THE EFFECTS OF A SYSTEMATIC TIER 2 INTERVENTION ON

KINDERGARTNERS' DIBELS BENCHMARKS

by

Richard Kyle Abernathy

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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APPROVED BY:

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ABSTRACT

This study investigated the effects of teaching prescriptive and teacher-guided decoding lessons to kindergarten students in need of Tier 2 interventions in the Georgia Response to Intervention protocol based on DIBELS curriculum-based measurements. A causal-comparative design was used to examine spring 2018 DIBELS benchmarks scores of kindergarten students in a large rural school district in northwest Georgia. Students in the treatment group received Tier 2 intervention following a newer curricula termed Differentiated Reading Instruction (DRI) from the manual *How to Plan Differentiated Reading Instruction* (2017). Students in the control group received a similar commercially-based intervention. The curriculum-based measurement, DIBELS, served as the assessment for the research study. A one-way MANOVA was initiated to analyze archival data from spring 2018 DIBELS benchmark scores. The analysis indicated that there was not a statistically significant difference between the scores of the students in the linear combination of the dependent variables based on the scores of students who participated in the treatment compared to the control group. Therefore, the researcher failed to reject the null hypothesis. Limitations, implications, and further suggestions for research are considered.

Keywords: Response to Intervention, DIBELS, decoding, reading, kindergarten, elementary school, Differentiated Reading Instruction

Dedication

To all of the students I have taught how to read, this dissertation is dedicated to you. Reading opens up a world of possibility. The sky is the limit when you can read. May the fruits of my labor yield an abundance of good.

Acknowledgements

Know ye that the LORD he is God: it is he that hath made us, and not we ourselves; we are his people, and the sheep of his pasture. Enter into his gates with thanksgiving, and into his courts with praise: be thankful unto him, and bless his name. For the LORD is good; his mercy is everlasting; and his truth endureth to all generations (Psalm 100: 3–5 KJV). God, I thank you for shepherding this work and giving me the strength to write and apply statistics to research when I did not even think it was possible. To You alone be all the glory!

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believed in me before anyone else did. I love you, deeply. This doctorate is as much yours as it

is mine.

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List of Abbreviations

DIBELS Oral Reading Fluency (DORF)

Differentiated Reading Instruction (DRI)

Dynamic Indicators of Basic Early Literacy (DIBELS)

First Sound Fluency (FSF)

Georgia Department of Education (GADOE)

Individualized Education Plan (IEP)

Individuals with Disabilities Education Act (IDEA)

Informal Decoding Inventory (IDI)

Letter Naming Fluency (LNF)

Nonsense Word Fluency (NWF)

Phoneme Segmentation Fluency (PSF)

Professional Learning Community (PLC)

Response to Intervention (RTI)

Student Support Team (SST)

Word Use Fluency (WUF-R)

CHAPTER ONE: INTRODUCTION

Overview

A variety of research exists which points to the importance of early intervention in remediating students' difficulties in reading. While such research exists, schools around the nation are still charged with the task of providing explicit, research-based, scientific-based, or evidence-based interventions that will support students' struggles in early reading. This is the fundamental underpinning of the Response to Intervention (RTI) design. Furthermore, such early reading interventions in the RTI process must be carefully selected to verify that learning will occur with supporting evidence from curriculum-based measures. This study will address a gap in the literature that exists with a selected decoding intervention and its effects on curriculum-based measures in kindergarten to assess early reading fluency.

Background

Since 1992, little growth in scaled scores of high stakes, norm-referenced reading ability tests in fourth grade has been observed with no substantial change in scores since 2005 (NAEP Reading Report Card, 2017). In fact, lower performing students nationwide who took the NAEP test in 2017 scored lower on the test than in 2015 (NAEP Reading Report Card, 2017). With these hard truths, teachers and administrators must face the realization that students in America are in need of systematic intervention. This systematic intervention needs to be early, as soon as the problem is identified. Therefore, it is imperative that intervention is initiated and response to those interventions is measured—and measured early.

Prior to 2004, schools had not been introduced to the concept of intervention. RTI was birthed from the mandates of Individuals with Disabilities Education Act (IDEA) in 2004. This protocol provided for a way to intervene for students who were identified as struggling in

academic areas through a problem-solving design of screening through curriculum-based

measurements, identification, multi-tier intervention, progress monitoring, and referral to special

education. Prior to the reauthorization of IDEA in 2004, states over-identified students using

only a discrepancy model measuring the severe discrepancy between intellectual ability and

actual achievement to identify students for special education services. RTI provides a roadmap

for students to receive instruction in a multi-tiered process that focuses on student achievement

instead of student problems (Bradley, Danielson, & Doolittle, 2005). The overall thought behind

RTI is that fewer students will be identified as needing special education services, and more

students will benefit from proper intervention in the general education setting.

However, in a study implemented by the U.S. Department of Education (Balu et al.,

2015), it was found that RTI services in a wide-scale sample of schools largely resulted in

schools identifying students for Tier 2 or Tier 3 reading intervention, but many of those students,

74 % to be exact, remained in the same tier over the course of one year. Perhaps this proportion

of students could have avoided being placed in the same tier for the entire year if proper

interventions in a proper RTI protocol were selected to remediate the wide number of students

identified using curriculum-based measurements. Stahl (2016) affirmed the need for the layering

of RTI to include a healthy core curriculum, a differentiated Tier 2 that targets specific skill-

deficits, and a Tier 3 or 4 that offers intensive instruction in an individualized fashion.

Since RTI in the area of literacy calls for early intervention and screening of reading

difficulties to determine the readiness level of students, the idea of providing systematic

intervention with the support of a teacher or trained professional aligns with the works of Lev

Vygotzky, a Soviet psychologist (Thomas & Dykes, 2010). Vygotsky's research on Zone of

Proximal Development (ZPD) in the sociocultural theory of learning relates to RTI in that it calls

for instruction to be slightly above the reach of the student with support of the teacher, so that students can access the curriculum independently at a higher level in their "zone." Wass and Golding (2014) wrote, "We should pitch what we teach so that it is slightly too hard for students to do on their own, but simple enough for them to do with assistance. Our teaching will be more effective if we teach in this ZPD" (p. 671). It is not without mention that the goal of intervention is the same—to foster independence in the skills taught that at once students could not do without the help of the teacher or interventionist (Blake & Pope, 2008).

Additionally, many early literacy interventions mirror the work of George A. Miller, who formed the information processing theory (Miller, 1956). The information processing theory supports the idea that if the human, or student, receives an external stimulus, it will flow into sensory memory and by repetition will flow into short-term memory. Thus, information, much like a computer, will process information from short-term memory, eliciting a response, to store the information into long-term memory. This is ensured when the information is repetitively encoded and retrieved (Suthers, n.d.). The RTI model works with many literacy interventions in that learning stimuli are repeatedly and systematically presented to students in direct instruction so that early literacy skills are automatically associated and cycles of new information occur, keeping repeated encoding and retrieval the focus of intervention for fluency and comprehension to improve in the long-term (Huitt, 2003; Slate & Charlesworth, 1989).

The works of Vygotsky and Miller support the argument for early intervention in a RTI model with repeated, systematic lessons which initiate learning stimuli to reach long-term memory. If students are to learn to read as early as kindergarten, remediation must begin as soon as the problem is identified for future reading success. To strengthen reading ability is to identify the problem as early as kindergarten, in the RTI process, and combat it with purposeful

reading while strengthening the sound/symbol relationship of sounds in words (Gutloff, 1999). Our nation needed and still needs Response to Intervention to continue the march toward reading achievement.

RTI was initiated from the passage of IDEA in 2004 which "provides a protocol for identifying students with specific academic deficits and [for students] who demonstrate the need for individualized forms of instruction" (Ridgeway, Price, Simpson, & Rose, 2011, p. 83). The architecture of RTI provides for a research-based core curriculum, systematic screening for academic/behavioral/speech progress, timely progress monitoring, and multiple tiers of intervention which are differentiated in degree of intensity as the need for individualized instruction is documented. While there is no minimum or maximum number of "tiers" for intervention, most states utilize a three-tier model, giving states flexibility to design their own RTI models (Zirkel, 2018). The RTI model is widely known as a problem-solving model that works to intervene in multiple areas of instruction and allows for another model of identification of students with disabilities. RTI, however, is not the vehicle to special education. It is a prescriptive model for differentiated and individualized instruction.

Prior to 2019, Georgia was the only state that included a four-tier model of RTI. Tier 1 provides for core instruction that is standards-based driven. In this tier, universal screening occurs which works to identify students who will potentially need additional tiers of intervention. Progress monitoring will also occur to rate the effectiveness of student responses to instruction on grade level standards. In Tier 2, students who are identified as needing intervention after universal screeners and progress monitoring receive differentiated instruction on grade level. As students progress through Tier 2 and adequate progress is not made, students can receive a referral to the Student Support Team (SST), or Tier 3, where individualized instruction occurs on

a daily basis. This instruction is provided on a layer of Tier 1 and Tier 2. Tier 4 is the final tier

of intervention and requires a referral to special education. Tier 4 also includes specialized

instruction for students with disabilities, gifted students, and English Learners (EL) students

(Georgia Department of Education, 2011).

The state of Georgia recognizes Dynamic Indicators of Basic Early Literacy (DIBELS) as

a universal screener and progress-monitoring tool which can identify students who struggle in

literacy (Good & Kaminski, 2002). DIBELS is also known as a curriculum-based measurement

which functions to assess grade level skills and standards. There is no set universal screener for

schools to choose. However, screeners like DIBELS must measure basic literacy, identify

students who need additional intervention or assessment, and generate positive outcomes

(Georgia Department of Education, 2009). DIBELS has been known to provide for positive

outcomes as it can be used in any tier of the RTI process. It is normally given three times a year.

DIBELS serves to assess early letter identification, phonological awareness, phonics/decoding

fluency, and beginning comprehension (Hoffman, Jenkins, & Dunlap, 2009). Early DIBELS

measurements can predict future reading achievement (Cummings, Kaminski, Good, & O'Neil,

2010; Good, Baker, & Peyton, 2008; Yesil-Dagli, 2011).

When a problem is identified from the universal screener or progress monitoring,

teachers are charged with implementing research- or evidence-based interventions in the areas of

deficiency that were identified. The earlier the reading problem is identified, the earlier

interventions can be in place to close the achievement gap. However, because of the lack of

norm-referenced tests in the early grades (kindergarten–second grade) and that some

professionals see early reading problems as likely to be fixed over time, early intervention is

often overlooked and given only to older students (Foorman, Dombek, & Smith, 2016). This

lessens the chance of remediation of reading difficulties in the domains of reading.

Problem Statement

According to the National Center for Educational Statistics (Snyder, 2018), only 36% of

fourth grade students were at or above proficiency level, with this number only increasing by 9%

since 1992. This presents the realization that as of 2017, 64% of students were below

proficiency level on fourth grade high-stakes reading assessments. These statistics indicate the

need for early reading intervention in the RTI protocol. Longitudinal studies suggest that early

intervention in the areas of phonemic awareness, letter naming fluency, and phonics/decoding

can decrease the chances of reading difficulty as late as the seventh grade (Partanen & Siegel,

2014). Furthermore, waiting to address decoding deficiencies can prove taxing to the

interventionist and/or classroom teacher due to the increasing text complexity and nature of

advanced phonics (O'Connor, Harty, & Fulmer, 2005). It is imperative that intervention in

decoding begins when the problem is identified.

The state of Georgia (Georgia Department of Education, 2011) recommends teachers and

interventionists select interventions that meet the scientific evidence or research-based criteria

and are proven to remediate the early reading difficulties that are identified through screening

and progress monitoring using curriculum-based measurements. To date, few systematic

interventions exist in Georgia that are found effective in building early decoding skills in the

kindergartener. Early intervention is crucial in remediating difficulties in reading. Oftentimes,

the first difficulty in reading is manifested in the kindergarten year of instruction. The research

is rich in the implementation and effectiveness of RTI, but there exists a lack of research on the

early detection and remediation of early reading skills using the earliest literacy skills (Utchell,

Schmitt, McCallum, McGoey, & Piselli, 2016). Research supports the use and importance of

systematic and intensive decoding interventions to remediate reading difficulties. The problem

is whether or not kindergarteners who were taught using the DRI performed better on the

DIBELS assessment than those who did not.

Purpose Statement

The purpose of this quantitative, causal-comparative study is to examine the effects of a

systematic Tier 2 reading intervention named Differentiated Reading Instruction (DRI) created

by authors Sharon Walpole and Michael McKenna (2017) in their book *How to Plan*

Differentiated Reading Instruction as compared to that of another intervention program. This

research examined the spring archival data from 2018 DIBELS scores for 106 kindergarten

students identified in Tier 2 in the RTI process. These students were either identified as

receiving the intervention (DRI) or were identified as not receiving DRI and came from five

schools in a large rural school system in northwest Georgia.

The scores on the spring 2018 DIBELS in letter naming fluency, phoneme segmentation

fluency, and nonsense word fluency of the 106 kindergarten students served as the dependent

variables for the study. Based on their fall 2017 benchmark scores at or below the 40th

percentile, some students were identified as needing intervention. Some were placed in groups

using the target intervention, the DRI, and others were placed in groups who did not use it. For

the purpose of this study, the data for 53 students who used the DRI and 53 students who used

another intervention were used as the independent variable.

Significance of the Study

When students are identified as having struggles in early reading and can participate in

effective response to intervention that is prescriptive and systematic, their reading performance

outnumbers students who receive inadequate intervention or intervention that comes too late in the process to remediate difficulties (Otaiba et al., 2014). Denton (2012) reported, "Kindergarten may represent a window of opportunity during which intervention is most likely to prevent reading difficulties for many children" (p. 236). Although RTI continues to be of focus in today's schools and crucial to closing achievement gaps, teachers have reported weaknesses in the understanding of the RTI protocols and how to remediate reading deficits in the areas of phonemic awareness and phonics (Spear-Swerling & Cheesman, 2011). Thus, if achievement gaps in the area of reading are to be closed, reading intervention must start early and it must address early literacy skills in phonemic awareness, letter naming, and decoding in a strong response to intervention protocol.

The authors of the DRI intervention worked with teachers across the nation during the Reading First grant, a federal literacy grant, which derived from the Bush Administration in 2004. Prior to the creation of the intervention, a model of assessment and core curriculum embedded intervention was the focus of the RTI process (McKenna & Walpole, 2005). As the need for a systematic decoding intervention arose, the authors provided embedded assessments that would, alongside curriculum-based measurements, identify specific deficits in reading (Walpole & McKenna, 2009). The most current edition provides for systematic instruction beyond decoding to build fluency and comprehension skills in Tier 2 of the RTI process (Walpole & McKenna, 2017). As previous research has indicated, DRI is a beneficial intervention, but more research should be conducted to examine the effects of the intervention on early literacy skills as measured by curriculum-based measurements (Hearn, 2014).

The state of Georgia has recognized the DRI curriculum as an evidence-based intervention for the purposes of providing interventions in the early childhood classroom. While

there lacks wide scale research on its effectiveness, the methods and practices in the interventions are highly effective (Walpole & McKenna, 2017). This study may assist administrators, teachers, interventionists, and literacy specialists in providing kindergarteners with an intervention that initiates instruction in phonemic awareness, letter naming fluency, and early decoding. Additionally, this study supports the need for curriculum-based measurements to assess progress and connect the interrelatedness of distinct skills. Prescribed curriculum-based measurements such as DIBELS "tell the teacher how well the instruction is working within the context of foundational literacy skills for each student who may require such close and accurate monitoring" (Langdon, 2004, p. 58). Administrators and teachers will also see the benefits of the Tier 2 intervention and the relationships it provides in remediating early kindergarten decoding skills.

Research Question

RQ1: Do kindergarten students who receive Differentiated Reading Instruction as a RTI Tier 2 decoding intervention have different DIBELS letter naming fluency (LNF), phoneme segmentation fluency (PSF), and nonsense word fluency (NWF) benchmark scores on the end-of-the-year benchmark when compared to students who did not receive DRI?

Definitions

1. *Alphabetic Principle—*Alphabetic Principle is the knowledge of the relation between speech sounds and the letters/letter patterns that represent them (Earle & Sayeski, 2017, p. 262).

2. *CBM—*Curriculum-based measurement (CBM) is a diagnostic assessment which identifies progress toward skill-based, grade level standards (Deno, 2003).

3. *Decoding*—Decoding is also known as phonics instruction which teaches children the relationships between the letters of written language and the individual sounds of spoken language (Armbruster, Lehr, Osborn, & Adler, 2008).

4. *DIBELS*—Dynamic Indicators of Basic Early Literacy Skills (DIBELS) is a fluency-based curriculum-based measurement which consists of several one-minute, timed assessments which assess students' proficiency in early reading skills (Langdon, 2004).

5. *DRI*—Differentiated Reading Instruction (DRI) is a Tier 2 decoding intervention designed by Sharon Walpole and Michael McKenna (2007) to remediate deficiencies in reading.

6. *Fluency*—Fluency in reading is defined by the National Institute for Literacy as the ability to read text accurately and quickly (Armbruster et al., 2008).

7. *Intervention*—An intervention is anything a school does above and beyond what all students receive to help certain students succeed academically (Buffum, Mattos, & Malone, 2018).

8. *IDEA*—Individuals with Disabilities Education Act (IDEA, 2004) is a federal mandate in response to IDEA of 1975. It provides for procedural safeguards of students with disabilities to include the use of research and scientific-based interventions to remediate learning difficulties. IDEA also introduces Response to Intervention as a protocol to use to identify students with learning disabilities (Steinberg, 2013).

9. *LNF*—Letter Naming Fluency (LNF) is an administered test of the DIBELS curriculum-based measurement which reports kindergarten and first grade students' ability to correctly name as many random uppercase and lowercase letters of the alphabet within

one minute. LNF measures students' attainment of the alphabetic principle (University

of Oregon, n.d.).

10. *NWF*—Nonsense Word Fluency (NWF) is an administered test of the DIBELS

curriculum-based measurement which reports kindergarten through second grade

students' ability to correctly read as many correct letter sounds of pseudo words in one

minute. Students are given more points for decoding the entire word. NWF is a

measurement of early decoding ability (University of Oregon, n.d.).

11. *PSF*—Phoneme Segmentation Fluency (PSF) is an administered test of the DIBELS

curriculum-based measurement which reports kindergarten through second grade

students' ability to, after hearing pronounced words, correctly isolate as many sounds of

those words in one minute. PSF is a measurement of early phonemic awareness

(University of Oregon, n.d.).

12. *Phonemic awareness*—The National Institute for Literacy defines phonemic awareness as

the ability to notice, think about, and work with individual sounds in spoken words

(Armbruster et al., 2008).

13. *POI*—Pyramid of interventions (POI) is a graphic designed to illustrate the RTI protocol

where students receive primary, secondary, and tertiary interventions to remediate

learning difficulties. States have adopted and adapted the pyramid of interventions to

meet the needs of the problem-solving process (Fox, Carta, Strain, Dunlap, & Hemmeter,

2010).

14. *RTI*—Response to Intervention (RTI) is a problem-solving model of instruction that

requires systematic intervention to remediate learning difficulties monitored through

universal screeners and progress monitoring. Students progress through tiers of

instruction based on positive or negative responses. It is recognized in IDEA 2004 as a model to identify students with learning disabilities (Bradley et al., 2005).

15. *Tier 2 intervention*—Tier 2 interventions are required in Tier 2 of the pyramid of interventions of the RTI protocol. It is defined by supplemental instruction to remediate difficulties of students on targeted grade level standards (Buffum et al., 2018).

16. *Universal screening*—Universal screening is a requirement of the RTI process which assesses students' attainment of grade level standards/skills; its primary focus is to identify students in need of intervention (Buffum et al., 2018).

17. *ZPD*—Zone of Proximal Development (ZPD) is defined as the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers (Lloyd & Fernyhough, 1999, p. 225).

