THE EFFECTIVENESS OF SOUND PARTNERS TUTORING ON FIRST-GRADE STUDENTS AT RISK FOR READING FAILURE

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Dedication

This is dedicated to my sister, Tu-Uyen Nguyen, she teaches me everyday to be a kinder, gentler, and less judgmental human being.

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ABSTRACT

Evidence indicates that first-grade students who struggle with reading and do not receive help are likely to become poor readers for their entire school careers and will have continued reading problems into adulthood. If a person cannot read well, the outlook is dismal for their employment, self-sufficiency, community participation, social inclusion, and overall well-being. Researchers have found that the solution for struggling readers is not to simply wait and hope they will catch up with their peers. Instead, it is essential to identify students who are at risk for reading failure and disabilities as early as possible and quickly provide evidence-based interventions. This regression discontinuity study examined the effects of Sound Partners, an evidence-based early reading intervention that was implemented by teacher candidates, on the correct letter sounds of 46 first-grade students identified as being at risk for reading failure. Findings indicated that the intervention was effective in raising participants' reading scores. Additionally, stakeholder feedback from the participating university, schools, and teacher candidates helped to foster and develop a school-university relationship that yielded mutually beneficial results. Further research should be conducted that includes a larger sample of students using different measures and other evidence-based reading interventions, as well as following the students longitudinally.

Keywords: DIBELS, CLS, evidence-based practice, regression discontinuity, response-to-intervention, Sound Partners, teacher candidates

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List of Abbreviations

Evidence-based practice (EBP)

Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

DIBELS: Nonsense Word Fluency (NWF)

DIBELS: Correct Letter Sounds (CLS)

The Education for All Handicapped Children Act (EAHCA)

Multi-tiered system of support (MTSS)

Response-to-intervention (RTI)

Regression discontinuity (RD)

Randomized control trials (RCTs)

Response-to-intervention (RTI)

Sound Partners (SP)

What Works Clearinghouse (WWC)

Teacher candidates (TC)

CHAPTER ONE: INTRODUCTION

Background

First-grade students who struggle with reading are rarely just "late bloomers." In fact, reading problems are a serious issue that needs to be addressed as soon as possible. If these students are not taught how to read, they will not attain the same performance levels as their peers. Their struggles will accumulate as they progress through school and beyond. Longitudinal studies have concluded that a first-grade student who reads below the basic level has a 90% chance of continuing to be a poor reader at the end of fourth grade (Graves, Juel, & Graves, 1998). In addition, there is at least a 75% chance that the student will continue to be a poor reader as long as he or she is in school (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996). This means continued reading problems into adulthood (McGill-Franzen, 1987). Indeed, a substantial body of research has found that without early, systematic, focused, intensive, quality interventions, students who struggle with reading early on face a lifetime of illiteracy (National Institute of Child Health and Human Development [NICHIC], 2004), resulting in a very poor outlook for employment, self-sufficiency, community participation, social inclusion, and general well-being.

As a result, it is critical to identify struggling readers early (Good, Gruba, & Kaminski, 2001; Jenkins, Hudson, & Johnson, 2007) and subsequently provide quality interventions as soon as possible (Scammaca, Vaughn, Roberts, Wanzek, & Torgesen, 2007; Simmons et al., 2008). If first-grade students who are at risk do not receive appropriate interventions, their reading problems will continue to get worse and be harder to remedy as time goes on. Fortunately, early identification of students at risk for reading failure coupled with comprehensive early evidence-based reading interventions can turn this trajectory around, lessening the prospect of future reading problems and identification of disabilities (Mastropieri

& Scruggs, 2005; Vellutino, Scanlon, Small, & Fanuele, 2006).

Response to intervention (RTI) has been shown to be an effective framework for systematic delivery of these evidence-based interventions for struggling readers in the primary grades (Simmons et al., 2008). According to the National Center on Response to Intervention report (2010), RTI provides schools a framework for more meaningful ways to identify student needs, enhance instructional practices, and assist in appropriately identifying students with possible disabilities. RTI is a multitiered system of support (MTSS) that ensures early identification and support for students with learning and academic difficulties and provides the evidence-based interventions necessary to meet those needs.

Problem Statement

Despite its promise, however, there are several barriers to successful implementation of RTI. RTI's effectiveness relies heavily on its multitiered and systematic design and delivery. For RTI to be implemented successfully and yield results that positively impact student outcomes requires allocation of high levels of time and money, finite resources that are consistently in short supply in our schools. Specifically, the resources needed for a school to implement RTI successfully range from knowledge deficits, lack of adequate personnel, and need for long-term commitment to a variety of additional confounding factors. Its lack of ease, feasibility, and applicability prevents RTI from being a viable solution for many schools to solve reading remediation problems. Thus, early readers who struggle with reading often do not get the appropriate interventions despite the research and knowledge available.

These problems are compounded by the fact that teacher-training programs have difficulty-equipping candidates who come into the field of teaching with the skills necessary to teach reading and reverse reading failure. For example, according to a 2010 Institute of

Educational Sciences (IES) study on teacher preparation in early reading instruction, teacher candidates reported that upon exiting their teacher training programs, they had only 46% confidence in their preparedness to teach alphabetics – the essential prerequisite skill for knowing how to teach the basics of how to read to a nonreader. However, an even more critical skill teacher candidates need is the ability to identify reading deficits and provide the appropriate assistance for struggling readers to overcome their reading difficulties.

K-12 schools and universities face parallel difficulties. Schools need to prevent and provide early and effective interventions for reading difficulties. Universities need to prepare beginning teachers in effective reading instruction and remediation. The duality of these challenges presents a possible opportunity for both institutions to work together towards a solution that would provide mutual benefits could ultimately change the trajectory of reading failure for our youngest students.

A primary difficulty of RTI is that it is a resource drain for schools that must provide intensive instruction for all students. Intensive, early intervention works, but it is expensive in terms of time and funding (Mastropieri & Scruggs, 2005; Simmons et al., 2008). According to an IES (2010) study in teacher preparation in early reading, a majority of preservice teachers exit universities lacking knowledge and efficacy in early reading skills, specifically phonics and phonemic awareness (Salinger et al., 2010). This point of intersection, where schools and universities find themselves trying to solve the same problem from different angles, allows for an opportunity to capitalize on the problem in developing a solution that can be mutually beneficial by both meeting their needs and ultimately directly helping struggling readers.

Purpose Statement

The purpose of this study was to utilize university preservice teacher candidates as

interventionists to deliver the evidence-based intervention Sound Partners to first-grade students assigned via a cut-off score to either a treatment or a control group, to determine the effectiveness of the intervention as assessed by the students' reading scores.

Specifically, the intervention was delivered to first-grade students identified as being at risk for reading failure, as assessed by their initial first-grade reading scores. Schools provided individualized support to their identified struggling early readers through a partnership between the school and the university. That is, the university provided the training, support, and fidelity checks for participating teacher candidates during the delivery of the intervention to the struggling readers. Through this arrangement, the teacher candidates became beneficial to the students and the school while, at the same time, getting hand-on experiences and the universities getting better-trained novice teachers.

Teacher candidates were defined as university students in their first semester of a newly developed merged elementary and special education teacher preparation program. The intervention used, Sound Partners, is a structured program that provides intensive early literacy instruction for children who need more focused and individualized help than classroom teachers typically provide. The program consists of 100 lessons on phonological awareness, letter-sound activities, word identification, text reading, and writing (Vadasy, Jenkins, Antil, Wayne and O'Connor, 1997). Research indicates that struggling readers are likely doomed to a lifetime of illiteracy (Fuchs, Fuchs & Vaughn, 2014; NICHIC, 2004), unless provided quality interventions that have a proven track record, such as Sound Partners. Sound Partners has been identified by What Works Clearinghouse (2010) as an evidence-based practice that has improved outcomes in alphabetics and phonics for struggling early readers. In the RTI framework, Sound Partners, with its systematic design and progress-monitoring component, can be used as a tiered evidence-

based intervention.

According to the Individuals with Disabilities Education Improvement Act (IDEIA; 2004, "scientifically based instruction" refers to research that involves the application of rigorous, systematic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs to improve student outcomes. For schools and teachers to make research based decisions in their teaching of reading, they must first as teacher candidates during their training, acquire the skills to first teach students how to learn to read and then provide remediation for students who continue to struggle.

Teacher candidates need to understand how to use the information they learn during training to make data-based instructional decisions that improve student learning in their own classrooms. They should be able to identify students' reading needs and apply evidence-based interventions, strategies, and practices. Throughout this process new teachers gained experience within an RTI model that allowed them to better understand how to implement and follow up on the use of evidence-based practices (EBPs). Wanzek, Vaughn, Scammaca, Gaitlyn, Walker, and Capin (2015) found in a meta-analysis study of Tier 2 and 3 reading interventions that a variety of implementers, including those with specialized training (general and special education teachers, specialists) and those without (paraprofessionals), were equally able to successfully deliver tiered reading interventions to struggling early readers. Specifically, Vadasay, Jenkins, Antil, Wayne, and O'Connor (1997) found that volunteers could implement Sound Partners, yielding positive results for students.

Securing opportunities for teacher candidates to engage in field-experiences opportunities to directly teach and remediate alphabetics and phonics allowed them the critical practice in literacy instruction that they needed. The more training and application practice there is during

the teacher preparation phase, the better teacher candidates will be at applying this knowledge. Better teachers ultimately lead to better outcomes for students with and without disabilities.

Significance of the Study

The reading performance of first-grade students is extremely important, especially for students at risk for reading failure, given that remediating the problem in older students is much more difficult (Torgesen et al., 2001). However, early intervention can be a drain on resources for schools, and this is where the university partnership comes in. University teacher training programs need to provide teacher candidates with hands-on experience with teaching and remediating reading difficulties for students. The study was significant by determining if teacher candidates could provide evidence-based reading intervention with fidelity to improve outcomes for first-grade students.

Research Questions

The study addressed two primary research questions:

RQ1: Is there a significant difference in correct letter sound scores between those who received the reading intervention and those who did not?

RQ2: What are the perceptions of stakeholders regarding the process of using teacher candidates as interventionist in the reading intervention field component?

The null hypotheses for the study were as follows:

H0 1: There is no statistically significant difference in learning outcomes as measured by correct letter sound cut-off scores between those who received the Sound Partners intervention and those who did not.

CHAPTER TWO: LITERATURE REVIEW

Research on students at risk for reading failure suggests that early, explicit instruction in phonological and decoding skills helps ensure successful reading acquisition (Adams, 1990; Blachman, Ball, Black, & Tangel, 1994; Fielding-Barnsley, 1997; Juel, 1988; Liberman, Shankweiler, Blachman, Camp, & Werfelman, 1980; Spear-Swerling & Sternberg, 1996; Torgesen, Wagner, & Rashotte, 1994; Williams, 1985). As a result, such instruction may be critical for first graders who exhibit low literacy skills and, therefore, are at risk for developing long-term problems learning to read (Juel, 1988; Vellutino et al., 1996).

In order to change the trajectory for students who are at risk for reading failure, it is critical for teachers to be able to identify those students as soon as possible and provide early remediation. A multitiered system of support (MTSS) such as response to intervention (RTI) is the most effective way to provide early identification of students who are at risk. Those students can then be targeted for an evidence-based reading intervention immediately.

Bos, Mather, Dickson, Podhajski, and Chard (2001) found that many pre- and in-service teachers are not prepared to teach reading effectively, let alone remediate students' reading problems. It is critical to for preservice teachers who are in training to acquire phonemic awareness and the ability to teach phonics to their students.

Given the importance of providing students who are at risk for reading failure with direct instruction in phonological awareness and decoding strategies, I chose for this study the reading intervention Sound Partners (SP); Vadasy et al., 2004), which meets the criterion for an evidence-based practice (EBP) in phonemic awareness according to What Works Clearinghouse (WWC; 2010). This phonics-based tutoring program is designed to provide supplemental reading instruction to elementary school students in kindergarten through third grade with

below-average reading skills. This type of systemic instruction follows a progression that enables the students to acquire the skills and knowledge they need to learn new materials.

Further, given the need for better training of in-service teachers on specific reading interventions, prior to the intervention delivery, a group of teacher candidates were trained in using the Sound Partners program during reading instruction teacher preparation coursework. The overriding goal was to gather evidence and data to support the use of interventions such as Sound Partners so that other teachers can implement it as well and reach a greater population of students in need.

Response to Intervention

Prevention studies commonly show that the bottom 20% of early readers in kindergarten to second grade can learn to read in the average range if early identification and intervention is provided. According to the National Center on Response to Intervention report (2010), RTI provides schools a framework for more meaningful ways to identify student needs, enhance instructional practices, and assist in appropriately identifying students with possible disabilities. RTI is a multi-tiered system of support (MTSS) that ensures early identification and support for students with learning and academic difficulties.

The primary components of RTI include a schoolwide MTSS with universal screening, progress monitoring, and data-based decision-making through assessments and intervention. Typically, there are three to five tiered levels of support, each with its own level of instructional intensity. In each tier the premise is that high-quality instruction is occurring.

RTI focuses on a process of screening, progress monitoring, and data-based interventions. This provides three levels of prevention: primary, secondary, and tertiary. For example, an evidence-based early literacy after-school tutoring reading intervention program

would serve as a secondary or tertiary level of prevention for students at risk of reading difficulties.

Universal Screener

The first essential component of RTI is the use of a universal screener. Identifying students at risk and placing them in the correct tier of intervention is critical. The screener identifies both students who are and those who are not at risk. Universal screeners include validated benchmark goals and scores bands that predict level of risk and intensity of intervention needed.

Universal screeners are typically given schoolwide three times a year. They consist of brief assessments that target skills that are highly predictive of future outcomes. The important consideration of a universal screener is that it is sensitive, specific, and practical. The sensitivity factor identifies students who would be considered at risk, or considered true positives. The specificity factor measures students who are not at risk, or considered true negatives. There is no consensus on either a percentile or a cut-off score for universal screeners. Instead, certain skills are targeted at the primary tier. In kindergarten it is phonemic awareness. For first graders, it is word text reading, and for second and third graders it is type of words depending on difficulty.

Progress Monitoring

Another essential component of RTI is progress monitoring – a method of determining if students are benefiting appropriately from instruction and reaching their goals. RTI requires frequent progress monitoring. At a minimum, it should take place once a month, but more commonly recommended is weekly or biweekly. This is especially important as students move into more intensive tiers. Thus, the rate of progress monitoring should increase as the intensity increases.

Students identified in the schoolwide RTI system will already have received the primary prevention, Tier 1, which is the high-quality core instruction. While the duration of each tier can vary, Tier 1 is typically 8-10 weeks of progress monitoring. But more important than specific duration markers, a student's growth is measured by comparing his or her expected rate of learning to the actual rate of learning. The typical classroom instruction should meet the needs of most students. However, for students who do not respond to typical instruction, such as students at risk for reading failure, a secondary prevention level, Tier 2, is put into place. Tier 2 consists of evidence-based interventions of moderate intensity that address the needs of these struggling students. According to Gersten et al. (2009), in Tier 2, progress monitoring has to occur at least once a month and data should be used to determine if the student still requires the intervention or if sufficient progress is made. If needed, Tier 3 interventions should be considered. Tier 3 consists of the most intensive level of instruction that includes evidence-based interventions coupled with progress monitoring. Progress monitoring is used to assess students' academic performance, to quantify a student rate of improvement or responsiveness to instruction, and to evaluate the effectiveness of instruction.

Progress monitoring should be short and easy, and many sources are widely available for that purpose. One type of progress monitoring, curriculum-based measurement (CBM) (Fuchs & Fuchs, 2006), is well supported and has been shown to produce accurate and meaningful information about student academic level and growth. If done appropriately, tracking progress helps students learn more quickly. That is, teachers can use the data to judge the adequacy of student growth and improvement, and if a student fails to reach goals, the teacher can revise, adapt, and reevaluate to make instructional changes.

Data-based Decision-Making

Data-based decision-making occurs at all levels of RTI using data from universal screeners and progress monitoring. The data give teachers factual information about whether or not an intervention is working and, therefore, if it is necessary to increase or decrease the intervention. Database decisions should be made on the fidelity, intensity, and duration of interventions, strategies, and practices. As such, when making databased decisions, the aim is to move instructional choices away from nonmeasurable methods such as teacher opinions and colleague input and, instead, use student performance data to formulate instructionally relevant curriculum, tier movement, or any other relevant educational decision. Using data enables professional judgment to be informed directly by student performance.

