

A COMPARISON ON THE EFFECTS OF TWO CURRICULUM APPROACHES FOR
ELEMENTARY EARLY LITERACY

by

Christopher Alan Pennington

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

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ABSTRACT

The purpose of this ex post facto quantitative causal-comparative study was to determine whether the use of a teacher-modified literacy curriculum approach was effective in significantly reducing the achievement gap between demographic subgroups, when compared to a curriculum approach of rote teaching. Using gender, race, and lunch status as nominal variables, this study examined differences in pre- to post-test increases in phonemic/phonic skills between groups. Samples were comprised of first-grade students from two school systems in Alabama. School system one consisted of a treatment public elementary school in northwest Alabama ($n = 56$) that utilized the teacher-modified curriculum approach. School system two was a control group from a public elementary school in south Alabama ($n = 107$) that utilized a rote-curriculum approach from an adopted publication (Wonders Reading Series). The Dynamic Indicators of Basic Early Literacy Skills beginning and end of the year Nonsense Word Fluency/Words Read Correctly assessments were used for achievement scores for data collection. The research design utilized a Mann-Whitney U test to compare ranked means of achievement scores between rote versus modified curriculum approaches, as well as to determine potential significant differences in means of the nominal variables gender and race. Three tests showed a statistically significant difference in ranked student achievement in first grade early literacy learning based upon the curriculum approach. Additionally, a fourth use of a Mann Whitney U sign-ranks test on feelings of teacher efficacy showed no statistically significant difference in the use of curriculum approaches in either school.

Keywords: at-risk, early literacy skills, intervention, learning disability, Response to Intervention (RTI), tiered instruction.

Dedication

This manuscript is dedicated to my wife, Cheryl, who stood by my side every step of the way in this journey. Thank you for your love and support. May God continue to bless me every day with you in my life.

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List of Abbreviations

Common Core Readiness Standards (CCRS)

Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

Elementary and Secondary Education Act (ESEA)

English Language Learners (ELL)

Every Student Succeeds Act (ESSA)

Get Ready to Read (GRTR)

Individuals with Disabilities Education Act (IDEA)

Individuals with Disabilities Education Improvement Act (IDEIA)

Initial Sound Fluency (ISF)

Intelligence Quotient (IQIQ)

Maternal and Child Health Bureau (MCHB)

No Child Left Behind (NCLB)

Nonsense Word Fluency (NSF)

Problem-Solving Response to Intervention (*psRTI*)

Specific Learning Disability (SLD)

21st Century (21C)

CHAPTER ONE: INTRODUCTION

Overview

Delivery of instruction to address the learning needs of all students is not a new approach. However, as decades of research have identified a broad range of learning levels, styles, and needs, educators continue to deal with which approach best services all students. The use of differentiated instruction gives educators the flexibility to address multiple needs within the classroom, but what happens when instruction autonomy goes too far and utilizes resources that are not research-based and, in fact, may stifle the learning potential of the child? This research searches to answer this question by comparing a scripted research-based literacy program with an approach that provides complete autonomy to each individual teacher. The goal was to determine if either method yielded a significant level of achievement over the other. Educators may then have a better idea as to the extent of autonomy that should be utilized when making decisions on curriculum that are outside of research-based components.

Background

The search for an effective instructional approach to meet the appropriate learning needs of all students in the United States public school system is a challenge. The increasing demand to produce measurable student achievement is the impetus for exploring adaptive measures for literacy curriculum effectiveness. These adaptive measures shoulder the burden of providing a universal approach for closing the achievement gap. A modified curriculum intended to be adaptive for literacy learning is based on the belief that a teacher's ability to remain flexible, and brainstorm for solutions to student learning barriers (Boschman, McKenney, & Voogt, 2014) provides educators the ability to tap into their expertise to better reach their students. Englert et al. (1995) stated the use of a modified/integrated curriculum approach supports improving

achievement in both non-learning disabled and disabled learning students in comparison to a scripted rote-curriculum approach.

Efforts to create a global approach to a literacy curriculum to service the needs of all students (Englert et al., 1995) over the last few decades resulted in the emergence of new programs and initiatives (Flewitt, Messer, & Kucirkova, 2015). Learning theories based on social interaction placed an enhanced focus on emergent literacy (Justice & Pullen, 2003), which utilizes social and cultural language and written contexts among preschool children that develop outside of the school setting. Integration of learning theories, such as the social contextual approach (Vygotsky, 1978) changed literacy curriculum to include how students interacted within their social paradigm. Additions of social learning theories fueled change away from the rote-teaching approach (Hollingsworth, 1989) and towards an adaptive approach that supports social interaction to stimulate learning and utilization of emerging technological resources (Flewitt et al., 2015).

Education achievement expectations have increased, but federal and state programs and funding struggle to support these expectations. The need for a literacy approach that meets the needs of all student learners via differentiated instruction has an influence on decisions made in public schools. Studies to assist in the decision-making of curriculum effectiveness have been utilized extensively over the years (Fullan & Pomfret, 1977; Justice & Pullen, 2003) with some studies comparing different curriculums across global, national, and regional levels (Bray & Thomas, 1995). The use of multiple school systems intrastate (Fullan & Pomfret, 1977) has been a better alternative to study the effectiveness of different curriculum approaches than that of utilizing a single school system, as this would require subjecting students to different approaches to learning that may or may not satisfy community expectations for consistency (Thomas, 2004).

Findings of international, interstate, and intersystem studies have been mixed, with some researchers expressing criticism of large, cross-comparison studies due to complex differences between country, cultural, and language influences (Bray & Thomas, 1995). Other studies report findings that support this approach as challenges are minimized with the utilization of systems that are closer geographically (Fullan & Pomfret, 1977) and when samples better match between systems (Justice, & Pullen, 2003). When considering these studies, a commonality exists in comparing multiple forms of curriculum and their effectiveness between approaches (Bray & Thomas, 1995; Fullan & Pomfret, 1977; Justice & Pullen, 2003).

The 2004 authorization of the Individuals with Disabilities Education Improvement Act (IDEIA) provided a catalyst for the shift away from placing children in special education services solely based on intelligence quotient (IQ) (Jimenez, 2010). Thus, a proactive approach was needed in determining students who are at-risk due to a wide variety of variables before a child's skills become significantly discrepant from typically developing peers (Jimenez, 2010; Restori, Katz, & Lee, 2009). The former *No Child Left Behind Act* (NCHB) of 2001 supported the use of an effective adaptive intervention program for remedial needs (Collins, Murphy, & Bierman, 2004). The use of an adaptive intervention, rather than a fixed intervention approach, was tailored to meet a child's reading ability and address achievement gaps that would address specific learning deficiencies due to both internal and external factors, such as delivery of instruction, cultural, racial, and poverty-related issues (Snyder, 2008). The new *Every Student Succeeds Act* (ESSA) of 2015 calls into question the use of adaptive intervention and turns decision-making authority over to state and local school systems to best decide the use of intervention strategies as an effective means of remediation of deficiencies and learning disability accommodations (NCLD, 2015).

Based on changes made in federal and state education law, educators continue to struggle with the lack of an effective adaptive intervention method to support literacy curriculum in U.S. public schools. Provision of an adaptive intervention component within a curriculum would enable all early learners to build a solid foundation for later success in higher levels of general education (Jimenez, 2010). As curriculum vendors labor to develop more efficient assessments to measure student achievement, educators struggle to find an effective instructional approach that is both financially feasible and provides broad support for all students (Fuchs & Young, 2006).

The use of problem-solving RTI (*psRTI*) is the most recent innovation of adaptive intervention. Intended for curriculum support, *psRTI* is used as a research-based method of proactively addressing the needs of learning-deficient students (Fuchs, D., & Fuchs, L., 2006; Vaughn & Fuchs, 2003). *psRTI* is a process for student remediation that performs the task of problem-solving individual student needs. A group of educators from teacher and administrative levels meet regularly to determine the learning needs of students identified as at-risk due to a lower level of achievement. The group then prescribes a treatment comprised of small group strategic and one-to-one intensive delivery. Finally, the group utilizes assessment tools for progress monitoring to determine treatment effectiveness (Fuchs & Fuchs, 2006). The purpose of *psRTI* is to provide adaptive intervention for any established curriculum, thus providing a *task contingency*, or service to address the remedial needs of students (Simpson, 2002).

The *psRTI* framework is designed to change in intensity via the use of tiers, which are determined by ongoing formative assessments (Fuchs & Fuchs, 2014). Although the number of tiers varies, most schools using *psRTI* choose to divide treatment delivery into three levels or *tiers*. Tier I involves whole-class same delivery of instruction and provides an opportunity to

observe each child's response to instruction within a classroom environment. Tier II intensifies instructional delivery by grouping students into small groups with similar learning struggles or enrichment needs, and Tier III targets acute learning deficiencies by pairing an individual student directly with their teacher. Tier III is the most intense method as it deals with an acute need of a child by allowing the teacher to utilize one-to-one delivery to remediate deficiencies in content standards (Fuchs & Fuchs, 2006). Tier III is an essential component of problem-solving RTI to distinguish between a learning deficiency or learning disability (Vaughn & Fuchs, 2003).

A child may exit from *psRTI* by leaving Tier II support and remaining in Tier I whole class instruction when they meet on-target assessment scores, and if the intervention teacher (or problem-solving team) determines that a learning deficiency has been remedied (problem-solved). The opposite is true if a teacher, or team, determines that a deficiency has increased, in which a more intense level (Tier) of instruction would be required. A child that is successfully serviced with *psRTI* during the administration of a literacy curriculum recovers from a learning deficiency once a benchmark assessment reveals the level of standard mastery expected is achieved and thereby returns the student to general classroom Tier I instruction (Fuchs & Fuchs, 2006). If continued progress monitoring determines that the student's rate and level of progress is once again falling behind his or her peers' progress, the student is placed back into *psRTI* for an additional treatment that again is tailored to meet their needs (Fuchs & Fuchs, 2014).

The *psRTI* process is now included as a remediation resource for modern research-based literacy publications (McGraw-Hill, 2013; Scott Foresman, 2017). The *psRTI* model is not a curriculum, but a supporting intervention framework or process for delivering a literacy or math curriculum/contents to students. The Tiered adaptive intervention levels of *psRTI* incorporated into an evidence-based curriculum can provide significant improvement for students struggling

to keep up with their counterparts (Mock & Young, 2003; Tilly, 2008; Vaughn & Fuchs, 2003). Most notably, early studies found that a prescribed treatment of *psRTI* fused into research-based publications gave many school systems the ability to improve quickly achievement scores (Jenkins et al., 2013; Tilly, 2008).

There are limits to the *psRTI* process when considering its usage within local instructional approaches (O'Connor & Freeman, 2012) that mainly involve its incongruous use when local school systems pick and choose (i.e., cherry-pick) specific literacy components to best support their curriculum (Strand et al., 2007). The uncertainty of curriculum effectiveness exists due to the use of non-research-based resources, such as word-of-mouth peer recommendations (e.g., teacherspayteachers.com, a cherry-picked use of a literacy publication, use of multiple literacy publications simultaneously, online literacy computer activities) within the public-school setting (Ritchey et al., 2012). As such, there is a need to examine closely a curriculum that includes a non-research-based modified approach now widely utilized by public school districts.

Problem Statement

Current research indicates that the literacy achievement gap in U.S. public schools continues to increase between Caucasian and minority subgroups (Darling-Hammond, 2015) and between students who are above and below the poverty threshold (Gorski, 2016; Howard, 2015; Rearden, 2013). Both situations reinforce stereotype and identity threats among minority students who struggle to find their place within society, by labeling them as *stupid*, *dumb*, or *loser* by their peers (Sherman et al., 2013).

Research suggests that an achievement disparity exists in at-risk subgroups when using adaptive intervention within a modified literacy curriculum approach (Jenkins et al., 2013;

Strand et al., 2007; VanDerHeyden et al., 2008). The disparity may result from the use of non-research-based methods and resource components that teachers utilize to meet system standards (Bean & Lillenstein, 2012; Castro-Villarreal, Rodriguez, & Moore, 2014; Yeo & Christ, 2011). The potential of any instructional approach adopted by a school system that may negatively impact student achievement creates a need for a research study to address the issue of utilizing a *pick and choose* (or modified) approach to a literacy curriculum while continuing to use a research-based adaptive intervention program.

Differentiated instruction with complete teacher autonomy of supplemental resources instead of solely depending on a research-based scripted program may impact the achievement of students identified as having a learning deficiency (Alba, Badoui, & Gil, 2015; Oakes, 1992; Plunk, Tate, Bierut & Grucza, 2014). Specifically, a need exists to define the widely used *pick and choose* literacy curriculum/non-scripted method in order for it to be analyzed. This *pick and choose* non-scripted method to a literacy curriculum occurs when teachers have the autonomy to omit scripted portions of a research-based reading curriculum. By doing so, a teacher can choose to keep other portions of literacy instructional content, skill-building literacy activities, and assessments to bypass district-perceived textbook weaknesses and support teacher interests, strengths, and methods (Shawer, 2010).

An autonomous approach, therefore, could potentially eliminate the effectiveness of research-based components or processes in a scripted reading series that are deemed unnecessary by teachers and local systems. The problem to be considered is how the implementation of an autonomous, non-scripted literacy method of approach with differentiated instruction in a school system in north Alabama has impacted student early-literacy achievement. A comparison of these achievement data with those of a school system in south Alabama using a scripted-based

approach to literacy will address a gap in research (Fuller, 2016) where isolation of each approach in a study is recommended.

Purpose Statement

The goal of this study was to examine if the use of a teacher-modified literacy curriculum approach was more effective at increasing student reading achievement than that of a rote-curriculum approach. The study compared achievement data that reflect the use of a customized instructional implementation on students in first grade from one elementary school in a suburban public-school system in northwest Alabama to that of a scripted/rote implementation in a suburban public-school system in south Alabama. The purpose of this quantitative study was to examine if the use of a non-research-based teacher-modified implementation approach to literacy curriculum in one school system (Jenkins et al., 2013; Strand et al., 2007) was more effective at increasing student achievement in all first-grade student subgroups than that of a rote-curriculum implementation approach utilized in another school system.

Addressing the purpose of the study required a quantitative, causal-comparative design of research (Creswell, 2014). Student achievement and teacher survey ratings data were recorded and quantified, and, subsequently, analyzed using SPSS software (Green & Salkind, 2011). Deductions were made from analysis of these data as to how a modified-teacher approach to literacy curriculum may affect student achievement (Saldaña, 2001).

This study measured the effect of a modified use of literacy publication between subgroups (Gall, M., Gall, J., & Borg, 2007) on all student achievement scores. Participants for the study were obtained using convenience sampling. The study compared achievement scores of all students with a specific focus of on-target or at-risk student identification by Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessments for letter naming, nonsense

word, phoneme segmentation, initial sounds, and oral reading fluencies. Assessments scored male and female populations, as well as minority versus white, learning deficient, and socioeconomic status level student subgroups. The causal-comparative independent variables were the teacher-modified literacy curriculum approach versus a rote-curriculum approach utilized between two school systems in Alabama. The study consisted of a control group of first-grade students exposed to the rote-teaching literacy curriculum approach (i.e., one that is not cherry picked but implemented with fidelity) utilized by an elementary school in south Alabama. The treatment group included first-grade students in a southern Alabama school district who were exposed to the systematic use of the teacher-modified (i.e., cherry-picked) literacy curriculum approach (i.e., independent variable). The study occurred over the course of a school year (i.e., 36 weeks).

The dependent variable was student achievement as measured by the DIBELS fluency scores for initial screening and final assessments of all student progress as determined by DIBELS benchmark scores (Good & Kaminski, 2014). Achievement categories are classified at each assessment as being on-track, strategic, or intensive for each grade level subtest, based on performance range characteristic to the grade level and time of year the benchmark test is administered (Good & Kaminski, 2014).

The study analyzed all testing data via use of a non-parametric Mann Whitney *U* test to compare the ranked means (Creswell, 2014; Gall et al., 2007). Covariates consisted of a commercial literacy curriculum publication use, supplemental resources utilized by individual teachers, and initial student DIBELS scores used as a pre-screener. This study provides the opportunity to establish the significance of effectiveness regarding a first-grade teacher-modified literacy curriculum approach on student literacy achievement in all students in an elementary

public-school setting. The treatment occurred during the 2017-2018 school year over 36 weeks utilizing DIBELS progress monitoring with a routine formative assessment to determine any individual student change needed in Problem Solving RTI intensity level. Good and Kaminski (2014) stated benchmark assessment scores will determine the frequency at which students are progress-monitored (on-target is once per month, strategic is bi-weekly, and intensive is weekly). Any formative assessments used in this capacity were submitted to the Institutional Review Board for approval before conducting the research, reviewed for their reliability and validity, and pre-screened to determine whether, or not they violated statistical assumptions for parametric analysis.

Significance of the Study

This study aims to answer questions about the effectiveness of time and resources required for the treatment of a modified literacy curriculum approach for all first-grade students. Public education needs an instructional approach that effectively blends with a school system's literacy curriculum and is effective in decreasing the literacy achievement gap for all at-risk students. The results of this investigation should prove to be useful to schools similar to those in the study. The goal is to sustain student literacy growth in the areas of phonemic awareness and phonics, and for results from this study to provide information useful for a non-research-based curriculum approach at schools with similar educational challenges. Knowledge of pragmatic and scientific teaching practices that are effective in promoting effective literacy practices could also benefit teacher preparation programs, teacher trainers, elementary school programs, and others who have the role of providing professional literacy instruction to primary education teachers (Ely et al., 2014; Israel, Maynard, & Williamson, 2013).

The study consisted of two public elementary schools first-grade students from two separate school systems in Alabama (one elementary school in northwest Alabama, and one elementary school in south Alabama – see Table 1). Permission to use both schools was granted as indicated in appendices X and Y. The current demographic average percentages of the 2017-2018 first-grade northwest Alabama school population is 54% male, 46% female; 48% white, 29% black, and 24%, Hispanic. Current demographic percentages of the 2017-2018 first-grade south Alabama elementary school population is 66% male, 42% female; 74% white, and 18% black.

Table 1

First-Grade Participant Schools Information, minus Hispanic Students

School	Male		Female		White		Black	
	<i>N</i>	%	<i>n</i>	%	<i>N</i>	%	<i>N</i>	%
Apple	62	.66	45	.42	80	.74	19	.18
Bravo	26	.34	30	.53	27	.48	16	.29
Total <i>N</i>	88	.54	75	.46	107	.66	35	.34

The study was comprised of two groups (a whole-class rote-curriculum control and teacher-modified curriculum treatment). Grade level analysis for determination of class and subgroup standard deviation, skewness, and “goodness of fit” reported the descriptive statistics of all chi-square results within a grade level. Convenience samples that are stratified and then matched according to demographic subgroups and the initial DIBELS screener assessment scores (Good & Kaminski, 2014) populated the groups. Pre-test DIBELS screener scores (see Appendix D: Numbers in columns that contain a plus sign indicate that anything less than the given number of points scored is to be considered “below” the cutoff point) were categorized into subgroup nominal variables based on gender, race, and poverty status. The use of *psRTI* as

an adaptive intervention process was a mediating factor for the study as it was implemented in both curriculum approaches.

The classroom teacher of each respective student in northwest Alabama was responsible for providing the teacher-modified approach that represents the treatment group. Checks for fidelity and efficacy for both curriculum approaches was in the form of a teacher survey that rated levels of instructional delivery, ongoing professional development effectiveness, instructional coach support effectiveness, and impact of data meetings. Reading coaches in each school administered the DIBELS screener and benchmark assessments midway and after the treatment, respectively. This study was designed to provide teachers and administrators research results to consider the approach of utilizing a teacher-modified literacy curriculum approach as well as provide relevant information to advance education practices nationally.

Study results could provide teachers and administrators a platform for advancing local elementary school literacy policies that, through a pragmatic, science-based approach, can serve as valuable insight for addressing potential subgroup differences affecting early childhood literacy academic achievement. Elementary teachers could benefit from being able to focus on classroom strategies and adjust their approach to a literacy curriculum with their own adaptations of a commercial literacy publication for cognitive accommodation of the identified differences in subgroup demographic achievement.