CHAPTER TWO: LITERATURE REVIEW

Overview

There exists a plethora of research regarding the importance of early intervention for success in future reading comprehension and future academics in the K–12 setting. Much research centers on the importance of oral reading fluency intervention and the need for students to read fluently in order to better comprehend text (Allinder, Dunse, Brunken, & Obermiller-Krolikowski, 2001; Fuchs, Fuchs, Hosp, & Jenkins, 2001; Wanzek et al., 2018; Wanzek & Vaughn, 2007). Although several studies have indicated the link between early reading fluency interventions and comprehension measures and assessments, there lies a gap between early fluency curriculum-based measures in kindergarten to a prescribed, systematic Tier 2 decoding intervention, *Differentiated Reading Instruction*, or DRI (Walpole & McKenna, 2017). This study includes an examination of the link between the social development theory, Zone of Proximal Development, and the information processing theory when planning for response to intervention in reading. It also examines Georgia's Response to Intervention protocols, curriculum-based measures or screeners, and components of early reading intervention necessary for closing the gaps in early phonics.

Response to Intervention (RTI) has been a mandate in the United States since the reauthorization of IDEA in 2004. This mandate requires states to develop and monitor a comprehensive, multi-tiered plan that ensures students receive high quality research-based instruction in the core curriculum of the classroom, progress monitoring, comprehensive screenings for learning and/or behavioral problems, and definitive tiers of instruction which intensify intervention for at-risk students (IDEA, 2004). According to Ehren (2013), "RTI has served as a framework to both identify students with learning disabilities and . . . prevent

mislabeling and over identification of students as having disabilities" (p. 451). Given the call for RTI across the nation, literacy interventions in Tiers 2 and 3 have been focused on closing the achievement gap for students who are identified as having reading difficulties in general education and for those in special education.

In regards to literacy instruction, most states have provided direction for schools to implement RTI in a fashion to support small group instruction to meet the needs of groups of students with similar struggles in reading, all the while utilizing research and/or evidence-based strategies, programs, and tools which yield to higher levels of learning (Lemons, Kearns & Davidson, 2014). Often, students struggling with basic literacy skills in the primary grades need additional small group intervention in targeted areas to achieve grade-level standards and will not need this support again (Jones, Conradi, & Amendum, 2016). Thus, early screening and identification of students who struggle with phonemic awareness, the alphabetic principle, phonics/decoding, and fluency can make the difference in future reading instruction in reading comprehension and can return more students to Tier 1, or universal instruction, of the RTI process.

This review of literature will synthesize research regarding the RTI process, especially in Georgia's schools, and how this process remediates reading difficulties in early literacy. The first section will chart the theoretical framework behind RTI. The second section will survey Georgia's RTI methods. The third section blends research regarding interventions and specific screening such as the Dynamic Indicators of Basic Early Literacy Skills (DIBELS). The final section will describe Differentiated Reading Instruction (DRI), a Tier 2 intervention, as the focus of the research, with a finding of the gap in the research for Tier 2 instruction and screening using DIBELS measurements (Walpole & McKenna, 2017).

Theoretical Framework

Lev Vygotsky's work in psychology and how students learn has framed much of what can be seen in the primary classroom today (Slavin, 2018). His social development theory recognizes that children learn alongside each other and that cognitive growth occurs with learning in a social setting (Vygotsky, 1978). Furthermore, the role of the teacher is much the same—students learn alongside the teacher's instruction in the social setting. Alves (2014) held, "Systematic cooperation between teacher and student provides the development of higher psychological functions and consequent intellectual development" (p. 26). In Vygotsky's theory, students learn in higher levels with the collaboration of someone else.

In collaboration with the social development theory, Lev Vygotsky's Zone of Proximal Development (ZPD; Slavin, 2018) asserts that children might actually perform above current capacity given the support from a teacher, a tutor, or another peer (Tzuriel, 2000). That is, concepts which are not within reach independently can be obtained with support, scaffolding, and intervention. However, a caution to teachers, psychologists, and administrators is the difference between student ability and efficiency when screening children. Tzuriel (2000) upholds that "educators confuse ability and efficiency in observing or diagnosing children. Children might have a high level of intellectual ability . . . but they perform rather inefficiently on various tasks" (p. 388). This assertion solidifies the need for intervention and proper screening.

Another theory that is closely related to classrooms today is the information processing theory penned by George A. Miller (Miller, 1956). In this theory, students require the attention of the teacher with the idea that students will gain new information built on prior knowledge or an association (much like that of a computer). However, students need meaningful, organized

interaction with the information in order to make meaning and for the information to be retained in the long-term sense. "Overlearning" is a concept within this model which provides for repeated coverage of material so as to keep it in the memory of the student. LaBerge and Samuels (1974) conducted a study using the Informational processing theory of automatic association in reading and found that students must learn sub-skills (i.e., letter naming) and make meaning with the sub-skills in order to have the capacity to fully develop in other sub-skills (i.e., letter sounds, decoding). Thus, the informational processing theory relates well to reading where repeated coverage of material for building of new material is necessary (Slate & Charlesworth, 1989).

LaBerge and Samuels' (1974) automatic association study within the information processing theory also coincides with the Tier 2 intervention, DRI, created by Sharon Walpole and Michael McKenna (2017). As a focus of this study, DRI encompasses automatic association in that it requires explicit, direct instruction. Hence, repeated practice of phonemes, beginning sounds, letters and their sounds, high frequency words, and easily decodable words bring direct instruction to the forefront. The lessons within DRI are thought to increase speed, automaticity, and a cycling of new information with old information which mirrors the work of LaBerge and Samuels (LaBerge & Samuels, 1974; Walpole & McKenna, 2017).

Taking Vygotsky and Miller's work into account, RTI mirrors the concepts of the social development theory, the Zone of Proximal Development, and the information processing theory. As students enter Tier 1 of instruction, they receive universal instruction that is provided for everyone. Tier 2 initiates what is small-group, skill-specific based instruction that allows the social interaction between like peers and the teacher. Concepts which are within reach of cognitive ability are meaningfully scaffolded and repeated within this instruction. Tier 3 further

initiates individualized instruction which still upholds both theories of providing assistance that is meaningful and repeated. Thus, Vygotsky's research and Miller's theories uphold RTI mandates in the primary classroom.

Related Literature

Response to Intervention

As a result of the reauthorization of IDEA in 2004, schools were given the choice to use allocated resources from special education funds for the use of a RTI model (Hicks, 2008). This model was used as an approach to monitor progress of struggling students who were learning disabled (Mellard, 2017). Prior to the RTI model, the number of special education referrals was unbalanced and required the use of a discrepancy model which was not the best predictor for students with learning disabilities. Furthermore, prior to RTI, no system was in place to ensure the efficiency, rigor, and effectiveness of classroom instruction before special education referrals were made (O'Connor, Bocian, Sanchez, & Beach, 2014). Thus, many students were placed into special education, over-representing specific populations of students (Hosp & Reschly, 2004).

RTI requires the use of at least three tiers of intervention. Its early promises were to provide for screening efforts in Tier 1, or universal instruction, to identify struggling students and remediate reading problems earlier than the previous "wait to fail model." Tier 2 requires small group intervention, while Tier 3 is reserved for a very small percentage of students needing intensive, individualized instruction (Al Otaiba, Wagner, & Miller, 2014). In some states, Tier 3 is also the tier for specialized instruction in special education, while other states utilize an additional tier to signify students in need of special education (Georgia Department of Education, 2011).

RTI "is about providing every student with the differentiated time and support needed to ensure he or she learns at the highest levels possible" (Georgia Department of Education, 2011, p. 29). At the heart of RTI is the idea of differentiation, which is not a new term to educators. The Georgia Department of Education (2011) described differentiated instruction as "the need of educators to tailor the curriculum, teaching environments, and practice to create appropriately different learning experiences for students. . . . To differentiate . . . is to recognize students' varying interest, readiness levels, and learning profiles to react responsively" (p. 29).

Carol Tomlinson (1999) advocates differentiation for every child. In her work on differentiation (Tomlinson, 2001), she claimed that the best way to differentiate is to work in small groups where individual needs and small group needs can be better met. Furthermore, instead of her referring to "intervention," she presents tiers of instruction. These tiers involve groups of students who receive instruction on their level, with purpose, and engage the learner (Wu, 2013). In this model, RTI, in every tier, is truly functional. Thus, the idea of differentiated instruction in reading provides teachers and interventionists with the opportunity to serve students on ability level while connecting the standards of learning in each tier of "instruction."

Georgia Response to Intervention

The passage of IDEA 2004 outlined the need for RTI but gave flexibility to states in establishing a comprehensive pyramid of interventions (POI). While most states include a three-tier model, or pyramid of interventions, Georgia utilizes a four-tier model for the use in identifying and addressing student needs (Georgia Department of Education, 2011). Even though federal and state mandates have driven the RTI process, little has been done to identify a comprehensive set of interventions which work in each tier. As stated by Buffum et al. (2018), "districts have created lists of approved interventions that constitute the only programs their

schools can use which . . . restricts a school's ability to creatively meet each student's individual

needs" (p. 8). More attention should be given to the interventions which work in each tier so that

teachers are not relying heavily on programs which are not truly designed for remediation. The

Georgia Pyramid of Interventions is displayed in Figure 1. This figure constitutes what should

occur in each tier of intervention.
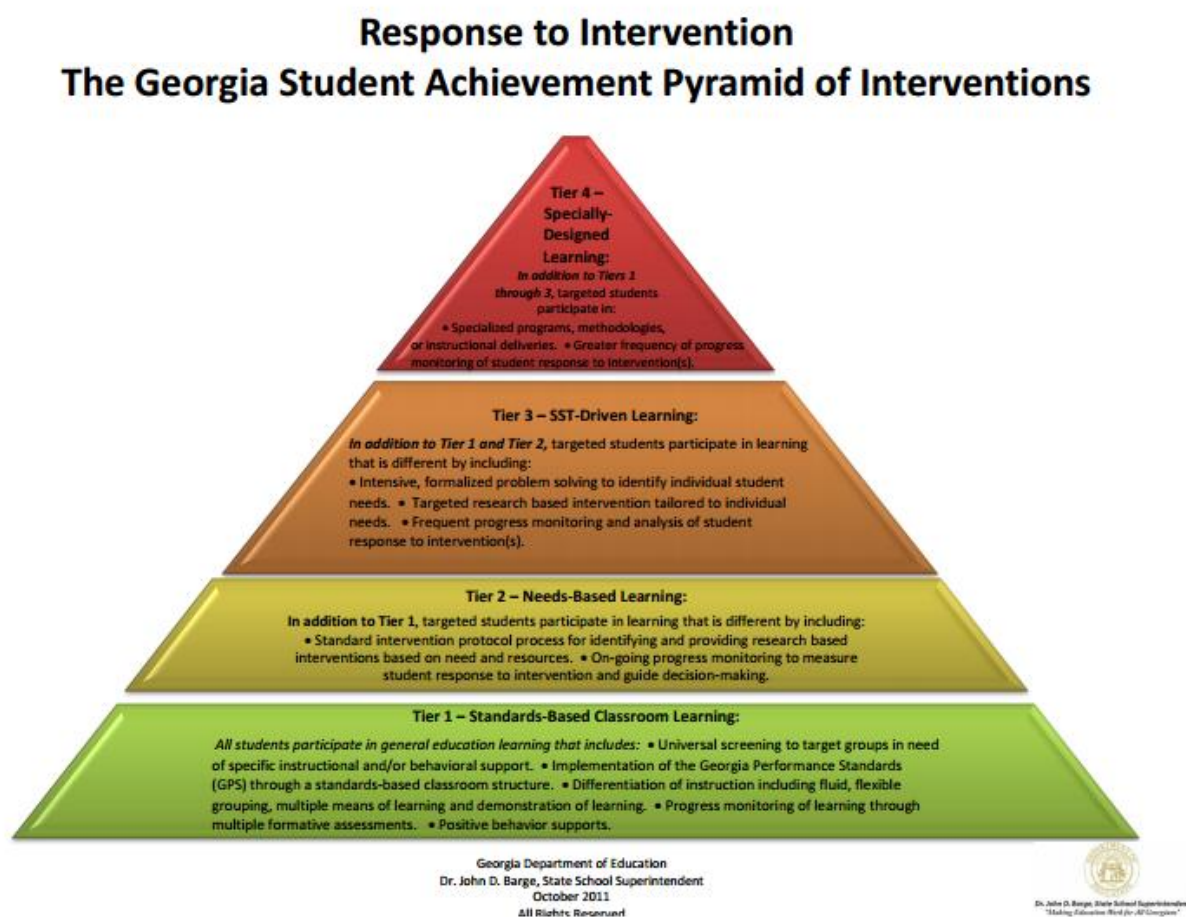
Figure 1. Georgia Student Achievement Pyramid of Interventions. From "Response to Intervention: Georgia's Student Achievement Pyramid of Interventions." Copyright 2011 by Georgia Department of Education. Reprinted with permission (see Appendix B).

Tier 1 of Response to Intervention. Tier 1 in Georgia's RTI protocol represents

universal instruction. This tier represents "the core," a popular term for referring to the

curriculum by which everyone receives a research-based education, complementing the Georgia

Standards of Excellence (Georgia Department of Education, 2011), or standards-based instruction. Furthermore, Georgia's RTI protocol states that RTI "is based in the general education classroom where teachers routinely implement a strong and rigorous standards-based learning environment" (Georgia Department of Education, 2011, p. 6). Buffum et al. (2018) warned that Tier 1 must be "highly effective" and that no amount of intervention can "make up for a toxic school culture, low student expectations, and poor initial [Tier 1] instruction" (p. 3). In fact, Buckingham, Wheldall, & Beaman-Wheldall (2014) found in their study that a weak Tier 1 in conjunction with a Tier 2 intervention lessened the effect of the intervention altogether. Thus, all students should be provided access to Tier 1 instruction as is necessary for standards-based instruction.

Some differentiated instruction or supplemental intervention will be needed in Tier 1. According to the Georgia Department of Education (2011), standards-based learning, or Tier 1 instruction in Georgia, is characterized by "differentiation of instruction including fluid, flexible grouping, multiple means of learning, and demonstration of learning" (p. 39). A national survey from Jenkins, Schiller, Blackorby, Thayer, & Tilly (2013) found that 80% of teachers were using differentiated instruction in Tier 1, whereas a grim 20% did not use it at all or used it inconsistently. Moreover, Georgia's TAPS Performance Standards (Georgia Department of Education, 2014) outlines in Standard 4 that the teacher "challenges and supports each student's learning by providing appropriate content and developing skills which addresses individual learning differences" (p. 1). Without question, differentiation is at the core of Tier 1 in Georgia's schools.

Tier 2 of Response to Intervention. Students who are screened, receive diagnostic assessments, and are progress-monitored after initial Tier 1 instruction are considered for Tier 2

instruction, a fairly straightforward process for intervention (McKenna, Walpole, & Jang, 2017).

Tier 2 in Georgia's RTI is "characterized by the addition of more concentrated small-group or

individual interventions that target specific needs and essential skills. All tier two interventions

'must be research proven and aligned to the needs of the student and resources of the school'"

(Georgia Department of Education, 2011, p. 3). Another term to describe Tier 2 would be

supplemental instruction, or instruction that is "timely, targeted, flexible, and most often guided

by team-created common assessments aligned to grade-level essential standards" (Buffum et al.,

2018, p. 21). Thus, students who are receiving Tier 2 supports are receiving supplemental

instruction which targets grade level standards within the core instructional model (Simmons et

al., 2013).

It should also be noted that Tier 2 is not a replacement for Tier 1, or core instruction.

Instead, it serves as an additional layer of instruction where frequent progress monitoring occurs

to aid in supporting students with strong interventions in reading with the eventual hope to

demonstrate mastery of grade level academic skills (Georgia Department of Education, 2011).

One of the flaws of Tier 2 intervention is that some deem it as another "wait to fail" option as

there is no prescribed time allotment for students to stay in this tier. This is certainly not just an

inconsistency in Georgia, but can be seen across the nation as far too many students remain in

this tier when individualized instruction should begin in Tier 3 when students become

unresponsive (Al Otaiba et al., 2014).

Tier 3 of Response to Intervention. When students remain unresponsive in Tier 1,

universal instruction, and to the layering effect of Tier 2, supplemental instruction, the

recommendation is for students to be placed in Tier 3. This tier serves the students with the most

difficult reading problems where specialized and often individualized instruction may occur.

Often, the intensity and the frequency of the intervention are increased, whereas the progress monitoring is also increased (Wanzek & Vaughn, 2010). What should be noted is that most state models of RTI include only three tiers, whereas Georgia's RTI model includes four. Some states view Tier 3 as specialized instruction within special education, while Georgia's Tier 3 is considered the most intensive tier before special education referral. Regardless of the differences, most states agree that Tier 3 is the most intensive tier where individualized and systematic intervention can take place.

The Georgia Department of Education (2011) outlines that the inclusion of a Student Support Team (SST) should conduct the process of data collection, progress monitoring, screening, and decision-making regarding specialized instruction in Tier 3. This is a federal mandate from *Marshall v. Georgia* (1984) which requires at least one SST in each school. This law initiated problem-solving mechanisms with the "original purpose . . . to prevent inappropriate referral(s) to special education" (p. 44). Included in the SST could be the parent, a general education teacher, an SST coordinator or administrator, and any specialized committee members who are needed (school psychologist, counselor, special education teacher, diagnostician, etc.).

Buffum et al. (2018) identified the following actions to be taken when Tier 3 is initiated:

- Identify students needing intensive support

- Create a dynamic, problem-solving site intervention team

- Prioritize resources based on greatest student needs

- Create a systematic and timely process to refer students to the site intervention team

- Assess intervention effectiveness. (p. 277)

These steps would flow naturally within the Tier 3 process before a referral to special education is made. As of 2005, it is estimated that over 92% of students in RTI will be successful with the layering of Tier 1, Tier 2, and Tier 3 instruction (Marston, 2005). The small percentage of students who have received intensive support, intervention, and have been identified by the SST team as unresponsive can then be referred to Tier 4, special education.

Referral from Tier 3 to Tier 4 (Special Education). In Georgia, documentation should be gathered to suggest that the interventions in Tier 1, Tier 2, and Tier 3 were unsuccessful in solving individual student problems before further referrals are made. Thus, districts must design a process for bridging Tier 3 to a referral to special education. The RTI Flowchart for Special Education Referral is displayed in Figure 2 to illustrate how districts design a Tier 3 to Tier 4 process. If, within the district's process of referral, students are found eligible for special education services, they would be moved to Tier 4 of the RTI process. If students are not identified for special education, they would remain in Tier 3 for intensive, specialized instruction (Georgia Department of Education, 2011). The state of Georgia will move to a three-tier model of the RTI process in the 2019-2020 school year (Georgia Department of Education, 2019).

The SST team is responsible for identifying outside contributors to students who are unresponsive to intervention (ex. attendance, behavior, needs, attitudes toward learning, second language learning). Over a 12-week period where data points are collected and outside contributors have been addressed, then the team may consider students with disabilities. This determination does not immediately disqualify a student from Tier 3 interventions. Alongside the process, intervention data are collected and the Individualized Education Plan (IEP) team reaches a consensus regarding special education eligibility. At this time, students may receive special education services in which an IEP is developed and initiated, or students may return to

Tier 3 instruction. SST or IEP teams may also consider documented disabilities or impairments toward the creation of a Section 504 or Individualized Accommodation Plan (IAP) where accommodations are considered in the general education classroom setting (Georgia Department of Education, 2011). Many students who have not been identified for special education are often considered for Section 504 accommodations.
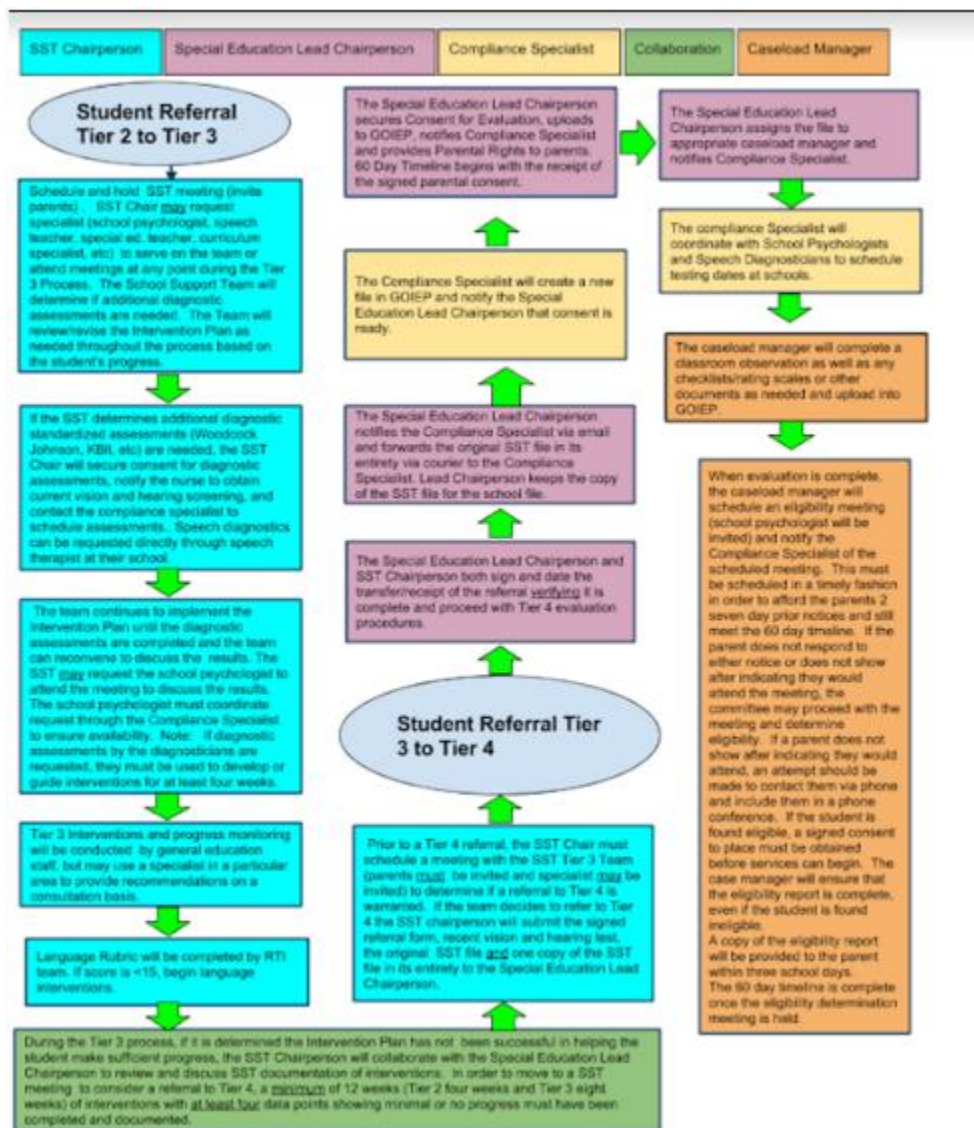

Figure 2. Student Support Team to Special Education Referral Flowchart. Reprinted with permission (see Appendix C).

Tier 4 of Response to Intervention. Tier 4 in Georgia's RTI protocol is deemed as "specially-designed learning." Tier 4 not only includes students with disabilities but also English learners and gifted learners. For the sake of the study's focus on students with reading difficulties in the general education setting, Tier 4 will be understood as special education. Special education is described by the Georgia Department of Education as "specially-designed learning [where] targeted students participate in specialized programs, methodologies, or instructional deliveries; [including] greater frequency of progress monitoring of student response to intervention" (2011, p. 50). When students are placed in Tier 4 for special education, students' least restrictive environment (LRE) is considered to allow for the greatest opportunities for individual needs to be met (Georgia Department of Education, 2010).

Tier 4, or special education, like the other tiers in RTI, should include research-based strategies which promote individualized learning and access to the standards from the general education curriculum. Far too often, students considered for Tier 4 are given goal-specific plans which close gaps for achievement but are denied access to reading comprehension skills and self-monitoring skills (Klingner, Urbach, Golos, Brownwell, & Menon, 2010). However, this does not undermine the importance of early literacy skills to provide a means for greater comprehension; in fact, it strengthens the argument that early screening and identification of literacy skills are necessary to provide a solid foundation for reading comprehension to come (Walpole & McKenna, 2017).

Screening and identification in RTI. Screening and identification have a two-fold purpose. For one, screening and identification of students who struggle in reading may inform the teacher on specific skills that need to be targeted for students to reach mastery before leaving the grade level. The second purpose is to screen and identify students who are "at risk" or

struggle in areas of reading. In reality, screening and identification can provide for a model of detecting students who have learning disabilities. In fact, "the 2004 reauthorization of the Individuals with Disabilities Act (IDEA) permitted school districts to use RTI as an alternative to a discrepancy formula in identifying students with learning disabilities" (Ehren, 2013, p. 451). Universal screening, then, takes the concept of identifying at-risk students and applies it as a tier.

One mechanism of universal screening provides for informative data so that it can "determine the rate of increase for the district, school, classroom, and student in reading" (Georgia Department of Education, 2011, p. 30). Without universal screening, it would be up to individual teachers to use other means to measure student performance in reading, which is done in some schools across the nation already. However, universal screening also allows for the collection of data to suggest not only the remediation of students who fall below target, but those who score at or above the expected targets for growth. Proper universal screeners should also include cut points so that it will predict future outcomes on other measures (i.e., state tests, general reading achievement; Fuchs, Fuchs, & Compton, 2012).

The Georgia Department of Education (GADOE) has specified that universal screeners should include the following parameters: "[should be] easily administered, research based, highly correlated to skills being assessed, [a] benchmark or predictor of future performance, [should show] reliability and validity, [should be] sensitive to small increments of change, [should have] expected identified rates of increase, [should have] data analysis and reporting component" (p. 31). Furthermore, the GADOE is explicit in directions to systems to include universal screenings three times a year in both reading and math, with the inclusion of a system database for storing information gained from the universal screeners.

One drawback to screening is that a screening only identifies that there is a "problem," not the "cause." McKenna et al. (2017) asserted that "when a student falls below a benchmark, additional testing is needed to narrow the area sufficiently to deliver targeted instruction" (p. 110). The authors indicated the need for additional diagnostic assessments which target specific areas in reading (i.e., short vowel decoding, long vowel decoding, multi-syllabic words). Otherwise, the screening only yields to reflect a failed Tier 1 acquisition of skills.

Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

The Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2002) is a widely-known screening tool which is used across schools in the nation to universally screen students. It is largely a screening measure for fluency given that it is a timed assessment (Utchell et al., 2016). Good & Kaminski (2012) recognized DIBELS Next as a screener that can

- identify students who may be at risk for reading difficulties;
- help teachers identify areas to target instructional support;
- monitor at-risk students while they receive additional, targeted instruction; and
- examine the effectiveness of your school's system of instructional supports. (p. 1)

The screener is appropriate for most groups of students except those with severe disabilities and those who are learning to read in other languages besides English. DIBELS includes benchmarking and progress monitoring for the use of continual data collection on all students, in every tier. DIBELS measures the following areas: Letter Naming Fluency (LNF), First Sound Fluency (FSF), Phoneme Segmentation Fluency (PSF), Nonsense Word Fluency (NWF), DIBELS Oral Reading Fluency (DORF), and Daze (p. 2). Word-Use Fluency is a new measure that is not commonly used in primary settings. Figure 3 illustrates the alignment of basic early

literacy skills to DIBELS indicators. Figure 4 illustrates the basic early literacy skills with an

appropriate timeline across the grade level indicators.

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

Figure 3. Alignment of DIBELS Next Measures with Basic Early Literacy Skills. From
"DIBELS Next Assessment Manual." Copyright 2011 by Dynamic Measurement Group.
Reprinted with permission (see Appendix D).

DIBELS Word Use Fluency (WUF-R). The purpose of the DIBELS Word Use Fluency

(WUF-R) is to measure expressive language of students in kindergarten through third grade

(Dynamic Measurement Group, n.d.). WUF-R can be given to students in kindergarten through

third grade, with concentration to be given to students in the instructional bottom 20% to 40%

(University of Oregon, n.d.). The measurement includes 15 words that are given to students

orally. Students then are to orally use the words in a sentence. The WUF-R is not used widely

by schools as of the date of this study and is only accessible to research partners. Further

research should be conducted to connect the WUF-R to the other DIBELS indicators (Dynamic

Measurement Group, n. d.).

   Letter Naming Fluency. The purpose of the Letter Naming Fluency (LNF) subtest is to

measure a child's ability to rapidly name random letters. According to Riedel & Samuels

(2007), "students are shown an 8.5" X 11" sheet of paper with randomly arranged upper and

lowercase letters. Students are asked to name as many letters as they can, and the LNF score is

the number of letters correctly named in one minute" (p. 552). The LNF subtest is administered

three times in the kindergarten school year and in the fall of first grade.

   Good & Kaminski (2012) hold that the purpose of assessing letter naming fluency should

be to measure fluency, not which letters students know or do not know. Adams (1990) found

that letter naming fluency can predict later performance in reading as was solidified in a later

research report by Catts, Nielsen, Bridges, Liu, & Bontempo (2015). The work of Stage,

Sheppard, Davidson, & Browning (2001) also yielded importance that letter naming fluency

achievement in kindergarten can predict first grade achievement on oral reading fluency. In fact,

the study found that students who made little growth in first grade oral reading fluency, read on

average eight letter sounds per minute. Therefore, letter naming fluency as an indicator for

curriculum-based measures (CBMs) is of hallmark importance for the prediction and the

monitoring of reading achievement.

   First Sound Fluency (FSF). The purpose of the First Sound Fluency (FSF) subtest is to

"measure . . . a student's fluency in identifying the initial sounds in words" (Good & Kaminski,

2012, p. 39). In FSF, students orally produce the initial sound of up to 30 words given by an

examiner. The FSF score is calculated based on the correct number of beginning sounds or "first

sounds" students can orally present within 1 minute. However, partial credit is given when

students blend sounds. Thus, FSF asks for students to give only one initial sound per word, not a

blended phoneme (University of Oregon, n.d.). The FSF subtest is administered only during the

beginning and middle benchmark windows of the kindergarten school year.

Cummings et al. (2010) reported the validity of First Sound Fluency over DIBELS'

earlier Initial Sound Fluency (ISF) and found it to be a better indicator of phonemic awareness in

early literacy skills and predictive of how students would perform in other DIBELS indicators

such as Phoneme Segmentation Fluency (PSF) and Nonsense Word Fluency (NWF). Thus, the

DIBELS Next assesses First Sound Fluency (FSF). Little research has been conducted on the

predictive ability of FSF. However, Yesil-Dagli (2011) suggested that FSF in first grade ELL

students was a predictor for third grade Oral Reading Fluency behind Letter Naming Fluency and

general vocabulary skills. More research should be conducted on FSF for the purpose of

predictors of achievement in reading and the usefulness of the measurement.

Phoneme Segmentation Fluency (PSF). The purpose of the Phoneme Segmentation

Fluency (PSF) subtest is to measure a "child's ability to orally segment the individual sounds in

words. Students are asked to reproduce individual letter sounds from words presented orally. . . .

Each word contains three to four phonemes, and the student has one minute to identify as many

phonemes as possible" (Oslund et al., 2012, p. 85). The PSF score is the number of phonemes

correctly named in one minute. Students are given partial credit for combining phonemes and

full credit when each component is named. The PSF subtest is administered only during the

middle and ending benchmark windows of the kindergarten school year and the beginning of the

first grade.

PSF directly assesses early phonemic awareness (Good & Kaminski, 2012). PSF is

thought to have predictability for outcomes in later reading, especially with the combination of

other predictors of early literacy (Powell-Smith & Cummings, n.d.). Research conducted on PSF

suggests that research-based, systematic intervention take place in early phonemic awareness

skills to strengthen the oral sound components of reading (Abbott, Walton, & Greenwood, 2002;

Gyovai, Cartledge, Kourea, Yurick, & Gibson, 2009). The auditory component of early literacy

will strengthen the alphabetic principle and early decoding to come.

Nonsense Word Fluency (NWF). The purpose of the NWF subtest is to measure a

"child's ability to decode non-words. Students are presented with . . . vowel-consonant or

vowel-consonant-vowel nonsense words and asked to produce either the individual letter sounds

or the total blended word" (Oslund et al., 2012, p. 85). Also termed pseudo-words, nonsense

words are meant to assess letter-sound correspondence along with the ability to apply this

correspondence to make words. Students read these short vowel pseudo-words within one

minute and are given more points for reading the whole word and less points for reading the

words in a sound-by-sound fashion (Good & Kaminski, 2012). The NWF subtest is administered

during the middle and ending benchmark windows of the kindergarten school year, during all of

the benchmark windows for first grade, and at the beginning of the second grade.

Good et al. (2008) describe the research behind using NWF as a measurement tool as

such:

> Measures such as NWF, and other pseudo-word reading measures, specifically isolate
>
> how well students are able to apply their understanding of phonics rules in learning to
>
> decode. Students taught to read through explicit phonics instruction can readily
>
> demonstrate their knowledge on NWF, because this measure taps how fluently students
>
> are able to convert individual letters into sounds and blend strings of letter-sounds to read
>
> pseudo-words. (p. 36)

Another finding by Good et al. (2008) was that nonsense word fluency accounting for the first

semester in first grade has a high predictive rating for the end of first grade success.

Furthermore, the utilization of NWF measurements in kindergarten can help improve instruction

for those in first grade who initially struggle as the likely outcome of students improving in this

skill is positive.

   DIBELS Oral Reading Fluency (DORF). The purpose of the DIBELS Oral Reading

Fluency (DORF) subtest is to "measure 'advanced phonics and word attack skills, accurate and

fluent reading of connected text, and reading comprehension'" (Good & Kaminski, 2012, p.

89). DORF measurements include students' reading a grade level passage that is unfamiliar, or a

"cold read." The examiner asks them to read the passage aloud and will provide assistance when

needed. Students read as many words as they can in one minute. The DORF measurement, or

fluency score, is the number of correct words read per minute. The DORF subtest is

administered during the middle and ending benchmark windows of first grade, and during all of

the benchmark windows for second, third, fourth, fifth, and sixth grades.

   Immediately following the cold read of the passage, the students are asked to retell as

much as they can regarding the passage. Examiners count words of retell and deduct for

rambling, repeated words, etc. The retell is calculated by how many meaningful words were

used to retell the passage. Then, the examiner rates the quality of the passage using a scale of

one to three, with one being the lowest quality and three being the highest quality. The retell

portion is optional but is highly recommended to measure early comprehension skills (Goffreda,

Diperna, & Pederson, 2009).

   Many studies have yielded the importance of oral reading fluency in the elementary

classroom. The idea for DORF was birthed from the University of Minnesota under the direction

of Stan Deno (Shinn, 1989). DORF can be a measurement to predict future comprehension skills and future performance on state standardized tests (Buck & Torgeson, 2003; Kim, Vanderwood, & Lee, 2016; Morris et al., 2017; Munger & Blachman, 2013; Petscher & Kim, 2011; Roehrig, Petscher, Nettles, Hudson, & Torgeson, 2008; Utchell et al., 2016). As it is a curriculum-based measure (CBM) to measure the fluency of grade level passages, it yields a strong indicator of the acquisition of all skills aforementioned (LNF, FSF, PSF, and NWF).

Studies have also been conducted to uncover the relationship between kindergarten students receiving systematic Tier 2 intervention and the measurements of success on oral reading fluency, word identification, and passage comprehension. In a study by Simmons et al. (2013), the number of at-risk students receiving such intense intervention dropped from 63% in the spring of first grade to 54% in the spring of second grade oral reading fluency. As the intervention continues, this percentage of students should likely decrease given the fidelity systematic nature of the Tier 2 intervention. Thus, early detection of reading difficulty provides better outcomes for oral reading fluency in later grades.

Daze. The purpose of the Daze subtest is to "measure the reasoning processes that constitute comprehension" (Good & Kaminski, 2012, p. 109). The Daze subtest is similar to the Maze concept as described in Fuchs, Fuchs, Hamlett, & Ferguson (1992). Students read a three-minute, timed, grade level passage where "every seventh word in Daze passages is replaced by a box containing the correct word and two distracter words. Students are asked to read a passage silently and to circle their word choices" (Kim, Vanderwood, & Lee, 2016, p. 7). Daze differs from the other benchmark indicators because it can be given to a whole group of students, small group, or individual since the reading is done silently by each student. Scores are derived by the number of correct answer choices and an adjusted score is calculated so as to eliminate the

effects of student guessing (Good & Kaminski, 2012). The Daze subtest is administered during all three benchmarks of third, fourth, fifth, and sixth grades.

To date, there is very little research regarding the Daze procedures. However, a study by Allinder et al. (2001) found that struggling students who used oral reading strategies performed better on the maze strategy and performed well on standardized testing. These findings uphold, again, the importance of improved oral reading fluency so that comprehension constructs can be better obtained. The maze strategy, similar to Daze, coincides with the DORF to provide educators with a holistic view of a student's reading achievement.
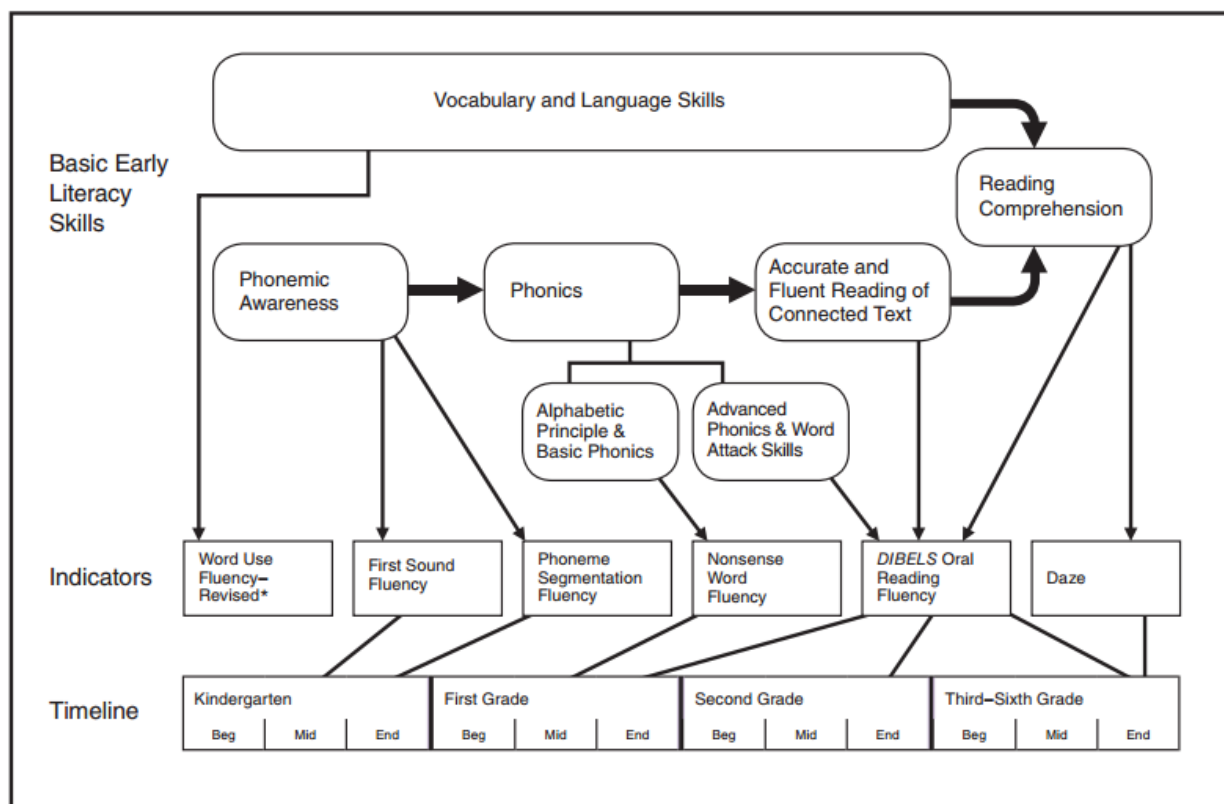

Figure 4. Model of Basic Early Literacy Skills, DIBELS Next Indicators, and Timeline. From "DIBELS Next Assessment Manual." Copyright 2011 by Dynamic Measurement Group. Reprinted with permission (see Appendix D).

Considering all of the areas that are screened in the DIBELS program, research has yielded that the earliest measurements (LNF, FSF, PSF, NWF) are the most "reliable indicators of reading achievement in subsequent years" and can predict future performance on state standardized test measurements (Utchell et al., 2016, p. 513). The authors of this study found that "the strongest correlation among early literacy probes was . . . between LNF and NWF (r= .77)" (Utchell et al., 2016, pp. 515-516). Implications for this research allow for RTI teams to use early kindergarten measurements such as LNF, FSF, PSF and NWF to predict future performance on state standardized tests and allow for early identification of struggling students in need of Tier 2 and Tier 3 intervention.

Intervention in Early Literacy

Early identification of reading difficulty is essential to long-term success in literacy and in higher levels of reading comprehension. O'Connor et al. (2014) tested kindergarten and first grade students' reading outcomes in a longitudinal study. These students were given a Tier 2 intervention in phonemic awareness, alphabetic principle, and decoding after initial screening scores indicated reading difficulty. Out of the kindergarten sample for the study, "45 % of students who received tier 2 met exit criteria by the end of second grade, compared to 26 % of students with Grade 1 access. . . .These statistics suggest that earlier intervention shrinks the proportion of students who remain in high-risk groups for reading difficulties" (p. 322). It also yields the ongoing argument that weak foundational skills in kindergarten and first grade will manifest continued reading difficulties in years to come.

The term "intervention" has enjoyed the spotlight over the years as the RTI model has shifted the instructional tone to include early prevention of literacy deficits. Simply put, interventions are methods, programs, or actions which work to eliminate or alleviate struggles

which are either detected in the classroom or detected in response to screening or assessment. Buffum et al. (2018) wrote that " an intervention is anything a school does above and beyond what all students receive to help certain students succeed academically . . . if the school provides a specific practice, program, or service to some students, it is an intervention" (p. 27).

The GADOE recognizes that interventions can take on three categories: *scientifically proven, research-based,* or *evidence-based*. What distinguishes them is that scientifically proven interventions have undergone research from peer-reviewed literature, research-based interventions are recognized in gold standard review from the research community, and evidence-based interventions provide "evidence" from data sources to benefit students (p. 53). However, the intervention is not the mainstay of focus. Student learning is the focus in every tier. McKenna et al. (2017) wrote, "The design of effective tiered instruction in the first years of schooling must attend to developmental issues and to the standards if students are to succeed as they engage in challenging literacy tasks beyond the early grades" (p. 111). This realization forms the focus on early literacy in phonemic awareness, the alphabetic principle, and decoding development.

Phonemic Awareness

Phonemic awareness is the very first literacy skill that forms the basis on all other decoding and comprehension skills to come. Phonemic awareness forms an auditory base for students to be able to successfully manipulate sounds. Adams (2006) wrote that children should be able to connect sounds in words with letter forms later in alphabetic principle. To be aware that the smallest units of sound construct our language is phonemic awareness. Truly, with a strong phonemic awareness skill, or the auditory ability to hear sound parts in words, students will be better able to understand the alphabetic principle which is critical for reading and

spelling. As the alphabetic principle is crucial for identifying that sounds in letters make up

words, a lack of awareness of the units of sound will result in an inability to decode and spell

words (Ehri, 1991; Bay Area Reading Task Force, 1997).

Suggate (2016) found from a meta-analysis of the effectiveness of 16 different

interventions that phonemic awareness intervention is critical to the needs of pre–K and

kindergarten students, with large effect sizes gained from follow-up (d=0.29 vs. d=0.07).

Phonemic awareness was the single best predictor of positive effect in the follow-up protocol in

this study. In a similar study, Schaars, Segers, and Verhoeven (2017) found from kindergarten

students struggling in early literacy skills, students were most at risk for phonemic awareness

skills, which highly predicted word decoding achievement at the end of first grade. These

studies suggest that early intervention in phonemic awareness is necessary for decoding skills to

come.

Alphabetic Principle

Once students have had an opportunity to hear sounds individually in spoken words and

have the opportunity to manipulate those sounds, students should be able to begin an

understanding of the alphabet and the sounds which are associated with the letters. Gorp, Segers,

and Verhoeven (2014) noted the importance of students gaining the alphabetic principle:

> It turns out to be the case that many children do not succeed in teaching themselves how
>
> to decode words as long as letter knowledge is still incomplete. It seems that the self-
>
> teaching device in children will then be hampered, since word decoding will often fail
>
> and repeated word exposures have minimal chance to occur. (p. 225)

True retrieval of the alphabetic principle involves students being able to fluently name the letters

(grapheme) and the sounds they make (phoneme), making a strong connection for decoding

(Adams, 2006). It is the role of the teacher or the interventionist to allow for ample time of the

alphabetic principle to develop before students are expected to formally decode.

> Armbruster, Lehr, and Osborn (2008) wrote that
>
> the goal of phonics instruction is to help Children . . . use the alphabetic principle—the
>
> understanding that there are systematic and predictable relationships between written
>
> letters and spoken sounds. Knowing these relationships will help children recognize
>
> familiar words . . . and "decode" new words. (p. 11)

A strong background in phonemic awareness and the alphabetic principle leads to strength in

decoding which is necessary to reading fluently for meaning.

As early detection of decoding is key to the identification of students in need of Tier 2 or

Tier 3 instruction, the study by Catts et al. (2015) provided evidence that alphabetic principle

obtainment in kindergarten yielded information on how students would perform later at the end

of first grade. With areas under the receiver operating characteristic curve values ranging from

.85 to .92, this study predicted outcomes using DIBELS screening measures. The researchers

found the following:

> Among the screening measures, an assessment of letter knowledge (DIBELS: LNF)
>
> proved to the strongest single predictor of reading outcomes for over 366 students. LNF
>
> had a moderate correlation with first grade reading achievement (.58 to 66) and was the
>
> strongest predictor in all of the screening models. (Catts et al., 2015, p. 292)

The findings of this research mirror the findings of Simmons et al. (2013), who noted that

"letter identification was a significant predictor of oral reading fluency (B= 0.83, $p<.05$,

$sr^2=0.06$)" (p. 467). As the alphabetic principle is a precursor to decoding skills, the importance

of this obtainment provides a foundation for all other literacy skills to come (Wanzek, Roberts,

Al Otaiba, & Kent, 2014). Whereas multiple studies yield kindergarten achievement as a predictor for first grade achievement, research has suggested the validity of LNF and FSF to be reliable predictors (from .94 to .99) of first grade reading difficulty based on the DIBELS measurements (Catts et al., 2015; Gorp et al., 2014). This finding supports the need for early intervention in kindergarten to decrease the struggles in first and beyond.

Development in Decoding

Phonemic Awareness and the Alphabetic Principle form the foundation for successful decoding. Noltemeyer, Joseph, and Kunesh (2013) claimed that "explicit and systematic phonics instruction has the greatest impact on reading achievement for kindergarteners" (p. 122). The skill of decoding takes on a natural progression. When students struggle with decoding, a backward design of what they "have not" mastered can be initiated to further build missing skills. Research from leading literacy experts (McKenna et al., 2017) said this about development in literacy skills:

> For words that are not learned holistically because of interest or exposure, children typically learn individual letter sounds, and then use them to decode regularly spelled words with short vowels, progressing from three phonemes to four or five. They master "r-controlled vowels" and "vowel-consonant-e" patterns before they move to vowel teams. They work more productively with single-syllable words before acquiring proficiency with multi-syllabic words. (p. 111)

It is vastly important that teachers and interventionists trained in literacy have a firm grasp on the development of phonics, since the skills progress for fluent reading. Systematic and frequent instruction should take place to introduce new material in phonics and supplement instruction in phonics as needed.

Gorp et al. (2014) held that kindergarteners' repeated reading of consonant-vowel-consonant (CVC) words, a decoding skill, can show positive effects of reading with retention of the words, speed, and accuracy improving over time. In an intervention setting, while students have a grasp of the alphabetic principle, speed and accuracy of reading and decoding words can improve on known words as well as unknown words. This leads to fluency skills necessary for reading later. Systematic and supplemental intervention in this area for struggling readers is crucial for decoding.

Although much focus on literacy instruction and intervention has surfaced since IDEA in 2004, students are continuing to struggle in reading. In a study by Jones et al. (2016), it was found that 6,000 third grade students failed a high-stakes reading comprehension assessment. Digging further, the group found that 1.6% of the students were labeled severely insufficient decoders, 6.5% were labeled poor decoders, and 28.5% were labeled diffluent decoders. This accounts for roughly 36.6% of the sample involved. Hence, without sufficient decoding in place, multi-syllabic decoding is altered and comprehension and understanding of text is likely diminished.

One study conducted to measure the effectiveness of a Tier 2 intervention on kindergarten low-achieving readers found a large effect size (partial eta squared=.622) for the treatment group as measured on a literacy screening assessment. The intervention which focused solely on recoding and whole word reading proved the Tier 2 intervention to be a powerful way to close gaps in reading (Buckingham et al., 2014). This strengthens the argument that repeated intervention in Tier 2 can have a positive effect on literacy achievement.

Differentiated Reading Instruction

Differentiated Reading Instruction (DRI) was birthed from an initial publication in 2009

by Walpole & McKenna (2009). The second edition in 2017 was updated to provide alignment to

the Common Core Standards with the idea that the staircase of proficiency follows the path from

phonological awareness to word recognition to fluency, ending at comprehension. DRI is meant

to be a systematic, supplemental Tier 2 intervention to target basic alphabet knowledge skills,

letter sounds and blending, word recognition and fluency, and decoding of vowel patterns and

multisyllabic words, following the staircase of proficiency. The use of the Informal Decoding

Inventory (IDI) can be used to place students in the correct lessons within DRI based on

decoding deficiencies. Evidence of the effectiveness of this practice was discovered by

McKenna et al. (2017).

The lessons within DRI range from 14 days of instruction to 30 days of instruction based

on the levels of proficiency in decoding students have mastered. Lessons increase in difficulty as

students progress through the staircase of proficiency. The authors suggest that students who

need Tier 2 instruction in decoding participate in daily DRI lessons for 15 to 20 minutes. Upon

the concluding lesson, the teacher or interventionist may administer the test of letter names, test

of letter sounds, or test of Fry instant words for kindergarteners or the IDI for students in first

grade or beyond. However, teachers may also use data from other progress monitoring measures

to dictate which lessons to place students in the staircase of proficiency.

Based on assessment results, teachers or interventionists may cycle through lessons as

many times as needed or advance students to the next staircase of proficiency. It is important

that teachers allow instructional groups to remain fluid as student needs may progress and

indicate less of a need for systematic intervention in specific areas of decoding. It is noted that

the kindergarten tests (test of letter names, test of letter sounds, and test of Fry instant words) have not been tested for validity and reliability and are not mandatory, hence the need for additional measures of progress in specific reading skills (Walpole & McKenna, 2017). DIBELS can be considered for one such measure of progress.

A previous study by Hearn (2014) utilized DRI but found no significant differences in mean scores of reading assessments of second and third graders who received the intervention. However, the study was taken prior to the realignment to the rigorous Common Core Standards and prior to the second edition of the DRI. Furthermore, the study did not examine DRI's early literacy skills (K–second grade) effectiveness in dynamic reading assessments, a perceived limitation of the study. The researcher also suggested the use of DIBELS to be considered for further study of the effectiveness of DRI. This study seeks to build upon past research regarding DRI to narrow its focus on the early intervention in kindergarten with curriculum-based measures of achievement.

Summary

Much research has centered on early screening, identification, and intervention of students with reading difficulty. The RTI process dictates the importance of providing supplemental and individualized instruction as necessary when information is gained regarding the achievement of students. What is done in each tier of the pyramid of interventions should lead to a greater awareness of phonemic awareness, alphabetic principle, and decoding for fluency. Students will not be successful in reading until a firm grasp has been achieved in the foundational skills of literacy.

A plethora of research exists that finds the importance of oral reading fluency for comprehension and the predictability of early reading measures to yield later results in oral

reading fluency and comprehension. However, there seems to be fewer studies which center on early reading skills for research-based indicators such as the DIBELS in regards to using those measures for RTI purposes. Furthermore, few studies have "explored the predictive validity of early literacy measures like the DIBELS [FSF], LNF, PSF, and NWF" (Utchell et al., 2016, p. 512). Additionally, few studies have used the DIBELS measurements to obtain information regarding the effectiveness of specific Tier 2 interventions which target phonemic awareness, alphabetic principle, and early decoding in kindergarteners. This upholds Oslund et al.'s (2012) interjection that "less is known about the ability of PSF and NWF to predict reading outcomes among students who participate in reading intervention in kindergarten" (p. 81).

There is a critical need for research to be conducted to measure the effectiveness of Tier 2 interventions on DIBELS indicators in kindergarten. Noltemeyer et al. (2013) advocated for "more research . . . to explore the effectiveness of providing supplemental reading instruction methods to kindergarteners in a small group context" (p. 123). Thus, a gap exists to bridge the divide between DRI Tier 2 intervention in early kindergarten skills with DIBELS indicators.

Simmons et al. (2013) recognized the totality of research regarding kindergarten student reading achievement:

> Across intervention studies, researchers commonly focus on student demographics, cognitive processing, phonological processing, and entry-level reading-related skills as predictors of reading outcomes. Findings of studies including kindergarten students indicate a common set of student-related factors that are reliable predictors of reading performance. (p. 455)

However, as indicated by this claim, little research has been done to focus on specific reading outcomes measuring the effectiveness of DRI on DIBELS benchmarks for students in

kindergarten who are building early phonemic awareness, alphabetic principle, and early decoding skills. This gap exists as much more focus has remained on student-related factors rather than curriculum-based factors.

This study implemented DRI as authored by Walpole & McKenna (2017). As a second edition of the 2009 original work, the interventions provided are systematic, based on assessment of specific skills, and are further aligned to the rigor of the Common Core Standards. In this study, the treatment condition will be referred to as DRI. As DIBELS is used as a universal screener of reading achievement, each indicator can be tied to a staircase of proficiency as provided within DRI and tied to a Common Core Standard in English language arts. The DIBELS measurements allow teachers to place students within the appropriate staircase of literacy proficiency within DRI to target weaknesses in phonemic awareness, alphabetic principle, and decoding in kindergarten. Cycles of instruction occurred daily for 15 to 20 minutes and were fluidly based on student needs and depending on the model in each classroom. DIBELS measurements were taken post-intervention for the study.

CHAPTER THREE: METHODS

Introduction

The purpose of this study is to examine the effects of a systematic Tier 2 reading intervention named "Differentiated Reading Instruction" (DRI) created by authors Sharon Walpole and Michael McKenna (2017) in their book *How to Plan Differentiated Reading Instruction*. The intervention, by design, is primarily a decoding or phonics intervention with the nature of building early literacy skills needed for fluency and comprehension. According to the researchers at the National Center for Education Evaluation, students should be taught letter names, the sounds they make, and then should be asked to break words into morphemes in order to attach meaning to new words. When students are able to do this and can decode more frequently, the greater accuracy, fluency, and comprehension students will achieve (Foorman, Coyne, et al., 2016). DRI is one such intervention which accomplishes this task.

DRI includes the following modules of intervention: Basic Alphabet Knowledge (a phonemic awareness and alphabetic principle module), Using Letter Sounds (phonemic awareness and early blending), Using Letter Patterns (segmenting and blending onset and rime), Blends and Digraphs with fluency passages, R-Controlled Vowels with fluency passages, Vowel-Consonant-E words with passages, and Analogical Decoding with passages. Teachers may utilize the basic assessments of the Informal Decoding Inventory (IDI) in first through fifth grades to gage student placement in the modules for DRI. The lessons are daily, scripted interventions which require little preparation from the teachers. Each intervention is designed to be 15 to 20 minutes in length, and is required daily for 15 to 29 days depending on the module. Teacher judgment and assessment data from the IDI and other curriculum-based measures

(CBMs) can dictate students' movement along the modules in DRI. The intervention can be used as long as needed to remediate reading difficulties.

<p style="text-align:center;">**Design**</p>

This study implemented a causal-comparative design. According to Gall, Gall, and Borg (2007) this research design is appropriate when groups receive or do not receive the independent variable and the dependent variables can be measured based on the absence or presence of the independent variable. Because the scores of students chosen for the Tier 2 interventions were selected based on rankings from fall 2017 DIBELS benchmark scores, it was impossible for the researcher to use random assignment. Thus, convenience sampling was used. The scores of students placed in Tier 2 of the RTI process were chosen through the collaborative effort of Professional Learning Communities (PLCs) which included the principal, assistant principal, grade level teachers, interventionists, and instructional lead teachers. The kindergarten students placed in Tier 2 of the RTI process were designated as needing intensive intervention based on percentile rankings from the fall 2017 DIBELS benchmark scores.

Schools chosen in the research had already implemented DRI as the intervention; thus, the conditions for research was already designed. Since much work regarding RTI and intervention is birthed through the chosen schools' PLC process and because there is no way to randomly select, a causal-comparative design was used. The researcher's school was not used in this study.

This quantitative, causal-comparative study examines the effects of a Tier 2 decoding intervention named "Differentiated Reading Instruction" on kindergarten archived spring 2018 DIBELS benchmark measures. DRI meets the strong evidence-based criteria from the U.S. Department of Education (2009) to provide for "intensive, systematic instruction on up to three

foundational reading skills in small groups of students who score below the benchmark score on universal screening" (p. 6). Research strongly suggests the need for decoding interventions to bridge the gap between fluency and comprehension. This study compared spring 2018 DIBELS benchmark scores of the treatment group who received DRI as an intervention with the scores of the control group who received other interventions. One research question provided the course of the study, using archival data from spring 2018 DIBELS benchmarks as the measurement of examination between the treatment and control groups receiving DRI or other interventions in Tier 2 of RTI.

The research sought to display the importance of the use of a systematic and intensive decoding intervention on student's universal screening scores when compared to control groups. Furthermore, the study sought to look at the effects on letter naming fluency, phoneme segmentation fluency, and nonsense word fluency when remediated by DRI's systematic decoding intervention. For the analysis of archival 2018 spring DIBELS benchmark scores, treatment and control groups are indicated so as to alleviate potential threats to validity.

Research Question

RQ1: Do kindergarten students who receive Differentiated Reading Instruction as a RTI Tier 2 decoding intervention have different DIBELS letter naming fluency (LNF), phoneme segmentation fluency (PSF), and nonsense word fluency (NWF) benchmark scores on the end-of-the-year benchmark when compared to struggling students who did not receive DRI?

Null Hypothesis

Ho1: There will be no statistically significant difference in DIBELS letter naming fluency (LNF), phoneme segmentation fluency (PSF), and nonsense word fluency (NWF) scores on the

end-of- the-year benchmark for students who receive Differentiated Reading Instruction as a RTI

Tier 2 decoding intervention when compared to struggling students who did not receive DRI.

Participants and Setting

In August of the 2017 school year, all entering kindergarten students were benchmarked

using the curriculum-based measure DIBELS by the Dynamic Measurement Group (Good &

Kaminski, 2012). An additional DIBELS benchmark was given in December 2017 to again

measure progress. Because of the intricacy and development of kindergarten skills, oftentimes

early screening measures (in the fall) can result in a false negative, indicating a struggle that

might not be prevalent if students are given adequate time in Tier 1 (core) instruction

(Smolkowski & Cummings, 2015). So, "in this study, students [are] provided with Tier 2

intervention as their scores on screening measures indicated risk" (O'Connor et al., 2014, p.

309). For the purpose of this study archival data was retrieved so that, spring, or end of the year

2018 DIBELS Benchmarks could be taken for comparison. All students in the treatment group

and in the control group had access to the interventions following the 2017 fall DIBELS

benchmark.

The participants were chosen for this study using convenience sampling because they

automatically fell at or below the 40th percentile in fall 2017 benchmarks. Students chosen for

this study came from five different schools in northwest Georgia. Two schools implemented the

DRI intervention (Walpole & McKenna, 2017) which constitutes the treatment group, while

three schools implemented a commercially-manufactured intervention which constitutes the

control group. The sample was chosen from schools that used the DRI intervention and received

the training in response to intervention as part of the Striving Literacy Grant (Georgia

Department of Education, 2017).