RTI has numerous benefits that reach far beyond what a single student can gain. RTI produces copious documentation of student progress. Such data are then available for accountability purposes for teachers, schools, and districts. Thus, RTI allows for better communication with families about student progress. Concurrently, it can document student lack of response and progress, which can lead to appropriately identifying a disability.

The premise of RTI, which was developed using decades of research, is that reading difficulties are preventable. According to Simmons et al. (2008), the underlying assumption of RTI is that there is a window of opportunity where reading difficulties are much more easily altered by instruction. This is where quality teaching and interventions can really change outcomes. RTI capitalizes on this time frame, typically the primary grades, and can change students' reading trajectories.

A study by Vellutino, Scanlon, Small, and Fanuele (2006) followed students for three years within an RTI framework. Students were identified in kindergarten as being at risk for reading difficulties and were provided interventions in kindergarten and first grade. The study

found that these students reaped the benefits through third grade, where they continued to be successful in reading compared to their peers who did not receive the early intervention.

Simmons and colleagues (2008) found similar results in another study that followed students' reading performance within a RTI framework from kindergarten through third grade. At-risk students in kindergarten responded positively to intervention, and the results held over time. Therefore, successful models of schoolwide RTI programs that prevent reading difficulties for students in the primary grades do exist.

Challenges of RTI Implementation

Despite its many promises and great potential, implementing an RTI system is subject to numerous challenges and drawbacks (Mastropieri & Scruggs, 2005). For example, the effectiveness of RTI hinges on the use of empirically validated and supported instruction in the core curriculum. This is also imperative in the subsequent tiers while implementing interventions, practices, and strategies. Thus, there is a basic assumption that teachers, both general and special education, use research-based methods and materials. However, this is often not the case (Landrum, Cook, Tankerlsey, & Fitzgerald, 2008).

Presently, general educators report that they do not possess the necessary background knowledge and skills to implement RTI (Fuchs & Fuchs, 2006). Yet, according to the Adoption of RTI 2010 survey, 94% of schools reported some implementation and 24% reported full implementation. When key stakeholders in RTI, such as the schools and teachers, report such different perceptions on their experience with RTI, this sets alarms on the actual current state of RTI implementation. RTI is such a comprehensive and schoolwide system that requires teachers buy-in, knowledge and skills that the discrepancy between the reporting suggests even further pitfalls and problems for successful RTI implementation.

Another critical challenge of RTI concerns human resources. Determining who is responsible for ensuring the procedures and process are implemented properly can be problematic. This issue occurs both in practice and theory, as neither professionals in the field nor the literature provides clear, definitive answers to the question of who is responsible for which tasks in RTI.

With regard to financial resources, Lyon et al. (2001) supported the use of special education funding for early identification and prevention. However, special education is already underfunded and struggling to support its own needs, making it difficult to also fund a school-wide, tiered systems-based model.

Operationalizing RTI for struggling readers requires implementing appropriate, high-quality core reading instruction along with evidence-based interventions and strategies. Through universal screeners and progress monitoring schools can administer, collect, score, and analyze assessments. That data can then be used to make decisions and target instruction using evidence based strategies and intensive interventions. But all this cannot be done in isolation.

Fixsen, Naoom, Blasé, Friedman, and Wallace (2005) suggested a comprehensive model of operationalizing a schoolwide system that consists of training, evaluation, administrative facilitative support, continually consultation and coaching, strategic staff selection, and systems intervention as needed. This would require collaborating with faculty, staff, and special service providers to coordinate services and schedules. It is vital to use social, human and financial resources wisely.

RTI is by design a framework for dynamic, well-orchestrated use of assessments and interventions to optimize student performance and make data-based decisions through multiple tiers of high-quality instruction with the end goal of achieving well-integrated supports to catch

as many students as possible and get them the help they need before they fall through the cracks.

Sound Partners

Sound Partners, developed by the Washington Research Institute in 2004, is a phonics-based tutoring program that provides supplemental reading instruction to kindergarten through third-grade students with below-average reading skills. Designed specifically for use by tutors with minimal training and experience, the program consists of a set of scripted lessons in alphabetics and phonics skills and uses BobBooks® beginning reading series as one of the primary texts for oral reading practice. The tutoring can be provided as a pullout or after-school program, as well as by parents who homeschool their children.

Vadasy et al. (1997) conducted a study in which 40 at-risk first graders who did not differ on reading skill prior to the intervention were randomly assigned to one of two groups, a treatment group or a control group. The treatment group received 30 minutes of individual instruction from community tutors four days a week for up to 23 weeks. The control group received only the regular reading instruction in their classrooms. The treatment group outperformed the control group on all reading, decoding, spelling and segmenting, and writing measures, with effect sizes averaging $d = 0.21$, 0.35, 0.37, and 0.19, respectively. Differences were significant on only one nonword reading and one spelling measure.

Another purpose of this study was to determine the effects of the tutors' ability to implement the lessons scripted for them. Tutors who implemented the program with a high degree of fidelity achieved significant effect sizes in the each early reading skill area assessed. Thus, the results support the potential of nonprofessional tutors to supplement early reading instruction, and prevent learning disabilities in at-risk children. Sound Partners can be used by almost anyone, which is a huge benefit. It holds great potential to help change the trajectories of

children who do not have access to quality educational instructors and would likely otherwise end up not being able to read.

Another study by Vadasay, Jenkins, and Pool (2000) examined the effectiveness of nonprofessional tutors who were using a phonologically based reading treatment similar to Sound Partners, in which successful reading outcomes have been demonstrated. Participants were 23 first graders at risk for learning disabilities. They received intensive one-to-one tutoring from non-certified tutors for 30 minutes four days a week for an entire school year. Tutoring included instruction in phonological skills, letter-sound correspondence, explicit decoding, rhyme analysis, writing, spelling, and reading phonetically controlled text. At the end of the year, tutored students significantly outperformed students in the control group on measures of reading, spelling, and decoding with effect sizes ranging from $d = 0.42$ to 1.24.

The study also found that treatment effects diminished at a follow-up at the end of second grade, although tutored students continued to significantly outperform untutored students in decoding and spelling. Findings suggest that phonologically based reading instruction for first graders at risk for learning disability can be effectively delivered by anyone, even those without training.

In a longitudinal study of one-to-one tutoring for students at risk for reading failure (Vadasy, Sanders, Peyton, & Jenkins, 2002), participants either (a) received phonics-based tutoring in first grade, (b) were tutored in comprehension skills in second grade, or (c) were tutored both years. At the second-grade posttest condition, there were significant differences in word identification and word attack between students who had been tutored in first grade only compared to students who were also tutored in second grade. Overall, outcomes were better for students who had been tutored in first grade only in comparison to students who received a

second year of tutoring. Thus, these findings indicate that there were no advantages to a second year of tutoring.

Along another dimension, Vadasy, Sanders, and Peyton (2005) conducted a quasi-experimental study, which was part of a series of investigations of variations of supplemental reading tutoring. Specifically, the relative effectiveness of more intense decoding instruction or text reading practice was examined. Fifty-seven first-grade students who scored in the lowest quartile for reading skills received either regular classroom reading instruction alone or one of two treatments, (a) tutoring in word study with text reading practice or (b) word study tutoring alone. Trained paraprofessional tutors provided the treatment instruction.

At the end of first grade, students who had received tutoring significantly outperformed their non-tutored peers on measures of reading accuracy, reading comprehension, reading efficiency, passage reading fluency, and spelling. The effect size was $d = 0.85$ for alphabetics, $d = 0.67$ for fluency, and $d = 0.75$ for reading comprehension. Differential treatment effects on passage reading fluency were also examined, taking into consideration pretest skill levels and text reading practice characteristics. The students in the treatment group demonstrated noticeable improvements over their peers, showing that the extra word study instruction made a positive difference on their reading outcomes.

As part of the same series of investigations, Vadasy, Sanders, and Peyton (2006a) evaluated the effectiveness of code-oriented supplemental instruction for kindergarten students at risk for reading difficulties. Paraeducators were trained to provide 18 weeks of explicit instruction in phonemic skills and the alphabetic code. Students identified by their teachers as meeting study eligibility criteria were randomly assigned to two groups, individual supplemental

instruction or control. Students were pretested in December, mid-tested half way through the study, and then posttested in May and June of their kindergarten year.

At posttest, students in the treatment group significantly outperformed those in the control group on measures of reading accuracy, reading efficiency, oral reading fluency, and developmental spelling. Students who received treatment had significantly higher linear growth rates in phonemic awareness and alphabetic knowledge during the kindergarten. Specifically, the effect size was $d = 0.45$ for alphabetics, $d = 0.80$ for fluency, and $d = 0.28$ for reading comprehension. At a one-year follow up, significant differences between the groups remained in both reading accuracy and efficiency.

Vadasy, Sanders, and Peyton conducted an additional study in 2006(b). One was quasi-experimental and one was a randomized experiment designed to evaluate the effectiveness of supplemental instruction in structural analysis and oral reading practice in second- and third-grade students with below-average word reading skills. Individual instruction was provided by trained paraeducators in single- and multiletter phoneme/grapheme correspondences, structural analysis of inflected, affixed, and multi-syllable words, exception word reading, and scaffold oral reading practice. Both studies revealed positive short-term word level and fluency effects for the students who received the additional instruction, again showing that intensive reading interventions work for students who are struggling with reading.

In a more recent study, the Sound Partners program was implemented across 30 classrooms in 13 urban public schools (Vadasy & Sanders, 2008) with 54 kindergarten students who were considered at risk for reading difficulties. One-to-one or one-to-two (dyad) pullout sessions were conducted with the students for 30 minutes a day on four days of the week, over a period of 18 weeks. Multiple measures were employed to assess the impact of Sound Partners on

various literacy constructs. In the alphabetics domain, the impact was mixed, with results showing a statistically significant positive effect size for phonological awareness of $d = 0.59$, as well as for one measure of phonics, the WRMT-R Word Reading Accuracy test, at $d = 0.63$. However, the effect size for letter knowledge was $d = -0.14$, which was not statistically significant. This was also true for another measure of phonics, Composite TOWRE: Phonemic Decoding Efficiency and Sight Word Efficiency, with an effect size of $d = 0.29$. Therefore, the overall effect size for the alphabetics domain was $d = 0.34$, which, according to WWC, is not substantively important.

In a study examining the long-term growth of reading skills following a one-year supplemental first-grade code-oriented intervention provided by paraeducators, a group of 79 first graders with reading skills averaging in the lowest quartile received explicit alphabetic and decoding instruction (Vadasy, Sanders, & Abbott, 2008). The participants were assessed post-intervention and at one year intervals through the end of third grade. Growth model results indicated that students continued to benefit from the intervention provided in first grade through the end of third grade. Specifically, average performance was near the 50th percentile on decoding and reading fluency, near the 40th percentile on word reading and comprehension, and near the 30th percentile on spelling. Without exception, both receptive language and rapid automatized naming uniquely predicted third-grade outcomes. Of the students who remained in the study by the fall of second grade, a subgroup selected by their teachers received additional supplemental instruction. Students referred for added intervention continued to perform significantly lower than those more readily remediated with first-grade intervention alone, showing that earlier intensive intervention provides better outcomes than later ones.

In another study, Vadasy and Sanders (2010) tested the efficacy of supplemental phonics instruction for 84 low-skilled language minority (LM) kindergarteners and 64 non-language minority kindergarteners at 10 urban public schools. Paraeducators were trained to provide the 18-week, January to May, intervention. LM and non-LM students performing in the bottom half of their classroom language group were randomly assigned either to individual supplemental instruction or to classroom instruction only. Regardless of their language status, 67 students who received treatment significantly outperformed 81 students in the control group at posttest in alphabetics, word reading, spelling, passage reading fluency, and comprehension. Average treatment was $d = 0.83$. Nevertheless, LM students tended to have lower posttest performance than non-LM students, with LM $d = -0.30$. LM students were also significantly less responsive to treatment on word reading.

When they examined the contribution of classroom phonics time to student outcomes, researchers found that the treatment effect on spelling was greater for students in lower phonics classrooms, whereas the treatment effect on comprehension was greater for those in higher phonics classrooms. Finally, when they examined LM students by themselves, Vadasy and Sanders (2010) found that pretest English receptive vocabulary positively predicted most posttest scores and interacted with treatment only on phonological awareness. In general, pretest vocabulary did not moderate kindergarten LM treatment response.

In a study of the efficacy of 20 weeks of individual supplemental phonics-based instruction for language minority and non-language minority first graders (Vadasy & Sanders, 2011), students were designated LM if the primary home language was not English. Those performing in the bottom half of their classroom in letter knowledge and phonological awareness

were randomly assigned to treatment and control conditions. Treatment included alphabetics, decoding, and oral reading practice.

Results showed that 93 students in the treatment group outperformed 94 students in the control group on five of the six posttests. However, LM students exhibited lower treatment response on passage reading fluency. Pretest word reading did not moderate treatment response, and LM students with greater baseline vocabulary showed greater treatment response on posttest word reading and spelling.

A follow-up study (Vadsay & Sanders, 2012) examined the long-term treatment effects of the intervention on lower skilled language minority and native English-speaking students who had participated in the previously discussed efficacy trial of a kindergarten phonics-based intervention. Follow-up procedures allowed 93% of the original sample to be recollected for simple treatment effects modeling. Seventy-eight of the LM students were retained, and 59 of the non-LM students. 72% were recollected for classroom instruction modeling, with 62 LM students and 44 non-LM students.

Simple treatment effects on longer-term outcomes were detected on word reading, spelling, and comprehension outcomes for LM students. Approximate effect sizes averaged d = 0.27. Comparatively, treatment effects for non-LM students were detected on all outcomes, including fluency, with approximate effect sizes averaging d = 0.54. Instructional model results showed that increased time in first-grade word study instruction and second-grade meaning instruction were associated with higher reading scores for LM students at the end of second grade, regardless of experimental condition. For non-LM children, greater time in first-grade meaning instruction was connected with higher reading scores at the end of second grade, regardless of experimental condition. Finally, kindergarten intervention effects tended to be

greater for both LM and non-LM students who received more first-grade word study instruction and more second-grade meaning instruction.

Teacher Preparation

Teachers need to enter the classroom with the skills necessary not only to teach reading but also to remediate reading problems (Bos, Mather, Dickson, Podhajski & Chard, 2001). In most general education teacher preparation programs, future teachers are trained to teach reading solely through a core curriculum. However, the reality in classrooms is that not all students will respond successfully to the core curriculum. Students who struggle with reading will need to be provided reading instruction that targets and remediates their specific issues (Lane, 2014).

Teacher training and preparation is the critical time for these necessary skills to be developed in new teachers. Teacher candidates need to learn how to teach students to read as well as how to work through problems in students at risk of reading failure. If they learn these valuable skills from the beginning, as inservice teachers they will be able to effectively support students who struggle with reading. Students should not have to wait for new teachers to learn, and they should not have to fail because they did not receive proper interventions using evidence-based practices in a timely manner (Blanton, Pugach & Boveda, 2014).

It is vital to create teacher preparation programs that emphasize frameworks such as RTI in a multitiered support system that requires general and special education to work together to produce greater student outcomes. Teacher preparation must include implementing schoolwide RTI through MTSS, as well as the use of EBPs and other effective research strategies, particularly for effective reading instruction and remediation (Spear-Swerling & Brucker 2004). This will provide the framework for highly effective and trained teachers, who can hopefully then improve outcomes and test scores for all students.

An individual can master oral language and still be illiterate. Literacy necessitates accessing messages conveyed via print, and this requires coordination of knowledge, skills, and processes. Learning to read actually becomes a code. Thus, Adams (1990) found that most students who struggle with severe reading problems have the greatest difficulty in lack of foundational phonemic awareness skills. Phonemic awareness is the capacity to detect and manipulate the individual phonemes or speech sounds within words.

Overwhelming amounts of research show that phonemic awareness is a powerful predictor of later reading success. Thus, it is well established that early, systematic, and explicit phonics instruction significantly improves children's reading proficiency (Adams & Snowing, 2001; Vadasay, Jenkins, & Pool, 2002; Vadasy, Sanders, & Peyton, 2006). To support primary-grade students who are at risk of reading failure, it is critical to identify problems early and intervene intensively. The interventions must include EBPs that have been proven to remediate the problem. Sound research already exists on how to teach reading, but teacher preparation programs must use this knowledge to effectively train new teachers and build educational programs that can teach reading to all students (Salinger et al., 2010).