Ultimately, children in the first-grade level will benefit as they gain the needed receptive and expressive language development skills to be successful not only in school but throughout their lives. The outcomes of this study may then be utilized to plan appropriate, literacy adaptive intervention with instructional adaptation practices and activities for first-grade students and teachers. Research has shown that literacy learning is a lengthy process that begins early in life

(Morris et al., 2013). Given the importance identified in the literature for children to approach school with a motivation to learn, and with prerequisite language and early literacy skills being encouraged, effective literacy models can play a vital role in literacy success (Morris et al., 2013).

Research Questions

The following research questions formed the basis for the investigation:

RQ1: Is there a difference in overall first-grade DIBELS achievement results when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

RQ2: Are there differences between first-grade gender subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

RQ3: Are there differences between first-grade race subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

RQ4: Is there a difference in feelings of teacher efficacy when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

Definitions

1. ***At-Risk*** - A description of students identified as having a higher risk of academic deficiencies or the potential to become a school dropout due to factors such as poverty, school attendance, parenting, nutrition, physical limitations, etc. DIBELS identifies students as being “at-risk” by those not meeting the pre-screener or benchmark minimum scores of each component, which then classifies a student into a category of either strategic or intensive (Good & Kaminski, 2014).
2. ***Cherry-Picking*** – To choose the best matching subsets, or cores for the purpose of maximizing the performance of a product or process (Raghunathan, Turakhia, Garg, & Marculescu, 2013). In the field of education, however, cherry-picking can have a negative impact on learning as practitioners may remove effective, research-based components that do not align with personal or district level expectations.
3. ***Direct and Explicit Instruction*** – A skills-based learning activity in which students are active participants. Components of instruction can target information delivery via implementation of small portions and are tailored to specifically meet a student's needs. Teachers continuously monitor progress to determine if a child understands the learning content being delivered by the teacher/instructor (Goeke, 2008).
4. ***Dynamic Indicators of Basic Early Literacy (DIBELS) – 6th edition***. An assessment of student literacy development that utilizes a variety of basic early literacy skills varying in degree of intensity for kindergarten age up to 9 years old (Good & Kaminski, 2014).
5. ***Learning Disability*** - A learning disability is a neurological-based processing problem that may interfere with a basic learning skill (Learning Disabilities

- Association of America, 2016). A student is considered "learning disabled" if psychometric testing that involves both student intelligence quotient (IQ) and level of student achievement is lower than the acceptable levels for his/her age (Jackson, 2009).
6. **Minority Students** – African American and Hispanic students historically are central to prejudice or bias that prohibits equal access to learning, which includes a disproportionate representation in lower-level courses, special-education programs, academic achievement, and graduation rates that are typically lower than those of their white peers (Solorzano, Ceja, & Yosso, 2000).
 7. **Problem-Solving RTI** – An intervention model designed to assist in student learning deficiencies related to general class instructional delivery. Levels of intervention intensity between tiers change, as individual at-risk student learning deficiencies change. Formative assessment is routinely utilized to determine improvement in content knowledge. This helps teachers apply appropriate levels of intervention based on the changing needs of all at-risk students within the class (Fuchs & Fuchs, 2006).
 8. **Tier I** - A RTI level involving whole group instruction in a regular classroom setting (Jackson, 2009).
 9. **Tier II** - A RTI level involving small group instruction. This level is strategic as it identifies remediation needs for servicing intensive intervention. Students remain in this tier until progress monitoring designates that they move either down to the one-to-one intensive intervention Tier, or back to the whole classroom setting (Jackson, 2009).

10. **Tier III** - A RTI level involving one-to-one teacher/student intervention. This level is intensive in that it targets learning deficiencies for immediate attention. Students remain in this tier until progress monitoring allows them to move back to a small group tier (Jackson, 2009).

Summary

This chapter briefly reviewed the need for an effective student literacy curriculum approach that is supported in many public schools by federal funding. The chapter proposed that the use of findings from this study could make a difference in the long-term success of literacy for all students, as well as the effective adoption of pairing practices, such as Response to Intervention (Vaughn & Fuchs, 2003) with a customized instructional approach. However, there are limits to *psRTI*, mostly surrounding an incongruous use of the model in conjunction with teachers who modify the components/aspects of a literacy curriculum. Teacher autonomy to alter the use of research-based curriculum and intervention methods places primary responsibility for instructional effectiveness on the classroom teacher when they may or may not be knowledgeable or adequately trained to make decisions regarding delivery. Unqualified modifications of a curriculum have the potential of undermining or decreasing its effectiveness (Strand et al., 2007). As such, there is a need to examine the use of a teacher-modified literacy curriculum approach. The next chapter addresses the literature available on the curriculum methods of delivery to validate the research study.

CHAPTER TWO: LITERATURE REVIEW

Overview

What model for early literacy learning has the greatest potential to impact achievement among the diverse student learner population in public schools? This study explored two different instructional models utilized by two school systems in Alabama. The following literature review serves to establish that the model of teacher/student engagement with appropriate resources support must be understood to influence effectively early literacy academic performance. In addition, resources and methods for intervention to support teacher/student engagement of at-risk public-school students must be considered when addressing this question. One of the two models in the study (teacher modified implementation) included differentiated instruction that can be traced back to the days of one-room schools that catered to a wide range of both age and ability levels (George, 2005; Sherman, 2009). A heterogeneous curriculum focusing on the use of personalized lessons, student pace, along with intervention strategies supporting levels of teacher/student engagement for re-teaching content has become the primary pedagogical component for student content mastery (Sherman, 2009; Tomlinson et al., 2003).

Over the last four decades, delivery of differentiated instruction in public education has become steadily institutionalized, while research shows that there are mixed results in achievement scores (Williams, 2012). Examining the literature on assessments for intervention identification, the use of direct and explicit instruction, RTI, published resources for content delivery, children who struggle with reading despite being exposed to effective teaching, gender learning, and K-2 grade universal access and student achievement can aid to clarify how teacher/student engagement is currently utilized (Bryant, 2014; Fuchs et al., 2003; Morgan et al., 2012; Norungolo, 2011; Rupley, Blair, & Nichols, 2009; Samanich, 2003).

Theoretical Framework

Children who read well in first grade comprehend and acquire greater information and knowledge in numerous domains (Thompson, 2010). Therefore, children's literacy has become a significant theme of research and policymaking incentives concerning childhood development (Callaghan & Madelaine, 2012). Antilla (2013) added to this by stating a need exists to ensure that all children receive the level of literacy learning to excel in all academic coursework. To this need, every effort must be made to deliver all necessary levels of instruction to achieve success.

Much like an approach for treating a medical condition, multiple levels of care and treatment are necessary to deal with both immediate concerns/deficiencies and to provide preventative measures for future problems (Fuchs, Fuchs, & Compton, 2012). Pearson et al. (2003) suggested accurate identification of a potential health problem, with prescribed levels of treatment intensity to assist a problem or condition, are critical to successfully addressing health wellness. This proposes that a consideration of interventions to address the health and welfare of a patient may be contingent on socioeconomic status, access to healthcare, and the need for differentiation to address levels of intensity.

Interventions dealing with a potential health risk possibility have been both fixed and adaptive in approach (Collins et al., 2004). A fixed intervention, such as Drug Abuse Resistance Education (DARE), is designed to deliver a blanket approach of one-size-fits-all toward the prevention of future drug abuse. The program is scripted and distributed via a law enforcement representative through handouts and lectures. The idea of the fixed intervention is to cast the net far and wide to prevent or affect as many potential candidates as possible, without prior knowledge of any at-risk potential in any student. Adaptive intervention uses assessment data as

a starting point to determine the level of treatment per individual. From this determination, levels of intervention intensity are then prescribed to treat the individual in areas of need. As the need increases, or decreases, the intensity level changes with the ultimate goal of improving health or learning within the individual. Much like the health prevention model, only those public-school students identified as having a learning deficiency are treated/remediated. There is a commonality of purpose between these two adaptive intervention methods, therefore, this study focused on the use of an educational adaptive intervention that allows multiple levels of treatment to address a learning deficiency and prevent increased future development of the deficiency in a student.

The use of the adaptive intervention model Response to Intervention has been the chosen approach for most public schools in the modern day setting and is utilized in many forms (Rush, Dobbins, & Kurtts, 2010). The *psRTI* provides multiple levels, or tiers, of intensity that are tailored to the learning deficiency (or deficiencies) of an individual student. As the level of deficiency increases or decreases, the tier level intensity changes to meet student mastery. The need for a consistent approach to the prescribed treatment requires scripted directives, direct and explicit instruction, teacher professional development on effective delivery, continuous progress monitoring, and teacher feedback to determine intervention delivery effectiveness (Fuchs & Fuchs, 2014; Rush et al., 2010).

Scripted/direct and explicit instruction operates from behavioral learning theories, with an emphasis on immediate feedback for a response (Skinner, 1950; Thorndike, 1932) and instructional delivery in the form of smaller portions (Rush et al., 2010). Direct and explicit instruction principles of adaptive intervention are reflected through practical applications that include evaluation of assessments, teacher feedback to adjust approach of instruction, and an

articulated path for all instructional delivery, either fixed or adapted for a purpose (Luke, 2014). Considered an archaic approach to learning, however, the behaviorist approach of direct explicit instruction opposes more recently accepted learning theories, such as cognitive, constructivism, social learning, and connectivism theories (Luke, 2014).

Differentiated/unscripted method of instruction falls within the Social Cognitive Theory of Learning (Gutek, 2011; Vygotsky, 1978) with measures taken to adjust pace and process within the social context (Fuller, 2012). These theories place learning on multiple cognitive and environmental influences, as well as interactive experiences that promote personal growth within a social environment and one's own interpretation of each experience (Callaghan & Madelaine, 2012; Heo et al., 2011; Van Brummelen, 2002). However, Edgar (2012) stated a utilization of a variety of learning activities from a customized/autonomous approach may inadvertently have an influence on a differentiated-learning-based method.

While comparing two methods of instructional delivery (scripted versus non-scripted with autonomy), an emphasis on the characteristics of differentiated instruction with teacher autonomy on resources, activities, adaptive intervention, etc., will require utilization of Cognitive Information Processing for learning (Sanders, 2008) and the Social Cognitive Theory for Public Health Intervention Model adopted by psychologists and educators (Mellard, McKnight, & Jordan, 2010; Sanders, 2008) to proactively address learning deficiencies in children as they develop. Therefore, the framework for this study consisted of learning theories that support cognitivism as it represents the learning processes of chunking information, problem-solving, linking concepts, and organizing structure for learning focus.

Related Literature

Direct and Explicit Instruction

For many years of public education in the United States, the use of direct and explicit instruction was a primary resource for instructional delivery. Advances in technology and mobility, along with newly proposed learning theories provided opportunities to pursue other forms of instruction, in spite of research that supported its continued use. Challenges to sustaining the direct and explicit delivery began to occur with many wanting to prove the dominance of other methods. A primary opportunity for challenge came from a federally funded 10-year study entitled, Project Follow Through (NIFDI, 2016). This long-term comparison of treatment versus control cohorts actually supported the direct and explicit instructional model (Meyer, 1984). Specifically, data results from the study compared its effectiveness to 12 other instructional models that clearly indicated direct and explicit instruction outperformed all other methods by a significant magnitude (Engelmann, 2007). These results took almost all researchers involved in the study by surprise as many had moved on to embrace another method of instructional delivery (NIFDI, 2016). What the federally funded study thought would be a death blow to the direct and explicit model had actually validated its use, when comparing it to alternative methods that most researchers wanted to validate.

Reviews of Project Follow Through data have been mixed over the last several decades with controversy created from conflicting research studies (NIFDI, 2016). Data results from the study were buried under a mountain of bureaucracy as federally subsidized education programs were supported by underperforming instructional models, such as Open Education, Tuscan Early Education Model, Behavior Analysis, Cognitive Curriculum (problem-solving), and Parent Education (NIFDI, 2016). Accusations of data results suppression from the 10-year research

study clouded the effectiveness of direct and explicit instruction in favor of models tied to programs that required federal funding for their implementation (Engelmann, 2007; NIFDI, 2016).

The use of direct and explicit instruction as a primary delivery method remains a topic of debate to this day. Many years have passed since Project Follow Through, and as with any controversy, sharp edges that carve an opinion begin to dull. Research on modern approaches to learning have identified the use of the instructional model as being antiquated, irrelevant, or impractical for individualized literacy learning (Baumann, 1988; Sawyer, Graham, & Harris, 1992). This placed new priorities on self-learning for students that focus on the use of a cognitive strategies instructional approach (Rupley et al., 2009). In addition, researchers against the use of direct and explicit instruction consider the model an overbearing excursion of a teacher's will over that of the student, thus stifling a student's ability to develop cognitive strategies (Baumann, 1987, 1988; Shannon, 1987). Powerful forces backed by research that support self-learning development (Rupley et al., 2009) and the importance of sustaining student individuality (Baumann, 1987, 1988) has proven to be an almost overwhelming obstacle for direct and explicit instruction. It could be stated that, at best, research has blurred the lines of interpretation of the model.

Confusion in the modern era over determining what direct and explicit instruction is, and what it is not, has provided an environment for method change in today's use as an instructional model. Baumann (1988) stated a defining moment occurred when direct and explicit instruction shifted from being known as a script-lead program to a teacher/student engagement instructional approach to learning, thus creating an interactive activity tailored to each student's specific learning needs. Modern applications of the model as a support engine for RTI can be viewed as

an opportunity for universal acceptance of direct and explicit instruction as a viable model for modern education consideration. This opportunity is rooted in a philosophical shift to include interactions between teacher and student with use of multiple strategies and modelling and less on the rote delivery of content void of an opportunity for student response (Baumann, 1988; Rupley et al., 2009). Additional research supports this interactive approach to direct and explicit instruction as gains in early literacy achievement scores in phonemic awareness, phonics, fluency, vocabulary, and comprehension are larger than their respective control groups (Mizumoto & Takeuchi, 2009; Rasekh & Ranjbar, 2003; Rupley et al., 2009; Zaki & Ellis, 1999). Years of searching for the best method of direct and explicit instructional delivery and the controversy created in its wake provided a chrysalis for the metamorphosis into today's use of the instructional model.

Rote-Teaching vs Student-Centered Learning

Differences in opinion regarding scripted versus non-scripted instruction perpetuated the search for the best method of delivery for student learning. This search allowed researchers to address core components that may or may not support learning needs of a progressive society. Suppression of PFT findings (NIFDI, 2016) allowed for a continued belief that scripted instruction could only function in the form of rote-teaching. A recent study supports this perception with a comparison of differentiated instruction over rote teaching as the former allows students to integrate knowledge into practical problem-solving situations and the latter stifles critical thinking (Tian et al., 2014). However, an unintended byproduct of additional research has also resulted in modifications to student-centered learning that mixes scripted and non-scripted instructional components. One such study performed at a university in Vietnam revealed that a differentiated learning style called “inter-teaching”, which combines rote-teaching

components in a scripted form with non-scripted student-centered learning, was more effective for student knowledge and application of skills than a sole rote lecture model of teaching and learning (Wheaton, O'Connell, & Yapa, 2016). Students participating in the study were observed and assessed at regular intervals over three, six-week semesters, which found the inter-teach group outperforming the lecture group with a 70% reduction in failure rate (Wheaton et al., 2016).

Additional research refutes the use of this instructional hybrid when considering the role of the teacher in the classroom. Johnson and Barrett (2017) compared two pedagogical methods (active learning and passive instruction) with a sample size ($N = 59$) divided into approximate halves. The study found that the students exposed to active learning scored higher on the assessment in dealing with problem-solving and reasoning. One weakness mentioned in the findings of the study was the fact that the small sample size resulted in the use of a weaker power ($p = .10$) to determine data results (Johnson & Barrett, 2017). However, a research study in Belgium provides evidence that a combination of delivery can be effective at increasing achievement, with a crucial component hinging on when each instructional component is delivered and that timing of delivery is key to the success of student-centered learning. Baeten, Struyven, and Dochy (2013) studied a group of university students ($N=496$) and found that students who were exposed to a hybrid containing lecture-based rote teaching and differentiated learning performed as well as their student-centered learning counterparts. The study was able to more deeply scrutinize data results as the larger sample size allowed for a stronger power level ($p = .05$).

Another issue that developed when comparing rote-teaching and student-centered learning was how to effectively assess students who were exposed to a combination of the two

instructional methods. As a result, researchers had to address the increased complexity of delivery methods that also required adjustments to monitoring their effectiveness. Wheaton et al. (2016) used methods for assessment that did not meet the traditional criteria of standardization based solely on a score. Instead, researchers used both formative and summative assessments to determine effectiveness. Johnson and Barrett (2017) acknowledged that a more complex form of assessment (standard score, observations, conversations, formative assessments, and a rubric) was also used in their study to determine achievement instead of a standardized summative assessment approach. In Baeten et al. (2013), results were also obtained by utilizing varied forms of assessment. However, the major difference in their approach was the use of two different assessment methods, one assessment for rote-teaching and a combination of two assessments for student-based learning that allowed for a gradual release in determining learning effectiveness (Baeten et al., 2013).

Complexity of approach toward effectiveness monitoring of these two instructional models reveals the increasing factors that must be considered when determining what may or what may not work. Based on current research, methods of assessment are called into question when determining what is considered effective learning. Recent studies (Baeten et al., 2013; Johnson & Barrett, 2017; Wheaton et al., 2016) had to alter their assessment approach to determine how instruction impacts achievement. Even so, current U.S. state-adopted assessments for achievement continue to determine success from numerical scores of a summative test based on normal distribution (ALEX, 2016; Education Commission of the United States, 2017) and do not utilize other forms of assessment to determine non-special needs student achievement, such as portfolios, interviews, checklists, rubrics, etc. (Baeten et al., 2013; Wheaton et al., 2016). The conclusion from these studies is that the same method of assessment

utilized for standard rote-teaching in the past is still considered for approaches today that hybridize rote teaching with student-centered learning.

Scripted Reading Instruction

How does direct and explicit instruction fit into today's education? The need for creating positive achievement results from all students has educators searching for the most effective means of delivery. Recognition of individual learning needs means consideration of any and all theories and methods that have potential for creating desired results. Scripted instruction is one method in this endeavor. Fuller (2016) stated that since scripted instruction is founded in multiple behavioral learning theories, the scripted learning process is contingent upon direct and regularly provided feedback associated with the prescribed learning process. This statement fits into a paradigm for multiple levels of learning by using a combination of methods (direct and explicit, differentiated instruction, lecture, small group, etc.). The primary component of scripted instruction is direct and explicit delivery, where specific scripted directions and commands are given to a student, or classroom of students, and immediate feedback is given on task results. Encouragement is given to achieve positive results through use of a reward system during the feedback process. Redirection is used when a student does not provide the correct response, the script is re-engaged, student response repeated, and feedback is once again provided. If the student's answer to the problem is correct, a reward for positive response is supplied.

Not every student subgroup responds with the same level of achievement to the use of a reward system (Fuller, 2016). Even so, the use of rewards to motivate learning is nothing new and remains a standard practice (Anderson, 2014). The key, therefore, is to find the right combination of methods and feedback that is tailored for each subgroup and thereby provides the

desired level of achievement. Skinner (1970) further suggested that consequences for incorrect responses were just as important to preferred knowledge behaviors. Educational learning programs today continue to reinforce this belief with rewards regularly given to students to reinforce correct responses. Modern examples of the use of consequences can be viewed in online reading programs, such as Classworks Reading (2008), Kids College (2015), and USA TestPrep (2017), which reward students with an assortment of video games at the end of each correctly answered base level reading lesson, while delaying gratification with an additional review if major components of the lesson are answered incorrectly. Regular use of rewards and/or redirection also provides feedback during student engagement that is essential in determining the effectiveness of the program and gives educators an indication of the level at which a student is achieving.