Students in the treatment group received DRI intervention based on needs indicated in DIBELS and the strong need for early intervention in kindergarten. Students who were below on letter naming, first sound fluency, and phoneme segmentation in DIBELS were placed in the Basic Alphabet Knowledge Group lessons of DRI, and the Letter Sounds Group lessons of DRI. Group sizes were no more than six participants. Students in the control group received a commercially-manufactured decoding intervention and received Tier 2 interventions based on DIBELS scores below the 40th percentile with no more than six participants in each group. Students who were part of any intervention group who moved or transferred to other schools within the same year were excluded from the study.

The sample size for this study began with 53 kindergarten students in the treatment group and 53 kindergarten students in the control group with a total of 106 participants. Warner (2013) suggests sampling to be at 92–120 participants for a small effect size with estimated power of .70 and $\alpha = .05$, and three dependent variables. Of the 106 participants, there were 54 boys and 52 girls. The treatment group receiving DRI had 27 boys and 26 girls. The control group receiving a comparable intervention had 27 boys and 26 girls.

The ethnic makeup of the research included a comparable sample of the district's overall ethnic makeup of Asian (1%), Black (7%), Hispanic (10%), White (78%), and Multiracial (4%). In the treatment group, there were no Asian students, five were Black, 11 were Hispanic, 35 were White, and two were Multiracial. In the control group, there were no Asian students, five were Black, 11 were Hispanic, 36 were White, and one was Multiracial. The groups were similar in both gender and ethnic makeup. Total percentages of the population sample can be observed in Table 3.1. All 106 participants were kindergarteners, with seven students at age 5, 91 students at age 6, and eight students at age 7. Eight of the students were repeating kindergarten.

Table 3.1

Gender and Ethnicity Characteristics of Treatment and Control Groups

Demographics	Treatment			Control				Entire Sample
	School 1	School 2	Total	School 3	School 4	School 5	Total	
Male	10	17	27 (50.9%)	13	4	10	27 (50.9%)	54 (50.9%)
Female	7	19	26 (49.1%)	13	5	8	26 (49.1%)	52 (49.1%)
Asian	0	0	0 (0%)	0	0	0	0 (0%)	0 (0%)
Black	2	3	5 (9.4%)	2	0	3	5 (9.4%)	10 (9.4%)
Hispanic	2	9	11 (20.8%)	11	0	0	11 (20.8%)	22 (21.0%)
Multiracial	1	1	2 (3.8%)	1	0	0	1 (1.9%)	3 (2.8%)
White	12	23	35 (66.0%)	12	9	15	36 (67.9%)	71 (67.0%)

The study, a causal-comparative design of research, examined the 2018 archival spring DIBELS benchmark scores in kindergarteners who received Tier 2 interventions in the RTI protocol. All participants in the study came from a sample of five different schools within a large school district in rural northwest Georgia. The school district was home to ten elementary schools, four middle schools, four high schools, and one college and career academy serving approximately 10,092 students. The race and ethnic makeup of the school district was comprised as such: Asian (1%), Black (7%), Hispanic (10%), White (78%), and Multiracial (4%). Subgroups in the county represented the following: Limited English Proficient (5%), Free and Reduced Meals (68%), and Students with disabilities (14.4%). Students in the district selected for Early Intervention Program (EIP) represented 31.5%. English to Speakers of Other

Languages (ESOL) represented 2.3% of the school district. Students in remedial education represented 22% of the population, while 0.3% was identified for alternative programs. There was a percentage of 13.6% identified for gifted services and 65.9% identified for vocational labs. The school district's graduation rate was at 93.6% (Governor's Office of Student Achievement, 2018).

The first selected primary school in the district from which the researcher examined the scores of the treatment group was comprised of pre-kindergarten through second grade students. The school was identified as a Title 1 school. Total enrollment in the 2017–2018 school year was 489 students. The race and ethnic makeup of the primary school was comprised as such: Black (3%), Hispanic (5%), White (88%), and Multiracial (3%). Subgroups in the primary school represented the following: Limited English Proficient (4%), Free and Reduced Meals (68%), and Students with disabilities (12.7%). Students in the primary school selected for Early Intervention Program (EIP) represented 28.8%. There was a percentage of 5.5% identified for gifted services and 12.7% identified for special education programs with 16.5% of pre-K students receiving special education services (Governor's Office of Student Achievement, 2018).

The second selected elementary school in the district was comprised of pre-kindergarten through fifth grade students; the kindergarten scores were examined by the researcher as part of the treatment group. The school was identified as a Title 1 school. Total enrollment in the 2017–2018 school year was 681 students. The race and ethnic makeup of the elementary school was comprised as such: Black (13.0%), Hispanic (19%), White (63%), and Multiracial (5%). Subgroups in the elementary school represented the following: Limited English Proficient (15%), Free and Reduced Meals (68%), and Students with disabilities (10.7%). Students in the elementary school selected for Early Intervention Program (EIP) represented 28.9%. English to

Speakers of Other Languages (ESOL) represented 9.8% of the school. There was a percentage of 8.4% identified for gifted services and 10.7% identified for special education programs with 17.6% of pre-K students receiving special education services (Governor's Office of Student Achievement, 2018).

The third selected elementary school in the district was comprised of pre-kindergarten through fifth grade students; the kindergarten scores were examined by the researcher as part of the control group. The school was identified as a Title 1 school. Total enrollment in the 2017–2018 school year was 478 students. The race and ethnic makeup of the elementary school was comprised as such: Asian (2%), Black (10%), Hispanic (37%), White (45%), and Multiracial (7%). Subgroups in the elementary school represented the following: Limited English Proficient (31%), Free and Reduced Meals (68%), and Students with disabilities (12.3%). Students in the elementary school selected for Early Intervention Program (EIP) represented 49.7%. English to Speakers of Other Languages (ESOL) represented 24.4% of the school. There was a percentage of 7.3% identified for gifted services and 12.3% identified for special education programs (Governor's Office of Student Achievement, 2018).

The fourth selected elementary school in the district was comprised of pre-kindergarten through fifth grade students; the kindergarten scores were examined by the researcher as part of the control group. The school was identified as a Title 1 school. Total enrollment in the 2017–2018 school year was 244 students. The race and ethnic makeup of the elementary school was comprised as such: Asian (1%), Black (3%), Hispanic (2%), White (91%), and Multiracial (3%). Subgroups in the elementary school represented the following: Limited English Proficient (2%), Free and Reduced Meals (68%), and Students with disabilities (13.1%). Students in the elementary school selected for Early Intervention Program (EIP) represented 41.9%. There was

a percentage of 17.6% identified for gifted services and 13.1% identified for special education programs (Governor's Office of Student Achievement, 2018).

The fifth selected elementary school in the district was comprised of pre-kindergarten through fifth grade students; the kindergarten scores were examined by the researcher as part of the control group. Total enrollment in the 2017–2018 school year was 525 students. The race and ethnic makeup of the elementary school was comprised as such: Asian (1%), Black (10%), Hispanic (3%), White (83%), and Multiracial (3%). Subgroups in the elementary school represented the following: Limited English Proficient (1%), Free and Reduced Meals (68%), and Students with disabilities (15.5%). Students in the elementary school selected for Early Intervention Program (EIP) represented 37.5%. There was a percentage of 11.8% identified for gifted services and 15.5% identified for special education programs (Governor's Office of Student Achievement, 2018).

The district was a recipient of Georgia's Striving Readers Grant which mandates winning schools to improve literacy initiatives. One initiative of the grant was to allow for common intervention for students identified in RTI across feeder pattern schools, or schools located within a sub-district in the district (Georgia Department of Education, 2017). Teachers in the district schools received extensive training in chosen interventions that were specific to the feeder pattern. Teachers from the three schools in the control group received intervention from the intervention component from the commercially-based Tier 1 program. Teachers from the two schools in the treatment group received training in DRI during the 2016–2017 school year when the Tier 1 program *Bookworms* was implemented (Comprehensive Reading Solutions, 2017). This program was endorsed by the Georgia Department of Education. No new training was necessary for the teachers of the treatment group.

There were a total of 22 kindergarten teachers from the selected four schools. Each of the 22 teachers serve Tier 2 or Tier 3 students in RTI. All 22 kindergarten teachers were female Caucasians. Six of the teachers held a bachelor's degree, eleven held a master's degree, and five held an educational specialist degree. Three of the teachers had been teaching for a range of 13 years. Two of the teachers had been teaching for a range of 610 years. Three of the teachers had been teaching for a range of 1115 years. Five of the teachers had been teaching for a range of 1620 years. Nine of the teachers had been teaching for a range of 2130 years (Georgia Professional Standards Commission, 2019). Each teacher utilized a paraprofessional who serves students in the kindergarten classroom all day.

Twenty-two kindergarten classes were used in this study. Two schools represented the treatment group and three schools represented the control group. Both the treatment group and the control group each included 53 students with a total of 106 in the entire sample. All schools represented in the sample used a commercially-based core program that was purchased with grant funds and/or local funds. The core program identified in schools with the control groups was a traditional basal series that lasts 8090 minutes. An additional intervention time for each classroom in each school within the study ranged from 15–30 minutes and was initiated during the reading intervention block.

Students in the treatment sample received 1520 minutes of intervention daily while students in the control sample received 1520 minutes, five days weekly, of intervention depending on the intervention design and group needs. All students, whether in the control or treatment group, received daily intervention in the classroom during a designated intervention time in the morning from the certified teacher. For this study, the treatment group received the DRI intervention while students in the control group received intervention from the core program

intervention series or other chosen research-based interventions. Every student's progress in Tier 2 was monitored using DIBELS progress-monitoring tools. This data was only accessible to teachers and data teams to help inform instruction and intervention needs. No progress monitoring data were used for purposes of this study.

To maintain fidelity of treatment and control instruction, assistant principals at each school were designated as RTI or student support team (SST) coordinators as is the county protocol. Assistant principals ensure that all intervention materials (DRI or other interventions) are accessible to teachers and that teachers know protocols for intervention and for progress monitoring. Teachers of the treatment group were provided with the scripted kindergarten lessons, assessments, and student materials from DRI and administered all interventions. Teachers of the treatment group maintained flexibility to group students according to decoding needs and group sizes were held to a maximum of five to six students. Teachers of the control group were provided with commercially-based intervention materials, lessons, and assessments and administer all interventions. Teachers of the control group maintained flexibility to group students according to decoding needs and group sizes were held to a maximum of five to six students.

The study sought to examine the mean scores of the archival spring 2018 kindergarten DIBELS benchmarks to determine the effectiveness of the DRI intervention. A design of the intervention is to allow for student access to intervention as need arises from progress monitoring, benchmarking from universal screeners, and from decoding assessments in the DRI workbook. Students in the control group also access intervention as need arises from assessment data.

To further maintain treatment fidelity, all teachers of the treatment and control groups in the study were required to complete a mandatory county-made Tier 2 documentation form to log intervention data frequency with progress monitoring points for each child. This document was completed on each student and was reviewed every month in monthly professional learning communities with the principal, assistant principal, instructional lead teachers, interventionists, and grade level teams. The researcher conducted interviews with each of the assistant principals, or RTI/SST coordinators to examine the fidelity of interventions. All schools carried out treatment and control groups similarly and with fidelity. An example of the Tier 2 fidelity sheet is shown in Figure 5.

Figure 5. Tier 2 Intervention Sheet.

Instrumentation

All kindergarten students in the county where the research was conducted were screened in the fall of 2017 using the Dynamic Indicator of Basic Early Literacy Skills (DIBELS) benchmarks. Since kindergarten is often the first time students are enrolled in school, and because initial benchmarks provide for false negatives because of a lack of exposure, DIBELS winter benchmarks are often used to provide a better indicator of true student performance. Thus, the spring benchmark scores (LNF, PSF, and NWF) serve as the dependent variables in order to gather collective data over a period of time where intervention was implemented. All kindergarten students were benchmarked three times a year (fall, winter, spring) and were progress monitored based on student need. This study will only examine the spring 2018 benchmarks for mean comparisons of archival data. Progress monitoring scores were only accessible to individual teachers.

Kindergarten teachers and trained instructional lead teachers administered the DIBELS benchmarks. Because DIBELS is a dynamic indicator and provides much information that can be used to make instructional decisions, all professionals who administered the benchmarks were trained on how to administer and score the benchmarks. This allowed for no invalidations due to improper administration. Depending on teacher hire date, training in DIBELS was either conducted by the system ELA coordinator or by the Northwest Georgia RESA agency that provided the training.

Teachers administered the DIBELS benchmarks in a quiet location in the school where the administration was given one-on-one. Teachers followed a script provided by Dynamic Measurement Group (2009) and administered all three tests, Letter Naming Fluency (LNF), Phoneme Segmentation Fluency (PSF), and Nonsense Word Fluency (NWF) consecutively, for

no longer than a 5-minute period per student. Students had access to student materials in page

protectors to name letters and read nonsense words while teachers recorded correct and incorrect

answers on benchmark scoring booklets. Teachers were given a short script provided in the

DIBELS manual and read each script verbatim before testing.

For the LNF test, teachers provided students with a sheet of 110 random uppercase and

lowercase letters and timed students' reading of the letters in one minute. Students were scored

only for correct recall of letters. No partial credit was given. For the PSF test, teachers orally

called out up to 24 real one-syllable words to students, asking students to repeat each individual

sound/phoneme in the words within the one minute timeframe. No credit was given to students

chunking sounds in words. Students had to recall each phoneme individually to receive one

point per sound. For the NWF test, teachers provided students with a sheet of 50 nonsense

words/pseudo-words. Students were asked to read the words as whole words or students could

decode and then blend the words. Students received one point for each sound and then could

receive Whole Words Read points for each word that was read without the need for blending.

Students decoded words for one minute (Dynamic Measurement Group, 2009).

Teachers scored the DIBELS tests on each student's individual scoring booklet. Students

could receive a total of up to 110 points for LNF (no benchmark suggested), 79 phonemes for

PSF (spring benchmark is 40), and 143 correct letters sounds for NWF (spring benchmark is 28;

Dynamic Measurement Group, 2009; University of Oregon, n.d.). Teachers then recorded

benchmark data in the DIBELS platform where graphs and ranking could be generated. Archival

data from the spring 2018 benchmark were used in the study.

DIBELS is considered a universal screener, or curriculum-based measure (CBM), and is

recognized by the Georgia Department of Education as one required screener which can be used

for instructional purposes. DIBELS were based on the work of Deno and Fuchs (1987) who

provided for CBM assessments to screen for learning disabilities and learning problems as a

quick, fluency-based measurement. DIBELS are short, timed assessments which measure

fluency of early literacy skills from kindergarten through sixth grade. The design of DIBELS

was to identify students who are at risk for reading difficulties and prevent those difficulties from

continuing. DIBELS scores in kindergarten provide for measurements in phoneme segmentation

fluency, letter naming fluency, nonsense word fluency, first sound fluency, and a composite

score. Composite scores represent a formula of all skills combined to accurately paint a picture

of reading achievement on all skills (Dynamic Measurement Group, 2009).

This study used the mean scores from the LNF, PSF, and NWF indicators of 2018 spring

DIBELS benchmarks for kindergarten students. DIBELS reporting ranks students as *At or*

*Above Benchmark (80-90% proficiency), Below Benchmark (40-60 % proficiency)***,** and *Well*

Below Benchmark (10-20% proficiency; Dynamic Measurement Group, 2009). Students who are

identified as *Below Benchmark* or *Well Below Benchmark* in the fall 2017 benchmark in any

indicator were targeted for intervention in reading. Depending on the structure of the response to

intervention protocol at individual schools and in individual classrooms, intervention could begin

at any time after benchmarks are initiated. This study sought to examine the effects of DRI*,* a

Tier 2 decoding intervention, on the mean scores of students' DIBELS 2018 archival spring

benchmarks in relation to commercially-based interventions that are given to other students at

risk.

According to research conducted by Dewey, Powell-Smith, Good, and Kaminski (2015),

the reliability for the slope of improvement for First Sound Fluency was .90, Phoneme

Segmentation and Nonsense Word Fluency was .86, all above .80. Inter-rater, alternate form,

and test-retest reliability estimates were all above .80. It is noted that letter naming fluency was

not tested for reliability by the authors in this study since there are no benchmark or cut scores

for this predictor. However, it remains an important indicator for future reading ability (Adams,

1990; Catts et al., 2015; Dynamic Measurement Group, 2009; Stage et al, 2001) and was deemed

a reliable indicator by Good and Kaminski (2002) with reliability at .88 and then a reliable

measurement ranging from .86 to .98 with validity ranging from .31 to .74 (Dynamic

Measurement Group, 2008).

Three peer review journals were examined and found early measurements of DIBELS to

hold predictive ability (Oslund et al., 2012), predict future state assessment performance (Utchell

et al., 2016), and yielded letter naming fluency to be a good predictor of first grade reading

outcomes with moderate correlation from .58 to .66 (Catts et al., 2015). Additional studies from

Good et al. (2004) found DIBELS reliability to be moderately reliable with first sound fluency at

(r=.72), phoneme segmentation fluency at (r=.79), nonsense word fluency at (r=.83), and letter

naming fluency at (r=.89). This information provides for justification of using the earliest

indicators of DIBELS (LNF, PSF, and NWF) to study mean scores after receiving Tier 2

intervention to remediate decoding deficiencies.

The independent variable for this study was receiving DRI or receiving another

commercially-based intervention. DRI is in its second edition, published in 2017, and is a fairly

new intervention to RTI literature in early reading and decoding. Hearn (2014) conducted a

study utilizing the intervention to examine scaled scores of second and third graders using the

STAR Literacy test and found that there was no significant difference in mean scores of second

and third graders who received DRI intervention as opposed to those who received other

interventions. However, the study yielded to the effectiveness of the intervention as good as

commercially-based interventions, but called for more research to be conducted to examine other screening measures and specific components of the intervention. Thus, DRI is considered an acceptable intervention.

Three peer-reviewed journals were examined for the validity of DRI. One is from the authors' professional development that was implemented within schools to use the lessons prior to publication (Joyce & Showers, 2002); the other is from the intervention's use of implementation science for evidence-based practices as termed by Aarons, Hurlburt, & Horowitz (2011) and the third is from foundational lessons utilized and tested across states with coaching (Walpole, McKenna, &Morrill, 2011). McKenna et al. (2017) also shared validity of the informal phonics inventory which supports the lessons included within DRI with internal consistency exceeding .70.

The Georgia Department of Education in conjunction with area Regional Educational Service Agency partnerships introduced the DRI lessons to teachers in primary grades as it was a chosen evidence-based intervention to use with the Reading First grant in 2008 and was fully developed in the *Bookworms* curriculum (Comprehensive Reading Solutions, 2017). Teachers who utilized DRI as the intervention for the treatment group were trained by the county ELA Specialist in the fall of 2016. Thus, every teacher who used the DRI cycled lessons were properly trained so as not to threaten the validity of the intervention. Teachers using DRI as the Tier 2 intervention cycled through kindergarten lessons to include 30 lessons for basic alphabet knowledge, 14 lessons for sounding and blending, and 14 lessons using letter patterns (Walpole & McKenna, 2017). Teachers used DIBELS progress monitoring to determine the groups' readiness to move through lessons.

Procedures

The researcher contacted the school system where the research was conducted before approval was granted. In working with the school system's superintendent, consent to conduct research was sought (see Appendix E for approval). Five schools in a rural school system in Northwest Georgia were selected for this research study. Upon receiving approval from the superintendent, the researcher contacted principals and assistant principals of the five schools by email, who granted further approval to coordinate research at the prospective buildings. The researcher and building administrators signed a system-level agreement for approval of research to take place. It was also signed by the researcher's committee chair. The document was scanned and sent to the system Director of School Improvement and superintendent and a letter of approval was generated (Appendix E).

After consent was granted at the system and building levels, the researcher sought IRB approval to conduct research and retrieve data from DIBELS benchmarks (Appendix A). Once IRB approval was granted, the researcher visited all five schools from the research sites and digital DIBELS reports were collected from building assistant principals/SST coordinators and printed to examine end-of-the-year archival spring 2018 benchmarks in letter naming, phoneme segmentation, and nonsense word fluency in order to answer pertinent research questions. Students who were identified as receiving Tier 2 in the schools who received the treatment groups were highlighted on the hard copy report by building assistant principals/SST coordinators. The researcher titled those reports as "Treatment Group Data School A and B." Students who were identified as receiving Tier 2 in the schools designated as the control groups were highlighted on the hard copy report by building assistant principals/SST coordinators. The researcher titled those reports as "Control Group Data School C, D, E."

This data was collected by paper and then typed and stored in an Excel file with verification of accuracy from the researcher and building assistant principals/SST coordinators. Hard copies of the data were destroyed after digital data were recorded and verified for accuracy. All data were saved on a protected computer belonging to the researcher who is the only person who has access to the passwords for the computer. Students who were identified as Tier 2 across the five schools were categorized into the treatment group (those receiving DRI intervention) and those in the control group (those receiving other Tier 2 interventions). Students were coded as 1 (treatment group, DRI) and 0 (control group, not receiving DRI) in the Excel file. All student names were removed to protect identification and to secure confidentiality.

After the data was verified for correctness, the researcher uploaded the data from the Excel file into SPSS. SPSS was used to run statistical reports for use in answering research questions for the study. All information regarding data was only accessible to the researcher and was available to the dissertation committee on an as-needed basis.

Data Analysis

One research question was analyzed comparing the three DIBELS benchmark indicators for kindergarten students who receive Tier 2 intervention using DRI or another commercially-based intervention. All data were stored and analyses conducted using SPSS. A Multivariate Analysis of Variance (MANOVA) was utilized and chosen for the research because of the multiple dependent variables, two independent variables, and because convenience sampling was used due to intact groups of students chosen for Tier 2 intervention. A one-way MANOVA was also used in this study to examine the "interrelated characteristics, and determine whether the groups being studied differ on them" (Gall et al., 2007, p. 324).

The archival data from the 2018 spring end-of-the-year benchmarks in LNF, PSF, and NWF served as dependent variables for the study. Descriptive statistics were generated to compare means and standard deviations of both independent variables and to verify the correctness of the sample size. There are nine assumptions which were addressed to answer research questions. Assumptions one through four require that dependent variables to be measured at the ratio level measured from 0100; there are two independent variables accounted for (group with IDI intervention, and group with non-IDI intervention); assumption three requires participants to remain in one group observation (intervention); assumption four requires adequate sample size.

Chi-square tests of independence were conducted to rule out the need to include gender and ethnicity as co-variants and to test for similarities across groups (Warner, 2013). Of the total sample ($N = 106$), 54 (50.9%) of the students were male and 52 (49.1%) were female. Most of the students were White ($n = 71$, 67%). The tests indicated that gender and ethnicity samples were similar across the groups with a p-value of .557 for gender and p-value of .836 for ethnicity (see Table 3.2).

Table 3.2

Student Demographics Disaggregated by Gender and Ethnicity

	Treatment ($n = 53$)	Control ($n = 53$)	p-value
	n (%)	n (%)	
Gender			.557
Female	26 (49%)	26 (49%)	
Male	27 (51%)	27 (51%)	
Ethnicity			.836
White	35(66%)	36 (67.9%)	
Minority	18 (34%)	17 (32.1%)	

Descriptive statistics were examined, and then a MANOVA test was generated to test for univariate or multivariate outliers. Outliers were examined via boxplots for threatening the integrity of the results. The Kolmorgorov-Smirnov test of normality was generated to test for multivariate normality. Each dependent variable was examined multicollinearity using Pearson's Correlation test. Assumption of homogeneity of variance was conducted using the Levene's test of equality of error variances. All assumptions were met and the MANOVA was analyzed with significance at the 95% confidence level on all tests. Wilks's Lambda was used to interpret results as sample sizes are equal and Box's M results were not statistically significant (Warner, 2013). An effect size of .062 was observed using partial eta squared.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this study is to examine the effects of a systematic Tier 2 reading intervention named "Differentiated Reading Instruction" (DRI) created by authors Sharon Walpole and Michael McKenna (2017) in their book *How to Plan Differentiated Reading Instruction*. The study examined the archival data from the spring 2018 kindergarten DIBELS benchmark scores of students who received the DRI intervention and a control group of students who received another intervention. This chapter discusses demographic data where a chi test was conducted to rule out gender as a covariance. Descriptive statistics and assumption tests are examined and discussed. The results of the MANOVA and summary of the findings conclude Chapter Four.

Research Question

RQ1: Do kindergarten students who receive Differentiated Reading Instruction as a RTI Tier 2 decoding intervention have different DIBELS letter naming fluency (LNF), phoneme segmentation fluency (PSF), and nonsense word fluency (NWF) benchmark scores on the end-of-the-year benchmark when compared to struggling students who did not receive DRI?

Null Hypothesis

Ho1: There will be no statistically significant difference in DIBELS letter naming fluency (LNF), phoneme segmentation fluency (PSF), and nonsense word fluency (NWF) scores on the end-of- the-year benchmark for students who receive Differentiated Reading Instruction as a RTI Tier 2 decoding intervention when compared to struggling students who did not receive DRI.

Descriptive Statistics

A one-way multivariate analysis of variance (MANOVA) was utilized to examine the differences between means of archival spring 2018 DIBELS benchmark scores of kindergarten students who received the DRI compared to the students who received another intervention. Using a causal-comparative research design, this study seeks to examine the differences in the treatment group (DRI) and the control group (non-DRI) when comparing scores on letter naming fluency (LNF), phoneme segmentation fluency (PSF), and nonsense word fluency (NWF). A convenience sample of kindergarten students ($N = 106$) were selected with 53 students receiving the DRI intervention and 53 receiving another intervention. Students were administered the spring 2018 benchmarks. Data collected for LNF, PSF, and NWF can be found in Table 4.1 with non-DRI labeled as 0 and DRI labeled as 1.

Table 4.1

Descriptive Statistics

	Control/Treatment	*M*	*SD*	*N*
LNF	0	41.43	12.520	53
	1	37.87	15.178	53
	Total	39.65	13.962	106
PSF	0	50.47	13.897	53
	1	46.28	13.603	53
	Total	48.38	13.846	106
NWF	0	32.70	15.128	53
	1	25.96	11.452	53
	Total	29.33	13.775	106

The total scores for LNF (M = 39.65, SD = 13.962) was marginally higher for the control group (M = 41.43, SD = 12.520) than in the treatment group (M = 37.87, SD = 15.178). Scores for PSF (M = 48.38, SD = 13.846) was marginally higher for the control group (M = 50.47, SD = 13.897) than in the treatment group (M = 46.28, SD = 13.603). The total scores for NWF (M = 29.33, SD = 13.775) were marginally higher for the control group at (M = 32.70, SD = 15.128) than the treatment group (M = 25.96, SD = 11.452). The highest mean occurred in the control group on the scores of PSF (M = 50.47, SD = 13.897), while the lowest mean occurred in the treatment group on the scores of NWF (M = 25.96, SD = 11.452).

Results

The researcher conducted data screening on each dependent variable (i.e., letter naming fluency, phoneme segmentation fluency, and nonsense word fluency) to test for outliers prior to conducting the MANOVA. The sample represented 106 kindergarten students with 53 in the treatment group (receiving DRI) and 53 in the control group (receiving another intervention). Six outliers in the control groups are seen in Figure 6 and are labeled as numbers 3, 16, 23, 25, 28, and 33. Five outliers in the treatment groups are seen in Figure 6 and are labeled as numbers 55, 56, 61, 69, and 80. Warner (2013) suggests that outliers which fall between -3.30 to +3.30 or three box-lengths away from the edge of the box are acceptable outliers, and thus are not identified as extreme outliers. There were no multivariate outliers in the data, as assessed by Mahalanobis distance (p > .001). The highest Mahalanobis distance value in the data set was 14.80, which did not exceed the critical value of 16.27. For this data screening, no extreme outliers were examined, thus the outliers were kept in the data set for analysis. Outliers were analyzed using box and whisker plots for each dependent variable (see Figure 6).
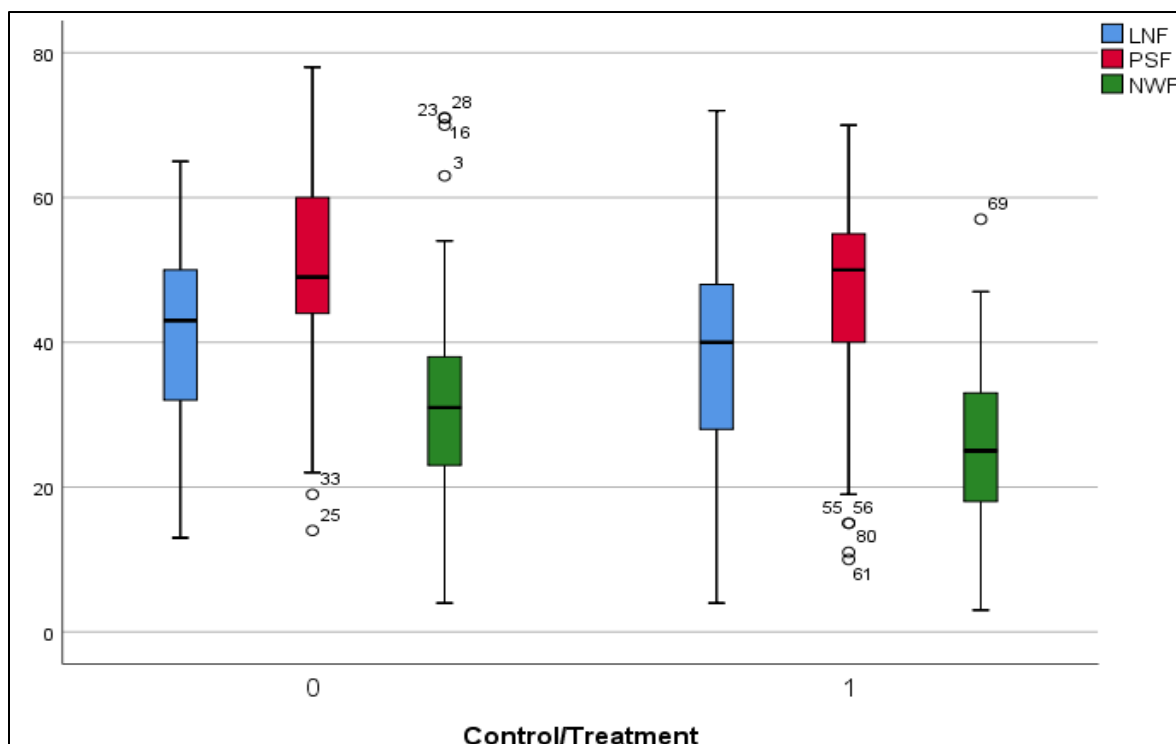
Figure 6. Box and whisker plots for LNF, PSF, NWF (Control=0; Treatment=1).

This study utilized a one-way MANOVA to determine if differences exist between LNF, PSF, and NWF from students who received the DRI intervention (treatment group) compared to those who received another intervention (control group). Scatterplots prior to conducting the MANOVA demonstrate a normal multivariate distribution of the data and a linear relationship existing between each pair of independent variables (DRI, non-DRI) in each dependent variable of LNF, PSF, and NWF (see Figure 7 for Scatterplot for LNF, PSF, and NWF).
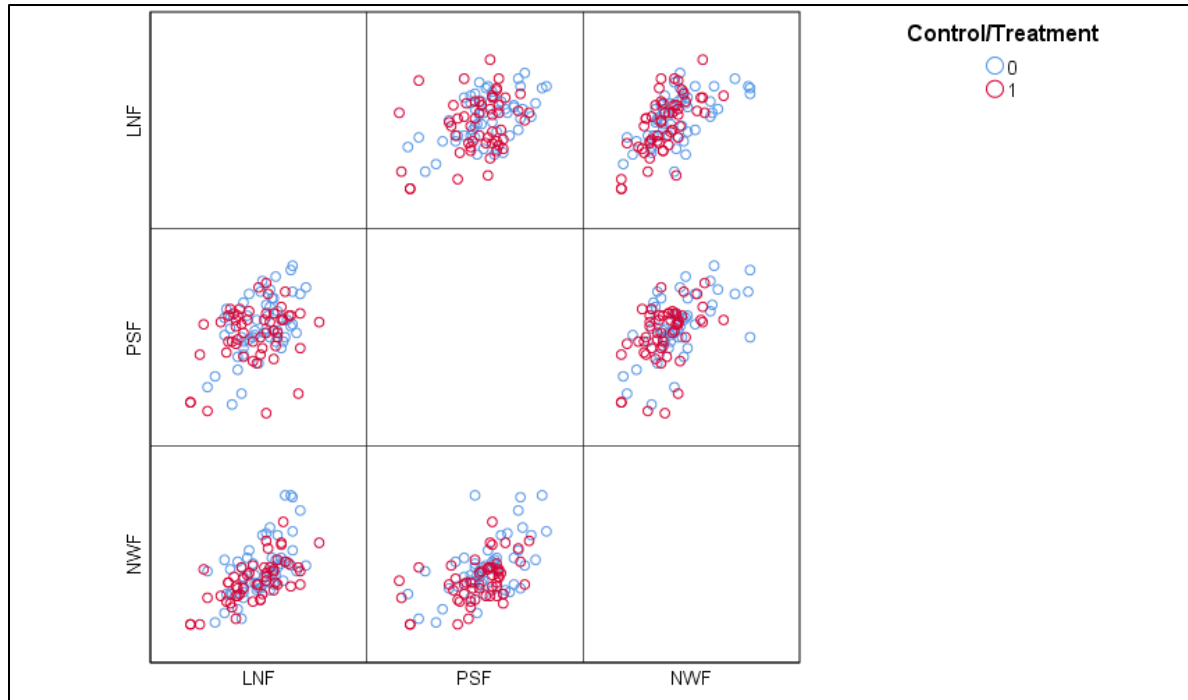
Figure 7. *Scatterplot for LNF, PSF, and NWF.*

All scatterplots for LNF, PSF, and NWF indicate an approximate linear relationship. The

assumption for normal multivariate distribution was tenable. To assess the assumption of

normality, the Kolmogorov-Smirnov test was conducted (see Table 4.2 for the Test of

Normality).

Table 4.2

Tests of Normality

	Control/ Treatment	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
		Statistic	*df*	Sig.	Statistic	*df*	Sig.
LNF	0	.076	53	.200[*]	.980	53	.521
	1	.072	53	.200[*]	.983	53	.649
PSF	0	.107	53	.193	.978	53	.445
	1	.126	53	.035	.911	53	.001
NWF	0	.155	53	.003	.939	53	.009
	1	.081	53	.200[*]	.978	53	.413

* This is a lower bound of the true significance.
a. Lilliefors Significance Correction

Further assumption tests indicated that LNF, PSF, and NWF were normally distributed for the treatment and control groups, as evidenced by Kolmogorov-Smirnov test ($p > .05$). However, there were two exceptions. PSF for the treatment group and NWF for the control group were not normally distributed. Weisberg (2014) and Warner (2013) hold that the MANOVA is unaffected by minor violations in normality. Therefore, the MANOVA is still an appropriate analysis for this study. The assumption of homogeneity of variance was analyzed by conducting the Levene's test (see Table 4.3).

Table 4.3

Levene's Test of Equality of Error Variances[a]

		Levene Statistic	*df*1	*df*2	Sig.
LNF	Based on Mean	1.499	1	104	.224
	Based on Median	1.333	1	104	.251
	Based on Median and with adjusted *df*	1.333	1	97.424	.251
	Based on trimmed mean	1.483	1	104	.226
PSF	Based on Mean	.071	1	104	.791
	Based on Median	.117	1	104	.733
	Based on Median and with adjusted *df*	.117	1	103.035	.733
	Based on trimmed mean	.120	1	104	.730
NWF	Based on Mean	1.893	1	104	.172
	Based on Median	1.701	1	104	.195
	Based on Median and with adjusted *df*	1.701	1	93.731	.195
	Based on trimmed mean	1.785	1	104	.184

Notes. Tests the null hypothesis that the error variance of the dependent variable is equal across groups.
Design: Intercept + ControlTreatment

Assessed by Levene's Test of Equality of Error Variances, the homogeneity of variances assumption was tenable for all of the dependent variables, letter naming fluency (LNF) $p = .224$, phoneme segmentation fluency (PSF) $p = .791$, and nonsense word fluency (NWF) $p = .172$. The Pearson r value was conducted and analyzed to test for assumption on multicollinearity. See Table 4.4 for Pearson r value analysis.

Table 4.4

Correlations - Pearson r value

		LNF	PSF	NWF
LNF	Pearson Correlation	1	.422**	.613**
	Sig. (2-tailed)		.000	.000
	N	106	106	106
PSF	Pearson Correlation	.422**	1	.545**
	Sig. (2-tailed)	.000		.000
	N	106	106	106
NWF	Pearson Correlation	.613**	.545**	1
	Sig. (2-tailed)	.000	.000	
	N	106	106	106

**Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation coefficients in this study ($r = .422, .613$, and $.545$) suggested a moderate correlation. That is, each of the dependent variables (LNF, PSF, NWF) was moderately and positively associated. Furthermore, since the Pearson correlation coefficients did not exceed the critical value of .9 for multicollinearity, the assumption of multicollinearity was not violated. This indicates that the MANOVA was the most appropriate choice of analysis.

Tests for normality, linearity, homogeneity of variance-covariance, and multicollinearity were all assumed. This provided justification for the one-way MANOVA used in this study to determine if differences occur in the benchmark scores (LNF, PSF, and NWF) of students who received the DRI intervention compared to those who did not receive the intervention. The MANOVA indicated that there was not a statistically significant difference between the students in the linear combination of the dependent variables based on students who participated in the

treatment compared to the control group on the Wilks' Λ = .938, $F(3,102)$ = 2.24, p =.088, partial

$\eta2$ = . 062. Therefore, the researcher failed to reject the null hypothesis. This signified there

was no significant difference in the benchmark scores (LNF, PSF, and NWF) of students in the

treatment group who received the DRI intervention in comparison to students in the control

group who received a similar intervention. No post hoc analyses were conducted.

CHAPTER FIVE: CONCLUSIONS

Overview

Chapter Five examines the results of the study by refocusing the purpose statement around the hypotheses. Findings of this study are examined in relation to past studies. This chapter will also consider implications of the study as a result of the findings from the statistical evidence. Limiting factors from the study are identified in order to strengthen further studies regarding the topic. Recommendations are made for further studies.

Discussion

The purpose of this quantitative, causal-comparative study is to examine the effects of a systematic Tier 2 reading intervention named Differentiated Reading Instruction (DRI) created by authors Sharon Walpole and Michael McKenna (2017) in their book *How to Plan Differentiated Reading Instruction* as compared to that of another intervention program. This research examined the spring archival data from 2018 DIBELS scores for 106 kindergarten students identified in Tier 2 in the Response to Intervention (RTI) process. These students were either identified as receiving the intervention (DRI) or were identified as not receiving DRI. The students were from five schools in a large rural school system in northwest Georgia.

Twenty-two kindergarten teachers administered the spring 2018 DIBELS kindergarten benchmarks for 53 students in the treatment group and 53 students in the control group. A total of 106 students' benchmark scores were examined from five different schools from a large rural district in northwest Georgia. Two schools maintained the treatment groups, utilizing the DRI as an intervention while three schools maintained the control groups utilizing a comparable intervention. All archival data were collected and stripped of student information before data analysis. A one-way multivariate analysis of variance (MANOVA) was examined to investigate

differences between kindergarten student's letter naming fluency (LNF), phoneme segmentation

fluency (PSF), and nonsense word fluency (NWF) spring 2018 DIBELS benchmarks. All

assumptions for the MANOVA were tenable as data was screened for outliers and major

violations. The independent variables were the DRI intervention group and the non-DRI

intervention group while dependent variables were LNF, PSF, and NWF. The research question

that guided the research was as follows: "Do kindergarten students who receive Differentiated

Reading Instruction as a RTI Tier 2 decoding intervention have different DIBELS letter naming

fluency (LNF), phoneme segmentation fluency (PSF), and nonsense word fluency

(NWF) benchmark scores on the end-of-the-year benchmark when compared to struggling

students who did not receive DRI?" Upon analysis of the MANOVA, the results yielded that

there were no differences between DIBELS benchmark scores of students who received the DRI

as an intervention than those who received another intervention. The researcher failed to reject

the null hypothesis. Concluding results of the analysis maintain that there is no statistical

difference between the benchmark scores of students who received the DRI as opposed to those

who received another decoding intervention.

This study aligned with Vygotsky's social development theory which maintains that

students learn best when given information that is pitched slightly above student's current

independence level, in the Zone of Proximal Development, through a small group setting where

social learning may occur (Tzuriel, 2000). Because of the design of the decoding intervention,

DRI, this study also mirrored the work of Miller (1956) who framed the information processing

theory. This theory suggests that students cycle through new and old information repeated in

short-term that will eventually reach long-term memory. The DRI, which was the intervention

for the treatment group, was utilized daily for 15–20 minutes by a trained and certified teacher,

which cycled through new information and reviewed old information. Small groups held no more than six students.

Much research exists that indicates that the oral reading fluency of students is a strong indicator of future success in reading comprehension (Allinder et al., 2001; Fuchs et al., 2001; Wanzek et al., 2018; Wanzek & Vaughn, 2007). Moreover, before oral reading can be strengthened, strong decoding skills must be present. It is important that students are taught decoding skills early as this intervention can decrease chances of reading difficulty as late as seventh grade (Partanen & Siegel, 2014). Research upholds the need for intervention to occur in early decoding to give students better access to fluency and comprehension of complex text. The remainder of this section discusses the DRI and control group interventions, DIBELS, and how this study aligned with existing research.

The results of this study closely resemble the results of a similar study using the DRI as an intervention for RTI protocols. Hearn's (2014) study found that for second and third graders using the DRI, a mean growth of 99.3 for second graders and 142.67 for third graders in the treatment group was slightly lower than the control group's mean growth of 162.59 for second graders and 160.50 for third graders. Using the STAR end-of-year literacy test for measurement (Renaissance Learning, 2010), the study found that there was no significant difference between the mean scores of students receiving the DRI as opposed to those receiving a different RTI intervention. The present study is similar in that the control group means were slightly higher for LNF ($M=41.43$), PSF ($M=50.47$), and NWF ($M=32.70$) whereas the treatment groups that received the DRI were slightly lower for LNF ($M=37.87$), PSF ($M=46.28$) and NWF ($M=25.96$; see Table 4.1). The present study also suggested there were no statistical differences between

the mean scores of DIBELS LNF, PSF, or NWF for students who received the DRI as opposed to those who received a similar decoding intervention.

Although mean scores were slightly higher for kindergarten students in the control group (see Table 4.1), the results from the MANOVA yielded a positive moderate correlation between LNF, PSF, and NWF with Wilks' $\Lambda = .938$, $F(3,102) = 2.24$, $p = .088$, partial $\eta 2 = .062$. This correlation between the DIBELS indicators also supports earlier findings of the correlations found in the research of Cummings et al. (2010). Therefore, there was no statistical difference between the scores of students in the treatment group receiving the DRI and the scores of the control group receiving a different decoding intervention.

The decoding intervention used in the control group (n=53) was effective as was the DRI used in the treatment group (n=53). To further explain, DIBELS benchmark goals for spring benchmarks are as follows: LNF (no benchmark), PSF (40), and NWF (28; Dynamic Measurement Group, 2010). All means from the control and treatment groups met the DIBELS spring benchmark scores, except the DRI treatment group's NWF mean ($M= 25.96$). This mean score is slightly below the benchmark goal, yet is higher than the cut score of 18 (Dynamic Measurement Group, 2010).

A further examination of individual scores in the treatment and control groups found the following: 85% of students in the control group ($n = 53$) met the benchmark scores for PSF, while 77% of students in the treatment group ($n = 53$) met the benchmark goal for PSF. Of the control group, 62 % of the students met the benchmark goal for NWF, while 43% of the students in the treatment group met the benchmark goal for NWF. These results point to some variances in the outcomes of DIBELS indicators, but confirms an overall effectiveness of decoding interventions in both groups.

Administrators of the three schools which included the control groups approved the unknown decoding interventions, and administrators of the two schools which included the treatment groups approved the DRI. The interventions from the control group were not documented so that emphasis could be given to a fairly new decoding intervention, the DRI. However, as is a mandate from the Georgia Department of Education (2011), teachers and administrators chose early decoding interventions that were deemed highly effective to remediate reading difficulties. The school district utilized a menu of interventions where research or evidence-based interventions could be selected. Evidence from this study and Hearn's (2014) study suggests that the selection of an appropriate decoding intervention is of utmost importance in building early fluency skills (Abbott et al., 2002; Adams, 1990; Catts et al., 2015; Good et al., 2008; Gyovai et al., 2009; Powell-Smith & Cummings, n.d.; Stage et al., 2001; Yesil-Dagli, 2011).

Implications

Results from this study confirm that a Tier 2 decoding intervention can remediate early reading deficits in kindergarten students. Additionally, the correlations between LNF, PSF, and NWF yield the interrelatedness of DIBELS indicators in archival kindergarten spring 2018 benchmark scores, which works to close the gap in literature (Utchell et al., 2016). Tier 2 intervention groups of students in RTI were initiated for the entire 2017–2018 school year in addition to the layering of a Tier 1 curriculum. Mean scores examined for the control group were LNF (M=41.43), PSF (M=50.47), and NWF (M=32.70); mean scores examined for the treatment groups that received the DRI were LNF (M=37.87), PSF (M=46.28) and NWF (M=25.96). This illustrates that both groups' overall means met the DIBELS end of the year benchmark scores, except the NWF scores (n=53) of the DRI group. However, only 62% of the control group met

benchmark goals for NWF while 43% of the treatment group met benchmark goals for NWF. This information supports the idea that early decoding is progressive and needs systematic review and repetition through second and third grade (National Reading Panel, 2000). The current study found no significant differences in the spring 2018 archival DIBELS benchmark scores in both groups.

Little research has been conducted to examine the earliest indicators of DIBELS (LNF, PSF, NWF) when these indicators are used to measure reading improvement of students in Tier 2 of the RTI process. This research study was developed in response to Hearn's (2014) findings that literacy scores of students who received the DRI as opposed to another intervention in second and third grade were not statistically different. This study expanded upon Hearn's (2014) findings to include DIBELS indicators and a focused observation of early literacy scores in kindergarten. Of utmost importance is the early detection of reading difficulty in kindergarten for future success in later grades. This study added to limited, current research on the early detection of decoding difficulties in kindergarten being remediated and examined using DIBELS benchmarks as the primary curriculum-based measure for progress.

Limitations

Since this study was a non-experimental, causal-comparative study, it may be concluded that the study has weak internal validity. To explain, Warner (2013) writes, "a nonexperimental study usually has weak internal validity; that is, merely observing that two variables are correlated is not a sufficient basis for causal inferences" (p. 20). Thus, results from the MANOVA and comparison of the means must be interpreted carefully as rival explanations could explain variability in the results (Warner, 2013). Rival variables for this study could

include age of the students, strength of the Tier 1 curriculum between the groups, experience

level of the teachers, and fidelity of the interventions in both groups.

An additional limitation was a small sample size located only in one school district in

northwest Georgia, including benchmark data from one grade level. A larger sample size with

multiple grade levels could have increased the effect size, strengthening the validity of the

results. Since archival data was reported, this eliminated the ability to utilize random assignment

which could have provided for actionable results in using the information for RTI planning in the

future. Results from this study are specific for the demographics in the area researched and may

not be applicable for other districts.

One final limitation to mention is the inability of the researcher to observe fidelity of the

intervention. Since archival data from the 2017–2018 school year was examined, fidelity was

confirmed by interviews with the assistant principals of each school with a review of the fidelity

page across the district seen in Figure 5. All kindergarten teachers were trained on the

appropriate usage of the decoding intervention, DRI (Walpole & McKenna, 2017), as well as

decoding interventions that were included on the county's menu of interventions. Teachers were

also trained in RTI and how to utilize the fidelity page to document progress. With these

verifications, implementation of the treatment and control groups were similar across the five

schools included within the research.

Recommendations for Further Research

Future research in regard to the effectiveness of the decoding intervention, DRI, needs to

be conducted so that schools, in Georgia specifically, have a clear picture of the intervention's

effectiveness on curriculum-based measures. STAR Literacy results for second and third grade

students who received the DRI exist but only examine the mean scores for a composite, not an

individual examination of literacy indicators (Hearn, 2014). Few studies have been conducted to provide evidence that the intervention remediates decoding deficiencies in the primary grades. A future study could continue examining the results of the decoding intervention on DIBELS spring benchmarks but include first and second grade scores in nonsense word fluency where decoding is still a major focus of the Tier 1 curriculum. Major studies exist which examine the effectiveness of Tier 2 interventions on oral reading fluency measures, but more emphasis could be gathered on early decoding measures. Furthermore, an examination of the DIBELS spring composite scores and the overall change in mean from the fall could be examined to present the effectiveness of the intervention in providing for overall change in benchmark scores.

An additional area of study could focus on the DRI's effectiveness of oral reading fluency for students in first through third grade. As Walpole & McKenna (2017) suggested, the results from the informal decoding inventory (IDI) could further identify the need for decoding and/or fluency intervention, and intervention groups could be created to remediate difficulties in particular areas of weaknesses. Progress could be incrementally measured through progress monitoring or benchmark periods where oral reading fluency is examined using DIBELS as the curriculum-based measure. Additionally, the study could examine benchmarks from an additional curriculum-based measure such as the NWEA MAP Reading Fluency measure (2017).

Another area of study could be examining the attitudes of teachers and students toward the DRI intervention in comparison to another selected intervention. This could easily be implemented once during the onset of the intervention (fall or winter) and once more at the completion of the intervention (spring). This data could be used to inform educators about the overall attitude toward the intervention. To date, no studies have been conducted to examine

attitudes toward the intervention. This information would be powerful in selecting interventions that are of interest to students and teachers.

Lastly, future research could be conducted to cover a large population to include students from rural and urban school districts. Hearn's research (2014) included a vast majority of White students (73.2%). This study included archival data where 67% of the participants were White. Utilizing a larger population might increase the chances of retrieving data from larger ethnic groups. Ellett (2014) found that students from differing minority groups were often underrepresented in the top achieving groups of students when measured by DIBELS and the NWEA MAP assessment. This solidifies the need for a larger-scale study on the usage of DRI as a Tier 2 intervention to remediate difficulties in reading for early readers and readers from various backgrounds and ethnic groups.

REFERENCES

Aarons, G.A., Hurlburt, M., & Horwitz, S.M. (2011). Advancing a conceptual model of evidence-based practice implementation in public service sectors. *Administration and Policy in Mental Health and Mental Health Services Research, 38*(1), 4–23.

Abbott, M., Walton, C., & Greenwood, C. R. (2002). Research to practice: Phonemic awareness in kindergarten and first grade. *Teaching Exceptional Children, 34*(4), 20.

Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.

Adams, M. J. (2006). *Phonemic awareness in young children: A classroom curriculu*m. Baltimore, MD: P.H. Brookes.

Al Otaiba, S., Wagner, R. K., & Miller, B. (2014). Waiting to fail redux. *Learning Disability Quarterly, 37*(3), 129–133. doi:10.1177/0731948714525622

Allinder, R. M., Dunse, L., Brunken, C. D., & Obermiller-Krolikowski, H. J. (2001). Improving fluency in at-risk readers and students with learning disabilities. *Remedial and Special Education, 22*(1), 48–54. doi:10.1177/074193250102200106

Alves, P. F. (2014). Vygotsky and Piaget: Scientific concepts. *Psychology in Russia, 7*(3), 24–34. doi:10.11621/pir.2014.0303

Armbruster, B. B., Lehr, F., Osborn, J., & Adler, C. R. (2008). *Put reading first: The research building blocks for teaching children to read: Kindergarten through grade 3*. Washington, D.C.: National Institute for Literacy.

Balu, R., Zhu, P., Doolittle, F., Schiller, E., Jenkins, J., & Gersten, R. (2015). *Evaluation of Response to Intervention practices for elementary school reading* (NCEE 2016-4000). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Bay Area Reading Task Force (1997). *A reading-writing-language source book for the primary grades.* San Francisco, CA: University School Support for Educational Reform.

Blake, B. & Pope, T. (2008). Developmental psychology: Incorporating Piaget's and Vygotsky's theories in classrooms. *Journal of Cross-Disciplinary Perspectives in Education, 1*(1), 59–67.

Bradley, R., Danielson, L., & Doolittle, J. (2005). Response to intervention. *Journal of Learning Disabilities, 38*(6), 485–486.

Buck, J., & Torgeson, J. (2003). *The relationship between performance on a measure of oral reading fluency and performance on the Florida Comprehensive Assessment Test* (Technical Report 1). Tallahassee, FL: Florida Center for Reading Research.

Buckingham, J., Wheldall, K., & Beaman-Wheldall, R. (2014). Evaluation of a two-phase implementation of a Tier-2 (small group) reading intervention for young low-progress readers. *The Australasian Journal of Special Education,38*(2), 169–185. doi:10.1017/jse.2014.13

Buffum, A. G., Mattos, M., & Malone, J. (2018).*Taking action: A handbook for RTI at work*. Bloomington, IN: Solution Tree Press.

Catts, H. W., Nielsen, D. C., Bridges, M. S., Liu, Y. S., & Bontempo, D. E. (2015). Early identification of reading disabilities Within an RTI framework. *Journal of Learning Disabilities,48*(3), 281–297. doi:10.1177/0022219413498115

Comprehensive Reading Solutions. (2017). Retrieved from

      http://comprehensivereadingsolutions.com/category/grades-k-5/

Cummings, K. D., Kaminski, R. A., Good, R. H., & O'Neil, M. (2010). Assessing phonemic

      awareness in preschool and kindergarten: Development and initial validation of first

      sound fluency. *Assessment for Effective Intervention,36*(2), 94-106.

      doi:10.1177/1534508410392209

Deno, S. L. (2003). Developments in curriculum based measurements. *The Journal of Special*

      Education, 37(3), 184–192.

Deno, S. L., & Fuchs, L. S. (1987). Developing curriculum-based measurement systems for data-

      based special education problem solving. *Focus on Exceptional Children, 19*(8), 1–16.

Denton, C. (2012). Response to intervention for reading difficulties in the primary grades: Some

      answers and lingering questions. *Journal of Learning Disabilities, 45*(3), 232–243.

      doi:10.1177/0022219412442155

Dewey, E. N., Powell-Smith, K.A., Good, R. H., Kaminski, R.A. (2015). *DIBELS' Next*

      technical adequacy brief. Eugene, OR: Dynamic Measurement Group, Inc.

Dynamic Measurement Group. (2008). *DIBELS 6th edition technical adequacy information*

      (Technical Report No. 6). Eugene, OR: Author. Retrieved from

      http://dibels.org/pubs.html

Dynamic Measurement Group. (2009). Retrieved from https://dibels.org/dibels.html

Dynamic Measurement Group. (2010). *DIBELS next benchmark goals and composite score*.

      Retrieved from

      https://dibels.uoregon.edu/docs/DIBELSNextFormerBenchmarkGoals.pdf

Dynamic Measurement Group. (n.d.). *Word use fluency-revised.* Retrieved from

    https://dibels.org/wufr.html

Earle, G. A., & Sayeski, K. L. (2017). Systematic instruction in phoneme-grapheme

    correspondence for students with reading disabilities. *Intervention in School and Clinic,*

    52(5), 262–269. doi:10.1177/1053451216676798.

Ehren, B. (2013). Expanding pockets of excellence in RTI. *The Reading Teacher, 66*(6), 449–

    453. Retrieved from http://www.jstor.org/stable/41853141

Ehri, L. (1991). Development of the ability to read words. In R. Barr, M. L. Kamil, P. Mosenthal,

    & P. D. Pearson (Eds.), *Handbook of reading research* (pp. 383–417). New York, NY:

    Longman.

Ellett, R. (2014). *The use of Dynamic Indicators of Basic Early Language Skills (DIBELS) and*

    Measures of Academic Progress (Map) to compare reading proficiency in native English

    speakers and English language learners (Unpublished doctoral diss., University of

    Kansas).

Foorman, B., Coyne, M., Denton, C. A., Dimino, J., Hayes, L., Justice, L., . . . Wagner, R.

    (2016). *Foundational skills to support reading for understanding in kindergarten through*

    3rd grade (NCEE 2016-4008). Washington, DC: National Center for Education

    Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S.

    Department of Education. Retrieved from http://whatworks.ed.gov

Foorman, B., Dombek, J., & Smith, K. (2016). Seven elements important to successful

    implementation of early literacy intervention. *New Directions For Child & Adolescent*

    Development, *2016*(154), 49–65. doi:10.1002/cad.20178

Fox, L., Carta, J., Strain, P., Dunlap, G., & Hemmeter, M. (2010). Response to intervention and the pyramid model. *Infants & Young Children*, *23*(1), 3–13. doi:10.1097/IYC.0b013e3181c816e2

Fuchs, D., Fuchs, L. S., & Compton, D. L. (2012). Smart RTI: a next-generation approach to multilevel prevention. *Exceptional Children*, *78*(3), 263–279.

Fuchs, L. S., Fuchs, D., Hamlett, C. L., & Ferguson, C. (1992). Effects of expert system consultation within curriculum based measurement, using a reading maze task. *Exceptional Children, 58*, 436–450.

Fuchs, L. S., Fuchs, D., Hosp, M. K. & Jenkins, J. R. (2001). Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading*, 5(3), 239–256. doi:10.1207/S1532799XSSR0503_3

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction*. Boston, MA: Pearson.

Georgia Department of Education. (2009). *The universal screening process and Georgia's assessments.* Retrieved from http://archives.gadoe.org/DMGetDocument.aspx/ RTI%20Universal%20Screener%20Assessments%20Addendum%20June%201.pdf?p=6 CC6799F8C1371F65C7F23EBF29D4833B79FEA854747E6AC5E46ADB5F032B276& Type=D

Georgia Department of Education. (2010). *Least restrictive environment (LRE).* Retrieved from http://archives.doe.k12.ga.us/DMGetDocument.aspx/160-4-7-.07_LRE_3-31- 10.pdf?p=6CC6799F8C1371F68EDFFC40B905394D67D99802D4D9370782C6D840D AA4C7F0&Type=D

Georgia Department of Education. (2011). *Response to intervention: Georgia's student achievement pyramid of interventions.* Retrieved from http://public.doe.k12.ga.us/ci_services.aspx?PageReq=CIServRTI

Georgia Department of Education. (2014). *TAPS performance standards and rubrics.* Retrieved from https://www.gadoe.org/School-Improvement/Teacher-and-Leader-Effectiveness/Documents/FY15%20TKES%20and%20LKES%20Documents/A_TAPS%20Standard%20Rubrics%20C2.pdf

Georgia Department of Education. (2017). *Literacy and striving readers grant*. Retrieved from http://www.gadoe.org/Curriculum-Instruction-and-Assessment/Curriculum-and-Instruction/Pages/Literacy-Reading.aspx

Georgia Department of Education. (2019). *Multi-level prevention system*. Retrieved from http://www.gadoe.org/Curriculum-Instruction-and-Assessment/Special-Education-Services/Documents/MTSS/Multi-Level%20Prevention.pdf

Georgia Professional Standards Commission (2019). Check certification status. Retrieved from https://www.gapsc.com/Certification/Lookup.aspx

Goffreda, C. T., Diperna, J. C., & Pedersen, J. A. (2009). Preventive screening for early readers: Predictive validity of the dynamic indicators of basic early literacy skills (DIBELS). *Psychology in the Schools*, *46*(6), 539–552.

Good, R. H., Baker, S. K., & Peyton, J. A. (2008). Making sense of nonsense word fluency: Determining adequate progress in early first–grade reading. *Reading & Writing Quarterly, 25*(1), 33–56. doi:10.1080/10573560802491224

Good, R. H., & Kaminski, R. A. (2002). *Dynamic indicators of basic early literacy skills* (6th ed.). Eugene, OR: Institute for the Development of Education Achievement.

Good, R. H., & Kaminski, R. A. (2012). *DIBELS next assessment manual.* Retrieved from

https://dibels.org/next/downloads/DIBELSNext_AssessmentManual.pdf

Good, R. H., Kaminski, R. A., Shinn, M., Bratten, J., Shinn, M., Laimon, D., . . . Flindt, N.

(2004). *Technical Adequacy of DIBELS: Results of the Early Childhood Research*

Institute on measuring growth and development (Technical Report, No. 7). Eugene, OR:

University of Oregon.

Gorp, K. V., Segers, E., & Verhoeven, L. (2014). Repeated reading intervention effects in

kindergartners with partial letter knowledge. *International Journal of Disability,*

Development and Education, 61(3), 225–239. doi:10.1080/1034912x.2014.932572

Governor's Office of Student Achievement. (2018). Retrieved from

https://gaawards.gosa.ga.gov/analytics/saw.dll?dashboard

Gutloff, K. (1999). Reading research ready to go. *NEA Today*. Washington, DC: National

Education Association.

Gyovai, L. K., Cartledge, G., Kourea, L., Yurick, A., & Gibson, L. (2009). Early reading

intervention: Responding to the learning needs of young at-risk English language

learners. *Learning Disability Quarterly, 32*(3), 143–162.

Hearn, E. (2014). *Investigation of differences in star reading scores for second- and third-grade*

students who received differentiated reading instruction (Unpublished doctoral diss.,

Liberty University).

Hicks, T. (2008). Using title 1 funds for RtI will be a challenge. Retrieved from

https://www.wrightslaw.com/news/08/rti.fund.constraints.01.08.htm

Hoffman, A.R., Jenkins, J.E., & Dunlap, S.K. (2009). Using DIBELS: A survey of purposes and

practices, *Reading Psychology*, *30*(1), 1–16. doi:10.1080/02702710802274820

Hosp, J. L., & Reschly, D. J. (2004). Disproportionate representation of minority students in special education: Academic, demographic, and economic predictors. *Exceptional Children,70*(2), 185–199. doi:10.1177/001440290407000204

Huitt, W. (2003). The information processing approach to cognition. *Educational Psychology Interactive.* Valdosta, GA: Valdosta State University.

Individuals with Disabilities Education Improvement Act, 20 U.S.C. § 1400 (2004).

Jenkins, J. R., Schiller, E., Blackorby, J., Thayer, S. K., & Tilly, W. D. (2013). Responsiveness to intervention in reading. *Learning Disability Quarterly,36*(1), 36–46. doi:10.1177/0731948712464963

Jones, J. S., Conradi, K., & Amendum, S. J. (2016). Matching interventions to reading needs: A case for differentiation. *Reading Teacher*, *70*(3), 307–316. doi:10.1002/trtr.1513

Joyce, B., & Showers, B. (2002). *Student achievement through staff development* (3rd ed.). Alexandria, VA: ASCD.

Kim, J. S., Vanderwood, M. L. & Lee, C. L. (2016). Predictive validity of curriculum-based measures for English learners at varying English proficiency levels, educational assessment. *Educational Assessment, 21*(1), 1–18, doi:10.1080/10627197.2015.1127750

Klingner, J., Urbach, J., Golos, D., Brownell, M., & Menon, S. (2010). Teaching reading in the 21st century: A glimpse at how special education teachers promote reading comprehension. *Learning Disability Quarterly, 33*(2), 59–74. Retrieved from http://www.jstor.org/stable/25701434

LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology,6*(2), 293–323. doi:10.1016/0010-0285(74)90015-2

Langdon, T. (2004). DIBELS: A teacher-friendly basic literacy accountability tool for the primary classroom, *Teaching Exceptional Children, 37*(2), 54–58.

Lemons, C. J., Kearns, D. M., & Davidson, K. A. (2014). Data-based individualization in reading: Intensifying interventions for students with significant reading disabilities. *Teaching Exceptional Children, 46*(4), 20–29.

Lloyd, P., & Fernyhough, C. (1999).*Lev Vygotsky: Critical assessments*. London: Routledge.

Marston, D. (2005). Tiers of intervention in responsiveness to intervention. *Journal of Learning Disabilities, 38*(6), 539–544. doi:10.1177/00222194050380061001

McKenna, M., & Walpole, S. (2005). Assessment: How well does assessment inform our reading instruction? *The Reading Teacher, 59*(1), 84–86. Retrieved from http://www.jstor.org/stable/20204322

McKenna, M. C., Walpole, S., & Jang, B. G. (2017). Validation of the informal decoding inventory. *Assessment for Effective Intervention,42*(2), 110–118. doi:10.1177/1534508416640747

Mellard, D. F. (2017). RTI in early intervention: Promise and vulnerabilities. *Perspectives on Language and Literacy, 43*(4), 11–14.

Miller, G. A. (1956). The magical number seven, plus or minus two: some limits on our capacity for processing information. *Psychological Review*, *63*(2), 81.

Morris, D., Trathen, W., Perney, J., Gill, T., Schlagal, R., Ward, D., & Frye, E. M. (2017). Three DIBELS tasks vs. three informal reading/spelling tasks: A comparison of predictive validity. *Reading Psychology,38*(3), 289–320. doi:10.1080/02702711.2016.1263700

Munger, K. A., & Blachman, B. A. (2013). Taking a 'simple view' of the dynamic indicators of basic early literacy skills as a predictor of multiple measures of third grade reading comprehension. *Psychology in the Schools*, *50*(7), 722–737. doi:10.1002/pits.21699

NAEP Reading Report Card. (2017). Retrieved from https://www.nationsreportcard.gov/reading_2017/nation/scores?grade=4

National Reading Panel (U.S.), & National Institute of Child Health and Human Development (U.S.). (2000). *Report of the National Reading Panel: Teaching children to read : an evidence-based assessment of the scientific research literature on reading and its implications for reading instruction : reports of the subgroups*. Washington, DC: National Institute of Child Health and Human Development, National Institutes of Health.

Noltemeyer, A. L., Joseph, L. M., & Kunesh, C. E. (2013, Fall). Effects of supplemental small group phonics instruction on kindergartners' word recognition performance. *Reading Improvement*, *50*(3), 121–131.

NWEA Map Reading Fluency. (2017). Retrieved from https://www.nwea.org/content/uploads/2018/01/MAP-Reading-Fluency-Fact-Sheet-1.pdf

O'Connor, R. E., Bocian, K. M., Sanchez, V., & Beach, K. D. (2014). Access to a responsiveness to intervention model. *Journal of Learning Disabilities,47*(4), 307–328. doi:10.1177/0022219412459354

O'Connor, R. E., Harty, K. R., & Fulmer, D. (2005). Tiers of intervention in kindergarten through third grade. *Journal of Learning Disabilities,* 38(6), 532–538. doi:10.1177/00222194050380060901

Oslund, E. L., Hagan-Burke, S., Taylor, A. B., Simmons, D. C., Simmons, L., Kwok, O., Johnson, C., & Coyne, M.D. (2012). Predicting kindergarteners' response to early reading intervention: An examination of progress-monitoring measures. *Reading Psychology*, *33*(1–2), 78–103. doi:10.1080/02702711.2012.630611

Otaiba, S. A., Connor, C. M., Folsom, J. S., Wanzek, J., Greulich, L., Schatschneider, C., & Wagner, R. K. (2014). To wait in Tier 1 or intervene immediately: a randomized experiment examining first-grade response to intervention in reading. *Exceptional Children*, *81*(1), 11–27.

Partanen, M., & Siegel, L. S. (2014). Long-term outcome of the early identification and intervention of reading disabilities. *Reading and Writing, 27*(4), 665–684. doi:10.1007/s11145-013-9472-1

Petscher, Y., & Kim, Y. (2011). The utility and accuracy of oral reading fluency score types in predicting reading comprehension. *Journal of School Psychology,49*(1), 107–129. doi:10.1016/j.jsp.2010.09.004

Powell-Smith, K. A., & Cummings, K. D. (n.d.). What's PSF got to do with It? - DIBELS. Retrieved from https://dibels.org/papers/PSF_PCRC_013107.pdf

PowerSchool. (2019). Retrieved from https://www.powerschool.com/

Renaissance Learning. (2010). *Getting the most out of STAR reading.* Wisconsin Rapids, WI.

Ridgeway, T. R., Price, D. P., Simpson, C. G., & Rose, C. A. (2011). Reviewing the roots of response to intervention: Is there enough research to support the promise? *Administrative Issues Journal: Education, Practice, and Research, 2*(1), 83–95. doi:10.5929/2011.2.1.8

Riedel, B., & Samuels, S. (2007). The relation between DIBELS, reading comprehension, and

    vocabulary in urban first-grade students [with Commentary]. *Reading Research*

    Quarterly, 42(4), 546–567. Retrieved from http://www.jstor.org/stable/20068319

Roehrig, A. D., Petscher, Y., Nettles, S. M., Hudson, R. F., & Torgesen, J. K. (2008). Accuracy

    of the DIBELS oral reading fluency measure for predicting third grade reading

    comprehension outcomes. *Journal of School Psychology,46*(3), 343–366.

    doi:10.1016/j.jsp.2007.06.006

Schaars, M. M., Segers, E., & Verhoeven, L. (2017). Word decoding development during

    phonics instruction in children at risk for dyslexia. *Dyslexia,23*(2), 141–160.

    doi:10.1002/dys.1556

Shinn, M. R. (1989). *Curriculum-based measurement: Assessing special children*. New York,

    NY: Guilford.

Simmons, D. C., Taylor, A. B., Oslund, E. L., Simmons, L. E., Coyne, M. D., Little, M. E., . . .

    Kim, M. (2014). Predictors of at-risk kindergarteners' later reading difficulty: Examining

    learner-by-intervention interactions. *Reading and Writing, 27*(3), 451–479.

    doi:http://dx.doi.org.ezproxy.liberty.edu/10.1007/s11145-013-9452-5

Slate, J. R., & Charlesworth, J. R. (1989). Information processing theory: Classroom

    applications. *Reading Improvement, 26*(1), 2.

Slavin, R. E. (2018).*Educational Psychology: Theory and practice*. NY, NY: Pearson.

Smolkowski K., Cummings K. (2015). Evaluation of diagnostic systems: The selection of

    students at risk for reading difficulties. *Assessment for Effective Intervention Advance*

    Online Publication. doi:10.1177/1534508415590386

Snyder, T.D. (2018). *Mobile digest of education statistics, 2017* (NCES 2018-138). U.S.

    Department of Education. Washington, DC: National Center for Education Statistics.

Spear-Swerling, L., & Cheesman, E. (2012). Teachers' knowledge base for implementing

    response-to-intervention models in reading. *Reading and Writing*, *25*(7), 1691–1723.

    doi:10.1007/s11145-011-9338-3

Stage, S. A., Sheppard, J., Davidson, M. M., & Browning, M. M. (2001). Prediction of first-

    graders growth in oral reading fluency using kindergarten letter fluency. *Journal of*

    School Psychology,39(3), 225–237. doi:10.1016/s0022-4405(01)00065-6

Stahl, K. D. (2016). Response to Intervention. *Reading Teacher*, *69*(6), 659–663.

    doi:10.1002/trtr.1457

Steinberg, G. (2013). Amending § 1415 of the IDEA: Extending procedural safeguards to

    response-to-intervention students. *Columbia Journal of Law and Social Problems, 46*(3),

    393–429.

Suggate, S. P. (2016). A meta-analysis of the long-term effects of phonemic awareness, phonics,

    fluency, and reading comprehension interventions. *Journal of Learning Disabilities,*

    49(1), 77–96. doi:10.1177/0022219414528540

Suthers, D. (n.d.). Information processing theory of learning. Learning Research and

    Development Center, Pittsburg, PA. Retrieved from https://info.psu.edu.sa/psu/maths/

    008%20Information%20Processing%20Theory%20of%20Learning%2002.pdf

Thomas, S. B., & Dykes, F. (2010). Promoting successful transitions: What can we learn from

    RtI to enhance outcomes for all students? *Preventing School Failure, 55*(1), 1–9.

    doi:10.1080/10459880903217979

Tomlinson, C. A. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, VA: Association for Supervision and Curriculum Development.

Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms* (2nd ed.). Alexandria: Association for Supervision and Curriculum Development.

Tzuriel, D. (2000). Dynamic assessment of young children: Educational and intervention perspectives. *Educational Psychology Review, 12*(4), 385–435.

University of Oregon. (n.d.). UO DIBELS data system: Dynamic indicators of basic early literacy. Retrieved from https://dibels.uoregon.edu/assessment/dibels/measures/lnf.php

U.S. Department of Education. (2009). Assisting students struggling with reading: Response to intervention (RTI) and multi-tier intervention in the primary grades assisting students struggling with reading: Response to intervention (RTI) and multi-tier intervention in the primary grades. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/rti_reading_pg_021809.pdf

Utchell, L. A., Schmitt, A. J., McCallum, E., McGoey, K. E., & Piselli, K. (2016). Ability of early literacy measures to predict future state assessment performance. *Journal of Psychoeducational Assessment,34*(6), 511–523. doi:10.1177/0734282915621221

Vygotsky, L. S. (1978). *Mind in Society: Development of Higher Psychological Processes*. Cambridge, MA: Harvard UP.

Walpole, S., & McKenna, M. C. (2009). *How to plan differentiated reading instruction: Resources for grades K–3*. New York, NY: Guilford Press.

Walpole, S., & McKenna, M. C. (2017). *How to plan differentiated reading instruction: Resources for grades K–3*. New York, NY: The Guilford Press.

Walpole, S., McKenna, M. C., & Morrill, J. (2011). Building and rebuilding a statewide support system for coaches. *Reading and Writing Quarterly, 27*, 261–280.

Wanzek, J., Roberts, G., Al Otaiba, S., & Kent, S. C. (2014). The relationship of print reading in Tier I instruction and reading achievement for kindergarten students at risk of reading difficulties. *Learning Disability Quarterly,37*(3), 148–160. doi:10.1177/0731948713518334

Wanzek, J., Stevens, E. A., Williams, K. J., Scammacca, N., Vaughn, S., & Sargent, K. (2018). Current evidence on the effects of intensive early reading interventions. *Journal of Learning Disabilities, 51*(6), 612–624. doi:10.1177/0022219418775110

Wanzek, J., & Vaughn, S. (2007). Research-based implications from extensive early reading interventions. *School Psychology Review, 36*(4), 541–561.

Wanzek, J., & Vaughn, S. (2010). Tier 3 interventions for students with significant reading problems. *Theory into Practice, 49*(4), 305–314. Retrieved from http://www.jstor.org/stable/40890962

Warner, R. M. (2013). *Applied statistics: From bivariate through multivariate techniques*. Thousand Oaks, CA: SAGE Publications.

Wass, R., & Golding, C. (2014). Sharpening a tool for teaching: the zone of proximal development. *Teaching in Higher Education*, *19*(6), 671–684. doi:10.1080/13562517.2014.901958

Weisberg, S. (2014). *Applied linear regression* (4th ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Wu, E. H. (2013). The path leading to differentiation. *Journal of Advanced Academics,24*(2), 125–133. doi:10.1177/1932202x13483472

Yesil-Dagli, U. (2011). Predicting ELL students' beginning first grade English oral reading

    fluency from initial kindergarten vocabulary, letter naming, and phonological awareness

    skills. *Early Childhood Research Quarterly,26*(1), 15–29.

    doi:10.1016/j.ecresq.2010.06.001

Zirkel, P. A. (2018). Response to Intervention: Lore v. Law. *Learning Disability*

    Quarterly, *41*(2), 113–118. doi:10.1177/0731948717745646

APPENDIX A: IRB APPROVAL

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

March 11, 2019

Richard Kyle Abernathy
IRB Application 3735: The Effects of a Systematic Decoding Intervention on Kindergartners' DIBELS Benchmarks

Dear Richard Kyle Abernathy,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study does not classify as human subjects research. This means you may begin your research with the data safeguarding methods mentioned in your IRB application.

Your study does not classify as human subjects research because it will not involve the collection of identifiable, private information.

Please note that this decision only applies to your current research application, and any changes to your protocol must be reported to the Liberty IRB for verification of continued non-human subjects research status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Application number.

If you have any questions about this determination or need assistance in identifying whether possible changes to your protocol would change your application's status, please email us at irb@liberty.edu.

Sincerely,

Administrative Chair of Institutional Research
Research Ethics Office

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Liberty University | Training Champions for Christ since 1971

APPENDIX B: GEORGIA DEPARTMENT OF EDUCATION PERMISSION TO USE

THE RTI PYRAMID OF INTERVENTIONS

dissertation permission

Wed, Jun 20, 2018 at 12:10 PM

To: Kyle Abernathy <kabernathy@floydboe.net>

Good afternoon,

This correspondence serves as notification that the Georgia Department of Education (GaDOE) grants limited permission to you to use the following in your dissertation: http://archives.gadoe.org/ DMGetDocument.aspx/Response%20to%20Intervention%20Student%20Achievement%20Oct%202011.pdf?p= 6CC6799F8C1371F62E73B736042998 7B3848567EA4E6AC015A424285AAFF3923&Type=D. Please know that we are in the process of updating this graphic. The updated version is not currently available.

Any use of the material and reproductions must expressly state that all rights in and to the material belong to the Georgia Department of Education. Please note that this permission is a revocable non-exclusive license granted by GaDOE. The license is limited to the non-commercial use by you only as described above and cannot be assigned to or assumed by another party. No other permission is granted or implied.

Kindest regards,

From: Kyle Abernathy [mailto:kabernathy@floydboe.net]
Sent: Saturday, June 16, 2018 3:47 PM

Subject: Re: dissertation permission

Taken from the DOE website:

http://archives.gadoe.org/DMGetDocument.aspx/Response%20to%20Intervention%20Student% 20Achievement%20Oct%202011.pdf?p=6CC6799F8C1371F62E73B736042998 7B3848567EA4E6AC015A424285AAFF3923&Type=D

APPENDIX C: SCHOOL'S PERMISSION FOR SST TO SPECIAL EDUCATION

REFERRAL FLOWCHART

permission
2 messages

Kyle Abernathy <kabernathy@floydboe.net>   Wed, Jun 13, 2018 at 9:02 AM

Hi D▮▮▮▮▮▮

I am seeking permission to use the SST flowchart to Special Education Referral as part of the requirements for my literature review section of my doctoral dissertation. Please let me know if this is permitted. Thank you.

--
Kyle Abernathy, Ed.S.
Assistant Principal

▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮   Wed, Jun 13, 2018 at 9:04 AM
To: Kyle Abernathy <kabernathy@floydboe.net>

Yes it is fine.

APPENDIX D: DYNAMIC MEASUREMENT GROUP CONSENT

Dynamic Measurement Group   12:13 PM (22 minutes ago)

to ▮▮▮▮▮, me

Hi Kyle,

Dynamic Measurement Group hereby grants permission for you to use the following images from the DIBELS Next Assessment Manual in your dissertation, provided they are properly cited:

Table 1.1: Alignment of DIBELS Next Measures With Basic Early Literacy Skills
Figure 1.1: Model of Basic Early Literacy Skills, DIBELS Indicators, and Timeline

Please let me know if you have any questions,

--
▮▮▮▮▮▮▮▮▮▮
Director of R&D Operations
Dynamic Measurement Group

The 2018 DIBELS Super Institute is approaching. Register today! https://dibels.org/institute/

APPENDIX E: SCHOOL DISTRICT CONSENT FORM

A Georgia Charter System

BOARD OF EDUCATION
BOARD CHAIR
BOARD CHAIR

SUPERINTENDENT

March 8, 2019

To Whom it May Concern:

As superintendent of ▮ County Schools, I grant Kyle Abernathy permission to conduct his doctoral research in our school system.

The data he is requesting access to will have all identifying information removed.

Please feel free to contact me if you have any questions.

Sincerely,