Teacher preparation programs should also include ample opportunities for teacher candidates to practice with students in their classrooms, accompanied by specific feedback by program supervisors (Lane, 2014). This includes working intimately with students who are at risk with identified academic difficulties. Teacher preparation must target the specific needs of real-life students in order for teacher candidates to adequately learn how to service students with all kinds of struggles, but particularly those in reading.

Teacher preparation programs that include components of effective reading instruction, particularly in phonemic awareness, can help teacher candidates gain the necessary skill set to

remediate reading failure and, as a result, change the trajectory of student outcomes and, ultimately, change lives. Lane (2014) advocated that teacher candidates have knowledge of the foundation, processes, and structure of language and literacy development, and understand the role of EBPs for reading instruction and interventions.

In developing effective teacher preparation programs that have shared outcomes of developing future teachers who can impact student achievement, careful attention must be paid to improving early phonemic awareness within a multitiered intervention system such as RTI. This is the way to impact systemic cohesive change.

Individual differences in phonological awareness are related to the acquisition of reading skills. Children who are better at detecting phonemes learn to decode words more easily, and this association seems to be present even after variability in reading skills due to intelligence, receptive vocabulary, memory skills, and social class. Elbro (1996) suggested that phonological awareness is the single strongest predictor of reading development in both childhood and adulthood.

Interventions have extensively shown that classroom teachers can make a huge impact when provided literacy curricula that include explicit and well-designed phonemic awareness and alphabetic activities, along with quality training and professional development. Well-educated, well-prepared teachers can enable at-risk first-grade students to attain positive outcomes in the development of critical early reading skills (Coyne, Kame'enui, Simmons, & Harn, 2004; Elbro & Petersen, 2004; Foorman et al., 2003; Fuchs et al., 2001; Torgesen, Wagner, Rashotte et al., 1999). Preservice teacher candidates have shown to graduate with the lowest knowledge and efficacy in these foundational skills, which is identified as the most critical skills needed for student success in reading (Salinger et al., 2010).

Summary

Substantial research clearly shows that without quality, systematic, focused, and intensive reading-focused interventions, children at risk for reading difficulties are likely going to be faced with a lifetime of illiteracy (NICHIC, 2004). Despite older theories that these children would eventually catch up with their peers given time, we now know that the solution is absolutely not to wait. It is essential to first identify students early (Good et al., 2001), and then provide quality interventions (Scammaca et al., 2007). The joint problems that schools and university face provide an opportunity to merge and work together towards an end goal of improving student reading outcomes. Universities benefit by producing teacher candidates with the skills necessary to teach and remediate reading. Schools benefit, because due to the constraints of implementing a schoolwide RTI system, partnering with a teacher preparation program can provide struggling readers with trained individuals to deliver effective evidence-based interventions that target the reading concerns.

Unless first-grade students who are at risk for reading challenges receive appropriate interventions, they will continue to have reading problems all the way into adulthood (McGill-Franzen, 1987). Thus, early identification of students at risk for reading failure coupled with comprehensive early evidence-based reading interventions can reduce the percentage of students who end up illiterate. The studies discussed in this literature review support the evidence that students at risk for reading failure who receive early reading interventions experience higher levels of reading mastery in subsequent grade levels, often reading at average levels in just a short period of time.

CHAPTER THREE: METHOD

Design

This study used a regression discontinuity (RD) design. The hallmark feature of an RD design is to group students, via an assignment variable, as a means of distinguishing treatment students from control (or unassigned) students. RD is based on a variable measure such as test scores, allows for rigorous analysis and determination of causal inference within a treatment and control group model. Thislethwaite and Campbell (1960) first proposed RD as a legitimate alternative to the randomized experiment, because its advantage is that it can provide unbiased estimates of a treatment effect when it is not practical to undertake a randomized experiment. RD is a type of pre- and post-test comparison group design (Cook & Campbell, 1979). The RD design includes the major strengths of experimental designs but does not have random assignment of students to treatment and control groups. The major strength of the RD design is that it does not require equivalence before instruction. This is because the major assumption is that in the absence of a treatment effect, the groups should be the same on the post-test measure (i.e., those immediately above and below the cut score would have no reason to score differently in terms of the outcomes).

The design is described as follows:

O C X O

O C O

The O suggests the students are measured prior to instruction and the C denotes that the groups are assigned by a conditional factor (i.e., participants scoring above or below a specific cut score). In this case, the lower scoring group (27 or below) receives the tutoring intervention (X) and the second group (score of 28 and above) does not. At the end, students are measured in

terms of the MOY outcome.

Because the assignment process is known and can be modeled as part of the investigation of potential treatment effects, the RD design provides results similar to those of a true experimental design when implementing the latter type of design is not feasible. Taken together, features of the RD design can, therefore, provide evidence that the intervention, as opposed to other factors, caused the results (Lesik, 2006). Because the study took place in school settings that are subject to a multitude of possible extraneous variables that cannot always be controlled, an RD design was chosen over a randomized controlled trial (RCT), which is sometimes considered the gold standard of research. RD compensates for the lack of random assignment by modeling the assignment process. According to Lesik (2006), RD does not require group assignment because it uses an exogenous factor (i.e., cut-off score) as the basis for grouping. Based on the cut-off score, then, the critical assumption can be made that two similar groups would have similar outcome trajectories without the introduction of the treatment.

When using RD, assignment to treatment and control groups should be based solely on the cut-off score. Other measures such as gender or disability categories cannot determine or influence the formation of the groups. If both the treatment indicator and the assignment variable, such as a pretest cut-off score, are included as covariates in a hypothesized regression model, treatment effect can be determined (Cook & Campbell, 1979; Rubin, 1977). It is also possible that the treatment may interact with the pretest measure. A significant interaction would suggest different treatment effects at different levels of student previous learning (as captured by the pretest score). This would be shown by different slopes for the treatment and control regression lines.

To formulate an RD design, groups are formulated based on a previous test, and a cut-off

score is specified. For example, if the cut score established is 21, then students whose scores were 20 or lower would be assigned to one group (e.g., the treatment group), and students who scored 21 or higher would be assigned to the other group (e.g., control group). This assignment process could also be reversed; that is, lower scoring students could be assigned to the control group and higher scoring students assigned to the treatment group.

Primary Assumptions of RD

According to Lesik (2006), the primary assumption of an RD design is that a cut-off score assignment is a plausible alternative for assigning students to groups when random assignment is not possible because the sensitivity of scores around the established cut score to the presence or absence of a treatment strengthens the belief the students are similar before the introduction of the treatment. More specifically, in the absence of an intervention, the students who scored on either side of the established cut score of 50 (i.e., students scoring 49, 50, 51, or 25) would be expected to have similar outcomes, given their similar pre-treatment scores. However, when there is a statistical discontinuity in outcome scores for students observed on either side of the chosen cut score, it can be argued that there is the presence of an unbiased treatment effect. It is important that the assignment of individuals by the cut score be followed. A second assumption is that the pattern of pretest scores must be specified correctly by the statistical model used. Models were tested initially for possible higher order polynomial effects related to the related to the pretest scores (i.e., quadratic, cubic) and for interactions between the higher order polynomials and the treatment. These were found to be nonsignificant so they were dropped from the final model presented. The third assumption is that there is no coincidental factor at the chosen cut score that resulted in the observed treatment effect. This threat is reduced by the assignment of the lowest scoring students. In this study, individuals with a pretest score of

27 or below were assigned to the treatment group.

The greatest evidence of treatment effect is the presence of discontinuity between the individuals in the treatment and control groups right at the cut-off score. The difference in the slope of the treatment effect (coded 1 = treatment and 0 = control) will determine the effectiveness of the intervention. Based on test outcomes, RD allows for a line of best fit, or a regression line, which represents the outcome of the treatment and control group. This discontinuity, if statistically significant, provides evidence of the treatment effect and appears in a slope in the regression line between pre- and posttest (Okimoto & Heck, 2015). If the treatment is effective, there will be a discontinuity in the regression line representing the pretest slopes, which is evident in the treatment group. If the treatment is not statistically significant, there will be no break in the regression line and there will only be a single slope, or regression line. The greater the distance between the pretest slopes between the individuals in the two groups, the stronger the argument for the treatment effect.

For example if the cut off score is between 50 and 51, there should be a discontinuity of scores at the end of the intervention between the treatment group (students who had scored 50 or below on the initial test) and the control group (students who had scored 51 or above). If the intervention was effective, there should be a break, or a discontinuity, and separate slopes should appear for the treatment and control groups, as in Figure 3.1. The larger the treatment effect observed, the stronger the evidence that the intervention was successful. The null hypothesis is that without the presence of the intervention, students who scored near the cutoff score (e.g., 50 and 51) on the initial test would typically only show one continuous slope when retested, since their scores had been so similar before the treatment was introduced.

In the current educational climate, rigorous scientific evidence is required to demonstrate

that instructional interventions produce positive outcomes for students. Teachers must use practices that work, and be able to prove that they work. RD provides one relatively easy design to implement in educational settings that can provide results demonstrating what works in busy, ever-changing classrooms and schools.

Specifying the RD Model

Following Shadish, Cook, & Campbell, a preliminary model was first specified to check whether there might be higher order polynomial effects and interactions. Quadratic and cubic terms were included in the model and then non-significant terms should be dropped from higher to lower order. In all cases, these higher order terms were found to be non-significant. The following equation represents the reduced RD model examined after testing for higher order treatment effects and higher order treatment pretest interactions:

$$Y_i = \beta_0 + \beta_1(x_i - x_0) + \beta_2 z_i \qquad (3.1)$$

where

Y_i = failing (0) or passing (1) score for student *i*

x_i = transformed pretest score of student *i* ($x_i - x_0$)

x_0 = the required cut score for assigning student *i*

z_i = the treatment for student *i* (0 if control; 1 if treatment)

β_0 = probability of passing for the control group

β_1 = coefficient for pretest effect

β_2 = coefficient for treatment effect

The coefficients β_1 and β_2 represent the effect of the pretest and the effect of the treatment, respectively. The effect of the pretest is assumed linear for this illustration, and it is also assumed

that there is no significant interaction between the treatment and pretest (which is tested in tested model).

RD is also an acceptable, feasible, and empirically sound choice. Thus, randomized control trials are no longer the only method to conduct an unbiased research study in educational settings. This can help researchers and practitioners determine the effectiveness of interventions designed to improve academic outcomes using scientific methods that can reduce (or eliminate) rival explanations due to weak research designs. Through working together to implement interventions that can reduce rival explanations of treatment effects (Smith, Schmidt, Edelen-Smith, & Cook, 2013), we can meet the intended goals of ultimately improving students' lives and making our community a better place.

Research Questions

The following research questions guided the study:

RQ1: Is there a significant difference in correct letter sound scores between those who received the reading intervention and those who did not?

RQ2: What are the perceptions of stakeholders regarding the process of using teacher candidates as interventionist in the reading intervention field component?

Null Hypotheses

The null hypotheses for the study were as follows:

H0 1: There is no statistically significant difference in learning outcomes as measured by correct letter sound cut-off scores between those who received the Sound Partners intervention and those who did not.

Participants and Setting

The research took place within the first year of the pilot of a merged teacher preparation

program of a university teacher-training program. The merged teacher preparation program was a collaborative effort between the elementary and special education departments of the university. Traditionally, joint education programs have separate, yet parallel courses, curriculum, instructors, field assignments, and objectives and be called discrete programs (Blanton & Pugach, 2007). The purpose of the new merged teacher preparation program was to develop a program that was truly merged between both departments. Revamping of the program involved an overhaul of design through a number of innovations such as a merged curriculum through new syllabi, professors co-teaching new courses, technology integration, and revised field components such as the EBP reading intervention field experience. The setting of the study included the school sites partnering with the program. The teacher candidates recruited had applied for and been accepted into the pilot program.

The new program recruited schools in the Hawaii Department of Education that had similarly aligned goals. Purposeful sampling method was used to recruit and select six elementary schools from the Hawaii Department of Education, these schools had agreed to partner with the pilot program for two years. The study took place within the first semester of the program. The stakeholders include university and school personnel and the teacher candidates who served as interventionists. The participants were first-grade students identified as at risk for reading failure in these six schools.

School Demographics

School 1. According to the State of Hawaii Department of Education Student Ethnicity School Status and Improvement Report (2014), the economic level of families in School 1 falls within the mid-range income level for the state of Hawaii. This school has a total enrollment of approximately 613 students. At the time of this study, 5.7% of the student population was

eligible for reduced or free-price lunch. White students made up approximately 76% of the student body, followed by 7% African American, 5% Filipino, 2% Korean, and 2% Hispanic (see Figure 3.1). Schoolwide, approximately 9% of the student population was receiving special education services (see Figure 3.2).

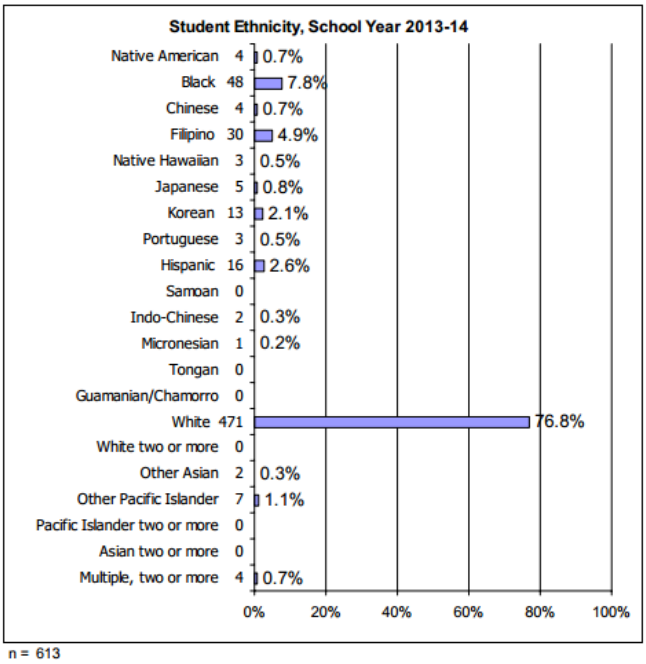


Figure 3.1. Student ethnicity, School 1.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

Student Profile

School year	*2011-12*	*2012-13*	*2013-14*
Fall enrollment	576	643	597
Number and percent of students enrolled for the entire school year	489 84.9%	550 85.5%	502 84.1%
Number and percent of students receiving free or reduced-cost lunch	43 7.5%	53 8.2%	34 5.7%

	2011-12	*2012-13*	*2013-14*
Number and percent of students in Special Education programs	39 6.8%	49 7.6%	54 9.0%
Number and percent of students with limited English proficiency	11 1.9%	8 1.2%	6 1.0%
Percent of Kindergartners who attended preschool	63%	69%	72%

Figure 3.2. Student profile, School 1.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

School 2. School 2 falls within the mid-range income level for the state of Hawaii. This school has a total enrollment of approximately 459 students. At the time of this study, 48% of

the student population was eligible for reduced-price or free lunch. White students made up approximately 41% of the student body, followed by 22% African American, 13% Hispanic, 8% Native Hawaiian, 4% Filipino, and 3% Samoan (see Figure 3.3). Schoolwide, approximately 10% of the student population was receiving special education services (see Figure 3.4).

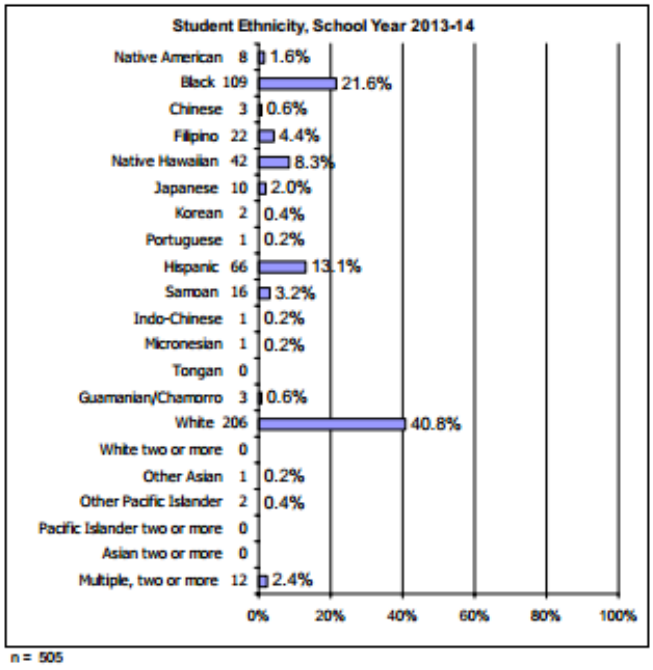


Figure 3.3. Student ethnicity, School 2.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

Student Profile

School year	2011-12	2012-13	2013-14
Fall enrollment	277	403	459
Number and percent of students enrolled for the entire school year	227 81.9%	352 87.3%	379 82.6%
Number and percent of students receiving free or reduced-cost lunch	114 41.2%	193 47.9%	222 48.4%

	2011-12	2012-13	2013-14
Number and percent of students in Special Education programs	36 13.0%	40 9.9%	44 9.6%
Number and percent of students with limited English proficiency	27 9.7%	21 5.2%	12 2.6%
Percent of Kindergartners who attended preschool	39%	39%	--

Figure 3.4. Student profile, School 1.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

School 3. School 3 falls below the median income level for the state of Hawaii. This school has a total enrollment of approximately 253 students. At the time of this study, 63% of

the student population was eligible for reduced or free lunch. Native Hawaiian students made up approximately 19% of the student body, followed by 18.6% Japanese, 18% Chinese, 10% Indo-Chinese, 9.5% White, 6% Filipino, and 3% each Black, Korean, and Micronesian (see Figure 3.5). Schoolwide, approximately 13% of the student population was receiving special education services (see Figure 3.6).

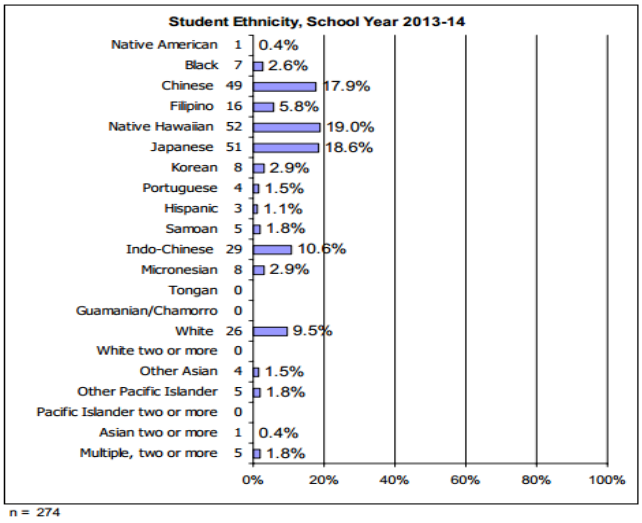


Figure 3.5. Student ethnicity, School 3.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

Student Profile

School year	*2011-12*	*2012-13*	*2013-14*
Fall enrollment	244	248	253
Number and percent of students enrolled for the entire school year	231 94.7%	221 89.1%	243 96.0%
Number and percent of students receiving free or reduced-cost lunch	127 52.0%	128 51.6%	134 53.0%

	2011-12	*2012-13*	*2013-14*
Number and percent of students in Special Education programs	25 10.2%	25 10.1%	32 12.6%
Number and percent of students with limited English proficiency	34 13.9%	31 12.5%	35 13.8%
Percent of Kindergartners who attended preschool	75%	75%	--

Figure 3.6. Student profile, School 3.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

School 4. School 4 falls above the median income level for the state of Hawaii. This school has a total enrollment of approximately 455 students. At the time of this study, 13.6% of

the student population was eligible for reduced-price or free lunch. Japanese students made up approximately 32% of the student body, followed by 22% White, 13% Chinese, 9% Native Hawaiian, 7% Filipino and 6% Korean (see Figure 3.7). Schoolwide, approximately 3% of the student population was receiving special education services (see Figure 3.8).

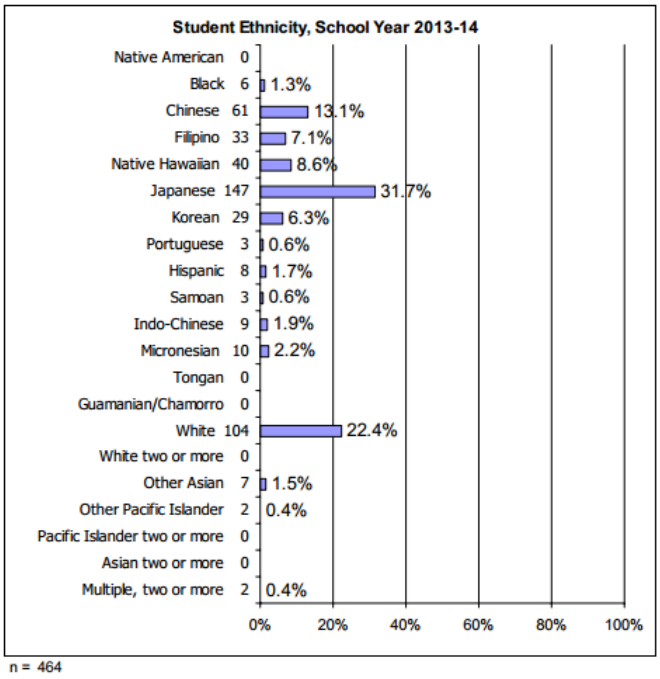


Figure 3.7. Student ethnicity, School 4.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

Student Profile

School year	*2011-12*	*2012-13*	*2013-14*
Fall enrollment	468	467	455
Number and percent of students enrolled for the entire school year	452 96.6%	434 92.9%	437 96.0%
Number and percent of students receiving free or reduced-cost lunch	58 12.4%	62 13.3%	62 13.6%

	2011-12	*2012-13*	*2013-14*
Number and percent of students in Special Education programs	20 4.3%	20 4.3%	15 3.3%
Number and percent of students with limited English proficiency	11 2.4%	12 2.6%	12 2.6%
Percent of Kindergartners who attended preschool	86%	90%	--

Figure 3.8. Student profile, School 4.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

School 5. School 5 falls below the median income level for the state of Hawaii. This school has a total enrollment of approximately 324 students. At the time of this study, 55.2% of

the student population was eligible for reduced-price or free lunch. Native Hawaiian students made up approximately 49% of the student body, followed by 10% Japanese, 10% Chinese, 7% Filipino and 6% Micronesian (see Figure 3.9). Schoolwide, approximately 5.6% of the student population was receiving special education services (see Figure 3.10).

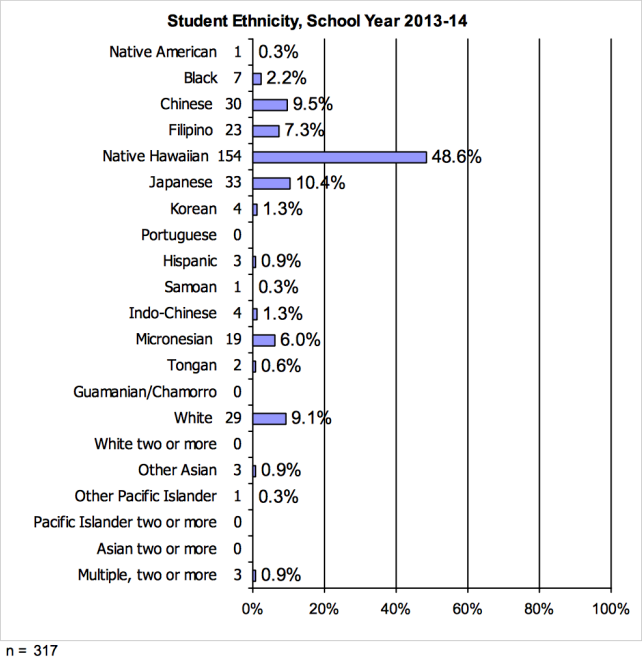


Figure 3.9. Student ethnicity, School 5.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

Student Profile

School year	*2011-12*	*2012-13*	*2013-14*		*2011-12*	*2012-13*	*2013-14*
Fall enrollment	307	321	324	Number and percent of students in Special Education programs	22	22	18
					7.2%	6.9%	5.6%
Number and percent of students enrolled for the entire school year	285	296	306	Number and percent of students with limited English proficiency	24	24	27
	92.8%	92.2%	94.4%		7.8%	7.5%	8.3%
Number and percent of students receiving free or reduced-cost lunch	178	175	179	Percent of Kindergartners who attended preschool	75%	67%	--
	58.0%	54.5%	55.2%				

Figure 3.10. Student profile, School 5.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

School 6. School 6 falls below the median income level for the state of Hawaii. This

school has a total enrollment of approximately 295 students. At the time of this report, almost 94% of the student population was eligible for reduced-price or free lunch. Micronesian students made up approximately 48% of the student body, followed by 30% Native Hawaiian, 8% Samoan, 7% Indo-Chinese, and 4% Tongan (see Figure 3.11). Schoolwide, approximately 10.5% of the student population was receiving special education services (see Figure 3.12).

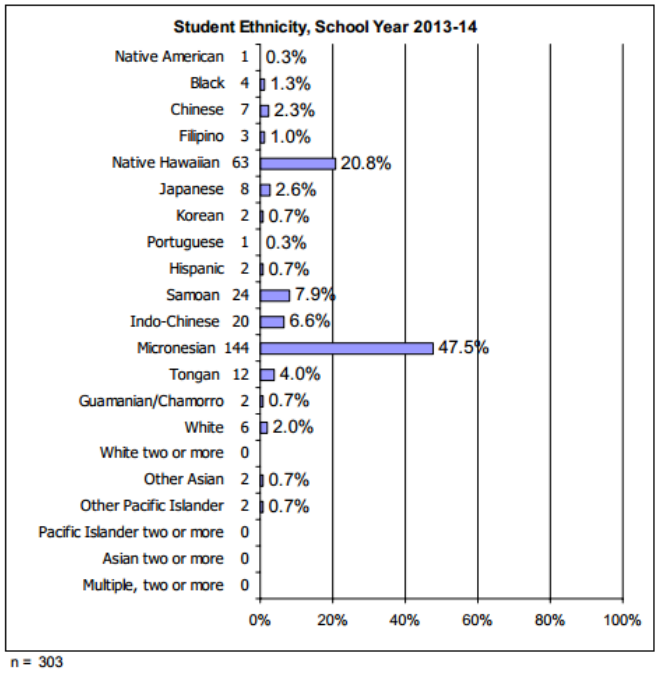


Figure 3.11. Student ethnicity, School 6.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

Student Profile

School year	*2011-12*	*2012-13*	*2013-14*
Fall enrollment	267	300	295
Number and percent of students enrolled for the entire school year	242 90.6%	274 91.3%	275 93.2%
Number and percent of students receiving free or reduced-cost lunch	225 84.3%	268 89.3%	276 93.6%

	2011-12	*2012-13*	*2013-14*
Number and percent of students in Special Education programs	26 9.7%	29 9.7%	31 10.5%
Number and percent of students with limited English proficiency	96 36.0%	100 33.3%	96 32.5%
Percent of Kindergartners who attended preschool	49%	66%	52%

Figure 3.12. Student profile, School 6.
Source: Student Ethnicity School Status and Improvement Report, 2013-2014.

Student Participants

The key to the RD design is the presence of a criterion (e.g., a pretest) that can be used to assign individuals to pretest and control groups. Individuals below the cut score can be assigned to one group, the experimental group, and those above the cut score can be assigned to another group, the control group. The cut-off score used for this study was 27 and below for the experimental group and 28 and above for the control group. The DIBELS NEXT Beginning of the Year (BOY) Correct Letter Sounds (CLS) scores was the sole measure used to determine group assignments. The schools in the study were already using DIBELS; thus, DIBELS BOY CLS was administered per school individually based on their current practices and administration cycle.

Treatment group. The numbers of students per school were based on the number of teacher candidates placed at each school. Table 3.1 shows the distribution of members of the treatment group per school as well as their corresponding BOY CLS scores, all 27 and below. (The range of the scores was between 0-27.)

Table 3.1

Students Assigned to the Treatment Group

School	Number of Students	BOY CLS Score
1	6	16, 18, 20, 20, 20, 21
2	6	12, 16, 21, 23, 23, 18
3	3	22, 27, 23
4	3	11, 16, 0
5	3	11, 15, 15
6	2	14, 0

Control group. The control group consisted of students from four of the six schools. Two of the six schools chose not to provide middle of the year (MOY) data on the control group. The two schools that did not provide the MOY data was schools 3 and 4, this was based on their own preference and level of comfort in sharing data for this study. Historically data sharing, analysis and overall research involving student results with the DOE and university was a relative new phenomenon, thus this study served only as an initial step in towards the greater goal of future high quality research between the school and the university. Impact results were not examined based on the non-inclusion of the 2 schools. Table 3.2 shows the participants in the control group per school as well as their corresponding BOY CLS scores, all 28 and above. (The range of the scores was between 28-31.)

Table 3.2

Students Assigned to the Control Group

School	Number of Students	BOY CLS Score
1	10	28, 28, 28, 30, 30, 30, 30, 31, 31, 31
2	7	28, 28, 28, 29, 30, 30, 30
3	0	N/A
4	0	N/A
5	4	28, 29, 29, 30
6	2	29, 31

Interventionists. A total of 36 teacher candidates were enrolled in a pilot merged elementary and special education teacher preparation program and participated in a field-based reading intervention class, which required delivering the intervention one-to-one to first-grade students at risk of reading failure. Of the 36 candidates, 23 participated in the study and were

assigned to participating schools. The other 13 teacher candidates were assigned to first grade students at another two schools who did not enter into a data-sharing agreement with the university. Although the first grade students were tutored but their data was not collected for the study.

All candidates had applied to and been accepted in the two-year Bachelor of Education Program, which concluded with dual licensing in general and special education. The teacher candidates did not have extensive backgrounds in teaching prior to entering the program; 65% had been employed in a field other than education prior to pursuing their degree in education. The study was conducted during the first semester of the four-semester program. Table 3.3 describes demographics of the teacher candidates in the program the semester of the intervention.

Table 3.3

Demographic Data on Teacher Candidates

Demographics	
Ethnicity	Percentage
White	18%
Japanese	17%
Filipino	14%
Native Hawaiian/Part Hawaiian	13%
Native Hawaiian/Pacific Islander	12%
Chinese	6%
Other	6%
Hispanic	4%
African American	3%
American Indian	1%
Vietnamese	1%
Korean	1%

Note. Total number of participants = 23. Male = 1, Female = 22.

University personnel. University personnel participated in the program as university supervisors. For the reading intervention field course, the university supervisors provided literacy support for the teacher candidates during the reading intervention. The university supervisors also taught the coursework during the semester, two of the personnel taught the concurrent literacy course.

The merged preparation program coordinator served in multiple roles in the study, including leading the design of the new teacher preparation program, establishing and maintaining the relationships within the schools, coordinating between the university's elementary and special education departments, and aligning the most current empirical research in the design of the program elements. In addition, the coordinator was the chair of my dissertation committee. Table 3.4 shows the demographics of the university personnel involved in the study.

Table 3.4

Demographics of University Personnel

Role	Number of Years in Position	Tenure Track	Ethnicity	Highest Degree Held
University Supervisor	3 years	Non-tenure track	Filipino/ Japanese	MEd
University Supervisor	7 years	Non-tenure track	Japanese	MEd
University Supervisor	9 years	Non-tenure track	Japanese	PhD
University Supervisor	10 years	Tenure track	White	PhD
Program Coordinator	8 years	Tenure track	White	PhD

Intervention

Sound Partners

The treatment group received the reading intervention, Sound Partners. Sound Partners (Vadasy et al., 2004) is a phonics-based tutoring program for providing supplemental reading instruction to elementary school students with below-average reading skills in kindergarten through third grade. The program is designed for use by tutors with minimal training and experience (Vadasy, Sanders, & Peyton, 2006). Instruction emphasizes letter-sound correspondences, phoneme blending, decoding and encoding phonetically regular words, reading irregular high-frequency words, accompanied by oral reading to practice applying phonics skills in text. The program consists of a set of scripted lessons in alphabetic and phonics skills and uses Bob Books® beginning reading series as one of the primary texts for oral reading practice. Tutoring can be provided as a pullout or after-school program as well as by parents who homeschool their children.

Sound Partners was developed using explicit and systematic instruction. Explicit instruction includes a gradual release of tutor responsibility that begins with a clear explanation and modeling of skills, which then moves to guided practice and application of those skills, and culminates in student opportunities to practice the skills in context. This type of systemic progression enables students to acquire the skills and knowledge they need to learn new materials. Sound Partners was selected as the intervention for the current study because it meets the criterion for an EBP in according to What Works Clearinghouse (WWC, 2010). WWC conducts rigorous reviews on studies to provide credible and reliable evidence of the effectiveness of an intervention. Sound Partners review used the Beginning Reading Evidence

Protocol, which is intended to improve outcomes in the following domains: Alphabetics, Reading Fluency, Reading Comprehension and Reading Achievement. The alphabetics domain includes outcomes measuring phonemic awareness, phonological awareness, letter identification, print awareness, and phonics. The reading fluency domain includes outcomes measuring fluency, or the ability to read text accurately, automatically, and with expression (including appropriate pausing, response to punctuation, and so on), while extracting meaning from it. The comprehension domain includes outcomes measuring vocabulary development and reading comprehension. The reading achievement domain combine separate measures of two or more of the previous domains (alphabetics, reading fluency, and comprehension) by providing some type of summary score across domains, such as a "total reading score" on a standardized reading test. Sound Partners was found to have positive effects on alphabetics, fluency, and comprehension and no discernible effects on general reading achievement on beginning readers.

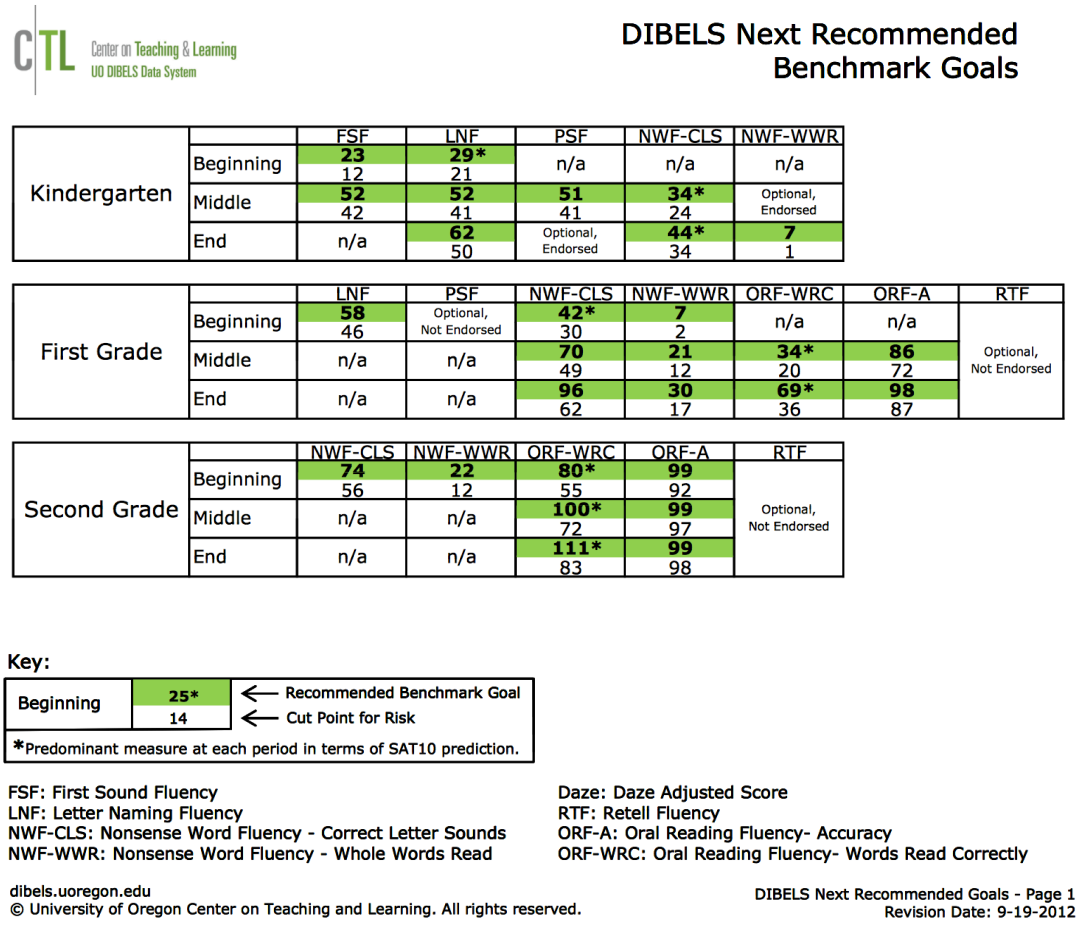
DIBELS Next (Good & Kaminski, 2002). was the universal screening measure used in the participating schools. DIBELS Next assess literacy skills for students in kindergarten through sixth grade through a series of short tests. There are two sets of benchmarks used for assigning students to groups based on odds of future risk: DIBELS Next published and DIBELS Recommended benchmarks from the University of Oregon. The DIBELS Next benchmarks referenced in this study are from the recommended benchmarks developed at the University of Oregon.

DIBELS consists of the following measures: Letter Naming Fluency, Initial Sound Fluency, Phoneme Segmentation Fluency and Nonsense Word Fluency. Correct Letter Sounds, the measure used in this study, falls under Nonsense Word Fluency (see Figure 3.13).

DIBELS Nonsense Word Fluency-Correct Letter Sounds (NWF-CLS) is a

standardized, individually administered test of the alphabetic principle. This includes letter-sound correspondence and the ability to blend letters into words in which letters represent their most common sounds (Kaminski & Good, 1996). The student is presented with an 8.5" x 11" sheet of paper showing randomly ordered vowel-consonant and consonant-vowel-consonant nonsense words (e.g., sig, rav, ov) and asked to verbally produce the individual sound of each letter or read the whole nonsense word. For example, if the stimulus word is "baj," the student could say /b/ /a/ /j/ or say the word /baj/ to obtain a total of three letter sounds correct. The student is allowed one minute to produce as many letter sounds as he or she can. The final score is the number of letter sounds produced correctly in one minute. Because the measure is fluency based, students receive a higher score if they are phonologically decoding the word and receive a lower score if they are providing letter sounds in isolation.

The benchmark goal for CLS is 42 correct letter sounds per minute by the end of the first testing period of first grade. Students scoring below 30 may need more intensive instructional support to achieve first-grade reading goals within a tiered RTI model. The middle-of-the-year benchmark goal for CLS is 70 correct letter sounds; thus, students scoring 49 and below may need continued reading support. Finally, at the end of first grade, the benchmark goal is 96 with 62 being the at-risk score. Some older children with low skills in letter-sound correspondence may have to be monitored more closely in order to ensure success.



CTL Center on Teaching & Learning
UO DIBELS Data System

DIBELS Next Recommended Benchmark Goals

		FSF	LNF	PSF	NWF-CLS	NWF-WWR
Kindergarten	Beginning	**23** 12	**29*** 21	n/a	n/a	n/a
	Middle	**52** 42	**52** 41	**51** 41	**34*** 24	Optional, Endorsed
	End	n/a	**62** 50	Optional, Endorsed	**44*** 34	**7** 1

		LNF	PSF	NWF-CLS	NWF-WWR	ORF-WRC	ORF-A	RTF
First Grade	Beginning	**58** 46	Optional, Not Endorsed	**42*** 30	**7** 2	n/a	n/a	Optional, Not Endorsed
	Middle	n/a	n/a	**70** 49	**21** 12	**34*** 20	**86** 72	
	End	n/a	n/a	**96** 62	**30** 17	**69*** 36	**98** 87	

		NWF-CLS	NWF-WWR	ORF-WRC	ORF-A	RTF
Second Grade	Beginning	**74** 56	**22** 12	**80*** 55	**99** 92	Optional, Not Endorsed
	Middle	n/a	n/a	**100*** 72	**99** 97	
	End	n/a	n/a	**111*** 83	**99** 98	

Key:

Beginning	25*	← Recommended Benchmark Goal
	14	← Cut Point for Risk

*Predominant measure at each period in terms of SAT10 prediction.

FSF: First Sound Fluency
LNF: Letter Naming Fluency
NWF-CLS: Nonsense Word Fluency - Correct Letter Sounds
NWF-WWR: Nonsense Word Fluency - Whole Words Read

Daze: Daze Adjusted Score
RTF: Retell Fluency
ORF-A: Oral Reading Fluency- Accuracy
ORF-WRC: Oral Reading Fluency- Words Read Correctly

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Figure 3.13. DIBELS benchmark goals.
Source: DIBELS NEXT (University of Oregon Center on Teaching and Learning, 2012).

Dependent Variable

The dependent variable was the DIBELS CLS score. The CLS score from the beginning of the year was compared with the CLS score at the middle of the year to determine the effectiveness of the intervention. CLS has been identified as predictive of future reading success (Coyne et al., 2004). The key to the RD design is the presence of a criterion (e.g., a pretest) that can be used to assign individuals to pretest and control groups. Students above the cut score can be assigned to one group, and those below the cut score can be assigned to another group.

Independent Variable

The independent variable was the reading intervention. Students with a cut score of 27

and below received the Sound Partners intervention. Students with a score of 28 and above did not receive the intervention; they did "business as usual," which varied across participating schools. Some of the schools reported no additional literacy support and some schools reported additional tutoring or support; no schools implemented the same intervention.

Procedures

Training

Training for the program coordinator and the primary researcher of the study was provided directly by the creator of the Sound Partners Program, Dr. Patricia Vadasay, and her team at the Washington Research Institute (now the Oregon Research Institute). The training took place in Seattle, Washington, and included eight hours of training on site and a half-day off site visit to observe the program at use in schools. Dr. Vadasay continued to provide support to the program coordinator and the primary researcher before, during, and after the study. Support was in the form of materials, ongoing emails, training videos, and supplemental resources.

Faculty training. The faculty members of the merged teacher preparation program, including the field supervisors, were trained to use Sound Partners by the program coordinator. The Sound Partners training occurred before the start of the semester during a scheduled training meeting. The training lasted for two hours and included an introduction of early reading skills along with the separate components of the Sound Partners program. The training also included a review of the components of the fidelity checklist used.

Teacher candidate training. The teacher candidates were trained to use Sound Partners in t their literacy course, which was the first course of their first semester in their teacher preparation program. Conducted by the program coordinator and the primary researcher, the training lasted for five hours and included explanations, modeling, and role-playing of early reading skills along with

the discrete components of each of the Sound Partners program with hands-on practice. The teacher candidates practiced every component of the program multiple times during the training. No assessment mastery of the intervention was conducted during this training. Further support for mastery was to be provided by the university supervisors who were present at the schools during the tutoring sessions. The university supervisors were also present during the teacher candidates training.

First-Grade Student Selection

The six schools in the study used DIBELS Next for all of their first-grade students following a standard timeline of universal screening. The schools conducted a complete DIBELS BOY battery two weeks prior to the start date of the intervention and then allowed teachers to select any first-grade students below 27 on CLS. Along with the score of below 27, the teachers at the schools selected the first grade students based on their own additional student data and professional opinion. The 23 students selected at each school to receive the intervention constituted the treatment group. The 23 students in the treatment group were selected based on those who scored closest to 28 or higher. Permission forms were sent home and returned prior to the start of the intervention. The control group consisted of 23 students who scored 28 and above on CLS. Schools were offered training in order to serve the participants in their wait control groups at a later date.

Intervention Delivery

The reading intervention was provided in a room at each school site. It began at the end of the school day on Mondays, Tuesdays, and Wednesdays. Each session lasted for 30 minutes. Due to holidays, a total of 14-week sessions were scheduled across the 16-week semester. A total of 12-weeks was the length of the intervention, due to unforeseen school events.

Prior to Lesson One, the teacher candidates met the first-grade student participants, families, and school personnel in an effort to build rapport, explain the program, and answer any questions about the study or the Sound Partners program. The intervention contains a mastery test every 10 lessons, teacher candidates were directed to send reports to classroom teachers and families after at each mastery test. Completing the Sound Partners intervention in its entirety or at the same pace is not critical because the program is designed as an explicit and systematic intervention program; that is students can progress at their own pace and learning rate. For instance first grade students who have the greatest difficulty with phonics could progress through only one lesson for the entire thirty-minute session, as opposed to some first grade students who could progress through five or more lessons per thirty-minute sessions. As the students progressed through the program and their phonics and decoding skills grew they would typically progress through multiple lessons per thirty-minute sessions. The teacher candidates kept record of how many lessons they completed per session. First grade students completed between 32 and 72 lessons during the 12 weeks.

Interrater Reliability

The program coordinator and I conducted only one interrater reliability check to ensure consistency. This was done during a single session where the program coordinator and myself concurrently completed a fidelity assessment at the same time for one teacher candidate. Table 3.5 below has the complete checklist form. The checklist is based on Sound Partners Tutor Observation Form, with permission from Dr. Particia Vadasay. We reviewed our forms together post session and compared results. The initial interrater reliability rate was 97% agreement rate between the program coordinator and myself.

Table 3.5

Sound Partners Procedural Fidelity Checklist

Part 1

Directions: If the observer arrives late or if the criterion is not applicable at the time leave blank. If the observer observes the criterion score "1" for correct implementation, and "0" for incorrect.

Component	Score		Criterion
Letter Sound Cards	1	0	Models and has student practice matching letters to sounds appropriately (for reading).
	1	0	Chooses letter sets that student needs to practice.
	1	0	Fades using word/picture when student knows sounds.
			Notes:
Say the Sounds	1	0	Models correct sounds.
	1	0	Detects and provides practice on weak sounds.
	1	0	Says the sounds for student to write (one new sound and three difficult sounds).
			Notes:
Segmenting	1	0	Has student point to each box when segmenting.
	1	0	Models correctly if student cannot do it.
	1	0	Requires student to complete task by listening to the word not reading it.
			Notes:
Word Reading	1	0	Models sounding out without stopping between sounds
	1	0	Has student sound out words without stopping between sounds.
	1	0	Directs student to difficult sound in word.
	1	0	Has student spell 3 words with new or difficult sounds.
	1	0	Provides added practice on difficult words when needed (first sound, last sound, etc.).
			Notes:

All Spelling Tasks	1	0	Requires student to apply sounding out.
	1	0	Has student read all written words.
	1	0	Provides added practice on difficult words when needed.
			Notes:
Sight Words	1	0	Models new words.
	1	0	Requires student to read and orally spell word.
	1	0	Has student spell 3 words in writing.
	1	0	Provides added practice on difficult words when needed.
			Notes:
All Sentence	1	0	Requires student to fingerpoint.
& Text Reading Tasks	1	0	Requires student to reread any sentence with error (added practice).
	1	0	Requires student to use sounding out when needed.
			Notes:
Magic –e-	1	0	Follows lesson sequence and provides added practice on each step of the rule.
	1	0	Corrects by reminding student of the rule/letter position.
	1	0	Provides added practice when needed.
			Notes:
Word Endings	1	0	Models by pointing and saying words with ending
	1	0	Has student say words with endings
	1	0	Corrects by reminding student to say words with/without ending.
			Notes:
Pair Practice	1	0	Dictates sounds first for students to spell.
	1	0	Has student read and spell words and nonwords.
	1	0	Corrects by pointing to letter pair or by using Letter Sound Cards.
			Notes:
Reading Long Words	1	0	Has student read one syllable at a time.
	1	0	Helps student identify each syllable, read each syllable, and then read the word.
	1	0	Scaffolds appropriately.
			Notes:

Book Reading	1	0	Has student read book from current lesson twice.
	1	0	Has student read book from previous lesson once, and additional books if time allows.
	1	0	Scaffolds appropriately.
			Notes:

Part 2

Directions: Check box "Y" for yes, or check box "N" for no. If criterion is not observed leave both boxes blank.

Use of Time	**Yes**	**Or**	**No**	**Observation Notes**
Tutor has material organized.	Y		N	
Starts on time.	Y		N	
Transitions are smooth/quick.	Y		N	
Allocates time as directed.	Y		N	
Paces lesson briskly & effectively.	Y		N	
Tutors for full 30 minutes.	Y		N	
Uses time for SP instruction only.	Y		N	
Follows SP instructions.	Y		N	

Tutor Instruction	**Yes**	**Or**	**No**	**Observation Notes**
Corrects all errors immediately.	Y		N	
Corrects without negative comments.	Y		N	
Uses specific praise effectively.	Y		N	
Maintains brisk, engaging pace.	Y		N	
Records all required student data.	Y		N	
Effectively motivates student.	Y		N	
Scaffolds tasks appropriately.	Y		N	

Management Tools	**Yes**	**Or**	**No**	**GRAND TOTAL**
				Add totals for "1" and "0" together for grand total, and divide grand total by total number of criteria for % correct

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Procedural Fidelity

The fidelity check form was utilized by the university supervisors across the semester to provide feedback to the teacher candidates. Each supervisor went to schools sites weekly to give support and feedback and to complete fidelity checks for each candidate. A total of 12% of the intervention sessions were scored for fidelity with the overall implementation of 92%. Using the

same procedural fidelity checklist in Table 3.5 interrater reliability checks with the university supervisor and either myself or the program director were completed twice at each school for a total of 12 sessions. The overall interrater reliability rate was 91%.

Stakeholder Perceptions

To examine stakeholders' perceptions of the new merged preparation program, a variety of data were gathered to examine how the various stakeholders, from the schools, university, and teacher candidates viewed their experiences. The intent was not to probe the reading intervention and tutoring experience specifically. Nevertheless, the data did provide insight into the impact of Sound Partners on the overall program experience.

School partner survey. Principals and school liaison personnel who worked with the university completed a post survey on their overall experience with the merged preparation program. This survey included Likert scale survey questions along with open-ended questions on the school's perspective of the implementation of the overall program, its effectiveness and specific program components. Table 3.6 shows the demographics of the school personnel involved in the survey.

Table 3.6

Demographic Data on School Personnel from Partner School Feedback Survey

Demographics	
Role	Percentage
Principal	13%
School Liaison	63%
Other	25%

Program evaluation feedback, surveys, and focus group. The teacher candidates provided overall program experiences, not specific to Sound Partners. The focus group was

conducted after the teacher candidates were shared the overall program evaluation results. Additional feedback was requested in order to make programmatic changes. Teacher candidates were asked to reflect back on the four semesters of the program through the various coursework, activities and assignments and answer global culminating questions.

Continued use of Sound Partners. Post intervention probing was conducted to determine if teacher candidates were continuing to use Sound Partners. Probing was done directly by the teacher candidates post graduation when they were in field teachers. The former teacher candidates asked for support (borrowing the materials, specific implementation questions) in implementing Sound Partners in their own classrooms as teachers. Thus, the intent was to examine if the Sound Partners program had a further impact on the teacher candidates, university, and the participating schools.

CHAPTER FOUR: RESULTS

This chapter presents the results of the study organized and presented in the form of a series of tables that address the two underlying research questions. Table 4.1 shows the descriptive statistics for the BOY and MOY. Table 4.2 lists the descriptive statistics for the experimental and control group. Table 4.3 shows the standardized residuals by treatment and control groups. Finally, Figure 4.1 summarizes the model-predicted posttest scores for the CLS measure and the beginning pretest scores. In Figure 4.2 shows the model-predicted estimates against the actual posttest CLS scores. Additionally, the stakeholder perceptions via the survey, focus groups, and plans for continued use are highlighted.

Research Questions

The research question for this study, were as follows:

RQ1: Is there a significant difference in correct letter sound scores between those who received the reading intervention and those who did not?

RQ2: What are the perceptions of stakeholders regarding the process of using teacher candidates as interventionist in the reading intervention field component?

Null Hypotheses

The null hypotheses for this study were as follows:

H01: There is no statistically significant difference in learning outcomes as measured by correct letter sound cut-off scores between those who received the Sound Partners intervention and those who did not.

Descriptive Statistics

Table 4.1 lists the descriptive statistics for the BOY (pretest) and MOY (posttest). As illustrated, the mean score on the pretest for the CLS measure across groups was 23.00. The

mean scores on the posttest, the MOY score, across groups were 58.43. The minimum score for pre-CLS was 0 with the maximum score being 31. The minimum score for the MOY CLS was 21 with the maximum score being 140. The standard deviation for pre-CLS was 8.022, and for MOY CLS, it was 26.355.

Table 4.1

Pre- and Middle-of-the-Year CLS Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-CLS	46	0	31	23.00	8.022
MOYCLS2	46	21	140	58.43	26.355

Table 4.2 shows the descriptive statistics for the control and the treatment groups. The treatment group students' scores ranged from 0-27 whereas the control group students' scores ranged from 28-31. Both control and treatment groups had a sample size of 23 students. The control group, coded as 0, had a mean of 29.39 on the pre-CLS and a MOY CLS score of 55.65. The treatment group, coded as 1, had a mean of 16.61 on the pre-CLS and MOY CLS score of 61.22.

Table 4.2

Control and Treatment Groups Descriptive Statistics

0	Mean	29.39	55.65
	n	23	23
	Std. Deviation	1.196	23.965

1	Mean	16.61	61.22
	n	23	23
	Std. Deviation	6.693	28.814
Total	Mean	23.00	58.43
	n	46	46
	Std. Deviation	8.022	26.355
Treat		Pre-CLS	MOY CLS2

Regression Discontinuity Findings

One assumption of the RD design is the treatment effect is more apparent near the cut off score. According to Figure 4.1, there was a discontinuity present at the pretest cut score suggesting a treatment effect concerning correct letter sounds; that is, students with lower pretest scores who were in the treatment group and received the reading intervention had increased predicted scores compared to their peers with higher pretest scores who were in the control group. As such, the results indicate a considerable effect of students who received the treatment and those who did not. This figure shows the model-predicted posttest scores for the CLS measure (dark line) and the beginning (pretest) scores in the lighter line. You can see the "discontinuity" between score 27and 28 as evidence of the treatment effect for individuals most near the cut score assigned to either group. Note that when you predict scores from a proposed model, there will always be residuals (or errors in prediction). We can check the model predictions by saving the standardized residuals (i.e., predictions standardized with a mean = 0, standard deviation = 1). For a good-fitting model, 99% of the standardized residuals should be smaller than 3 standard deviations (Park, 2012). In this case, the largest residual is 2.38, and the smallest is -2.246. Table 4.4 indicates that the standardized residuals for both the treatment and control groups fall within the guidelines. Moreover, the residuals are normally distributed (with skewness within +/- 1 and kurtosis within +/-2).

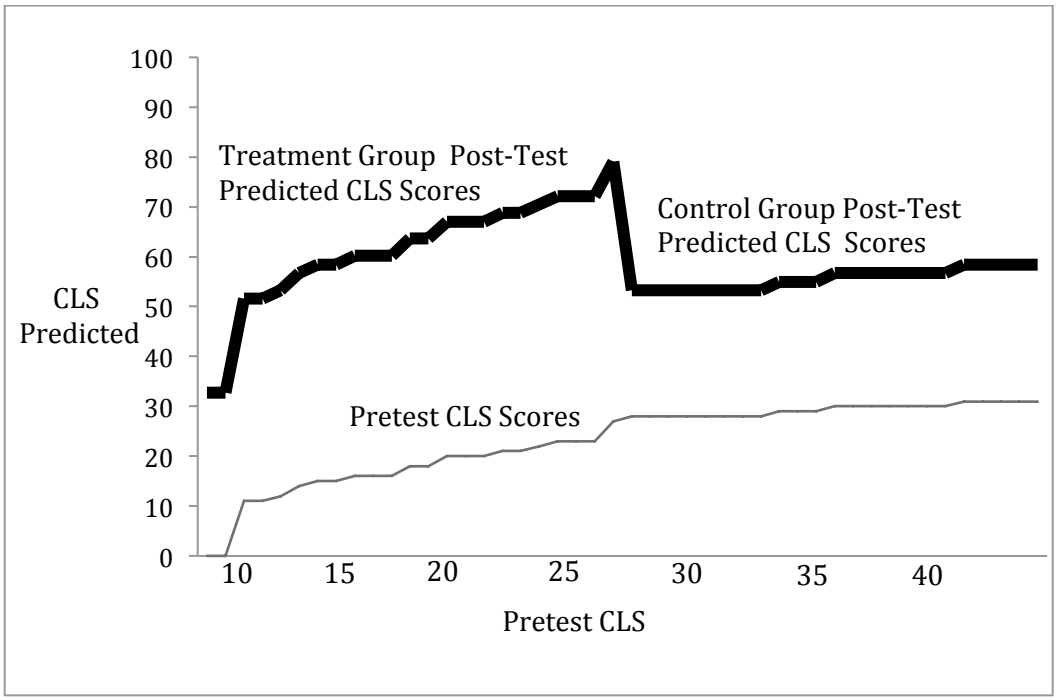

Figure 4.1. This figure shows the model-predicted posttest scores for the CLS measure (dark line) and the beginning (pretest) scores in the lighter line.

In Table 4.3 the standardized residuals are further examined by treatment and control groups. The data in the table also indicates the predicted scores are plausible values estimated from the data. The results from this table suggest the predicted values from the model produced standardized residuals that lie within +/- 2.39. This suggests the model estimates are plausible, since residuals less than +/3 standard deviations are often considered evidence of a good fitting model (Park, 2012).

Table 4.3. Standardized Residuals

treat	Mean	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis
0	.000	.896	-1.217	2.380	.908	.802
1	.000	1.051	-2.246	2.390	.295	.419
Total	.000	.966	-2.246	2.390	.516	.443

Table 4.4 summarizes the proposed model specifying the treatment effect, controlling for students' pretest CLS scores. In Table 4.3, the intercept can be interpreted as the predicted score of an individual when all other variables in the model are 0 (i.e., treatment = 0, transformed pretest = 0). This would be the predicted MOY score of the individual in the control group (coded 0) who scored at the transformed cut score. That individual would have a predicted an ending CLS score of 51.549. By comparison, the highest scoring individuals on the pretest in the treatment group (at the CLS score of 27) would have an estimated ending achievement score ($\beta_0 + \beta_2$) of 51.549 + 27.500 = 79.049.

Table 4.4

Regression Discontinuity Results Regarding Students Tutored and Not Tutored in the Sound Partners Program

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	*t*	Sig.
1	(Constant)	51.549	5.645		9.132	.000
	newpreCLS	1.716	.799	.522	2.148	.037
	treatment	27.500	12.677	.527	2.169	.036

[a]Dependent Variable: MOYCLS2.

As noted in Chapter 3, regarding the validity of the treatment effect, the design assumes that the assignment of individuals by cut scores was followed. The key to the RD design is the presence of a criterion (e.g., a pretest) that can be used to assign individuals to pretest and control groups. Individuals above the cut score can be assigned to one group, and those below the cut score can be assigned to another group. The design also assumes that the pattern of pretest scores was specified correctly. For example, there were no higher-order polynomial effects related to

the pretest nor were there any interactions between pretest effects (i.e., linear, quadratic, or cubic higher polynomials) and the treatment. To test the second assumption, the model was preliminarily tested for higher-order polynomial effects associated with the pretest CLS, as well as for possible interactions with the treatment. All higher-order effects and possible interactions with the treatment were found to be nonsignificant, so they were dropped from the final model.

In Figure 4.2 below I plotted the model-predicted estimates against the actual posttest CLS scores. Keep in mind that the model treats some of the scores as "under-predicted" or "over-predicted" – that is, there is error associated with any model to predict outcomes. You can see in the figure there are 3 sizeable residuals in the treatment group, where the actual scores are considerably above the model-predicted scores. Similarly, with the control group there is basically one actual score that is considerably under-predicted by the model. You can also see the model "over predicts" some scores below the heavy line as well. Overall, however, the analysis of the standardized residuals in Figure 4.2 suggests that the model estimation process does generally a good job in taking care of residuals, since none of the standardized residuals are near three standard deviations from the mean standardized residual of zero.

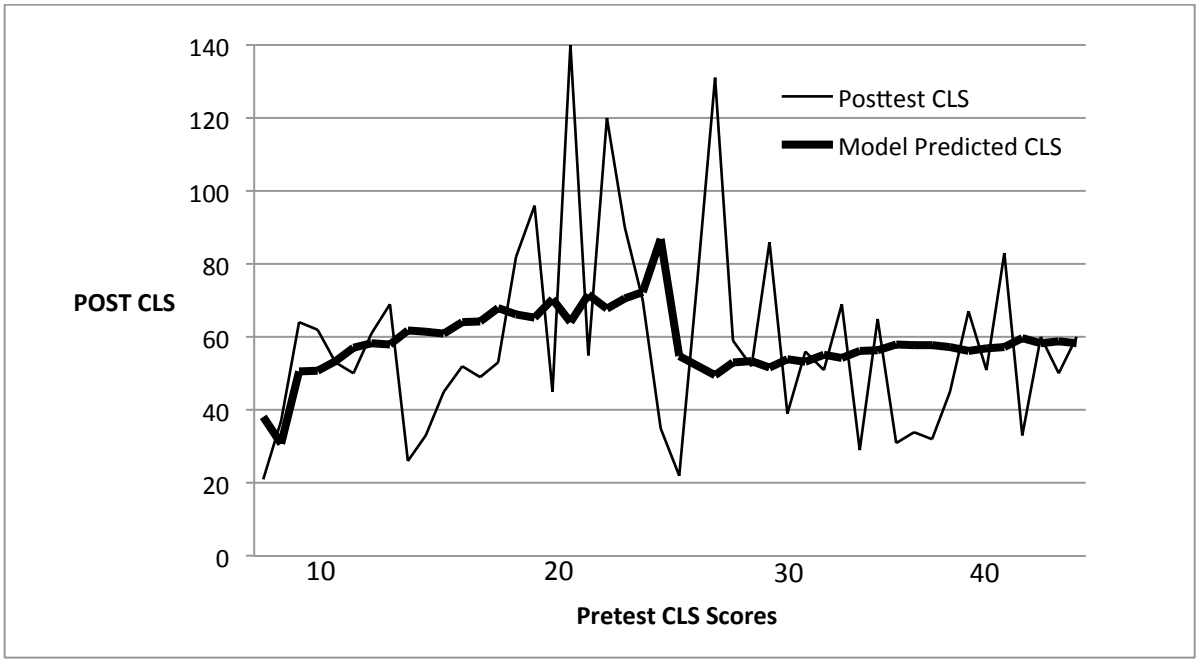

Figure 4.2. Regression discontinuity treatment effect.

Finally, the design also assumes that there was no coincidental factor at the chosen cut score (27) that would result in program effects other than the presence of the treatment. Tutoring was effective; there was a statistically significant difference in learning outcomes, as measured by correct letter sound cut-off scores between those who received the Sound Partners intervention and those who did not.

Stakeholder Perceptions

K-12 schools and universities face parallel problems as they attempt to prevent and provide early and effective interventions for reading difficulties require collaboration and partnerships between the two entities. To assess the impact of the study on the various stakeholders, stakeholder perceptions were probed on three measures: school partner survey, program evaluation, and continued use. The data were probed on the overall new merged preparation program and not specifically on the Sound Partners tutoring but overall perceptions of the merged program. The data reported below only specifically relate to the Sound Partners

tutoring.

School Partner Survey

The partner school feedback survey was intended for the lead school personnel to give feedback on their experiences on the overall program. A total of eight completed surveys were received, with the following number of types of respondents: 1 principal, 5 school liaisons, and 2 others. Of all elements of the overall merged preparation program, survey respondents ranked the reading tutoring for the students the highest, followed by support for students to improve learning and achievement. For recommendations and additional comments, schools reported that they wanted assistance with sharing data and progress monitoring. More specifically, schools wanted to meet with university personnel and view the pre- and post-data to help them determine if they should continue to work with the particular students.

Program Evaluation Feedback, Surveys, and Focus Group

Teacher candidates were critical in the study as they were the direct interventionists for the students. Tutoring the students was a part of the first semester field experience that the teacher candidates experienced in their teacher preparation program. Along with tutoring, teacher candidates experienced co-teaching, practicum rounds, solo teaching, and a number of innovative elements in the merged program. Feedback from the teacher candidates about their overall evaluation at the end of the two-year program through surveys and focus groups revealed that they saw the Sound Partners tutoring as an integral part of their teacher training.

When probed to determine what worked well with the merged preparation program, teacher candidates reported the following were beneficial: the DIBELS one-to-one assessments, running records, training in reading and assessments and progress monitoring. They also reported that tutoring with the first-grade students was helpful because learning to take data

while having to work with only one student was a good transition to teaching structured lessons. Further, it was noted by the teacher candidates that Sound Partners, being an EBP, had given them good practice in implementing interventions with fidelity. Overall, the teacher candidates reported that they felt extremely well prepared for their first year of teaching.

Continued Use of Sound Partners

Often interventions carried out in a research setting are not easily transferable to "real" teaching settings, resulting in the proverbial research-to-practice gap. In this case, however, the intervention was part of university and school partnership. The stakeholders involved in the study continued to use Sound Partners unprompted by the researcher. The university continues to use Sound Partners in the first semester field experience. In addition, an unexpected result was the use of Sound Partners in the new Master's in Literacy program.

Three of the six schools have requested and are now using Sound Partners in their practice. Two of the schools specifically use it in its schoolwide RTI practices for Tier 2 and Tier 3 students. The other school uses it for their Tier 3 students. Further, university personnel have continued to train schools, by request, to use Sound Partners and data collection techniques post-tutoring.

Teacher candidates have reached out to the university after graduation asking for copies of the Sound Partners program to use with their own struggling students in their first year of practice. Thus, teacher candidates who experienced the tutoring now use it as teachers themselves. They report on the effectiveness of the intervention and the great need they see for an effective intervention for their students. These former teacher candidates, and now teachers in the field, come from different schools and districts yet see the same need for remediating struggling your readers in interventions and practices that yield results for their students. One of

the teachers even wrote a grant to buy her own Sound Partners set.

In summary, the intent of the current study to see if Sound Partners had a further impact on the teacher candidates, university, and schools was shown to come true through the various sources of data through surveys, focus groups, and self-reporting by the stakeholders. The continued long-term reported effects of the Sound Partners tutoring program are a promising and unsolicited result.

CHAPTER 5: DISCUSSION

The purpose of this study was to examine the effects of a school-university partnership utilizing teacher candidates as interventionists to deliver an evidence-based reading intervention to first-grade students identified as being at risk for reading failure. The research questions addressed the growth in early reading skills for the first-grade students and the perceptions of both school and university stakeholders.

In this chapter I will interpret the results of the two research questions and discuss the implications for both policy and practice. The null hypotheses were not proven for both research questions. I will also address the limitations of the study and suggest ways that future research can address these limitations and extend this line of research.

Research Question 1

The first research question asked if there is a significant difference in correct letter sound scores between students who received the reading intervention and those who did not. Results showed that the treatment was effective and led to a statistically significant and meaningful difference in correct letter sound scores between first-grade students who received Sound Partners and those who had business as usual.

In addition to being statistically significant, the results were practically meaningful for both the first-grade students and the schools. The schools used DIBELS Next as a universal screener within their RTI programs. The literature indicates that effective RTI models have consistently yielded positive results for both schools and students (Simmons et al., 2008; Vellutino et al., 2006). Research supports the use of DIBELS in identifying students at risk for reading failure (Good, Baker, & Peyton, 2009). University of Oregon DIBELS Next CLS recommends varied subtests at each grade level; for example, NWF is recommended at the BOY

and MOY for first grade, and CLS has been identified as predictive of future reading success (Coyne et al., 2004).

When using DIBELS, scores are placed in three levels based on research, which suggest that the range of scores indicate various levels of future reading difficulties. The three instructional levels are: Core Instructional Level, the students are performing at grade-level benchmarks and typical instruction is recommended; Strategic Instructional Level, the students are performing slightly below grade-level benchmarks and additional intermittent evidence-based interventions are recommended; and lastly, Intensive Instructional Level, the students are performing well below grade level benchmarks and are at risk of reading failure; here frequent, intensive, remedial and evidence-based interventions are recommended. The beginning-of-the-year instructional benchmark is as follows: Core: 42 and higher, Strategic: 41-31, and Intensive: 30-0. The middle-of-the-year benchmark is as follows: Strategic: 70 and higher, Strategic: 69-50, and Intensive: 49-0. Table 5.1 shows the cut-off score ranges for first-grade students at the beginning and middle of the year (Good & Kaminski, 2002).

Table 5.1

DIBELS NEXT CLS Instructional Grouping Scores

	Beginning of the Year	**Middle of the Year**
Core Instructional Level	42 and higher	70 and higher
Strategic Instructional Level	41-31	69-50
Intensive Instructional Level	30-0	49-0

CLS, of the DIBELS NWF measure, is a critical foundational reading skill that is a reliable predictor of future reading success (Good et. al., 2001). That is, in order to learn to read, students must have a solid foundation of the alphabetic principle. There are 26 letters in the

alphabet, but 44 phonemes or sounds to represent them. The additional 19 phonemes use a combination of the 26 letters. As a result, students must be able to identify the sounds as well as blend them together to create words, whether real or pseudo. As words become more complex and turn into multisyllables and then phrases and sentences, there are more sophisticated sound rules, patterns, blends and exceptions for students to learn. The students who do not master the basic step will continually fall behind as the reading tasks and sounds become more complicated. The inability to decode and blend the sounds together to make words has dire consequences. Ravthon (2004) suggested that decoding is the single best predictor of reading as it is a reliable indicator of later reading performance. Below-benchmark performance on the CLS-NWF is an indicator that the student does not have mastery of the alphabetic principle and is not yet proficient at blending. Thus CLS was an adequate measure to use (Stanovich, 2000).

At the start of the intervention (BOY), in the experimental group 100% of first-grade students were at the Intensive Level. In the experimental group, 78% of first-grade students were at the Intensive Instructional Level and 22% were at the Strategic level. Neither group had scores at the Core Instructional Level. For the overall MOY scores, 26% of the experimental group remained at the Intensive Instructional Level, 39% moved to the Strategic level, and 35% moved to the Core Instructional Level. In the control group, 17% remained at the Intensive Instructional Level, 43% moved to the Strategic level, and 40% moved to the Core Instructional Level, as illustrated in Tables 5.2 and 5.3.

Table 5.2

Experimental Group CLS Instructional Grouping Scores

	Core Instructional Level	**Strategic Instructional Level**	**Intensive Instructional Level**
Beginning of the Year (BOY)	0%	0%	100%

Middle of the Year (MOY)	35%	39%	26%

Table 5.3

Control Group CLS Instructional Grouping Scores

	Core Instructional Level	**Strategic Instructional Level**	**Intensive Instructional Level**
Beginning of the Year (BOY)	0%	22%	78%
Middle of the Year (MOY)	40%	43%	17%

After 12 weeks of intervention, there were meaningful changes for both groups. MOY scores for the experimental group showed that 74% left the Intensive level and placed in the Strategic or Core groups. By comparison, for the control group, only about 61% left the Intensive group and placed in the Strategic or Core groups. Thus, the percentage of total positive student movement into different-tier instructional groups was higher for the experimental than the control group.

At the Core and Strategic Instructional Levels, instruction in schools takes place more in whole or larger groups whereas at the Intensive level instruction takes place in small groups or one-on-one. The implications of the above results, therefore, are that with the greater decrease in instructional group size for the experimental group, schools have the potential of better utilizing their personnel in expedient student-to-teacher ratios if they use evidence-based reading interventions. Thus, this study supports the research to intervene early (Kaminski & Good, 1998) and intensively (Torgesen, Wagner, & Rashotte, 1994).

Mastropieri and Scruggs (2005) describe the multiple pitfalls and potential of RTI. For schools implementing a RTI model, the current study shows a meaningful shift with substantial impact on the limited resources required to meet student needs. Instructionally, what this means at the school level is that low-cost intervention implementers, such as teacher candidates, can positively impact student results within an RTI model with students who are at risk of reading failure. At the university level, likewise, the study showed that during teacher training direct practice in evidence-based practices with one-to-one intervention with actual students has a positive impact on teacher candidates' learning outcomes.

Fuchs and Fuchs (2006) found that educators report that they do not possess the necessary background knowledge and skills to implement RTI effectively. However, the results of the present study show the potential for universities, via teacher candidates, to work in partnerships with schools to simultaneously provide schools knowledge and students skills using an EBP intervention that effectively proved to impact student learning directly, within the RTI model.

These findings support previous research that strategic and explicit reading instruction is beneficial for students with the greatest reading needs (Kameenui & Carnine, 1998). The study used a standard protocol approach implementing an EBP with fidelity at Tier 2 within the RTI framework. A large number of reading interventions address decoding and blending, making it difficult for districts, schools, and teachers to decide which intervention to use on their students who are at the greatest risk for reading failure. The literature suggests using interventions that have a track record and already proven through rigorous research to improve student outcomes (Cook & Cook, 2008).

The critical importance of learning to read in school cannot be underscored or

overlooked, success in school and life in our culture requires the ability to break the code of reading (Torgesen et al., 1994). The research is unequivocal in support of intervening early with intensity to combat the negative growth trajectory that exists for young children with early reading difficulties (Coyne et al., 2004).

Sound Partners has positively impacted students' reading skills for several groups of children, including kindergarteners at risk (Vadasy, Sanders, & Peyton, 2006), first graders at risk (Vadasy et al., 1997), and elementary-age students who are English language learners (Vadasy & Sanders, 2010). Coupled with its effectiveness, Sound Partners can also be implemented with ease by individuals without extensive teacher or reading training, such as paraeducators (Vadasy, Sanders, & Peyton 2006) and community volunteers (Vadasay et al., 1997), thus saving school districts money.

This study further extends the research demonstrating that first-semester teacher candidates can implement Sound Partners successfully. While student-level demographics were not collected or examined, the diversity of the schools in Hawaii, and specifically those included in this study, extends the populations that can benefit from this reading intervention.

Research Question 2

The second research question addressed the perceptions of stakeholders regarding the process of using teacher candidates as interventionist. The stakeholders, schools and universities, have mutual needs – they both need to provide early and effective interventions to prevent and/or address reading difficulties for students through teachers. Stakeholder perceptions were probed on three measures: school partner survey, program evaluation, and continued use of the Sound Partners intervention, and results showed that all parties reported the reading intervention had positive impact.

Schools struggle in implementing RTI and effectively remediating their students identified as poor readers. The challenges facing schools in implementing RTI successfully range from knowledge deficits, lack of adequate personnel, and need for long-term commitment to a variety of additional confounding factors (Mastropieri & Scruggs, 2005). This study extends the existing research by showing that the school-university partnership helped to rectify some of the problems with RTI implementation. The reading intervention served as a Tier 2 or 3 intervention within the RTI model. University personnel trained the teacher candidates to deliver the intervention, monitor progress, and collect data – all elements of RTI. In addition, the university provided training directly to school personnel who requested assistance with the intervention and its components, delivery, and fidelity. Teacher candidates reported understanding RTI with greater clarity.

According to a 2010 IES study on teacher preparation in early reading instruction, teacher-training programs have difficulty-equipping candidates with the skills necessary to teach reading and reverse reading failure. In previous studies preservice teachers have been shown to graduate with the lowest knowledge and efficacy in foundational reading skills (Salinger et al., 2010). This study confirms that during teacher preparation it is possible for teacher candidates to make an impact on student learning directly. The university trained the teacher candidates in an evidence-based reading intervention that targets early reading skills specifically. The teacher candidates ranked learning and delivering the reading intervention highest among the components of their teacher preparation program.

The results speak for themselves, from the study emerged unexpected long-lasting and far-reaching implications. Schools continue to use the intervention as a part of their RTI framework and practice, graduates are continuing to request and use it as part of their teacher

practice in the field, and it is now a part of various teacher training programs, such as the undergraduate dual preparation and graduate literacy program at the university.

Implications

Teacher preparation programs rely on school partners to provide placements for teacher candidates to practice the skills necessary to become teachers. Historically, teachers have reported teaching to be a profession of high stress and demand. Adding the additional component of having to train and develop a novice in the classroom, while still being held responsible for the class, is daunting for many teachers, making it difficult to finding field placements for teacher candidates. This study demonstrates that schools can benefit from partnering with teacher preparation programs.

Practice

Partnerships are beneficial to both the schools and university. Since the completion of this study, the relationship between the schools and the university has evolved and developed in numerous ways. Schools now ask to have teacher candidates in their buildings because they see the value of the reading intervention provided by the teacher candidates to their struggling readers. Although the teacher candidates were novices, they were still able to have a direct impact on student achievement within a short intervention period. These types of results leave a positive impression on schools that struggle to implement a successful RTI system with limited funds and personnel, especially to effectively serve students at the Strategic and Intensive Instructional Levels. Thus using teacher candidates as low-cost implementers has a direct positive impact on student learning and benefits the schools fiscally.

Participating schools also saw the value of using the EBP reading intervention. Thus, schools in the study continue to use the reading intervention because they saw the benefits of the

study on their own students. One school uses the reading intervention for all their Tier 3 students. In another school, teacher candidates tutor numerous struggling readers during a block of time, not just one student.

An important consideration was that the study was done at relatively low cost. There was no funding or grant to support the reading partnership. The relationship was built and maintained through the work the university and the schools did together. There was not a research team, district liaison, or outside influence to manage and fund the study, yet it was possible to conduct the study at six separate schools in two separate school districts and still yield significant results for students at risk of reading failure.

Policy

Universities can look for ways to benefit to their school partners while they assist in the development of novice teacher candidates. Schools should look for partnerships with universities that are infusing evidence-based interventions and instructional strategies into their programs. From the partnership model originally built through the tutoring, the relationship can deepen even further between the schools and university. As the schools are struggling with RTI, they can now benefit from a professional development school model that places the university more intimately in the schools with the teachers in training and learning. The step from school partnerships to professional development school model is the direction in which we should be headed for the sake of student learning. Positive experiences and outcomes, such as the reading intervention, can yield statistically significant results in student achievements and make conversations about relationship building truly possible.

Limitations

There are a number of limitations to this study. The first limitation is the small sample

size. A larger sample size would have provided greater validity to the observed distribution of scores within each group (especially having more individuals to compare around the cut-off score). The study was a part of everyday practice for the schools and university involved in the partnership, and the measures used were those being used by the schools within the beginning- to the middle-of-the-year time frame. Other measures than the CLS, and spanning the entire school year, such as Whole Words Read, Fluency, Comprehension, could possibly be additionally examined as comprehension skills is a predictor of reading skills.

Another limitation of the study was schools in the study were already using DIBELS; thus, DIBELS BOY CLS was administered per school individually based on their current practices and administration cycle. Thus the administration of DIBELS varied at each of the six schools.

Another limitation of the study is that other student level demographic information were not collected. Examining demographic variables such as language status, free and reduced lunch, and gender could demonstrate if there are interactions between these variables and the reading intervention. Future studies could examine if the reading intervention is more effective for specific populations.

Another limitation is that the stakeholder perceptions did not specifically probe the reading intervention; rather, it was looking at overall teacher program evaluation. If the surveys and focus groups had probed the reading intervention specifically, it could have yielded more precise and detailed data on the impact of the reading intervention on the schools, university personnel, and teacher candidates. This information, in turn, could be used to design a better reading intervention that meets all stakeholders' needs.

Another limitation in the study was that in the control group for business-as-usual there

was not a consistent method of instruction or intervention that was given across the board for these students. The schools self-reported that the students were given support in one of the following manner: the classroom teacher provided additional support for these students, the students were a part of the schools tutoring program, the students were given additional support from school personnel other than the classroom teacher, such as an educational assistant. The range of business-as-usual was varied and not uniform. Considering the variability it is hard to duplicate the control group. The overall lack of information on the baseline conditions, lack of information on the interventionists and sparse data on fidelity and inter-rater reliability were all limitations of the study tat could affect the outcome measures (pre or post-test).

Recommendations for Future Research

This study took a beginning look at the impact of the reading intervention on students, teacher candidates, schools, and universities. Further research should be conducted on the impact of teacher candidates' knowledge of reading. For example, teacher candidates could be assessed on their knowledge of foundational phonological skills and reading instruction skills. Having both types of knowledge is an important line of research to investigate whether teacher candidates exiting their training programs truly know how to teach and remediate reading. This type of research can help answer the question if there was a true benefit in growth of knowledge to the candidates themselves.

In addition, more structured research could follow up on the candidates' use of the reading intervention as practicing classroom as teachers. Although the teachers self-reported using the reading intervention, further research is needed to follow the teacher candidates longitudinally to see how they grow as in-field reading teachers. Longitudinal research beginning during teacher preparation and extending into practice will give a more holistic view of what

type of training and professional development teachers really need and will benefit from as it follows their learning trajectories.

Further research could also be done on the long-term effects of the Sound Partners tutoring on the first-grade students, such as whether they moved into the different Tiers of RTI instruction and if they benefited in the current school year and in further years in terms of their foundational reading skills. Although there are numerous studies on the impact of a reading intervention during short periods of time, longitudinal research that follows students for many years to determine the long-term effects of early intervention would be helpful and more powerful.

Finally, future research could evaluate the school partnership. With the self-reports reflecting promising feedback, answers to questions such as the following could be helpful: How has the partnerships evolved and changed and what does the model look like now? In what ways can the school partnership model be better improved and what are the specific needs of the schools beyond supporting struggling early readers? Can schools and universities partner in EBPs in math, science or other content areas?

Conclusion

This study has demonstrated that first-year teacher candidates with no previous literacy coursework can effectively implement an evidence-based reading intervention with minimal training and at a relatively low cost. Universities benefit because teacher candidates are getting practice delivering effective early reading instruction. Universities have often been criticized for being heavy on theory and not practice. By partnering with schools, as done in this study, the proof is not nebulous, it is directly linked to the students' growth and scores as impacted by tutoring from the teacher candidates. This study supports Lane's (2014) call for teacher

preparation programs to include ample opportunities for teacher candidates to practice with students in their classrooms, accompanied by specific feedback by program supervisors.

Age-old wisdom has always advocated for being proactive vs. reactive, frontloading, being preventive. Teacher candidates are a captive audience; they are at the beginning of their careers, and they are energized about teaching, eager to learn. As the future of the teaching profession, it only makes sense that we invest in the teacher candidates. We have a duty to train them to be teachers that enter the profession ready.

Students, especially in the early years of formal schooling such as the first grade, can benefit from preventive care. If we invest in the youngest of students early, intensively, and appropriately, our workload in the future will lessen because we have built the correct educational foundations. Of all the content areas, reading is the most critical as reading touches every subject in school and experiences throughout life that a student will encounter.

Schools are in the business of educating students, including the ones who have the greatest difficulty in learning. Teaching and remediating reading is one of the most important tasks. Schools are busy places filled with so many demands in addition to teaching reading. Therefore, even with the research and help available to remediate reading, schools can lose sight in the flurry and blur of things of what they need to do to help the students they really need to help.

Universities are in the business of training future teachers. However, the training is often lost amid the technicality of theory and the demands of research. The universities have the knowledge of the practices that schools need to use in order to be effective and teach students how to read. However, universities do not automatically have the point of tangency between themselves and the schools to make this bridge between research and practice.

Schools, universities, teacher candidates, and students are not separate entities; rather, they are interlocking parts of a greater education system. Whereas schools and universities have tended to operate in silos in the past, the future is now open for greater possibilities of working together. Schools and universities have common agendas and objectives, so it only makes sense that they find a way to work together towards these joint goals. The very important goal of changing the trajectory of students at risk of reading failure has presented itself with many solutions in the past. This study extends the research to embrace a collaborative and beneficial partnership between school and university for the best interest of the teacher candidates and students. If we keep our eye on the prize in education, on what our true aim is, to create better futures for those for whom we are responsible – the students and teacher candidates – the only answer that seems right is to work together hand-in-hand in true partnership.

References

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

Adams, J. W., & Snowling, M. J. (2001). Executive function and reading impairments in children reported by their teachers as "hyperactive." *British Journal of Developmental Psychology*, *19*(2), 293-306.

Al Otaiba, S., & Fuchs, D. (2006). Who are the young children for whom best practices in reading are ineffective? An experimental and longitudinal study. *Journal of Learning Disabilities*, *39*(5), 414-431.

Artiles, A. J., & Trent, S. C. (1997). Building a knowledge base on culturally diverse students with learning disabilities: The need to enrich research with a sociocultural perspective. *Learning Disabilities Research and Practice*, *12*(2), 80-81.

Ball, D., & Cohen, D. (1999). Toward a practice-based theory of professional education. *Teaching as the learning profession* San Francisco, CA: Jossey-Bass.

Blachman, B. A., Ball, E. W., Black, R. S., & Tangel, D. M. (1994). Kindergarten teachers develop phoneme awareness in low-income, inner-city classrooms. Does it make a difference? *Reading and Writing: An Interdisciplinary Journal*, *6*(1), 1-18.

Blanton, L. P., Pugach, M. C., & Boveda, M. (2014). *Teacher education reform initiatives and special education: Convergence, divergence, and missed opportunities* (Document No. LS-3). Retrieved from http://ceedar. education. ufl.edu/tools/literature-syntheses.

Bos, C., Mather, N., Dickson, S., Podhajski, B., & Chard, D. (2001). Perceptions and knowledge of preservice and inservice educators about early reading instruction. *Annals of Dyslexia*, *51*(1), 97-120.

Brown, W., Denton, E., Kelly, P., & Neal, J. (1999). *ERS Spectrum: Journal of School Research and Information, 17*(1), 3-12.

Brownell, M. T., Sindelar, P. T., Kiely, M. T., & Danielson, L. C. (2010). Special education teacher quality and preparation: Exposing foundations, constructing a new

model. *Exceptional Children*, *76*(3), 357-377.

Carnine, D. (1995). Trustworthiness, usability, and accessibility of educational research. *Journal of Behavioral Education, 5*, 251-258.

Carnine, D. (1997). Bridging the research-to-practice gap. *Exceptional Children*, *63*(4), 513-521.

Chall, J. (1967). *Learning to read: The great debate*. New York, NY: McGraw-Hill.

Children's Educational Services, I. (1987). *Test of Reading Fluency*. Minneapolis, MN: Author.

Cohen, W., Hodson, A., O'Hare, A., Boyle, J., Durrani, T., McCartney, E., & Watson, J. (2005). Effects of computer-based intervention through acoustically modified speech (Fast ForWord) in severe mixed receptive expressive language impairment outcomes from a randomized controlled trial. *Journal of Speech, Language, and Hearing Research*, *48*(3), 715-729.

Cook, B. G., & Cook, S. C. (2013). Unraveling evidence-based practices in special education. *The Journal of Special Education*, *47*(2), 71-82.

Cook, B. G., & Schirmer, B. R. (2003). What is special about special education? Overview and analysis. *The Journal of Special Education*, *37*(3), 200-205.

Cook, B. G., Tankersley, M., Cook, L., & Landrum, T.J. (2008). Evidence-based practices in special education: Some practical considerations. *Intervention in School and Clinic, 44*(T), 69-75.

Coyne, M. D., Kame'enui, E. J., Simmons, D. C., & Harn, B. A. (2004). Beginning reading intervention as inoculation or insulin: First-grade reading performance of strong responders to kindergarten intervention. *Journal of Learning Disabilities, 37*, 90-104.

Cummings, K. D., Otterstedt, J., Kennedy, P. C., Baker, S. K., & Kame'enui, E. J. (2011). *DIBELS data system: 2009-2010 Percentile ranks for DIBELS, 6th edition benchmark assessments* (Technical Report 1102). Eugene, OR: University of Oregon, Center on Teaching and Learning. Available https://dibels.uoregon.edu/research/techreports/#dibels

Denton C., Vaughn S., & Fletcher J. (2003). Bringing research-based practice in reading intervention to scale. *Learning Disabilities Research & Practice*, *18*, 201-211.

Elbro, C. (1996). Early linguistic abilities and reading development: A review and a hypothesis. *Reading and Writing*, *8*(6), 453-485.

Elbro, C., & Petersen, D. K. (2004). Long-term effects of phoneme awareness and letter sound training: An intervention study with children at risk for dyslexia. *Journal of Educational Psychology, 96*, 660-670.

Fielding-Barnsley, R. (1997). Explicit instruction in decoding benefits children high in phonemic awareness and alphabet knowledge. *Scientific Studies of Reading*, *1*(1), 85-98.

Fixsen, D. L., Naoom, S. F., Blase, K. A., Friedman, R. M., & Wallace, F. (2005). *Implementation research: A synthesis of the literature (FMHI #231).* Tampa, FL: University of South Florida, Louis de la Parte Florida Mental Health Institute, The National Implementation Research Network.

Fletcher, J. (2009). Dyslexia: The evolution of a scientific concept. *Journal of the International Neuropsychological Society, 15*, 501-508.

Foorman, B. R., Chen, D., Carlson, C., Moats, L., Francis, D. J., & Fletcher, J. M. (2003). The necessity of the alphabetic principle to phonemic awareness instruction. *Reading and Writing: An Interdisciplinary Journal, 16*, 289-324.

Francis, D. J., Shaywitz, S. E., Stuebing, K. K., Shaywitz, B. A., & Fletcher, J. M. (1996). Developmental lag versus deficit models of reading disability: A longitudinal, individual growth curves analysis. *Journal of Educational Psychology, 88*(1), 3-17. doi:10.1037/0022-0663.88.1.

Fuchs, D., & Fuchs, L. S. (2005). Responsiveness-to-intervention: A blueprint for practitioners, policymakers, and parents. *Teaching Exceptional Children, 38,* 57–61.

Fuchs, D., Fuchs, L. S., Thompson, A., Al Otaiba, S., Yen, L., Yang, N. J., et al. (2001). Is reading important in reading-readiness programs? A randomized field trial with teachers as program implementers. *Journal of Educational Psychology, 93*, 251-267.

Fuchs, D., Fuchs, L. S., & Vaughn, S. (Eds.). (2008). *Response to intervention: A framework for reading educators*. Newark, DE: International Reading Association.

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C. & Innocenti, M. S. (2005). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71*, 149-164.

Gillam, R. B., Loeb, D. F., Hoffman, L. M., Bohman, T., Champlin, C. A., Thibodeau, & Friel-Patti, S. (2008). The efficacy of Fast ForWord language intervention in school-age children with language impairment: A randomized controlled trial. *Journal of Speech, Language, and Hearing Research*, *51*(1), 97-119.

Good, R. H., & Jefferson, G. (1998). Contemporary perspectives on curriculum-based measurement validity. In M. R. Shinn (Ed.), *Advanced applications of curriculum-based measurement* (pp. 61-88). New York, NY: Guilford.

Good, R. H., III, Baker, S. K., & Peyton, J. A. (2009). Making sense of nonsense word fluency: Determining adequate progress in early first-grade reading. *Reading & Writing Quarterly, 25*(1), 33-56.

Good, R. H., Gruba, J., & Kaminski, R. A. (2001). Best practices in using Dynamic Indicators of Basic Early Literacy Skills (DIBELS) in an outcome-driven model. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology* (Vol. 4, pp. 679-700). Washington, DC: National Association of School Psychologists.

Good, R. H., & Kaminski, R. A. (Eds.). (2002). *Dynamic Indicators of Basic Early Literacy Skills* (6th ed.). Eugene, OR: Institute for Development of Educational Achievement.

Good, R. H., Kaminski, R. A., Shinn, M., Bratten, J., Shinn, M., & Laimon, L. (2008). *Technical adequacy and decision making utility of DIBELS* (Technical Report). Eugene, OR:

University of Oregon.

Good, R. H., Kaminski, R. A., Simmons, D., & Kame'enui, E. J. (2001). Using Dynamic Indicators of Basic Early Literacy Skills (DIBELS) in an outcomes-driven model. *OSSC Bulletin, 44*(1), 1-24.

Good, R. H., Wallin, J., Simmons, D. C., Kameenui, E. J., & Kaminski, R. A. (2002). *System-wide percentile ranks for DIBELS benchmark assessment* (Technical Report No. 9). Eugene, OR: University of Oregon.

Graves, M. F., Juel, C., & Graves, B. B. (1998). *Teaching reading in the 21st century*. Des Moines, IA: Allyn and Bacon.

Helland, T., Tjus, T., Hovden, M., Ofte, S., & Heimann, M. (2011). Effects of bottom-up and top-down intervention principles in emergent literacy in children at risk of developmental dyslexia: A longitudinal study. *Journal of Learning Disabilities*, *44*(2), 105-122.

Hook, P. E., Macaruso, P., & Jones, S. (2001). Efficacy of Fast ForWord training on facilitating acquisition of reading skills by children with reading difficulties – A longitudinal study. *Annals of Dyslexia*, *51*(1), 73-96.

Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children*, *71*(2), 165-179.

Individuals with Disabilities Education Improvement Act of 2004. (2004). Federal Register 71, pp. 46539–46845. Retrieved March 16, 2016, from http://idea.ed.gov/download/statute.html

Iversen, S., Tunmer, W. E., & Chapman, J. W. (2005). The effects of varying group size on the Reading Recovery approach to preventive early intervention. *Journal of Learning Disabilities*, *38*(5), 456-472.

Jenkins, J. R., Hudson, R. F., & Johnson, E. S. (2007). Screening for at-risk readers in a response to intervention framework. *School Psychology Review, 36,* 582–600.

Kame'ennui, Edward J. and Carnine, Douglas W. (1998). *Effective teaching strategies that accommodate diverse learners.* Upper Saddle River, NJ: Prentice Hall, Inc.

Kaminski, R. A., & Good, R. H. (1996). Toward a technology for assessing basic early literacy skills. *School Psychology Review, 25*, 215-227.

Kaminski, R. A., & Good, R. H. (1998). Assessing early literacy skills in a problem-solving model: Dynamic Indicators of Basic Early Literacy Skills. In M. R. Shinn (Ed.), *Advanced applications of curriculum-based measurement* (pp. 113-142). New York, NY: Guilford.

Klingner, J. K. (2004). The science of professional development. *Journal of Learning Disabilities, 37*(3), 248-55.

Laimon, D. E. (1994). *The effects of a home-based and center-based intervention on at risk preschool children's early literacy skills.* Unpublished Doctoral Dissertation, University of Oregon, Eugene, OR.

Lane, H. (2014). *Evidence-based reading instruction for grades K-5* (Document No. IC-12). Retrieved from University of Florida, Collaboration for Effective Educator, Development, Accountability and Reform Center website: http://cedar.education.ufl.edu/tools/innovation-configurations/

Lesik, S.A. (2006). Applying regression-discontinuity design to infer causality with non-random assignment. *The Review of Higher Education, 30(1)*, 1-19.

Landrum, T. J., Cook, B. G., Tankersley, M., & Fitzgerald, S. (2007). Teacher perceptions of the usability of intervention information from personal versus data-based sources. *Education and Treatment of Children*, *30*(4), 27-42.

Liberman, I. Y., Shankweiler, D., Blachman, B., Camp, L., & Werfelman, M. (1980). Steps toward literacy: In auditory processing and language. *Clinical and Research Perspectives,*189-215.

Linner, S. (2001, January). *Curriculum-based assessment in reading used as a predictor for the Alaska Benchmark Test*. Paper presented at the Alaska Special Education Conference, Anchorage, AK.

Lyon, G. R., Fletcher, J. M., Shaywitz, S. E., Shaywitz, B. A., Torgesen, J. K., Wood, F. B., ... & Olson, R. (2001). Rethinking learning disabilities. *Rethinking special education for a new century*, 259-287.

Marston, D., & Magnusson, D. (1988). Curriculum-based measurement: District level implementation. In J. Graden, J. Zins, & M. Curtis (Eds.), *Alternative educational delivery systems: Enhancing instructional options for all students* (pp. 137-172). Washington, DC: National Association of School Psychology.

McDuffie, K. A., & Scruggs, T. E. (2008). The contributions of qualitative research to discussions of evidence-based practice in special education. *Intervention in School and Clinic*, *44*(2), 91-97.

McGill-Franzen, A, (1987). Failure to learn to read: Formulating a policy problem. *Reading Research Quarterly*, *22*, 475-490.

McMaster, K. L., Kung, S. H., Han, I., & Cao, M. (2008). Peer-assisted learning strategies: A "Tier 1" approach to promoting English learners' response to intervention. *Exceptional Children*, *74*(2), 194-214.

Moats, L. C., & Lyon, G. R. (1996). Wanted: Teachers with knowledge of language. *Topics in Language Disorders*, *16*(2), 73-86.

Moats, L. (2009). Knowledge foundations for teaching reading and spelling. *Reading and Writing*, *22*(4), 379-399.

National Reading Panel. (2000). *Teaching children to read: An evidence-based assessment of the*

scientific research literature on reading and its implications for reading instruction: Reports of the subgroups. Bethesda, MD: National Institute of Child Health and Human Development. Available: http://www.nationalreadingpanel.org/.

Nova Development Corporation. (1998). *Art explosion.* Calabasas, CA: Author.

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). New York, NY: McGraw-Hill.

Okimoto, H., & Heck, R. (2014) examining the impact of redesigned developmental math courses in community colleges. *Community College Journal of Research and Practice*, DOI: 10.1080/10668926.2013.873004.

Park, C. S. (2012). *Essential First Steps to Data Analysis: Scenario-Based Examples Using SPSS. Newbury Park, CA: Sage.*

Ravthon, N. (2004). *Early reading assessment: a practitioner's handbook*. New York: The Guilford Press

Sackett, D. L., Rosenberg, W., Gray, J. A., Haynes, R. B., & Richardson, W. S. (1996). Evidence based medicine: What it is and what it isn't. *British Medical Journal*, *312*(7023), 71-72.

Satz, P., Taylor, H., Friel, J., & Fletcher, J. (1978). