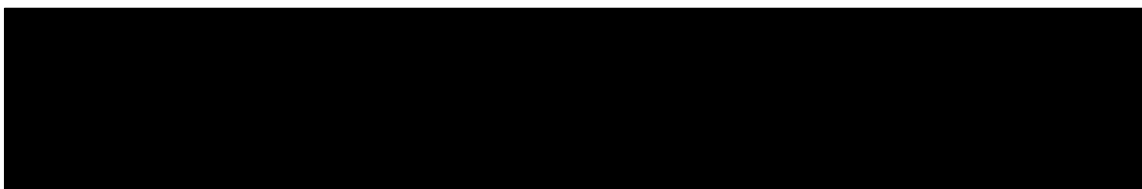
Please be reminded to clarify to teachers that participation is optional and to only collect information via completed surveys.

If I may be of any further assistance, please do not hesitate to contact me.

Sincerely,



## Response from County E Superintendent



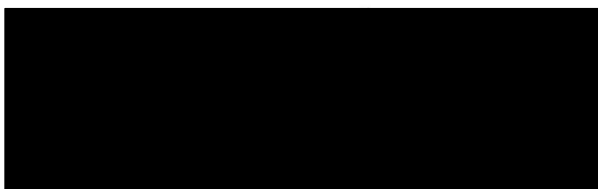
October 23, 2018



Dear Ms. Capers,

Your request to conduct your research study in the [redacted] as part of your quest for your doctoral degree, is granted.

We look forward to your final product and the results that your study will show.



c: File

Response from County E Superintendent



**Re: Request for Assistance in Research Study** 

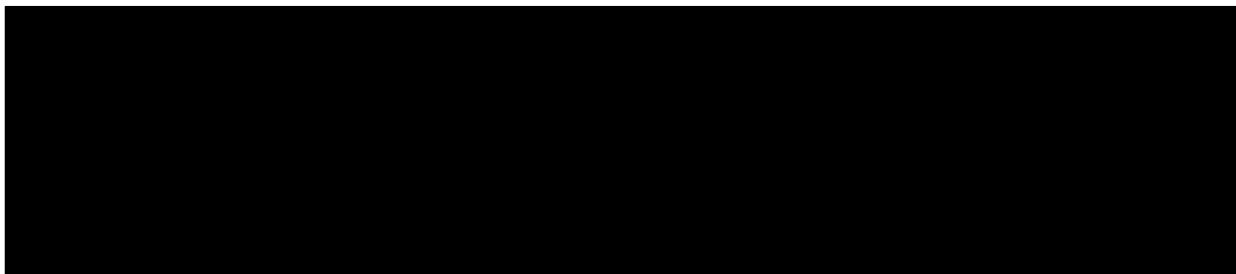
 to you + 1 more [show details](#) 

Ms. Capers, good morning. Permission granted.

Sent from my iPhone

On Jun 26, 2017, at 8:40 PM,  note:

Response from County F Superintendent

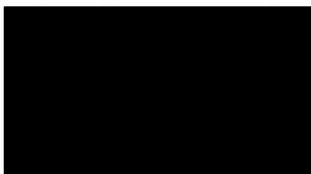


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December 10, 2018

To Whom It May Concern:

As Superintendent of [redacted] approve of Diedre Capers to conduct research for her program at [redacted] Ms. Capers will need to contact the principals of each school each time she communicates with stakeholders at the school.




## Appendix F

### IRB Approval

# LIBERTY UNIVERSITY

INSTITUTIONAL REVIEW BOARD

February 21, 2019

 Teachers' Understanding and Implementation of Differentiated Reading Instruction and Third Graders' Achievement

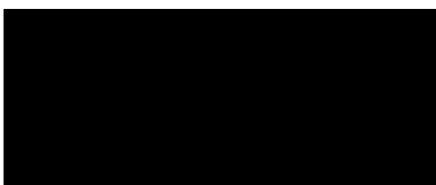
Dear Diedre Capers,

We are pleased to inform you that your study has been approved by the Liberty University IRB. This approval is extended to you for one year from the date provided above with your protocol number. If data collection proceeds past one year or if you make changes in the methodology as it pertains to human subjects, you must submit an appropriate update form to the IRB. The forms for these cases were attached to your approval email.