Known limitations to any program's effectiveness are needed in deciding if using that program is worth the effort. Another indication of effectiveness of the rewards/feedback approach is how it impacts each student subgroup, and particularly those that have a high at-risk percentage. Fuller (2016) and Anderson (2014) performed research studies that show where minority and poverty students have seen positive results from the use of this scripted approach, with a belief that structured and compartmentalized delivery with sequence breaks learning into manageable portions. Additional indications involve subject taught (Anderson, 2014; Fuller, 2016; Hughes, Phillips, & Reed, 2013; Schneider et al., 2016) and how timing with delivery impacts achievement. In the Schneider et al. (2016) study, authors compared the online scripted reading program *MindPlay Virtual Reading Coach* (MVRC) to a business-as-usual classroom approach. The sample size consisted of 209 students within the same school system who all received adaptive intervention delivered by teachers as needed. Eighty-four percent of these

students were of minority classification and 93% received free and reduced lunch status. The treatment group received scripted and structured lessons that were sequenced for reading fluency development in the form of online segmented activities. These activities rewarded students for accuracy at the end of each segment. A MANCOVA performed on pretest/posttest results ($p < 0.01$) revealed a significant increase in reading fluency, vocabulary, and phonics achievement among MVRC students as compared to the business-as-usual group. Findings also indicated a large increase in spelling achievement and vocabulary among Hispanic students.

Consideration on when and how much instructional delivery occurs is part of any teacher's approach. Timing of scripted instruction delivery and duration was a main focus in a study supporting the use of a scripted computer-based reading program (Hughes et al., 2013), which was performed on at-risk students (21 boys and 19 girls) at an elementary school in England. The scripted program was self-paced and consisted of short, timed online activities over a six-week period. A pretest-posttest comparison was performed, and an ANOVA utilized for the interactive effects of adaptive intervention used for both groups. Outcomes were the same as those by Schneider et al., 2016, but at $p = 0.10$, a much larger sample size would allow for a reduction in power to detect a larger significance in achievement between the control and treatment groups. Pronounced significance in the study was revealed where boys exposed to the online reading program outscored the boys in the control in all reading categories. Results of the study would need support as a combination of a small sample and use of a weaker power level for data analysis could be viewed as questionable in terms of the findings.

One study that provided support for Schneider et al. (2016), while at the same time calling into question how much delivery time is too much, was a mixed methods research study by Anderson (2014). In this study, specific attention was given to the duration of the treatment,

and evidence suggests that long-term use of a scripted instructional program may actually lose effectiveness over time. The study utilized a sample size of 608 students from an urban school in Midwest, America. Students were divided into four groups and provided four different online scripted programs. A pretest-posttest comparison and an ANOVA for analysis of interactive effects associated with instruction over the span of the exposure were performed. Modest gains in achievement over a one-semester period was observed in all four programs, but gains dropped significantly in every group after another comparison at the end of the second semester. This was especially true for minority students. Exit interviews revealed that students became uninterested with the predictability of the scripted programs as time progressed, with research recommendations for further study that would focus on peak levels of performance within a shorter time span.

Differences in Scripted/Non-Scripted Perceptions

Providing a clear distinction of what is and what is not a scripted-based instructional approach has become harder over recent years. Current trends in scripted instruction goes against traditional uses (Fuller, 2016; Lacina, 2011) that viewed such an approach as rote-teaching. What is considered scripted instruction today, and what is not, is stated by Davis (2012) to be a matter of perception of application for both teachers and their students. Teacher perception today can be seen as dependent on experience, with more experienced professionals referring back to former years. Fuller (2016) stated that in the past, printed text materials were commonly used by more experienced educators as a foundation only as opposed to less-experienced professionals who consider using online scripted programs for their foundation as they attain more experience. This latter perception is a departure from days past when the teacher workforce contained educators that utilized fewer programs, while at the same time

represented more experience. Former uses of scripted instruction were, as one may suggest, a cookie-cutter approach that was unchanging from year to year and had a limited breadth in the type of learners it reached. With a less-experienced majority of educators in today's workforce, Dillenbourg (2002) stated that consideration is given to the integration of a scripted-text approach into online programs while stating the need to determine their effectiveness from the duration of time utilized during instruction. As such, differences in perception must be addressed to resolve when and how scripted instruction should be used.

Time has always been a variable in determining our perceptions on most matters. As time progresses, so does our knowledge and understanding of what impacts the human learning process. The use of scripted instruction is no exception to this variable, with critics labeling it in the past as being limited in focus width, and as time progressed over the last few decades, teachers have viewed its use as being limited to their application in order to maintain creativeness and flexibility (Lacina, 2011). Over time, educator perceptions embraced a need to reach a wider variety of learning levels and styles that could provide flexibility in approach. Differentiated instruction allows for teacher creativity in that delivery flexibility is provided to bring the individual teacher's talent, skills, and experience to the classroom. Moreover, more experienced teachers with a mastery in instructional flexibility prefer non-scripted methods that are less repetitive and non-robotic in approach (Fuller, 2016). However, this creates a paradox in that recently graduated/less-experienced teachers who were taught in universities to provide more flexibility in delivery lacked the necessary experience in the classroom to do just that. Their negative perception towards the use of scripted instruction would have the potential to stunt their growth in an environment where years of quality teaching experience are essential.

One obstacle is how to provide adequate teacher training and professional development that allows for flexibility of delivery with fluidity in order to overcome this lack of experience in the classroom. A research study performed by Mendive, Weiland, Yoshikawa, and Snow (2016) compared two groups of literacy teachers in Chile with two different levels of differentiated instruction professional development that included adaptive intervention as well as varying levels of scripted and non-scripted delivery combinations. A total of 90 classrooms, 1,876 low-income students, and their associated elementary literacy teachers, comprised the sample. The study utilized observations via administrators and videotapes of instructional fidelity, dosage, and adherence to the training. A pretest-posttest comparison on achievement with a MANCOVA utilized for interactions was performed. Findings revealed that those teachers exposed to greater levels of adaptive intervention professional development had greater gains in student achievement over the control group. However, little to no difference was observed in overall gains in achievement between the two groups relating to whole class instruction and varying levels of scripted/non-scripted combinations when compared to the amount of time spent toward professional development for first delivery instruction (Mendive et al., 2016). Findings from the study state that time used to compensate for a lack expertise regarding differentiated whole class delivery was not considered worth the effort when comparing overall student achievement. One might say that these results reinforce the perception that years of classroom time teaching is the greatest resource in developing the use of instructional flexibility.

Situating Early Intervention

Efforts to remediate student learning deficiencies began with the dawn of the space era in the late 1950s. Ramey, C., and Ramey, S. (1998) stated the urgency and need in the United States for improved scholastic achievement in response to the launch of the Sputnik satellite in

October 1957. The shock of being overrun technologically by the Soviet Union made politicians, news media, and the general population question the effectiveness of public education. Patriotic fervor provided an impetus to seek an immediate solution and replace uncomfortable feelings of fear and vulnerability. Being reactive to other nations and their potential to succeed in areas that should always favor a nation built on democracy, tenacity, perseverance, and Christian principles provided an opportunity to explore new directions in instructional delivery (Ramey & Ramey, 1998). Simply stated, the citizens of the United States knew public education could do better and should be at the top of the list in every endeavor.

Feelings of urgency fueled studies that provided suggestions of where to start and with whom. Primary emphasis was placed on children and their families that lived in poverty and lacked the ability to attend school or to provide a home environment conducive to healthy development. As such, early forms of institutionalized (fixed) intervention included psychosocial programs that targeted minorities and the impoverished. Ramey and Ramey (1998) stated judicial decisions regarding desegregation of schools in the mid-1950s ushered in the consideration of educational equity. During this time, attention was directed toward poor white families in rural America. This attention supported the urgency to provide equitable opportunities for a free and appropriate public education, thus taking away some of the attention from a racial spotlight as being the primary trigger for a proactive intervention of at-risk students.

Attention to the post World War II economic boom and lingering components of racial inequality challenged early intervention development. Zigler, Taussig, and Black (1992) stated early attempts in fixed intervention in the 1960s were born out of a lack of faith in public education to address the specific needs of at-risk students. Political and societal concerns

suggested that, over time, at-risk student failure would degrade to a point resulting in juvenile delinquency and crime. Even so, the drive to take a systematic approach to improving education achievement remained strong. Federally-funded programs, such as Title I (Currie, 2001) were created to pay for public school initiatives and proposed to support programs born out of research studies of that day. Subsequently, this provided the foundation from which to choose an instructional model for content delivery. Early fixed intervention programs were created and administered by a variety of research foundations. Zigler et al. (1992) noted that The Perry Preschool Project, 1962-1967, The Syracuse University Family Development Research Program, 1969-1976, The Yale Welfare Research Program, and The Houston Parent-Child Development Center were all designed to provide a holistic approach to early intervention for pre-school. These programs included home visits and direct parental involvement in the program to assist in developing students while away from school and within social, parental, and peer interactions.

Massive funding by the U.S. government required a level of accountability of its usage and a determination of the best route to an effective delivery model. Concerns in the late 1960s about the effectiveness of educational models utilized to educate early elementary children resulted in the largest, most exhaustive evaluation of model approach effectiveness ever conducted. Project Follow Through was designed to compare nine educational models delivered by sponsors with empirical research performed over a 10-year period (Engelmann, 2007; NIFDI, 2016) to determine their effectiveness. NIFDI (2016) stated all efforts to minimize outside influences were performed with equal services provided for these influences (i.e., health services that focused on nutrition and medical needs) to level the playing field when interpreting model effectiveness data. Much controversy over PFT interpretation of findings remains to this day. Engelmann (2007) noted that political bureaucracy shifted emphasis from comparing model

effectiveness to a broader comparison of programs (Title I to PFT), thereby concealing to the general public how each model actually performed head-to-head over the 10-year study.

Interpretation of PFT findings that were driven by federal departments, such as the Department of Health, Education, and Welfare (NIFDI, 2016) continued to support the need for varied models to service students from cultural and socioeconomic backgrounds within the U.S. population. This approach to PFT findings kept alive models that drastically underperformed as compared to others (High Scope, Open Classroom, TEEM, Responsive Education, etc.), which ultimately left the door open for school systems to determine on their own which model would best service their general elementary population (Engelmann, 2007). With confusing or unclear data to support a decision regarding the use of an effective model, opportunities to effectively service an entire school system population required some level of continued intervention for students identified as learning deficient. One model that clearly outperformed all others was direct and explicit instruction (NIFDI, 2016), but these findings weakened the case for providing large sums of money into determining a different path for instructional delivery.

Federally funded efforts to develop early intervention programs were designed to address all components of a child's development, which would ultimately affect academic performance (Martin, 2010). Learning theories studied at the time resulted in a focus on which would best fit the global needs of intervention. This included the use of a constructivist theory approach to learning intended to create an environment of learning through a "socially-constructed reality" (Van Brummelen, 2002, p. 31). Grounded in this theory, focus was placed on components of nutrition, health, and safety, and resources supporting the child from infancy to elementary school age. Other theories studied focused instead on a linear approach to the instructional delivery/student learning activity. Van Brummelen (2002) indicated that Franklin Bobbit's social

efficiency ideology theory provided a linear approach to intervention learning where lack of student success required a curriculum restructure to improve mastery of content. This ideological approach focused on repetition of instruction through various methods that reinforced the delivery of content, thus creating multiple paths of instructional support for content mastery.

Yet another theory wrapped all environmental components (both inside and outside of the classroom) into an engine that supported social reform of the day. Head Start was a form of early intervention that targeted at-risk students before entry into elementary school. Born in 1965 from President Lyndon Johnson's social reformation of the 1960s, Head Start originated as one of many American social support resources, which addressed poverty needs (Currie, 2001). Evaluation of the effectiveness of Head Start in the late 1980s led to similar programs abroad (Martin, 2010), such as the Early Start program in Ireland, which developed after reviewing the success of Head Start based on Bronfenbrenner's Ecological Systems theory of environmental interactions. Curriculum for Early Start closely resembled Head Start by drawing from Piaget and Vygotsky standards of development that were "structured, child-centered, play-oriented, and facilitates self-directed learning experience" (Martin, 2010, p. 258). Miller (2011) stated that, within this construct, it is the social context in which children develop their thinking skills as utilized in a variety of activities and games. The Early Start program operated locally but was funded with federal monies. Therefore, it maintained a broader range of services, such as health and preventive medical care, nutrition, and child care services for additional children of low-income families (Currie, 2001).

Ultimately, evaluations of the effectiveness of federally funded early intervention programs provided critical research data to support future early intervention services for both learning-deficient (deficiencies in learning caused either by instructional delivery or learning

style) and learning-disabled (requiring special education services) students (Rudinoff, 2011).

Ramey and Ramey (1998) stated that reforms in the United States special education law in the late 1970s utilized an institutionalized approach to aid and assist students with disabilities and opened the door for policies and procedures that would also assist the learning-deficient.

Institutionalized public school intervention implementation ramped up with the passage of the Individuals with Disabilities Education Act (IDEA). Subsequent revisions to IDEA included the Individuals with Disabilities Education Act in the late 1970s (Jackson, Frontczak, Webb, Brown, & Romani, 2009) and IDEA under President George W. Bush in 2004 to further institutionalize intervention strategies development.

Response to Intervention

Origins of an intervention method specific to student needs were born from successes of different approaches of early federally-funded programs. Specifically, intervention for literacy in primary school education has seen a surge of research into effective interventions to supplement deficiencies and support instruction. A key component of the approach is the use of process mastery with consideration to methods and application (Denton, 2012). A current research-based intervention tool utilized for achieving mastery for early literacy is Response to Intervention (RTI). Jackson et al. (2009) stated that RTI and its associated principles evolved from a less organized form from pieces of special education instructional support in the 1970s. Early formation of RTI strategies and procedures during this decade also served as a means for special education teachers to better identify student needs and determine appropriate levels of intensity as related to specific levels of student learning disability. Research over subsequent decades provided an opportunity to select components of RTI to best serve learning deficiencies in a

similar fashion. First, however, there was much to overcome in order to create a working process for this new direction.

Developments in the late 1980s for a proactive approach to learning deficiencies emerged as research focused on early-literacy intervention prior to first grade. Findings revealed that students stood a greater chance of avoiding the path of becoming poor readers with the use of prescribed intervention strategies (Fuchs et al., 2003) via classroom delivery, as opposed to waiting until the end of the third grade, when formal referrals for special education were initiated (Gersten et al., 2006). As the need for research into methods effectiveness grew, so did programs designed to address specific gaps in learning, which were driven by the development of evidence-based literacy intervention that demonstrated effectiveness when focusing on letter knowledge and word meaning (Ecalte et al., 2015). Early formation of RTI strategies and procedures during the 1980s and 1990s remained primarily as a consideration for special education teachers to better identify student needs and determine appropriate levels of intensity as related to specific levels of student learning disability (Jackson et al., 2009), as well as to avoid misplacement of students into special education (Fuchs & Fuchs, 2006). Over time, RTI was transformed to prevent unnecessary special education referral consideration and as an ongoing instrument to prevent a misdiagnosis due to lack of consideration of all components that might affect student learning (Fuchs & Fuchs, 2006; Lindeman, 2013).

Part of the RTI transformation came from changes to IDEA law in 2004 that paved the way for a use apart from special education support. According to Jackson et al. (2009), this new approach serviced a broader range of students not meeting expected content mastery via whole group classroom instruction and supported the No Child Left Behind Act enacted to improve student achievement. RTI continues to service and assist in the identification of students with a

specific learning disability (SLD) (Rudinoff, 2011), but also operates under a proactive whole-class process while maintaining its basic components. Fuchs and Fuchs (2006) established the use of two RtI models to serve as both a reactive model for identification of learning disabilities (Standard Treatment Protocol), and a proactive model for addressing individual student learning deficiencies (Problem-Solving RtI). An additional purpose of Problem-Solving RTI (*psRTI*) is to prevent a misdiagnosis of a learning disability due to a lack of consideration of all components that might affect student learning (Fuchs & Fuchs, 2006; Lindeman, 2013).

The *psRTI* framework comprises a multi-tiered approach. Although there are no strict guidelines for a specific number of tiers, three levels are generally the accepted framework for effective intervention and are utilized under the two main models used in public schools (Fuchs & Fuchs, 2006). Lindeman (2013) stated that Tier I addresses “core, or universal outcomes and teaching” designed for research-based whole class instruction, Tier II for “targeted outcomes and teaching/caregiving strategies” in small group instruction, and Tier III for “highly individualized outcomes and teaching/caregiving strategies” on a one-to-one basis between a teacher and a student (p. 17). The intended outcome of utilizing multiple levels, or Tiers, allows for support that is both blended and fluid to meet the instructional needs of all students. Students move between tiers of intensity, based on their development toward mastery of class content, and as an adaptive intervention approach (Pearson et al., 2003), lessens in intensity as the treatment improved the condition or deficiency.

Expansion of RTI came from the controversial federal decision to use high-stakes testing and accountability measures to improve student achievement, as well as concerns from those who felt increased involvement by the federal government overstepped state boundaries. No Child Left Behind led the charge with ultimate expectations of all students achieving the same

level of mastery. Jackson et al. (2009) noted that supporters of RTI agreed that the common principles of *psRTI* could support NCLB with high-quality instruction, a curriculum that is closely aligned with research-based strategies, use of formative and summative assessments for screening and progress monitoring, and the provision of appropriate levels of intervention related to individual student needs. This intervention, in turn, would focus on any deficiencies which are related to the “quality, type, or relevance of teaching efforts that may have been received in general education settings prior to this identification” (Division for Early Childhood of the Council for Exceptional Children et al., 2014, p. 109). With few options on the table, and increased pressure from both stakeholders and politicians, *psRTI* fast-tracked its way into supporting the NCLB initiative. How it would serve core subject instruction would depend on student age and level of content complexity.

Recommendations from administration that supported gains in achievement from use of the *psRTI* processes, strategies, and support for the classroom found an audience in classroom teachers. From this combined effort to support achievement, the next step was to understand how the *psRTI* worked. Fuchs and Fuchs (2006) stated that literacy *psRTI* operates from research-based ongoing and blended strategies that provide academic support for students who fail to achieve expected levels of content mastery, which may be due to a learning deficiency. The *psRTI* process also contains frequent progress monitoring of at-risk students with immediate changes to intervention that promote student academic success (Ohl et al., 2013). Changes to intervention are based on a tiered level method as intensity levels are increased with additional supports of time and resources (Rudinoff, 2011). The key difference between initial instructional use of intervention models of the 1970s, 1980s, and 2000s was the development of two RtI

models that support either learning deficiencies (*psRTI*) or assist in identification of a student learning disability (*stpRTI*) (Fuchs & Fuchs, 2006; Fuchs, Mock, Morgan, & Young, 2003).

Gersten et al. (2006) stated that RTI provides a process in which teachers can judge individual students on whether or not a specialized instruction is necessary in the event they do not respond to standard classroom instruction. How to best deliver RTI required the use of a method that some claimed was buried during Project Follow Through to prevent its use. RTI for early literacy is dependent on direct and explicit intensive instruction delivery of key skills and cognitive strategies for an individual student or a group of learners lacking competency (Baumann, 1999; Fuchs & Fuchs, 2003). Core RTI components include attention to quality instruction, the utilization of a universal screener to determine achievement level, ongoing progress monitoring, and use with fidelity of research-based interventions within the instructional setting (Fuchs & Fuchs, 2006; Jimenez, 2010). Although the intent of several components of RTI is similar to early literacy intervention programs of past decades, primary emphasis for RTI relies on academic achievement related to established curriculum standards and their delivery (Fuchs & Fuchs 2006; Jackson et al., 2009; Norungolo, 2011) and less on the peripheral social components that may or may not influence student achievement (Currie, 2001; Martin, 2010; Samanich, 2003). Current early literacy RTI considers student behavior as a peripheral component and instead focuses on skill and cognitive deficits identified as leading factors for at-risk students (Vellutino, Scanlon, Small, & Fanuele, 2006).

RTI Approach and Effectiveness

Determining an efficient approach to *psRTI* drove its implementation in public schools with time as a factor that affects both administration and effectiveness of any intervention model. Zigler et al. (1992) stated that *psRTI* differs in approach to earlier intervention models in which

former programs were designed to provide support over longer periods of time. In some cases, this occurred over multiple years of infancy, as applications of ecological view and psychosocial approaches were previously used to determine the learning deficits of a child. The urgency to produce results under NCLB required a much quicker process in order to increase the expected level of achievement for all students. Former approaches to intervention required sustained broad support and long-term evaluations of effectiveness (Zigler et al., 1992). Ultimately, the new emphasis on student achievement accountability for public schools established a need for determination of student learning effectiveness via assessments and progress monitoring to support the No Child Left Behind legislation of the 2000s (Snyder, 2008).

Morgan and Young (2003) stated that with new emphasis on school accountability, education leadership worked diligently to assemble *psRTI* into a process that would support achievement expectations. Resulting NCLB legislation established strict timelines for academic student achievement and school improvement. Leaders considered *psRTI* as a malleable model to provide expected results in a shorter period of time and allowed for potential adjustments to instruction and delivery as a student's academic performance either improved or worsened (Fuchs & Fuchs 2006; Fuchs & Fuchs 2003; Fuchs et al., 2003). To support NCLB, educational leadership efforts during the early 2000s focused on a more politically accepted constructivist approach to RTI as the model utilized by the individual student and provided knowledge building within the whole-class environment. This approach was reinforced by a study from the Division of Early Childhood of the Council for Exceptional Children, National Association for the Education of Young Children, and National Head Start Association (2014), which reported that a constructivist approach during RTI was essential. Students interacted on a social level within

their groups to build their knowledge (Van Brummelen, 2002) with teachers serving as facilitators and research-based instructional practices being used.

Fuchs et al. (2003) noted that the purpose of intervention methods and delivery over the last 60 years has been dependent on what was deemed the most important component to learning and needs for learning disability identification. Mechanisms for *psRTI* as a proactive at-risk measure are designed to address the acute needs of learning, which relate to K-12 curriculum and delivery of instructional strategies (Vellutino et al., 2007) with a primary emphasis to address learning deficiencies before they are determined to be a learning disability. Gersten et al. (2006) stated that the use of a highly condensed and intensive form of RTI to improve deficiencies in individual student learning required 20-minute small group lessons for RTI students. However, research exists that calls into question the effectiveness of delivery size (Norungolo, 2011) and the time period duration necessary for early literacy students to catch up to peer levels of learning (Norungolo, 2011; Samanich, 2003; Zigler et al., 1992). School systems counteract these uncertainties via provisions of ongoing progress monitoring and a team review of data to offer a clearer picture of student RTI treatment effectiveness (Stecker, Fuchs, D., & Fuchs, L., 2008).

Since time was also a factor when determining implementation of *psRTI*, a need existed for research that determined how long an intervention should last and how intense it should be before assessing its effectiveness. The Division of Early Childhood of the Council for Exceptional Children, National Association for the Education of Young Children, and National Head Start Association (2014) based their endorsements of *psRTI* on research that focused on determining these variables. VanDerHeyden, Snyder, Broussard, and Ramsdell (2008) performed a study that compared public preschool to Head Start students ($N=35$), with

applications of five weeks of RTI that were multi-tiered and four days per week over the course of the school year. Data were analyzed via *t* test, and findings yielded significant short-term results but tended to taper off over subsequent grade levels at a faster rate than expected. The study also provided evidence that small group Tier II intervention provided stronger growth than one-to-one Tier III intervention, with reinforcement from Jimenez (2010) stating the use of small group second tier (Tier II) support proved to be the most effective tiered intervention approach, in particular when addressing initial sound identification of early literacy in children.

However, Lindeman (2013) argued against the use of extended early intervention exposure with research evidence from a meta-analysis by Barnett, VandDerHeyden, and Witt (2007), which stated a fluid application of RTI should be limited in duration as young children need more flexible learning environments. Barnett et al. (2007) reviewed duration, intensity, instructional environments, and measurement variables in research at that time, with a commonality of complexity that called for additional research on these variables. Fuchs, D., Fuchs, L., and Compton (2012) supported the conclusion that increased time duration of a *ps*RTI treatment was not as effective when implementation of a secondary treatment occurred in the exact same pattern. As an additional finding, Jackson et al. (2009) stated proper application of RTI by certified staff who administer the program promotes collaboration between teacher professionals and is critical to support the changing needs of students with the use of an evaluation of effectiveness via discussion across core subjects.

Assessments for Intervention Identification

Prior to 2000, IQ scores were a primary component of assessment to compare student achievement to determine severe learning deficiencies that would ultimately identify a child with a specific learning disability (SLD). The IQ-achievement discrepancy approach of the 1970s

served to determine student SLD eligibility, but recent research calls into question the validity of this approach (Gresham & Vellutino, 2010). Jimenez (2010) highlighted the need for an alternative assessment to assist in the determination of a learning deficiency/disability, instead of the standard use of comparing IQ to student achievement, which was born from the 2004 reauthorization of the Individuals with Disabilities Education Improvement Act (IDEIA). Research further disputes the use of the IQ-achievement discrepancy approach to determine SLD for early literacy in the areas of oral and written expression (Gresham & Vellutino, 2010). Ultimately, critics of the use of comparing IQ to achievement as an assessment tool argued the assessment measurement does not account for a child's ability to adjust phonological processing measures that come from phoneme awareness. Their reasoning for such an argument hinged on the possibility that an IQ came from a variance of developmental levels within each child (Gersten, Russell & Dimino, 2006).

More recent federal intervention programs and initiatives, such as the Good Start, Grow Smart initiative, and the 21st Century (21C) Program placed emphasis on acquisition of research-based curricula and federal funding that provides learning support for students prior to entering kindergarten (Rudinoff, 2011). The Maternal and Child Health Bureau (MCHB) established a plan in 2002, which took on a less-quantified, but broader function of encouraging states to provide health and emotional support services for early childhood development (The Lewin Group, 2007, as cited in Rudinoff, 2011). Consideration for development of state pre-K programs was in part a result of the impact that these three programs had on the improved success of children transitioning in kindergarten. Short-term data have revealed positive results for early intervention and assessment that support student achievement success into kindergarten

(Rudinoff, 2011). The long-term impact of these programs and initiatives, however, has not yet been conclusive as research into their effectiveness is in its infancy.

Determination of students who qualify as learning deficient must occur before *psRTI* can be implemented. Strand, Cerna, and Skucy (2007) stated early assessments for determination of learning deficiencies and/or disabilities were based on the deductive-psychometric model which allowed for the formation of a construct to reflect associated theories that supported the model. The deductive-psychometric model (Colberg, Nester, & Trattner, 1985) combines accepted intellectual, social, developmental, and behavioral theories into a framework to establish a comprehensive review of extraneous variables that may or may not influence learning. Problem-solving teams became familiar with the model as multiple components during assessment were considered to determine mastery/achievement of content remediated, learning levels, strengths, and weaknesses of each student exposed to *psRTI*. Research indicates that the use of this assessment model requires an extensive amount of data to comprehensively assess a child's capacity to learn, in comparison to whether or not a determined deficiency was due to a learning disability (Strand et al., 2007). As a result, each *psRTI* caseload requires a team of education professionals to evaluate and process the data load and make team-level decisions regarding process effectiveness for each child.

Not everyone is on board with the use of the deductive-psychometric model to drive student assessments as requirements for data collection to support *psRTI* achievement have grown significantly. Fletcher and Vaughn (2009) stated that a meta-analysis of research ultimately refuted the approach of these deductive-psychometric tools to assess individual student learning levels, with Strand et al. (2007) supporting the move away from the model with a study that compared the model's components, such as IQ versus achievement assessment to

that of an alternative inductive-experimental approach to assessment. In the study, 22 classrooms were compared on the effectiveness of the two models over a two-year period. Results indicated that the use of the deductive-psychometric model could not be controlled in a manner that would service the innate ability of each individual student and that determination of progress would require a large number and variety of assessments during its use. As a result, their research found functional relationships between a more simplistic assessment of component skill development and their impact on higher-order skill solving (Strand et al., 2007). The inductive-experimental approach is still in its infancy, but a simpler path of assessment would have the potential to dramatically reduce the need for multiple forms of assessment of student learning deficiencies, and/or disabilities.

Armed with updated research data on the assessments for determining early on learning deficiencies, core components of intervention may eliminate the need, in most cases, for the large amount of time used to identify a child as learning disabled. Efforts to achieve this goal were the impetus for early identification of learning deficiencies (Jimenez, 2010), which drove the need to improve and streamline a proactive assessment process to address issues before a determination of a specific learning disability (SLD) as a consideration. The result was an emergence of awareness to the importance of early assessment of learning deficiencies through concerted efforts to better identify students with learning disabilities (Gersten et al., 2006). The use of improved assessment tools would reduce the number of students who in the past might have been identified as SLD (Gersten et al., 2006; Jimenez, 2010).

Literacy and At-Risk Children

Based on determination of a learning disability, Ramey and Ramey (1998) observed that at-risk children have characteristics that inherently impede cognitive and behavioral development

within the boundaries of a general developmental framework. Suggestions for how to pay attention to lack of development, while providing assistance in the form of an intervention, can be traced back over the last several decades. A progression to higher levels of technology and industry in society created complex social problems requiring reform, so a need grew for understanding developmental influences and when to begin remediation (Guttek, 2011). Ramey and Ramey (1998) stated modern interpretations of individuals considered at-risk grew from post-World War II events that included *Brown v. Board of Education*, the space race, and social reform policy. Awareness of this issue grew from the publication of news articles, such as Life's article on the plight of Appalachian families in West Virginia. An increasing number of southeastern states served to fortify this public perception as situations were similar. Growing concern created a need for reforms to address deficiencies in literacy among families of poverty. Thus, from this need for reform, early intervention programs targeted toward literacy remediation began to develop.

Poverty and race-related issues became central to literacy studies on at-risk identification, which were common among minority students. Martin (2010) stated multiple conditions of poverty can influence the developmental potential of a child, which includes under-achievement, delinquency, and lack of emotional stability that tend to escalate as the child grows older. Additionally, Ramey and Ramey (1998) included lack of parental support in a poverty household as a factor when considering the need for intervention within the family. Morgan, Farkas, Hillemeier, and Maczuga (2012) identified the existence of an under-representation of minority children needing literacy intervention within impoverished families in comparison to an over-representation of the same group referred to special education. Mitigating factors, such as socioeconomic, linguistic, and cultural obstacles are difficult to overcome due to a lack of

preventative measures not afforded to those living in poverty. This disproportionality may result, in some cases, in a misdiagnosis of these children being disabled and, therefore, require special education services (Ramey et al., 1998).

Another study focused more attention on experiences during development and analyzed key components that affected the literacy learning process in minority children. Maher and Bellen (2014) stated that one key component that a student may encounter is the interaction with transitions. Their study spanned a two-and-a-half-year period that included observations of interactions between pre-school literacy teachers and four-year old students. Parent interviews on family experiences provided an additional reference for when key developmental transitions occurred. Findings suggest the complexity of these transitions, such as early childhood to first year formal education, varies by degree as cultural experiences dictate when and how students are ready to receive literacy learning. The result of these culturally influenced transitions means that minority students may face complicated adjustments when exposed to a Western education learning culture in public schools. The more successful the transition (with a support structure consisting of quality teaching and training geared toward dealing with multi-cultural differences), the more likely a minority child will establish a sense of value supported by their family, which is critical for future student learning success (Maher et al., 2014).

A studies review by Ramey and Ramey (1998) focused more on the urgency of literacy intervention that targeted groups for remediation, which generated a summary about the effectiveness of early intervention on poverty and minority students to determine potential benefits from a variety of approaches. These reviews included studies based on race, poverty, and students with learning disabilities; the results of which suggested that immediate intervention is critical to keep minority students from falling significantly behind their peers. From these

findings, a “Zone of Modifiability” (a critical timeframe of learning transition) exists which, in the past, has been misdiagnosed as a threshold too large to rectify and, therefore, constituted special education services (Ramey & Ramey, 1998, p. 112). The review concludes with recommendations for change toward prolonged intervention strategies rooted in developmental contextualism, with the use of six psychosocial priming mechanisms that provide a multi-faceted academic and social approach to close the gap in achievement and creates mechanisms for long-term literacy development (Bryant, 2014; Ramey & Ramey, 1998).

Additional research supports the urgency for early intervention prior to grade-level instruction. Research findings by Morgan et al. (2012) conclude that at-risk students who have delays in learning can benefit from high-quality intervention before they enter the public-school setting. VanDerHeyden et al. (2008) focused on the importance of literacy as a content area in the pre-kindergarten curriculum, which resulted in the establishment of pre-school standards in addition to other foundational needs. With a multitude of studies on when to start literacy intervention for early childhood students, identification of developmental deficits/skills has become a component to promote federal and state pre-K initiatives. However, a lack of consistency in approach nationwide to early literacy standard, and related content has hindered an effective administration of intervention to pre-K students (VanDerHeyden et al., 2008). Simmons et al. (2008) contended that without a consistency to considerations such demographics, socioeconomics, and supplemental instruction, students will have a “50-50” chance of becoming an average reader by first grade.

Emergent Literacy Skills

Determining the importance of student literacy and when to best begin addressing its development has created a shift of consideration prior to kindergarten. Research-based evidence

in Europe over recent decades has pointed to the importance of reading comprehension and word recognition as the foundation for emergent literacy skills (Ecalles et al., 2015). Cabell, Justice, Konold, and McGinty (2011) expanded the focus by European countries on emergent literacy skills, stating that U.S. interests also consider its importance to determine future student academic achievement. Their attention to emergent literacy, like in European countries, has come from concerns about the increasing population of low socioeconomic families. Despite efforts on both sides of the Atlantic Ocean to address emergent literacy skills development, questions remain regarding how to best determine the level of functioning as children enter kindergarten, as well as how to utilize many of the newer assessment tools that can more accurately predict success in future reading-related literacy skills.

Reading comprehension as a foundational component of emergent literacy skills includes a combination of symbol recognition and meaning. Ecalles et al. (2015) have made a case with their research findings for the decoding of words via symbol recognition by consideration of word identification, which is responsible for translating print into language during a child's preschool development. Additional research supports these findings by confirming that a need exists for determining specific variables that enhance the development of emergent literacy skills in each student when considering learning influences outside educational establishments (Cabell et al., 2011). Both studies concur that determination of component weaknesses involving word knowledge, phonemic awareness, and word meaning requires the use of effective assessments that can both quantify and qualify emergent literacy levels. As a result, institutions and publishers of educational curricula require timely feedback on instruction effectiveness tailored to individual emergent literacy development (Cabell et al., 2011; Ecalles et al., 2015).

Striking a balance on the right combination of evaluation tools that assist in determining emergent literacy achievement depends on the research that educators use as a foundation. According to Farrington (2015), emergent literacy skills components require formative and summative assessments on the directionality of print, letter sound knowledge, naming knowledge, manipulation of sounds, and oral language vocabulary and syntax. The generalization of student learning deficiencies due to a lack of vocabulary and phonemic awareness has recently given way to research that instead focuses on the specific emergent literacy skill nuances of the individual student. However, Cabell et al. (2011) stated that not all students who identify as low socioeconomic status lack generalized emergent literacy skills and therefore an assessment specific to their learning deficiencies is needed. Their conclusion is that the use of an effective screener assessment that is evidence-based to determine emergent literacy skills deficiencies for students entering the kindergarten grade level is essential in determining the delivery of instruction to individual learners (Cabell et al., 2011; Farrington, 2015).

Building on the momentum of assessment usage to evaluate emergent literacy learning levels, tests to evaluate and predict growth arose to fill the need. Two of these assessment tools utilized as an initial screener for early literacy kindergarten student achievement/identification of learning deficiencies are the *Dynamic Indicator of Early Literacy Skills* (DIBELS) tool with a three-component combination use reliability of $\alpha = .88$ (Good & Kaminski, 2014) and the *Get Ready to Read* (GRTR) tool, which also has a reliability of $\alpha = .88$ (Farrington, 2015). One concern of the alternate use of a combined screening method that contains interrogation, self-explanation, and supplied practice is the generalizability of student strengths and weaknesses instead of the identification of specific learning needs related to socioeconomic, gender, cultural, and English Language Learner status (Dunlosky, Rawson, Marsh, Nathan, & Willingham, 2013).

Ultimately, school districts are faced with the task of determining which early literacy skills are most important to support learning deficiencies in students entering their formal education. Identification of students with a learning disability typically occurs during the third-grade year. As a result, students with a learning deficiency prior to the third grade have been in jeopardy of being classified as learning disabled due to a lack of intervention support in basic early literacy skills (VanDerHeyden et al., 2008). Recent trends have been to take a proactive approach toward basic early literacy skills research-based intervention models, which includes the use of pre-kindergarten opportunities to address emergent literacy concerns. Research findings support a strategic approach to word knowledge and phonemic awareness that reveals a 15% improvement among students lacking adequate emergent literacy skills as compared to their classroom counterparts (Ecalte et al., 2015). With research-based tools and adequate instructional resources available, educators have the opportunity to improve a child's ability to establish a strong early literacy foundation.

Early Literacy Universal Access

Universal access in education describes a concept in which all children in the United States receive equal access to education, regardless of age, race, gender, or intellectual ability. The concept today faces many challenges to fulfill its purpose as an increasingly diverse culture exists. Greenwood et al. (2011) stated that having a lack of effective universal access is one of the greatest challenges faced today when considering equity and consistency of any intervention program. Policies that are literacy definitive and consistent in implementation are vague, as the power to make decisions regarding equal access lies with individual state education law. Rooted in the 10th amendment to the United States Constitution, states are given authority to administer and regulate education within their own boundaries (Stefkovich, 2013). While this U.S.

constitutional amendment provides citizens within each state the ability to determine what best serves their educational needs, this could be a critical issue and create ambiguity to the timeliness and appropriateness of mandated education (Kessinger, 2007). When it is acceptable for a child to receive early literacy education in public schools depends on state and school system allowances, so meeting universal access requirements can be viewed as one that lies in the eye of the beholder.

Research by Samuels (2014) revealed that only 15 states require kindergarten attendance while all but six of the remaining states offer kindergarten, but do not require it as part of their formal education. This situation is in direct opposition to the recently adopted Common Core Readiness Standards (CCRS) by most states, which identifies kindergarten as a grade level with a research-based curriculum (Alabama College and Career Ready, 2014). Most early intervention programs are identified as being pre-school centered in that these programs service students prior to kindergarten age, yet holes exist in providing the same early intervention to children old enough to attend a non-mandatory kindergarten level. Samuels (2014) supported this conclusion by stating that a void exists between early intervention programs and the authentic administration of formal public education of first grade in the United States. Given this statement, a willingness to provide intervention at the kindergarten level is somewhat dependent upon the level of commitment that states place on mandating a kindergarten program (Samuels, 2013).

Some states that require kindergarten have utilized CCRS as a research-based resource demanding formative and summative assessment with progress monitoring to ensure that effective mastery of content standards has taken place (ALEX, 2014). Since kindergarten is voluntary in most states, educators can make recommendations regarding the appropriateness of

student advancement to first grade but cannot mandate the retention of a child due to delayed learning deficiencies. Kessinger (2007) stated that universal access is relegated to an interpretation of appropriateness relating to each state's official start to formal education that results in an absence of requirements for intervention, as attendance in kindergarten can be viewed as a social rather than academic program. Administration of universal access to intervention at the kindergarten level might be viewed as a waste of resources and time while the power to determine student mastery and success lies in the hands of parents because kindergarten is voluntary in most states. Samuels (2014) added to findings by Kessinger (2007) by stating that some states have gone out on their own to expand literacy into kindergarten as the need to support new CCRS standards has dictated a change in approach.

Federal support for pre-kindergarten learning has grown in interest in recent years while appearing to fade attention toward kindergarten formal education. This could be considered one reason that all states do not mandate attendance, which creates a disparity in the use of existing intervention programs at the state level. Greenwood et al. (2011) noted that universal access to intervention has become a piecemeal effort between federal and state governments to assist at-risk children living in poverty. A primary message by school systems across the United States is to identify and support students who might be classified as having a learning disability later down the road. However, (Greenwood et al., 2011) states many of the pre-K programs established locally still have not broken free from the exclusive social development of the child and do not embrace components of literacy skills and academic rigor. As a result, state efforts can have limited reach and frequently funding fails to provide the ability to service all children living in poverty.