Your study falls under the expedited review category (45 CFR 46.110), which is applicable to specific, minimal risk studies and minor changes to approved studies for the following reason(s):

5. Research involving materials (data, documents, records, or specimens) that have been collected, or will be collected solely for nonresearch purposes (such as medical treatment or diagnosis). (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. [45 CFR 46.101\(b\)\(4\)](#). This listing refers only to research that is not exempt.)
7. Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies. (NOTE: Some research in this category may be exempt from the HHS regulations for the protection of human subjects. [45 CFR 46.101\(b\)\(2\)](#) and (b)(3). This listing refers only to research that is not exempt.)

Thank you for your cooperation with the IRB, and we wish you well with your research project.



**LIBERTY**  
UNIVERSITY.

*Liberty University | Training Champions for Christ since 1971*

## Appendix G

456 School Road  
City, State 12345  
October 11, 2018

[REDACTED]

Dear Dr. [REDACTED]

As a doctoral candidate in the School of Education at Liberty University, I will conduct research as part of the requirements for my degree. My research study's title is *Teachers' Understanding and Implementation of Differentiated Reading Instruction and Third-graders' Achievement: A Correlational Study*. The purpose of my research study is to determine if a relationship exists between the understanding and implementation of differentiated instruction with third-grade students' reading achievement.

Your superintendent has granted me permission to conduct the study in the [REDACTED] Schools. With your approval, I would greatly appreciate conducting my study in the [REDACTED]. Upon your written approval, I will contact the third-grade teachers and provide them with additional information.

I will ask participating teachers to complete two questionnaires: Understanding of Differentiated Instruction and Implementation of Differentiated Instruction. These will be provided in paper/pencil format and should take participating teachers approximately 15 minutes to complete them. Participation in this study is strictly voluntary. Participants are welcome to discontinue participation at any time. The obtained data will be used to test the strength and direction of the relationship between the variables.

Should you have any questions, please contact me at [REDACTED]. I can be reached at the aforementioned cellphone number after 3:30 p.m.

I greatly appreciate you considering my request to complete research in your elementary schools. If you choose to grant me permission, please provide a signed statement on district letterhead indicating your approval. You can scan and mail it to the above address or email it to [REDACTED]. Formal research will not be conducted until I receive the official Liberty Institutional Review Board permissions.

Sincerely,

Diedre Capers



## Appendix H

### PARTICIPANT CONSENT PAGE

#### CONSENT FORM

TEACHERS' UNDERSTANDING AND IMPLEMENTATION OF DIFFERENTIATED  
READING INSTRUCTION AND THIRD-GRADERS' ACHIEVEMENT: A  
CORRELATIONAL STUDY

Diedre Capers

Liberty University

School of Education

You are invited to be in a research study to **determine the relationship which exists between the understanding and implementation of differentiated instruction with third-grade students' reading achievement**. You were selected as a possible participant because you are a third-grade educator in one of the participating school districts. Please read this form and ask any questions you may have before agreeing to participate in the study.

#### **Background Information**

The purpose of this study is to determine if a relationship exists between the understanding (self-reported by teachers based on their understanding of student interest, assessment, lesson planning, content, process, and product within differentiated instruction) and implementation (self-reported by teachers based on their execution and application of student interest, assessment, lesson planning, content, process, and product within differentiated instruction) of differentiated instruction with third-grade students' reading achievement.

**Procedures**

Upon agreement to participate in the study, you will complete the Understanding of Differentiated Instruction, Implementation of Differentiated Instruction, and Background Demographic Data questionnaires. The survey and questionnaire are paper and pencil instruments and will take approximately fifteen to twenty minutes for completion. The survey and questionnaire will be strictly anonymous. At any point during the study, you may elect to decline participation. After completing the survey and questionnaire, you will be asked to secure and place them in a sealed envelope. Submit the envelope in the collection envelope in the secretary's office.

**Risks**

There are minimal risks involved in this study, none other than those experienced when executing daily tasks. Completing the survey and questionnaire during a planning period, classroom instructional time or after school will minimize teachers' time to plan and teach skills and content.

**Benefits**

There are not any direct (tangible) benefits to the participation in this study.

**Compensation**

After completing the survey and questionnaire, you can elect to participate in a raffle. You will obtain a chance to win a Target, Walmart or Amazon gift card.

**Confidentiality**

All records pertaining to this study will remain confidential. Throughout the published portion of the report, the researcher will not disclose information that will make subjects identifiable in the study. All research records will be securely stored at the researcher's home. The researcher

is the only individual who will access to the records. There is potential for a breach in confidentiality from the raffle ticket submissions, but the completed raffle tickets will remain apart from the survey and questionnaire forms to protect against such breach. All completed raffle tickets, surveys, and questionnaires will be kept in a locked file in the researcher's home.

### **Voluntary Nature of the Study**

Your participation in the study is strictly voluntary. Should you decide to decline participation, you have liberty to dismiss answering questions and withdraw from the study at any time. Your acceptance or declination of participation will not affect your current or future relations with Liberty University.

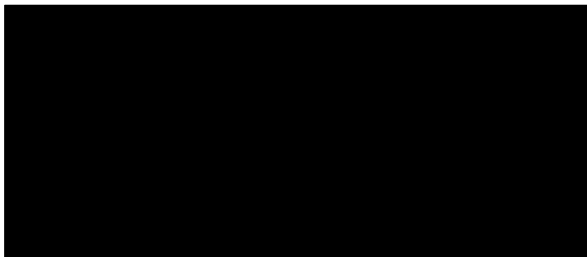
### **Contacts and Questions**

The researcher conducting this study is [REDACTED] Should you have any questions, please feel free to contact her at [REDACTED] Also, you may contact [REDACTED] Dissertation Chair, [REDACTED] If you have any inquiries about the study and need to speak with someone other than the researcher, you are encouraged to contact the Institutional Review Board, 1971 University Boulevard, Suite 1837, Lynchburg, Virginia 24515 or email at [irb@liberty.edu](mailto:irb@liberty.edu).

*Please keep this document for your records.*

## Appendix I


July 16, 2017



Thank you for agreeing to serve as a participant in my quantitative research study, *Teachers' Understanding and Implementation of Differentiated Reading Instruction and Third-graders' Achievement: A Correlational Study*. I am sincerely grateful for your support in the completion of my dissertation.

Throughout the process, you will complete the Teachers' Understanding and Implementation of Differentiated Instruction Survey. It is a self-report instrument designed by Carol Ann Tomlinson. She is the author of many differentiated instruction books in which you have possibly read during your years of teaching. The instrument is a tool which helps decipher your level of understanding and implementation of differentiated instruction in the classroom. From your results, I will correlate the data with your class average from mClass: Reading 3D Text Reading Comprehension (TRC). It will indicate the relationship between your understanding and implementation of differentiated and your third-grade students' reading achievement.

You will receive a survey and questionnaire. Choose 1, 2, 3, or 4 to rate your understanding and implementation of differentiated instruction. It is imperative that you answer all of the questions so that the results provide you with a score which will fall within the range of 26 to 104. All results are confidential.

Please complete the survey and questionnaire before October 12, 2018. Afterwards, write your name, school, and telephone number on your raffle ticket and submit it to your school secretary. She will secure your ticket in an envelope for my retrieval. Should you have any questions, please feel free to contact me. I can be reached at 

Again, I appreciate your participation in my research study.

Sincerely,

Diedre Capers

**Appendix J**

October 11, 2018

Greetings,

This is a reminder to complete the Teachers Understanding and Implementation of Differentiated Instruction Survey and Background Demographics Data Form before October 9, 2018. Also, complete the necessary information on the raffle ticket to win one of the prizes. The drawing will be held in early November 2018.

Again, I appreciate your support.

Sincerely,

Diedre Capers