Some states have found a way to address this by taking advantage of funding opportunities to support at-risk students with early intervention by creating state-funded voluntary pre-K programs (Clifford, Bryant, & Early, 2005). School systems in this case have scrambled to acquire a portion of funding to support pre-K programs within their district, but these districts can only service a limited number of children via lottery or through direct placement. In some instances, lack of funding creates a mixture of poverty students who are in critical need of intervention with children of teaching professionals who are committed to providing their own child with every developmental opportunity possible. Clifford et al. (2005) also stated that challenges to reliability and consistency in the provision of high-quality standards for pre-K instruction are common as many teachers lack the necessary highly-qualified training. Staff training requires funding, and when choices have to be made due to a lack thereof pre-K can become one of the first casualties in budget cut considerations.

The Alabama Department of Early Childhood Education (2020) has specific guidelines for learning in-place that meets both state and federal requirements for funding and universal access. This includes the use of screening assessments, both formative and summative for progress monitoring, and psychosocial development assessments, which are research-based and intended to provide long-term benefits for all children. The purposes stated in their pre-K program are to reduce the odds of any child repeating a later grade, score higher on achievement tests, increase the chance of graduation, and potentially obtain jobs that pay higher salaries later in life (DCA, 2014). Students attend the program daily for eight hours, and teachers are required to meet all criteria for instruction related to the development of children in their care. State education officials perform an education audit annually toward the end of a school year to ensure that all components are addressed within the timeframe of the program year. Students who have

the opportunity to experience the program continue to grow in numbers each year as state officials deem it vital to the future success of the next generation of learners.

Early Literacy RTI

State officials continue to debate about when children should start their formal education, with a growing trend toward use of pre-kindergarten programs and mandatory kindergarten. This gap in mandatory starting grades has the potential to create early intervention at multiple age levels, depending on each state's required formal education start. Simmons et al. (2008) stated that consideration of a universal support method is needed to service students who have not had access to a pre-kindergarten program and could potentially be at-risk by the first grade. The authors further noted that K-2 grade has come to the forefront as an instructional time when future literacy skills can be predicted. O'Connor, Bocian, Beach, Sanchez, and Flynn (2013) further suggested that it also provides the enhanced ability to identify learning-disabled students within the cohort early on. Vellutino et al. (2007) stated that children who entered kindergarten prior to initiation of an intervention program did so lacking essential literacy skills. Expansion of this statement by Duncan and Sojourner (2013) concluded that students from low socioeconomic status scored 1.3 standard deviations lower than other students when considering kindergarten entry-level literacy, including lower in social behavior indicators. Given the availability of a research-based curriculum and assessment resources for progress monitoring, the possibility of mandatory kindergarten as a grade level to allow for an effective articulated intervention program might be considered.

Research supporting the initiation of kindergarten through second grade intervention has revealed promising results. Findings by Simmons et al. (2008) via a mixed methods longitudinal case study on literacy intervention ($N=464$) revealed performance levels for the experimental

group that received supplemental intervention exceeded the 50th percentile in reading, with the same group beginning the school year in the 30th percentile. The four-year case study also revealed that a majority of the same group remained out of the at-risk category through third grade. Additional support for kindergarten literacy intervention came from a study by Vellutino et al. (2006) who found that children provided with small group RTI over the course of the kindergarten year, twice per week, and outside of the classroom by a separate certified teacher for 30 minutes each session, were able to sustain higher achievement as compared to the general cohort throughout subsequent grade levels.

Other research, however, suggests that RTI for kindergarten through second grade students would be better utilized to predict future learning disabilities in literacy and provides only marginal success for remediation of early literacy learning deficiencies. For example, O'Connor et al. (2013) conducted longitudinal research on a kindergarten through fourth grade at-risk cohort ($N=377$); findings revealed little to no significance in the difference between at-risk students with intervention and the general population as students progressed through grade levels. Instead, their research provided both classroom teachers and special education staff additional tools to predict future learning disabilities by the third grade. In another study, VanDerHeyden et al. (2008) collected data from multiple progress monitoring sources in their research on RTI effectiveness and found a pattern of diminishing effects over the longitudinal study. In both studies, the use of RTI as a gated method between whole group, small group, and/or one-to-one intensive instruction for early grade intervention was called into question with VanDerHeyden et al. (2008) recommending a simpler and less expensive form of intervention.

The search for a simpler and less expensive form of kindergarten literacy intervention actually began in a meta-analysis by Vellutino et al. (2007) that evaluated the effectiveness of

project-based intervention programs that included kindergarten students. The various intervention models, which included RTI, added activities designed to promote methods of collaborative learning that would result in student confidence via motivation to the research. These additional activities required enhanced progress monitoring resources, including the inclusion of teacher training and supervisory meetings every six weeks. The project-based intervention model study yielded results that were not as significant as the initial research but still proved to be effective in improving at-risk student literacy skills that were initially determined to be reading deficiencies at the beginning of the kindergarten school year. Even so, the researchers suggested that in most cases kindergarten students would overcome any learning deficiencies through intellectual development and natural maturity. As original consideration of RTI was to be used as a tool to identify a learning disability, a case could be made that the researchers' involvement in additional studies regarding RTI helped to change their perception of its effectiveness at the kindergarten level for learning deficiencies.

Early Literacy Intervention Assessments

For most children, kindergarten is the first formal introduction to a regimented and systematic approach to instruction in the public-school system. Increasingly, kindergarten has also become a primary grade-level consideration for intervention and assessment to develop literacy skills for future grade levels. As a result, the need for effective assessments that progress monitor for achievement is crucial to both student service and determination of adequate instructional delivery. Vadasy and Sanders (2012) performed a follow-up study on the effects of kindergarten intervention assessments for at-risk students ($N=106$). The kindergarten phonics-based intervention sample was divided into two halves that contained English language and non-English language minority students. Findings indicated that assessment effectiveness had a

direct impact on the determination of appropriate literacy intervention levels in kindergarten that sustained into subsequent first and second grade years. In particular, data indicated that students of low socioeconomic and English Language Learner subgroups had achieved significant growth when compared to the general classroom cohort.

Critical to a determination of student intervention need and intensity level is the use of screener tools for initial deficits and progress monitoring tools for the effectiveness of the program (Dufrene et al., 2010). Snyder, Wixson, Talapatra, and Roach (2014) stated that universal screeners predict those students who will not respond to high-quality instruction in a whole class setting, which at the kindergarten level, achievement can have a significant impact on both individual learning deficiencies and long-term success academically (Dickinson & Porche, 2011). Public school systems increasingly depend on combinations of screener components to provide an assessment of early childhood ability at the kindergarten level. Authentic assessments specifically linked to kindergarten-age appropriate curriculum provide both baseline achievement data and progress monitoring to evaluate the potential and level of intervention intensity that might be necessary (Dickinson & Porche, 2011). Components for authentic assessment as an RTI screener are widely available for consideration. The use of narrative production, emergent literacy, receptive vocabulary, reading comprehension, and word recognition (Dickinson & Porche, 2011) offer a research-based pool of battery components that are valid and reliable tools for creating an authentic assessment to determine the achievement level of kindergarten students.

Among the findings of authentic assessments utilized to determine the achievement level in kindergarten through second grade students, the most promising results have come from the use of narrative production, emergent literacy, and receptive vocabulary (Dickinson & Porche,

2011). Good and Kaminski (2015) added to these findings by stating an additional reliability of effectiveness develops in the use of combinations of assessment components via a variety of testing batteries for literacy, with Dickinson and Porche (2011) indicating that accuracy of assessment using these tools provides a glimpse at future academic success up to the fourth grade. Additional benefits of using authentic assessment in combinations is that these components provide connections to considerations related to early child development. These benefits are in the form of extraneous variables related to family poverty, maternal education, gender, student age, teacher experience, and environment/location of learning (Dickinson & Porche, 2011). In both studies, there is agreement on the impact that outside variables have on early student development and the importance of utilizing assessment tools to identify their potential effect on learning.

The use of multiple forms of assessment to determine literacy achievement requires shared input from multiple resources to progress monitor student achievement, and is a crucial component to determine the effectiveness of an intervention. Paris and Hoffman (2004) reinforced this comment by stating the ability to progress monitor comes from many resources: Teachers, Administrators, Parents, Summative Tests, and Formative assessment strategies. Another resource quickly gaining traction is the use of stakeholder involvement to assess progress. This has also become an increasing trend in decision-making for global school and student needs. Cashmore, Bond, and Cobb (2007) referred to this decision-making phenomenon as an “environmental assessment” (p. 1233). Findings concluded that stakeholder involvement in the assessment process was promising in contributing to “sustainable development and modern principles of environmental governance” (p.1239).

There are limitations to the inclusion of stakeholders, however, as resources are brought to bear to progress monitor for achievement is dependent on factors related to a timeline for implementation, location, and environment of the instructional setting. In some cases, including stakeholders as a resource for progress monitoring is restricted to time and availability to participate. Rudinoff (2011) stated that usage is dependent on a timeline of implementation and local factors (job responsibility, family commitment, etc.) that determine successful incorporation of parents. School systems that have a fully integrated stakeholder network do so as local expectations exist that place importance on community and parental involvement to assist in the determination of progress at the school and/or student level. This can be considered a disparity in progress monitoring approach between school systems as some may have to depend less on parental involvement due to uncontrollable factors that affect stakeholder involvement.

Use of a variety progress monitoring tools can provide teachers with powerful data to drive what intervention method(s) are used and to what degree they are utilized. This can certainly be a consideration for kindergarten students. Simmons et al. (2008) stated that for most learning-deficient students, literacy achievement can be obtained with an intense research-based kindergarten grade level curriculum containing intervention strategies and progress monitoring via formative assessment utilization. In their study of at-risk literacy students ($N=41$), findings indicate kindergarten literacy progress monitoring assisted in determining the effectiveness of the use of an intervention program occurred in the form of letter identification and phonological awareness tests used as a screener initially and then administered periodically over the course of the school year. A comparison was then performed at the end of the year between the intervention group and control group who received no intervention. This is positive news for

school systems addressing children identified at-risk at the beginning of kindergarten as results indicate the possibility of improvement in literacy skills by the end of the year that assist in preparing for first grade literacy content.

One final consideration of kindergarten authentic assessment for progress monitoring is the application of formative assessments to check for understanding. These assessments do not require a score but instead provide instant feedback to teachers for student mastery and understanding of content (Paris & Hoffman, 2004). They are quick and easy to administer but are mainly utilized for whole class settings as teachers check for adjustment of instruction. Formative assessments can be both formal (direct response) and informal (teacher observation of performance). The use of formative assessments at the kindergarten level is not without its critics, however, as MacDonald (2007) performed a study on the effects of formative assessment used as a primary component of progress monitoring by studying five kindergarten classrooms ($N=114$). Findings demonstrated that while deemed useful and beneficial for determining student achievement, the process by which teachers shared formative assessment results and interacted with stakeholders often put a strain on time needed for effective analysis of assessment, student achievement documentation, and parent relationship building. As formative assessments give ongoing and immediate feedback within a classroom environment, a case can be made that its effectiveness depends on a combination of variables that differ in influence from class to class and school system to school system.

Summary

A review of literature revealed a reoccurring usage of the theoretical framework of constructivism, or social constructivism, and how this intersects with the use of a teacher-modified/differentiated intervention method. Using a combination of social theory and

application of content repetition and process skills mastery constructs that specifically target all student learning styles, as well as to create effective RTI strategies, holds positive implications for educational reform (Van Brummelen, 2002). The development of student-centered learning and associated intervention has resulted in multiple methods used by federal agencies, sponsored social programs, and state education policymakers. Revisions to accountability for student achievement in education over the past 15 years have created the need for evidence-based curriculum programs that are proactive. As noted, the most widely accepted evidence-based intervention method to support this need is RTI. However, a need exists in determining the effectiveness of a curriculum approach as it relates to the current forms of assessment adopted by school districts to determine achievement. These considerations, along with constructivist approaches, could result in determining the best instructional implementation route for student achievement success.

Determination of a modern method of instruction that can effectively improve multiple levels of achievement across a range of student subgroups is still unknown. Use of programs over the decades has reinvented direct and explicit instruction, differentiated instruction, the use of available resources, and the use of fixed and/or adaptive intervention to support first delivery. With changes driven by social and political demands, one might wonder if a particular demographic subgroup benefits more from one specific instructional method than another. Chapter three investigates this possibility by comparing two methods used in the classroom today: (a) direct and explicit instruction via a scripted literacy program, and (b) differentiated instruction via the use of resources determined by individual teachers that include literacy publications, response to intervention, research and non-research-based school system-supplied resources, and research and non-research-based teacher-supplied resources.

CHAPTER THREE: RESEARCH METHODS

Overview

The purpose of this ex-post facto quantitative casual-comparative study was to explore whether the use of a teacher-modified literacy curriculum implementation was more effective on student achievement with first-grade students than that of a rote-literacy curriculum approach. An investigation of this comparison required a quantitative study approach (Creswell, 2014). By relying on the quantitative research approach, the data were recorded and quantified, and subsequently, analyzed using SPSS software (Green & Salkind, 2011).

Consistent with the purpose, the utilization of relevant research questions and null hypotheses guided this study, in alignment with a quantitative method suitable for use (Creswell, 2014). In comparison with the more subjective qualitative research methods, which presuppose a more intrusive approach from the researcher, as Bernard (2012) pointed out, quantitative research is deemed to be at the core of scientific research, as it relies on deductive reasoning (exemplified through hypotheses), which eliminates bias and allows increased focus on the hypothesis to be tested. Creswell (2014) argued for testing “objective theories by examining the relationship between variables. In turn, these variables can be typically measured on instruments, so that numbered data can be analyzed using statistical procedures” (p. 4). The quantitative method allowed for gathering quantifiable data that could later be converted into statistics and, hence, extrapolated to an even broader population to increase understanding of the phenomena. The following chapter explains the research method and design; provides an overview of the study population and sample; reviews the materials/instrument used; and describes the data collection, processing, and analysis procedures.

Design

The research design for this study was a quantitative, casual-comparative design of research (Creswell, 2014) to measure the effect of a non-research-based/teacher-modified curriculum approach between subgroups (Gall et al., 2007) on student achievement scores. The design was intended to determine if the effect of a modified use of literacy publication between subgroups (Gall et al., 2007) on all student achievement scores was more effective than that of a research-based/rote-curriculum implementation approach. Participants for the study were identified using convenience sampling. The study compared achievement scores of all students with a specific focus of on-target, or at-risk student identification by Dynamic Indicators of Basic Early Literacy Skills (DIBELS) nonsense word/words read correctly fluency.

The assessment scored male and female populations, as well as all black minority vs. white, student subgroups. The causal-comparative independent variables (IVs) were the teacher-modified literacy curriculum approach and a rote-curriculum approach utilized between two school systems in Alabama. The study consisted of a control group of first-grade students in a coastal Alabama school district (pseudonym Apple) exposed to the rote-teaching literacy curriculum approach (i.e., one that is not “cherry-picked” but implemented with fidelity). The treatment group consisted of first-grade students in a northwest Alabama school district (pseudonym Bravo) who were exposed to the systematic use of the teacher-modified (i.e., “cherry-picked”) literacy curriculum approach (i.e., IV). The study took place over the course of a school year (i.e., 36 weeks).

The dependent variable was student achievement as measured by the DIBELS fluency scores for initial screening and final assessments of all student progress as determined by DIBELS benchmark scores (Good & Kaminski, 2014). Achievement categories were classified

at each assessment as being on-track, strategic, or intensive for each grade level subtest, based on performance range characteristic to the grade level and time of year the benchmark test was administered (Good & Kaminski, 2014).

Research Questions

The following research questions formed the basis for the investigation:

RQ1: Is there a difference in overall first-grade DIBELS achievement results when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

RQ2: Are there differences between first-grade gender subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

RQ3: Are there differences between first-grade race subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

RQ4: Is there a difference in feelings of teacher efficacy when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

Null Hypotheses

The following null hypotheses corresponding to each research question above are as follows:

H₀₁: There is no significant difference in overall first-grade DIBELS achievement results when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation

Ho2: There is no significant difference between first-grade gender subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation.

Ho3: There is no significant difference between first-grade race subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation.

Ho4: There is no significant difference in feelings of teacher efficacy when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation.

Participants and Setting

The study consisted of first grade ($n = 107$) from one elementary school in a suburban school system in north Alabama, and of first grade from one elementary school in a school system in suburban south Alabama ($n = 56$). The demographic average percentages of the 2017-2018 first-grade school population in Apple was 74% white, 18% black, 7% Hispanic, 1% multi-race, and 74% poverty status (INOW, 2017). Demographic average percentages of the 2017-2018 first-grade population in Bravo was 48% white, 29% black, and 23% Hispanic (Bravo multi-race is classified as an ethnicity under Hispanic) and 66% poverty status (INOW, 2017). The study consisted of two groups (rote literacy curriculum implementation that is from a scripted manual and a teacher-modified curriculum that allows teachers to decide what is appropriate).

Sampling

Convenience samples of the scores from an initial DIBELS screener assessment (Good & Kaminski, 2014) determined the literacy skill level of each student. Pre-test results that identify

achievement levels (identified by Table 12 DIBELS benchmark scores) were categorized into subgroup nominal variables based on gender and race. Checks for fidelity of implementation in the treatment group were in the form of ongoing professional development, instructional coach support, data meetings, and administrative walk-throughs. Reading coaches in each school administered the DIBELS screener and benchmark assessments before and after the treatment, respectively.

Groups

The demographic breakdown of the rote literacy curriculum control group Apple School District was 74% white and 18% black. The rote literacy curriculum control group consisted of 66% males and 42% females. The demographic breakdown of the teacher-modified literacy curriculum treatment group Bravo School District was 48% white and 29% black. The teacher-modified literacy curriculum treatment group consisted of 34% males and 53% females (see Table 1).

Tests were performed to determine if any class sample subgroups were outside of the range of three standard deviations from the mean. Except for Apple white subgroups .1 and 2.4, all other subgroups in each school were within three standard deviations from the mean and were therefore found to be acceptable in class distribution (see Tables 2 and 3). Apple 1 was below the lowest third standard deviation (nine students compared to minimum 10.139), while Apple 2.4 was above the highest third standard deviation (19 students compared to maximum 18.921). A combined schools frequency distribution analysis was performed on male and black student samples to ensure equitable distribution within the grade level (see Table 4).

Table 2

Apple First-Grade Descriptive Statistics

Subgroups	N	Minimum	Maximum	Mean	Std. Deviation
Male	26	32	50	45.50	4.082
Female	30	26	50	44.38	6.155
Black	16	22	50	44.75	6.856
White	27	9	50	41.81	10.130
Valid N	99				

Table 3

Bravo First-Grade Descriptive Statistics

Subgroups	N	Minimum	Maximum	Mean	Std. Deviation
Male	26	8	50	28.62	12.323
Female	29	9	48	30.07	13.120
Black	16	9	50	26.25	13.077
White	27	14	50	32.67	11.351
Valid N	99				

Table 4

Apple/Bravo 1st Frequency Distribution of Black and Male Students

Black				Male			
Class	Range	Frequency	Rel. Freq.	Class	Range	Frequency	Rel. Freq.
4	3.95-4.35	6	.66	7	6.95-8.45	3	.33
4.4*	4.35-4.75	0	0	8.5*	8.45-9.95	0	0
4.8	4.75-5.15	2	.21	10	9.95-11.45	1	.11
5.2*	5.15-5.55	0	0	11.5	11.45-12.95	1	.11
5.6	5.55-6.05	1	.11	13	12.95-13.05	4	.44

Note: * = 0 indicates that no sample distribution exists within specified range

Results for the frequency distribution of black students in indicated a large percentage of lower relative frequencies in first grade. Gaps in frequency also existed in first grade between the lowest and highest classifications. Results for the frequency distribution of male students in first grade indicated an overall even frequency distribution, with the exception of male students.

The grade level had a larger frequency distribution in the lowest and highest classifications that included a gap in the 2nd classification. Overall, this was not an extreme disparity in distribution as only five classifications were utilized.

Classroom teachers received training via professional development seminars, district-wide sessions, and local school meetings that focused on using *psRTI* strategies to provide remediation for the first-grade levels. Specific training allowed them to support all levels of intervention. Reading coaches in each school were proposed for the administration of the DIBELS assessment at the end of the experiment (see Appendices B through D). Reading coaches administered the DIBELS assessment at the end of the experiment to reduce bias within the study (see Appendices E through I). The reading coaches provided a more objective approach to both deliveries of the experiment measurement tool and accuracy of the assessment results (Alabama Reading Initiative, 2014).

Instrumentation

The instrumentation used to measure the effectiveness of rote-curriculum literacy and teacher-modified literacy curriculum implementations was the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessment (Good & Kaminski, 2014). The instrument has an overall reliability Cronbach alpha score of .88. When combinations of the DIBELS subtests are aggregated together, reliability exceeds .88 and is in the low .90s (Good et al., 2004). The DIBELS subtest used in this study to assess student achievement (see Appendix A) classified any child below 60% proficiency as being at-risk, and any student scoring below 40% proficiency as being intensive. Composite scoring ranged from 26 (low) to 122 (high) (Good & Kaminski, 2014). Scoring for the DIBELS test battery was as follows: Nonsense Word Fluency (NWF) –

Maximum score is 144 points. Time length is one minute (a low score below 17 is considered at-risk, based on each benchmark).

The end-of-year composite score (26 - 238) was used to measure achievement at the end of the 36-week period. A score below this number was classified as at-risk. Students scoring at 85 or below were classified as requiring more concentrated intervention and were unlikely to achieve subsequent goals for the second-grade level without Tier III, one-to-one support on a regular basis. Appendix A provides a list of all assessment battery score ranges for each benchmark stage.

The administration of the DIBELS test to determine student progress/achievement at the end of the treatment was as follows: (a) Reading coach will explain the process for the test to the student with the provision of one practice attempt not counted in the final score of the test, and (b) The reading coach will set a timer for one minute with the student attempting as many letter sounds/blending nonsense words as possible within the timeframe. The reading coach then recorded the total number of correct-letter sounds accomplished, as well as the total words recorded completely and correctly within the one-minute timeframe (this will serve as a student achievement score). Based on the student score, they will then be identified as being on-track (traditional setting), strategic (intensive setting), or more concentrated (teacher/student instruction). While both strategic and more concentrated categories fall inside "at-risk" classification, only on-track and strategic levels were used in this study (Good & Kaminski, 2014).

Procedures

The researcher met with the administrators of the schools involved in the study, along with the curriculum instructor and reading coordinator for both elementary schools in each

school district. In the meeting, the researcher presented the framework of the experiment. The current curriculum provided must fit the purpose of the experiment to compare the effectiveness of the two forms of curriculum approach. The DIBELS measurement tool was used to promote a more robust instrument of measurement as the student intervention portion of the experiment ended. All parties in the experiment agreed to the specific terms of the experimental procedure. Once an agreement of the experimental procedure was reached between the researcher, respective school administrators, the school system curriculum coordinator, and school system reading coordinator, and was approved by the school system superintendent, the researcher then submitted the research proposal to the dissertation committee. Upon approval, the researcher submitted the research proposal to the Institutional Review Board for approval. After all approvals were given thereafter, the experiment began.

Students were identified as at-risk via DIBELS initial screener test used by the school district. Administration of the standardized test was performed by the reading coach, English Language Learner teacher, Title I teacher, and/or Special Education teacher. Identification of at-risk classification came from the DIBELS, Sixth Edition, Benchmark Goals chart (see Appendix A) used by the test administrators. The group performed this task within a two-day timeframe during the first two weeks of school. The standardized assessment was administered on a one-to-one basis by the team outside the whole classroom setting and in a quiet location void of distraction and interruption. Samples were then split into two groups (control and treatment) via the use of convenience sampling.

Sample size of the two groups was comprised of all students in first grade (control $n = 107$, and treatment $n = 56$). In order to minimize the potential for a Type-I error and threats to interval validity, a reduction in the control sample was necessary (Keppel, 1991). This was

accomplished via the random selection tool provided in SPSS software on all control samples. The use of convenience sampling via initial screener DIBELS scores allowed for a split of the total sample size into two groups:

Group 1 was the control group, which used a scripted curriculum approach adopted by the Apple school system consisting of a research-based literacy publication for implementation and administered by classroom teachers. The group participated in the classroom instructional model for a period of 36 weeks. Students from the control group were supported solely by the scripted instructional model with the use of the *Reading Wonders* series (McGraw-Hill, 2014).

Group 2, the treatment, received the teacher-modified implementation by the Bravo school system that included a cherry-picked instructional model for both standard classroom instruction and *psRTI*. In this setting, the school system afforded each teacher the autonomy to utilize a variety of resources, both research and non-research based, as they saw fit to achieve content mastery. The group received the same 36-week participation period. Students from the treatment group were also supported by the pieced-together instructional model with resources for literature that included, but were not limited to, the *Reading Wonders* series (McGraw-Hill, 2014). This published curriculum contained strategies that are research-based and designed to provide acute intervention to learning deficiency needs, based on the use of the “Process/Mastery Orientation” ideology (Van Brummelen, 2002, p. 28).

At the end of the 2017 – 2018, 36-week period, both control and treatment group school district assessments utilized board-mandated DIBELS, Sixth Edition, Nonsense Word Fluency/Words Read Correctly (NWF_WRC) posttest (see Appendices B through F) for their first-grade students. DIBELS test was used to assess learning progress (Alabama Reading Initiative, 2014). The use of multiple literacy assessment batteries in combination provided a

more robust measurement of content acquisition that resulted from higher-order thinking skills. A teacher survey to quantify levels of efficacy was also utilized at the end of the process for both control and teacher group instruction (see Appendix I for survey instrument). The method of data collection for the survey was via submission of a Google Forms file sent directly to the school's respective teachers. Each survey was sent directly back to the researcher as a Google Docs response by the teacher and did not ask for their name (Likert-type scale response only).

Data Analysis

Analysis of independent variables was performed using SPSS statistical software. The use of a Box and Whisker plot for each group and/variable was utilized to look for extreme outliers. A test for normality ($p = .05$) was conducted using a Kolmogorov-Smirnov test to ensure reliability of power (p) between the mean of the two samples (Chen, 2012; Creswell, 2014). A Mann-Whitney U Signed Ranks test was utilized to compare the means of achievement scores between rote vs. modified literacy curriculum implementation approaches (Keppell, 1991; Gall et al., 2007).

Summary

This quantitative study explored whether the use of a teacher-modified literacy curriculum implementation for early literacy was more effective than that of a research-based rote-curriculum implementation on first-grade students. To address this purpose, a quantitative research methodology was used. Chapter three discussed the design and methodology of this study while including an overview of the population and sample. A review of the materials/instrument was provided, and the data collection, processing, and analysis procedures were described. The study received approval by the Institutional Review Board before the study was carried out. Chapter four of this study will report study findings.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this ex-post facto quantitative causal-comparative study was to determine whether the use of an early literacy teacher-modified curriculum approach was more effective in significantly reducing the achievement gap between demographic subgroups, when compared to an early literacy curriculum approach primarily based on rote teaching. Addressing the purpose of the study required a quantitative, causal-comparative design of research (Creswell, 2014). Analysis consisted of first-grade students in two separate suburban school systems (one control group in coastal Alabama and one treatment group in northwest Alabama). Archived samples data were used and adjusted down due to incomplete test battery scores. Equalization of sample sizes between the control and treatment groups was performed utilizing the randomized custom sample selection feature in SPSS software to avoid Type-I error due to a convenience sample size disparity greater than two to one (Keppel, 1991). Using gender and race as nominal variables, this study examined differences in the means of phonemic/phonic achievement between subgroups by utilizing inferential statistics.

Research Questions

The following research questions formed the basis for the investigation:

RQ1: Is there a difference in overall first-grade DIBELS achievement results when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

RQ2: Are there differences between first-grade gender subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

RQ3: Are there differences between first-grade race subgroup DIBELS posttest achievement scores when comparing a research-based literacy program implementation with that of a teacher-modified literacy program implementation?

RQ4: Is there a difference in feelings of teacher efficacy when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation?

Null Hypotheses

The following null hypotheses corresponded with each research question above:

H₀1: There is no significant difference in overall first-grade DIBELS achievement results when comparing a research-based early literacy program implementation with that of a teacher-developed literacy program implementation.

H₀2: There is no significant difference between first-grade gender subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation.

H₀3: There is no significant difference between first-grade race subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation.

H₀4: There is no significant difference in feelings of teacher efficacy when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation.

Descriptive Statistics

Archived DIBELS achievement data were collected on 163 elementary school-age students from two school districts. Student data were coded and matched to provide

confidentiality and to ensure alignment of scores for each sample. Out of 163 students in the archived database systems, 66% ($n = 107$) primarily received research-based scripted literacy curriculum instruction, and 34% ($n = 56$) received teacher-modified/non-scripted literacy curriculum instruction. In order to minimize the potential for a Type-I error due to a large size disparity between control and treatment samples, an approach to randomly discard data from the larger control group was performed using the random selection option in SPSS to even out sample sizes (Keppel, 1991). Nine cases in these samples missing any portion of data (e.g., a student missing a specific battery test) were automatically removed from research consideration (three from the control and six from the treatment). Data utilized from the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) test (Good & Kaminski, 2014) were also dependent upon which batteries each school used to determine student achievement in reading.

Literacy scores for 2017-2018 DIBELS test batteries were administered at both school locations in three sets of first, middle, and last. This study compared the first test batteries (pretest) to the last test batteries (posttest). Table 5 provides gender descriptive data for the last batteries of tests for the year (L), which were administered in both schools in May to compare student achievement levels to that of the initial screener (F). First-grade Apple male students ($n = 26$), NWF_WRC_L scores ranged from 32 to 50, with $M = 45.50$, and $SD = 4.082$. Bravo male first-grade students ($n = 26$), NWF_WRC_L scores ranged from 8 to 50, with $M = 28.62$, and $SD = 12.323$. Apple female first-grade students ($n = 29$), NWF_WRC_L scores ranged from 26 to 50, with $M = 44.38$, and $SD = 6.155$. Bravo female first-grade students ($n = 29$), NWF_WRC_L scores ranged from 9 to 48, with $M = 30.07$, and $SD = 13.120$.

Table 5

Gender Descriptive Statistics for Last Test Battery

School	Level	Gender	Test Battery	<i>N</i>	<i>M</i>	Std. Error	<i>SD</i>
Apple	1st Grade	Male	NWF_WRC_L	26	45.50	.942	4.802
		Female	NWF_WRC_L	29	44.38	1.143	6.155
Bravo	1st Grade	Male	NWF_WRC_L	26	28.62	2.417	12.323
		Female	NWF_WRC_L	29	30.07	2.436	13.120

Note. NWF_WRC_L = Nonsense Word Fluency, Words Read Correctly Last Test.

Table 6 provides race descriptive data for the last batteries of tests for the year. Apple white first-grade students ($n = 27$), NWF_WRC_L scores ranged from 9 to 50, with $M = 41.81$ and $SD = 10.130$. Bravo white first-grade students ($n = 27$), NWF_WRC_L scores ranged from 14 to 50, with $M = 32.67$, and $SD = 11.351$. Apple black first-grade students ($n = 16$), NWF_WRC_L scores ranged from 22 to 50, with $M = 44.75$ and $SD = 6.856$. Bravo black first-grade students ($n = 16$), NWF_WRC_L scores ranged from 9 to 50, with $M = 26.25$, and $SD = 13.077$.

Table 6

Race Descriptive Statistics for Last Test Battery

School	Level	Race	Test Battery	<i>N</i>	<i>M</i>	Std. Error	<i>SD</i>
Apple	1st Grade	White	NWF_WRC_L	27	41.81	1.950	10.130
		Black	NWF_WRC_L	16	44.75	1.714	6.856
Bravo	1st Grade	White	NWF_WRC_L	27	32.67	2.193	11.395
		Black	NWF_WRC_L	16	26.25	3.269	13.077

Note. NWF_WRC_L = Nonsense Word Fluency, Words Read Correctly Last Test

Results

Null Hypothesis One

H₀₁ states: “There is no significant difference in overall first-grade DIBELS achievement results when comparing a research-based early literacy program implementation with that of a teacher-developed literacy program implementation.” Table 7 shows the descriptive statistics of differences between schools Apple and Bravo based on the first-grade means of the DIBELS

posttest. Schools were coded as Apple = 1 and Bravo = 2 in order to perform a comparison in SPSS. Grade level, class, and individual sample were also coded ordinally in order to assign test battery scores (grade level = 0-2, class = 1-5, and individual sample = 1-20). Coding also served to separate the overall sample by grade level into subgroups. Test batteries exclusively utilized by one school, but not the other were excluded as a comparison could not be made.

Table 7

First Grade Posttest Descriptive Statistics

School	Test Battery	Mean	Std. Deviation	<i>N</i>
Apple	NWF_WRC_L	44.30	6.600	56
Bravo	NWF_WRC_L	29.52	12.578	56

Note. *N* = 112

Assumptions of Normality Data

Screening. A histogram helps to show whether data groups are normally distributed. If the data are not skewed, then the data are regarded as parametric (Keppel, 1991). Data indicated that neither Apple, nor Bravo first grade NWF_WRC_L (see Figures 1 and 2), posttests categorically met the shape distribution parameters to be identified as parametric (Howell, 2011).

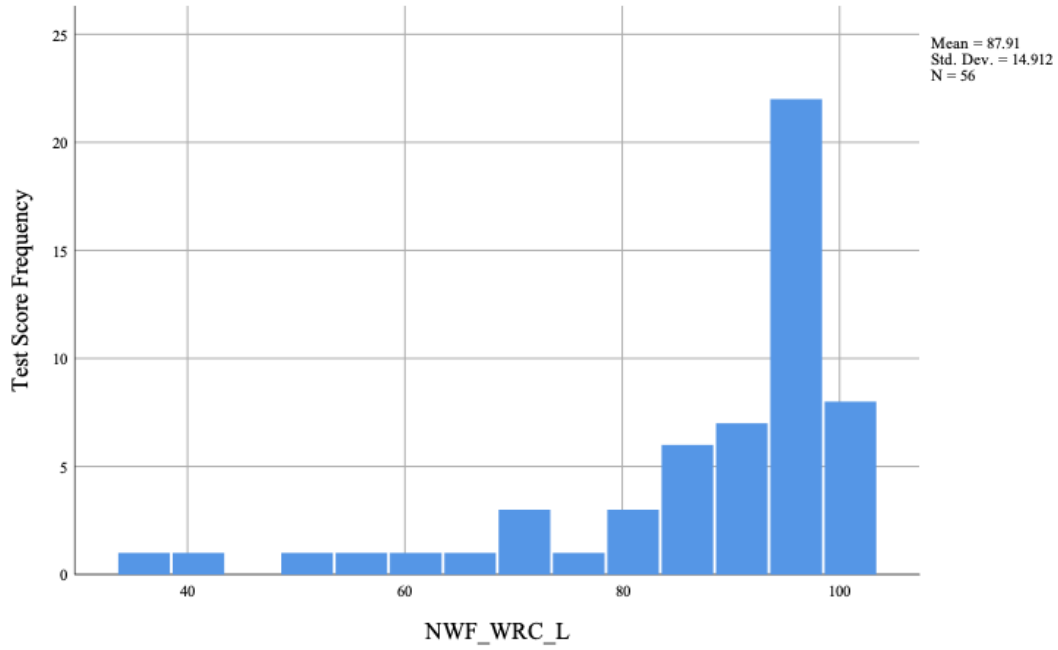


Figure 1. Histogram showing first-grade Apple posttest scores for NWF_WRC_L.

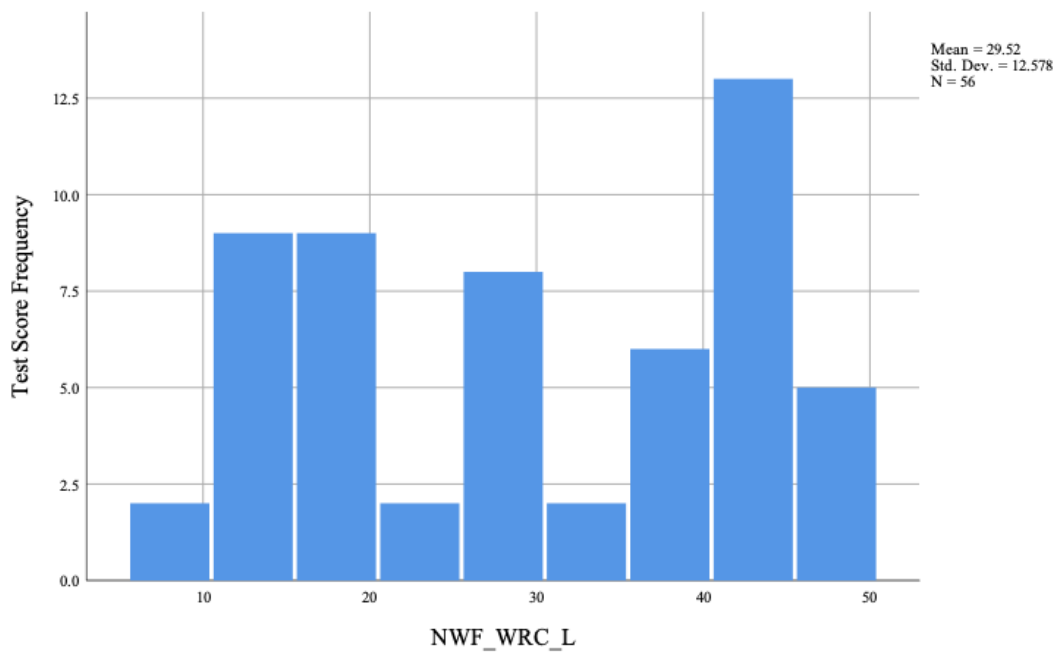


Figure 2. Histogram showing first-grade Bravo posttest scores for NWF_WRC_L.

A Kolmogorov-Smirnov (KS test) was then performed to determine if assumption of normality of the dependent variable was violated by the first-grade level of each school posttest battery. The KS test is preferred to determine normality, as it is effective for samples sizes larger than 50 (Howell, 2011). Table 8 shows that a comparison of first-grade KS results revealed Apple NWF_WRC_L ($p < .001$) and Bravo NWF_WRC_L ($p < .007$) posttests violated assumptions of normality and were untenable.

Table 8

First Grade Test of Normality of Posttest Scores

School	Test Battery	Kolmogorov-Smirnov		
		D	df	Sig.
Apple	NWF_WRC_L	.244	56	.000
Bravo	NWF_WRC_L	.141	56	.007*

Note. Lilliefors Significance Correction for undetermined standard deviation, * $p < .05$

A Mann-Whitney U test was performed as both first-grade group posttests violated assumption of normality with the presence of multiple extreme outliers and a negatively skewed distribution (Howell, 2011; Keppel, 1991). Tables 9 and 10 show the mean ranks for each school and their respective posttest. Mann-Whitney results showed that a statistically significant difference in NWF_WRC_L posttest means rank achievement scores of 40.28 points greater for first grade Apple ($M = 76.64$, $Mdn = 47$) than that of Bravo ($M = 36.36$, $Mdn = 30$), $U = 440.000$, $p < .001$. The findings rejected the null and confirmed that a statistically significant difference in levels of achievement did occur between first-grade level nonsense word fluency words read correctly posttest scores between schools.

Table 9

Posttest	School	<i>n</i>	Mean Rank	Sum of Ranks	Mdn
NWF_WRC_L	Apple	56	76.64	4292.00	47
	Bravo	56	36.36	2046.00	30

Table 10

Test Statistics	NWF	WRC	L
Mann-Whitney U		440.000	
Wilcoxon W		2036.000	
Z Score		-6.574	
Sig.		.000	

Null Hypothesis Two

H₀₂ states: “There is no significant difference between first-grade gender subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation.” A Kolmogorov-Smirnov (KS test) was performed to determine if assumption of normality of the dependent variable was violated by the race of each school posttest battery. The KS test is preferred to determine normality, as it is effective for samples sizes larger than 50 (Howell, 2011; Keppel, 1991). Table 11 shows a comparison of first-grade KS results revealed Apple male NWF_WRC_L assumptions of normality was untenable ($p < .001$), while Bravo male was tenable ($p > .145$). Table 13 indicated that both Apple female NWF_WRC_L ($p < .001$) and Bravo female ($p < .021$) posttests violated assumptions of normality and were untenable.

Table 11

First-Grade Male Test for Normality

Male	Test Battery	Kolmogorov-Smirnov		
		D	df	Sig.
Apple	NWF_WRC_L	.276	26	.000
Bravo	NWF_WRC_L	.149	26	.145

Table 12

First-Grade Female Test for Normality

Female	Test Battery	Kolmogorov-Smirnov		
		D	df	Sig.
Apple	NWF_WRC_L	.230	29	.000
Bravo	NWF_WRC_L	.177	29	.021

Due to the presence of non-parametric data, a Mann-Whitney U test was performed on all gender NWF_WRC_L posttests as each contained at least one independent variable that violated assumption of normality with the presence of multiple extreme outliers and a negatively skewed distribution (Howell, 2011; Keppel, 1991). Table 13 shows the male mean ranks for each school and their respective posttest. Mann-Whitney results in Table 14 show a statistically significant difference in male NWF_WRC_L posttest means rank achievement scores of 26 points greater for first-grade Apple ($M = 39.50$, $Mdn = 95$), than that of Bravo ($M = 13.50$, $Mdn = 28$), $U = 269.500$, $p < .001$. Mann-Whitney results in Tables 15 and 16 show a statistically significant difference in female NWF_WRC_L posttest means rank achievement scores of 29 points greater for first grade Apple ($M = 44.00$, $Mdn = 92$), than that of Bravo ($M = 15.00$, $Mdn = 30$), $U = 337.500$, $p < .001$. The findings rejected the null and confirmed that a statistically significant difference in levels of achievement did occur in both male and female first-grade level nonsense word fluency words read correctly posttest scores between schools.

Table 13

Mann-Whitney Ranks Descriptive Statistics for First Grade Male Posttest

Posttest	School	<i>n</i>	Mean Rank	Sum of Ranks	Mdn
NWF_WRC_L	Apple	26	36.92	960.00	47
	Bravo	26	16.08	418.00	28

Table 14

Mann-Whitney Ranks Test for First Grade Male Posttest

Test Statistics	NWF	WRC	F	NWF	WRC	L
Mann-Whitney U		269.500			67.000	
Wilcoxon W		620.500			418.000	
Z Score		-1.306			-4.970	
Sig.		.192			.000	

Table 15

Mann-Whitney Ranks Descriptive Statistics for First Grade Female Posttest

Posttest	School	<i>n</i>	Mean Rank	Sum of Ranks	Mdn
NWF_WRC_L	Apple	29	39.57	1147.50	46
	Bravo	29	19.43	563.50	30

Table 16

Mann-Whitney Ranks Test for First Grade Female Posttest

Test Statistics	NWF	WRC	F	NWF	WRC	L
Mann-Whitney U		337.500			128.500	
Wilcoxon W		772.500			563.500	
Z Score		-1.391			-4.547	
Sig.		.164			.000	

Null Hypothesis Three

H₀₃ states: “There is no significant difference between first-grade race subgroup DIBELS posttest achievement scores when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation.” A Kolmogorov-Smirnov (KS test) was performed to determine if assumption of normality of the

dependent variable violated either first-grade level of each school posttest battery. The KS test is preferred to determine normality, as it is effective for samples sizes larger than 50 (Howell, 2011; Keppel, 1991). In a comparison of first-grade race KS results, Table 17 shows that Apple white NWF_WRC_L posttest assumptions of normality was untenable ($p < .002$), while Bravo white NWF_WRC_L ($p > .158$) posttest assumptions of normality was tenable. Table 18 shows that Apple black NWF_WRC_L ($p < .002$) posttest assumptions of normality was untenable, while Bravo black NWF_WRC_L ($p > .200$) posttest scores were tenable.

Table 17

First-Grade White Test for Normality

White	Test Battery	Kolmogorov-Smirnov		
		D	df	Sig.
Apple	NWF_WRC_L	.216	27	.002
Bravo	NWF_WRC_L	.144	27	.158

Table 18

First-Grade Black Test for Normality

Black	Test Battery	Kolmogorov-Smirnov		
		D	df	Sig.
Apple	NWF_WRC_L	.274	16	.002
Bravo	NWF_WRC_L	.133	16	.200

Due to the presence of non-parametric data, a Mann-Whitney U test was performed on all race NWF_WRC_L posttests as each contained at least one independent variable that violated assumption of normality with the presence of multiple extreme outliers and a negatively skewed distribution (Howell, 2011). Table 19 shows the white mean ranks for each school and their respective posttest. Mann-Whitney results in Table 20 show a statistically significant difference in the white NWF_WRC_L posttest means rank achievement score 14.08 points greater for first grade Apple ($M = 34.54$, $Mdn = 47$) than that of Bravo ($M = 20.46$, $Mdn = 36$), $U = 174.500$, $p <$

.001. Black NWF_WRC_L Tables. 21 and 22 show a statistically significant difference posttest means rank achievement score 12.18 points greater for first grade Apple ($M = 22.59$, $Mdn = 47$) than that of Bravo ($M = 10.41$, $Mdn = 23$), $U = 30.500$, $p < .001$, which rejected the null and confirmed that significant levels of achievement did occur in both white and black first-grade level nonsense word fluency words read correctly posttest scores between schools.

Table 19

Mann-Whitney Ranks Descriptive Statistics for First Grade White Posttest

Posttest	School	<i>n</i>	Mean Rank	Sum of Ranks	Mdn
NWF_WRC_L	Apple	27	34.54	932.50	47
	Bravo	27	20.46	552.50	36

Table 20

Mann-Whitney Ranks Test for First Grade White Posttest

Test Statistics	NWF	WRC F	NWF	WRC L
Mann-Whitney U		245.500		174.500
Wilcoxon W		623.500		552.500
Z Score		-2.159		-3.292
Sig.		.031		.001

Table 21

Mann-Whitney Ranks Descriptive Statistics for First Grade Black Posttest

Posttest	School	<i>n</i>	Mean Rank	Sum of Ranks	Mdn
NWF_WRC_L	Apple	16	22.59	361.50	47
	Bravo	16	10.41	166.50	23

Table 22

Mann-Whitney Ranks Test for First Grade Black Posttest

Test Statistics	NWF	WRC F	NWF	WRC L
Mann-Whitney U		116.000		30.500
Wilcoxon W		252.000		166.500
Z Score		-.491		-3.682
Sig.		.623		.000

Null Hypothesis Four

H₀₄ states: “There is no significant difference in feelings of teacher efficacy when comparing a research-based early literacy program implementation with that of a teacher-modified literacy program implementation.” The researcher created a Likert-type scale survey, based on its usage in Bhatnagar, Srivastava, and Jadav (2011), to determine the level each first-grade teacher felt best reflected their level of early literacy efficacy as related to their curriculum approach. The scale utilized a five-level ranked score range that consisted of: 1 = Low, 2 = Somewhat Low, 3 = Neither High nor Low, 4 = Somewhat High, and 5 = High. Total ranks ranged from no less than three up to a five. Teachers received a two-part question survey that asked what grade level they taught, and their level of efficacy as related to their early literacy curriculum approach. The survey was voluntary and no personal identifying information was collected that would compromise teacher confidentiality. A majority of Apple teachers participated ($n = 14$) and all Bravo teachers participated ($n = 12$). These response rates provided a large enough sample size ($n = 26$) to perform a Mann-Whitney sign rank test (Howell, 2011).

A Mann-Whitney test was performed on teacher Likert-type scale as responses were survey scores in classification and thus a rank means comparison was necessary (Howell, 2011). Tables 23 and 24 show teacher feelings of efficacy; difference in means was 6.11 higher for Bravo ($M = 16.79$, $Mdn = 4$) than for Apple ($M = 10.68$, $Mdn = 4$), $U = 44.500$, $p < .052$. Use of median comparison was not tenable as the Apple response distribution was positively skewed and Bravo was negatively skewed (Hart, 2001). Therefore, an analysis of the data was performed based on mean rank of scores. Use of the sign rank analysis methods approach did not indicate a statistically significant difference in feelings of teacher efficacy between the two schools and failed to reject the null hypothesis that there is no significant difference in feelings of

teacher efficacy when comparing a research-based literacy program implementation with of a teacher-modified literacy program implementation.

Table 23

Mann-Whitney Ranks Descriptive Statistics for Teacher Efficacy Likert-Type Scale

Posttest	School	<i>N</i>	Mean Rank	Sum of Ranks
Teacher Efficacy	Apple	6	10.68	149.50
	Bravo	5	16.79	201.50

Table 24

Mann-Whitney Test for Teacher Efficacy Likert-Type Scale

Test Statistics	Teacher Efficacy
Mann-Whitney U	44.500
Wilcoxon W	149.500
Z Score	-2.246
Sig.	.052
Exact Sig.	.041

Summary

Appropriate analysis methods were used to address four null hypotheses, which required the use of a Mann-Whitney *U* test as data were either non-parametric and determined untenable for the use of a *t* test (Keppel, 1991), or necessary to rank ordinal numbers in response to a teacher efficacy survey process via a Likert-type scale (Bhatnagar, Srivastava, & Jada, 2011). H_{01} , H_{02} , and H_{03} first-grade results contained findings that led to the rejection of the null hypothesis, with the analysis of Nonsense Word Fluency/Words Read Correctly in the first-grade posttest batteries being statistically significant. Results showed that the whole-grade-level use of a direct and explicit research-based/scripted instructional curriculum approach for first-grade was more effective for DIBELS NWF_WRC test battery achievement scores, as well as for both gender and race subgroups. H_{04} results indicated no statistically significant difference between

the ranked mean scores of schools determined from the Likert-type scale survey, with similar feelings of teacher efficacy existing in school Bravo ($M = 16.79$, $Mdn = 4$) and school Apple ($M = 10.68$, $Mdn = 4$). A global view of result findings of this study is conclusive when addressing whether one first-grade curriculum approach has an advantage over the other. Chapter Five will discuss the critical analysis of student achievement of the study as it relates to specific learning theories, based on results from the four research questions.

CHAPTER FIVE: CONCLUSIONS

Overview

Growing pressure from stakeholders for students of public schools in the United States to adequately perform within changing learning expectations continue to shape which curriculum is adopted (NIFDI, 2016; Ramey & Ramey, 1998; Sherman, 2009; Zigler et al., 1992). A need for determining the most effective delivery approach for every student creates uncertainty when considering a curriculum (NIFDI, 2016; Williams, 2012). A great deal of research and funding from both state and federal governments has been given towards early literacy education for foundational reading programs (VanDerHeyden, Snyder, Broussard & Ramsdell, 2008). Previous research by Jenkins et al. (2013) and Strand et al. (2007) has demonstrated how varied instructional approaches to early literacy affected elementary grade-level reading skills. However, researchers acknowledge the need for additional investigation into how a research-based early-literacy curriculum modified with non-research-based methods and resources impacts all subgroups (see Alba et al., 2015; Bean & Lillenstein, 2012; Castro-Villarreal et al., 2013; Rodriguez & Moore, 2014; Strand et al., 2007). This research study examined the use of two early-literacy curriculum approaches to determine which approach was more effective for all students. The study also compared the use of complete teacher autonomy that included non-research-based methods and resources to a research-based and scripted approach.

Discussion

The purpose of this ex-post facto causal-comparative study was to explore whether the use of a teacher-modified early literacy curriculum implementation resulted in higher reading achievement/skills for first-grade students than for first-grade students who were exposed to a rote-literacy curriculum approach. The investigation examined early literacy skills achievement

among public schools in northwest and southwest Alabama ($n = 2$) that contained gender and race subgroups. The researcher compared 2017-2018 DIBELS achievement scores from the Nonsense Word Fluency/Words Read Correctly test battery given at both schools' first-grade level to determine if student subgroups of the treatment Bravo school benefitted more from a non-research-based curriculum approach. This study also compared ranked survey data from current teachers (who taught the first-grade students in 2017-2018) concerning their feelings of efficacy about the curriculum approach they used in an effort to understand how confident they were with the approach they used.

Null Hypothesis One

H₀1 stated: "There is no significant difference in overall first-grade DIBELS achievement results when comparing a research-based literacy program implementation with that of a teacher-developed literacy program implementation." The null hypothesis was rejected as a statistically significant difference in scores was found in the first-grade test battery, which favored the Apple school that received a scripted early literacy instruction. The control group (School Apple) research-based scripted approach was associated with a much higher median rank for reading achievement in NWF/WRC. Without further investigation into the instructional delivery of each teacher (and their usage level of direct and explicit instruction within their "freestyle" approach) it is impossible to determine what variables may have directly affected this score result. Furthermore, specific focus was not given in this study to determine the use of cooperative interactions as part of a learning curriculum, which requires teacher measures of professional development and field experience (Bryan et al., 2011). Such measures are not necessary when using a scripted/rote instructional approach by a teacher (Engelmann, 2007).

Statistically significant differences in first grade NWF/WRC supported school Apple's use of direct and explicit instruction which can be associated with identification of behavioral learning theory support components (Rush et al., 2010). In this study, student responses in School Apple to a scripted lesson had a greater impact ($M = 83.91$, $Mdn = 94$) compared to that of Bravo ($M = 29.09$, $Mdn = 30$), $U = 33.000$, $p < .001$. Good and Kaminski (2014) stated NWF_WRC focuses on the ability to recognize word formations as opposed to simply having the ability to recognize letter sounds (correct letter sounds – CLS). Wells (2013) stated that students who meet the WRC benchmark are likely to meet oral reading fluency benchmarks as well. With an understanding of how each DIBELS test battery was used for first grade, a case can be made that the larger WRC mean difference for Apple is preferred when preparing for next level batteries of oral reading fluency and accuracy in which a scripted/direct and explicit instructional approach was taken. However, Fien et al. (2010) argued against this position; research indicated that first-grade students achieving in a different DIBELS first-grade battery (Nonsense Word Fluency/Correct Letter Sounds) provided a stronger indicator of later oral reading fluency success than that of NWF/WRC.

The lack of statistically significant outcomes for the overall Bravo first grade group could be attributed to the existence of extraneous variables that affected overall achievement results for the treatment group. These could include a large instructional skill variation across kindergarten and second-grade levels at the treatment school, lack of adequate support from administration or instructional coaches (Engelmann, Granzin, & Severson, 1979), or it may be that fewer treatment school first-grade teachers lacked the experience to teach in their approach to fidelity.

Null Hypothesis Two

H₀2 stated: “There is no significant difference between first-grade gender subgroup DIBELS posttest achievement scores when comparing a research-based literacy program implementation with that of a teacher-modified literacy program implementation.” First-grade gender subgroup results suggest that something drastically different may have happened when comparing the two curriculum approaches. In a similar study that examined subgroup achievement in a departmentalized instructional setting, Nelson (2014) found that interactions with the fifth-grade Standards of Learning (SOL) posttest had no impact on mathematics achievement. It is possible that this is due to the fact that exposure to the departmentalized instructional setting occurred at a higher-grade level, when compared to first grade. Findings by Cabell et al. (2011) dispute the researcher’s H₀2 findings stating current assessments to determine early literacy achievement are not always specific or implemented enough for determining continuous learning growth in some student groups. However, DIBELS does have an ongoing progress-monitoring component to determine response to intervention needs. For static points to determine achievement, there must be at least three benchmark applications over the course of the year (Good & Kaminski, 2014).

First-grade findings did suggest that gender subgroup achievement results favored the use of the research-based/direct and explicit curriculum approach, as Apple school was ranked higher in Male and Female NWF_WRC posttests. Furthermore, the first-grade gender subgroup test score findings for DIBELS NWF/WRC suggested the use of the Apple school control that utilized a direct and explicit scripted curriculum approach may have benefitted more than the treatment Bravo non-research-based approach. NWF_WRC_L posttest score results by gender subgroups in this study supported previous findings by Engelmann’s (2007) meta-analysis of

curricula where direct and explicit instruction dominated over other curriculum approaches. Findings by Baumann (1988), however, advocated for a hybrid approach to a scripted/direct and explicit delivery as a better approach for student achievement as its use represents one of a variety of delivery method tools. An additional finding that may support the importance of NWF/WRC test battery analysis comes from Wells (2013), who determined that the test could be a greater indicator of later oral reading fluency in higher elementary grade levels.

In another comparison between DIBELS NWF/CLS and NWF/WRC first-grade test batteries, the goal was to determine which one may impact future oral reading fluency more, Fien et al. (2010) suggested that NWF/CLS had a larger effect on later oral reading fluency in subsequent grade levels. The researcher found that all control Apple gender subgroups scored a statistically significant rank in with the NWF/WRC battery, which is supported by the Wells (2013) study and, therefore could be the factor in determining which of the two curriculum approaches in this study benefits a first-grade subgroup more.

Null Hypothesis Three

H₀₃ stated: “There is no significant difference between first-grade race subgroup DIBELS posttest achievement scores when comparing a research-based literacy program implementation with that of a teacher-modified literacy program implementation.” First grade race results suggested that Apple White and Black subgroup NWF/WRC test scores were higher in ranked mean for reading achievement as a result of student exposure to a research-based/scripted curriculum approach.

Findings indicated that significant achievement differences existed in first-grade race subgroup achievement results when comparing the pretests to posttests. Use of a research-based, direct and explicit scripted approach showed that the first-grade Apple White and Black control

subgroups may have benefitted when considering their higher NWF/WRC mean ranked scores and student exposure to their curriculum. Ecalle et al. (2015) suggested that the use of a research-based/scripted approach would boost achievement scores in students lacking emergent literacy skills, such as words read correctly. However, Edgar (2012) disputed this and noted that higher early-literacy achievement scores could be a byproduct of a differentiated learning experience, with a higher level of teacher autonomy driving differentiated opportunities. This may imply that teaching is not the main determiner of achievement and that environmental factors may play a larger role, instead. There are research studies that do focus on the impact of differentiated teaching and subgroup early-literacy interactions during a differentiated autonomous curriculum approach. For example, Mellard et al. (2010) and Sanders (2008) suggested that differences in test scores may be from the added use of teacher differentiation of instruction to address specific skill deficits of students with disabilities in learning.

The researcher did not find in the results data to support the use of differentiation, when examining race subgroups. Instead, first-grade race subgroup data findings in this study appear to support the idea of a scripted/direct and explicit approach to early literacy learning. This finding may also support Well's (2013) findings that the NWF/WRC posttest is a better indicator of oral reading fluency by showing statistically significant achievement scores for Apple school White and Black subgroups, which received a research-based/direct and explicit approach. Simply stated, control Apple NWF/WRC race posttest scores had a statistically significant higher ranked mean with both subgroups, and statistical evidence in this study suggests that the Apple control approach to a curriculum had a greater impact on DIBELS scores with race subgroups than did the Bravo treatment. Bravo race treatment data results call into question whether or not an accurate determination of their curriculum approach effectiveness is tenable, when

consideration is given to the use of just one summative assessment approach (Paris & Hoffman, 2004). Paris and Hoffman argued that the use of one specific testing tool to determine the early literacy achievement of any specific group of students fails to reflect absolute learning and that a multi-faceted approach that combines summative and formative assessments to progress-monitor is more effective.

Null Hypothesis Four

H₀₄ stated: “There is no significant difference in feelings of teacher efficacy when comparing a research-based literacy program implementation with that of a teacher-modified literacy program implementation”. A Likert-type scale used in research by Bhanthnagar, Srivastava, and Jadav (2011) to rank teacher feelings of efficacy and a Mann Whitney *U* Signed Ranks test for analysis found no statistically significant difference in feelings of efficacy between teachers utilizing a scripted early literacy curriculum approach and teachers utilizing a non-research-based/modified approach. The null hypothesis was not rejected, suggesting that teachers who used the non-research-based modified approach for early-literacy were not more confident than teachers who utilized a research-based scripted approach. With results of the teacher survey, the objective of H₀₃ was to examine if teachers felt confident about the use of their curriculum approach and to see if their feelings were consistent with findings in H₀₁ and H₀₂. It is worth noting that some teachers might not truly be aware of the approach they are using and could be unsure of how effective they are in the classroom.

The ability for a school system to provide an approach that promotes an environment of creativity and flexibility for teachers is a desirable goal as these attributes fuel their productivity (Lacina, 2011). However, Mendive et al. (2016) found that this flexible approach can create a lack of consistency and experience within a staff due to system resources availability and high

teacher turnover. This, in turn, may create gaps in delivery confidence when addressing specific subgroup needs that could affect feelings of teacher efficacy. Gaps in delivery confidence may have been the case in this study as the four low teacher efficacy survey results from the treatment Bravo school were from teachers in their first three years of teaching. Student achievement results in both first-grade posttests analysis favored the use of both curriculum approaches with NWF/CLS higher for Bravo and NWF/WRC higher for Apple. However, Apple first grade teacher feelings of efficacy scores did not reflect their NWF_WRC student score findings.

First-grade Apple teacher efficacy scores were similar ($Mdn = 4$) to that of their Bravo first-grade counterparts ($Mdn = 4$). Although the teacher efficacy comparison did not use a standard Likert scale instrument, it does show that efficacy levels were fairly similar across the first-grade level between the two schools. It is worth noting that when Apple student achievement had a higher statistical significance in nonsense NWF/WRC groupings, the rank score for their first-grade teachers' feelings of efficacy appeared to be slightly lower, which might imply a negative relationship between the two. Understanding why this might potentially be the case could call into question the relationship between how teachers feel about their curriculum approach and students' actual achievement.

Implications

After reviewing the data from this research, conclusions could be made as to how a curriculum approach affects early literacy learning. First, a whole grade first-grade comparison indicates that a difference in curriculum approach does exist. Apple students receiving the research-based/scripted curriculum approach scored statistically significantly higher in the DIBELS Nonsense Word Fluency/Words Read Correctly test battery. Implications are that school Apple saw their first-grade early-literacy students excel, when compared to school Bravo.

Second, a comparison of gender and race subgroups between the control and treatment schools suggests that all Apple first grade subgroups benefitted from a particular curriculum approach, and these results were congruent with their whole-grade-level comparison. Third, levels of teacher efficacy were similar when a comparison was made between the control and treatment grade levels, but favored the treatment school Bravo. Even though the research-based/scripted approach benefitted Apple first grade students, their teachers did not reflect a feeling of confidence to support first-grade student achievement. Conversely, Bravo achievement in NWF_WRC was lower than Apple, but their teacher efficacy survey scores were higher. Overall feelings of efficacy, when comparing teachers between schools, showed that teachers at the treatment Apple school did not operate at a statistically higher level of efficacy even when given more flexibility to pick and choose resources and curriculum components intended to promote creativity and flexibility.

Levels of student achievement in each respective school were used to determine growth expectations by each school system against state standards for adequate early-literacy progress. As a result of this study, use of current DIBELS benchmarks for these purposes may need additional scrutiny if they are to be used solely to determine curriculum approach effectiveness. Teachers may choose to use formative assessments that operate based on classroom surveys for content understanding, which, if taken into consideration, might lead to a better indication of mastery and achievement if included in a system or state report. Doing so could include a basic use of formative assessment that reflects first-grade-level early-literacy mastery and student maturity level.

Data analysis for H_01 , H_02 , and H_03 found that significant statistical significances in student achievement existed to supported one curriculum approach over the other, and that a

statistically significant difference in achievement scores existed that represented the Apple first-grade approach. Based on these findings, it should be the responsibility of school systems to determine the best, scientifically validated/evidence-based approach to improve reading achievement outcomes for all of their students. This responsibility should not be taken lightly, as applications of research-based programs and publications will continue to be disseminated in piecemeal fashion due to impulsive reactions to bandwagons and fads that often influence the educational system. Extensive research and development occur when designing a curriculum to benefit all students. Hill et al. (2014) and Fuchs et al. (2012) stated that a need for the proper use of a research-based curriculum approach is essential, and that implementation to fidelity may not be happening due to resource modifications and unsatisfactory teacher training. Strict adherence to specific delivery guidelines and approaches for a research-based/scripted curriculum could give educators the ability to teach these components effectively, while potentially minimizing a negative outcome of a hastily delivered approach to student learning.

Limitations

The use of a causal-comparative design restricted the ability to draw conclusions based on causation. While the design has some parallels to experimental methods, it is not experimental in nature. The causal-comparative approach cannot lead a researcher to conclude whether an independent variable had an effect (or not), the design can only alert researchers that something of interest had indeed occurred (e.g., statistically significant findings and strong effect sizes) and that the outcome may be attributed to the independent variable. Nevertheless, any firm conclusions would eventually need to be based on and verified by a true experimental investigation (Brewer & Kuhn, 2010). Use of an ex-post facto design required the use of convenience sampling of student data archived in a database system. This led to unequal sample

sizes between the two schools, which was then addressed by randomly removing scores from the larger sample group to achieve equal sample sizes, a procedure recommended by Keppel (1991). Equalization of sample sizes between the control and treatment groups (Brewer & Kuhn, 2010; Keppel, 1991) was performed to reduce the control sample size in order to minimize a possibility of a Type-I error and reduce a threat to internal validity (Keppel, 1991).

Another limitation came from the researcher's inability to manipulate independent variables. This study could not change gender, race, or lunch-status independent variables in order to determine a potential cause, so use of a standardized assessment was studied to provide data for causal findings (Brewer & Kuhn, 2010). Use of only one school in an experimental design, while manipulating the independent variables of race, gender, and lunch-status, could have further reduced threats to validity. Using an experimental design would have also given more options to address/adjust for the number of extraneous variables that resulted from different expectations, rules, schedules, class lengths, and staff members that occurred in this casual-comparative study. Loss of power was another limitation, as some equalized subgroup samples resulted in sizes less than 20. Use of research interpretations of effect size on these smaller samples also created a greater chance for a Type-II error as a result the lower power of .50 (Keppel, 1991).

Use of one standardized assessment benchmark test battery to determine if one particular curriculum was more effective than another proved to be limited in scope as use of multiple assessment forms would provide a larger data set. The use of additional formative and summative assessment tools may have provided a more accurate determination of which curriculum approach was more effective for learning. Although DIBELS provides a research-based approach to determining levels of achievement (Good & Kaminski, 2014), school systems

could consider a process that uses multiple research-based programs for a cross-comparison of progress-monitoring results. Doing this in conjunction with summative benchmarks might provide a more robust tool for determining curriculum needs. Programs for cross-comparison could include DIBELS (Good & Kaminski, 2014), Performance Series (Scantron Assessment Solutions, 2019), iReady (Curriculum Associates, 2018), MobyMax (Willett & Willett, 2010), KidsCollege (LTS, 2015), and ClassWorks (Classworks Reading, 2008). These programs are either free or obtainable via use of state or federal grants. Another limitation was that the study did not perform a comparison across all subgroups. Doing so would have increased the scope of the study to such a degree that a massive additional amount of data analysis would have been required. The largest limitation, though, came from the use of a small treatment sample size in all whole class and subgroups. This could have contributed to the fact that most groups violated assumptions of normality and, thus required non-parametric analysis via the Mann-Whitney *U* test instead of the parametric *t* test (Keppel, 1991).

Recommendations for Future Research

Future research into which curriculum approach promotes early-literacy learning better than another may be achieved by using multiple summative assessment tools that are administered similarly by those schools participating in the study and by including formative assessment components that progress-monitor ongoing achievement. Additionally, a quasi-experimental study would allow for a quantitative analysis of standardized summative assessment scores based on the ability to manipulate the independent variables within treatment of an instructional setting. Additional quasi-experimental data analysis could be performed on formative assessments measuring ongoing progress and understanding. Phases for formative assessment recording could be measured through the use of short student responses (yes/no-

colored popsicle sticks, flash cards, individual dry erase boards for write and response, a quick write, and any other method to visually observe class or individual responses quickly).

Another recommendation would be to base curriculum effectiveness on student growth over the course of time as each student has the ability to demonstrate progress related to a particular curriculum approach. An additional consideration would be to compare achievement between subgroups within each school to determine if an achievement gap exists and where attention is needed to help close the learning gap. Gap closure percentages could then be compared between the two schools, while controlling for extraneous variables such as individual teacher subject strengths/interests, grade level emphasis on early literacy reading and vocabulary, and teacher attention to problem-solving RTI, to determine which curriculum approach was more effective at closing the gap. One final recommendation would be to recruit schools that contain sample sizes large enough to service both control and treatment grade levels and their respective subgroups.

Conclusion

While it might be difficult to determine what works in an early-literacy curriculum for all students, it is not impossible. Primary focus should be on what is best for student learning and less on ways to haphazardly implement approaches to satisfy the feelings of a school, school board, or community. Findings of this study show that there was an overall difference between the two approaches, based on achievement scores in early-literacy reading for first-grade. Findings also suggest considering how a first-grade posttest battery may best predict oral reading fluency in future grade levels. A starting point would be to consider how students exposed to a research-based scripted approach at one school scored much higher than the non-research-based

teacher autonomy approach at the other. Every opportunity to determine the best approach for improving student learning should be given serious consideration.

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APPENDICES

Appendix A

Score Range that Determines Benchmark Levels for DIBELS Test Batteries

Kindergarten

Measure	Beginning of Year		Middle of Year		End of Year	
	7-1-2014 Benchmark	Previous Benchmark	7-1-2014 Benchmark	Previous Benchmark	7-1-2014 Benchmark	Previous Benchmark
ISF	Not Endorsed	8+	Not Endorsed	25+		
LNF	11+	8+	34+	27+	47+	40+
PSF			33+	18+	Not Endorsed	35+
NWF-CLS			19+	13+	39+	25+
NWF-WRC			Optional Endorsed	No goal	3+	No goal
WUF	Optional Endorsed	No goal	19+	No goal	37+	No goal

1st Grade

Measure	Beginning of Year		Middle of Year		End of Year	
	7-1-2014 Benchmark	Previous Benchmark	7-1-2014 Benchmark	Previous Benchmark	7-1-2014 Benchmark	Previous Benchmark
LNF	38+	37+				
PSF	Not Endorsed	35+	Not Endorsed	35+	Not Endorsed	35+
NWF-CLS	25+	24+	54+	50+	71+	50+
NWF-WRC	2+	No goal	10+	No goal	13+	No goal
DORF-WC			19+	20+	47+	40+
DORF-A			78%+	No goal	91%+	No goal
RTF			Not Endorsed	No goal	Not Endorsed	No goal
WUF	25+	No goal	45+	No goal	47+	No goal

2nd Grade

Measure	Beginning of Year		Middle of Year		End of Year	
	7-1-2014 Benchmark	Previous Benchmark	7-1-2014 Benchmark	Previous Benchmark	7-1-2014 Benchmark	Previous Benchmark
NWF-CLS	62+	50+				
NWF-WRC	13+	No goal				
DORF-WC	41+	44+	76+	68+	96+	90+
DORF-A	91%+	No goal	97%+	No goal	98%+	No goal
RTF	Not Endorsed	No goal	Not Endorsed	No goal	Not Endorsed	No goal
WUF	37+	No goal	46+	No goal	50+	No goal

(University of Oregon Center on Teaching and Learning, Revised July 1, 2014)

Appendix B

DIBELS Nonsense Word Fluency

Short Form Directions

Make sure you have reviewed the long form of the directions in the *DIBELS Administration and Scoring Guide* and have them available. Say these specific directions to the student:

Look at this word (point to the first word on the practice probe). **It's a make-believe word. Watch me read the word: /s/ /i/ /m/, "sim"** (point to each letter then run your finger fast beneath the whole word). **I can say the sounds of the letters, /s/ /i/ /m/** (point to each letter), **or I can read the whole word, "sim"** (run your finger fast beneath the whole word).

Your turn to read a make-believe word. Read this word the best you can (point to the word "lut"). **Make sure you say any sounds you know.**

<p>CORRECT RESPONSE: If the child responds "lut" or with some or all of the sounds, say</p>	<p>INCORRECT OR NO RESPONSE: If the child does not respond within <u>3 seconds</u> or responds incorrectly, say</p>
<p>That's right. The sounds are /l/ /u/ /t/ or "lut."</p>	<p>Remember, you can say the sounds or you can say the whole word. Watch me: The sounds are /l/ /u/ /t/ (point to each letter) or "lut" (run your finger fast beneath the whole word). Let's try again. Read this word the best you can (point to the word "lut").</p>

Place the student copy of the probe in front of the child.

Here are some more make-believe words (point to the student probe). **Start here** (point to the first word) **and go across the page** (point across the page). **When I say, "Begin," read the words the best you can. Point to each letter and tell me the sound or read the whole word. Read the words the best you can. Put your finger on the first word. Ready, begin.** Start your stopwatch.

Appendix C

yiz	wan	zoc	ful	mik
zum	nuf	kun	ruv	fod
vep	ij	op	juj	sug
zuz	ov	vit	wam	buk
lef	luk	tev	lof	kom
juf	tam	nol	rez	kec
pum	poz	mum	ol	kav
riv	kic	kis	kem	vak
tek	ut	riz	aj	vej
yil	jev	neg	som	jup

Appendix D

Benchmark K.2
DIBELS Nonsense Word Fluency

y i z	w a n	z o c	f u l	m i k	__/15
z u m	n u f	k u n	r u v	f o d	__/15
v e p	i j	o p	j u j	s u g	__/13
z u z	o v	v i t	w a m	b u k	__/14
l e f	l u k	t e v	l o f	k o m	__/15
j u f	t a m	n o l	r e z	k e c	__/15
p u m	p o z	m u m	o l	k a v	__/14
r i v	k i c	k i s	k e m	v a k	__/15
t e k	u t	r i z	a j	v e j	__/13
y i l	j e v	n e g	s o m	j u p	__/15

Total correct letter sounds (CLS): _____

Total words recoded completely and correctly (WRC): _____

Error Pattern:

Appendix E

DIBELS Nonsense Word Fluency**Short Form Directions**

Make sure you have reviewed the long form of the directions in the *DIBELS Administration and Scoring Guide* and have them available. Say these specific directions to the student:

Look at this word (point to the first word on the practice probe). **It's a make-believe word. Watch me read the word: /s/ /i/ /m/, "sim"** (point to each letter then run your finger fast beneath the whole word). **I can say the sounds of the letters, /s/ /i/ /m/** (point to each letter), **or I can read the whole word, "sim"** (run your finger fast beneath the whole word).

Your turn to read a make-believe word. Read this word the best you can (point to the word "lut"). **Make sure you say any sounds you know.**

<p>CORRECT RESPONSE: If the child responds "lut" or with some or all of the sounds, say</p>	<p>INCORRECT OR NO RESPONSE: If the child does not respond within <u>3 seconds</u> or responds incorrectly, say</p>
<p>That's right. The sounds are /l/ /u/ /t/ or "lut."</p>	<p>Remember, you can say the sounds or you can say the whole word. Watch me: The sounds are /l/ /u/ /t/ (point to each letter) or "lut" (run your finger fast beneath the whole word). Let's try again. Read this word the best you can (point to the word "lut").</p>

Place the student copy of the probe in front of the child.

Here are some more make-believe words (point to the student probe). **Start here** (point to the first word) **and go across the page** (point across the page). **When I say, "Begin," read the words the best you can. Point to each letter and tell me the sound or read the whole word. Read the words the best you can. Put your finger on the first word. Ready, begin.** Start your stopwatch.

Appendix F

Benchmark 2
DIBELS Nonsense Word Fluency

f o j	h o n	t u m	l e n	a j	___/14
s u v	k a m	r e s	k i c	f a v	___/15
i d	w o d	n e j	s o k	w i f	___/14
b i s	w e m	a v	j a j	a c	___/13
l u j	w a n	u c	b a s	i d	___/13
b e f	z i j	v e n	w i l	v e p	___/15
l o d	o s	h i c	v o s	s o v	___/14
r i l	v e s	j o s	s e j	j e b	___/15
p a c	e c	d o k	v u t	f e g	___/14
v i b	k o v	h u v	s e b	j i t	___/15

Total correct letter sounds (CLS): _____

Total words recoded completely and correctly (WRC): _____

Error Pattern:

Appendix G



Mike Bishop
Principal

Athens Middle School

"Home of the Golden Eagles"

601 South Clinton Street
Athens, Alabama 35611

Phone: 256-233-6620 • Fax: 256-233-6623



Chris Pennington
Assistant Principal

Mr. Trey Holladay
Superintendent
Athens City Schools
455 U.S. Hwy. 31 N.
Athens, AL 35611

April 24, 2015

Mr. Holladay,

As per ACS board policy (section ICC) regarding research projects within the Athens City Schools district, I would like to officially request to perform a research project beginning the 2015/2016 academic school year. The project will focus on methods of intervention for kindergarten grade level at-risk students. I have spoken with the both Mr. Scott Sutton, Athens Elementary School Principal, and Mrs. Kim Moore, J.L. Cowart Elementary School Principal concerning the usage of their students and faculty to complete the study. I have also talked to the respective Title I and reading coaches from each school. Preliminary approval has been granted by both institutions.

The project will begin the first week of the 2015/2015 school year. The first two weeks will utilized the school's standardized assessment for early literacy ability level to determine the at-risk cohort and followed by 10 weeks of intervention treatment by using two different models (Standard RtI and small group). Assessment of achievement will occur at the end of the 10 week period. I will need to utilize the **DIBELS assessment of early literacy skills** as it has a high level of reliability, given the three components that the students will be assessed (ISF, LNF, and NWF composite that has a Cronbach's reliability of .88).

I formally ask permission to perform this research study that will require the use of the DIBELS (ISF, LNF, and NWF sub tests) assessment to measure student achievement. Should you need any additional information regarding the study, please do not hesitate to contact me.

Sincerely,

Chris Pennington, Ed. S.
Assistant Principal
Athens Middle School

Appendix H

 **Shropshire, M Michell/Collier** <mmshropshire@mcps.com>
to me ▾

Oct 9 ☆



Chris,

I agree to participate in your research project. We will supply you with K-2 DIBELS data that has been scrubbed and will only include the needed data based on race and gender. Thanks. I will send you the needed information by teacher asap.

Michelle Shropshire, Principal
Elsie Collier Elementary School

[601 Snow Rd. N.](#)

[Mobile, Alabama 36608](#)

[251 221-1120](#) Office

[251 214-4859](#) Cell

mmshropshire@mcps.com



Mobile County
PUBLIC SCHOOLS

From: Pennington, Chris [mailto:cpennington@chickasawschools.com]

Sent: Monday, September 25, 2017 1:08 PM

To: Shropshire, M Michell/Collier <mmshropshire@mcps.com>

Subject: Research Proposal Permission

Appendix I

Feelings of Self-Efficacy*

For this research, self-efficacy in early literacy teaching is defined as “Creating a strong sense of efficacy through a personal mastery of teaching experiences in the classroom. Successes build a robust belief in one’s personal efficacy.”

What is the grade level that you teach? Please check one:

Kindergarten

First Grade

Second Grade

At what level of self-efficacy in early literacy teaching do you feel you are currently operating, with 1 being the lowest level and 5 being the highest level? Please check one:

1. Not at all

2. Somewhat Low

3. Neither High, nor Low

4. Somewhat High

5. Very High

* Participation in this survey is completely voluntary and confidential. All individual responses will be scrubbed and codified prior to use in data analysis.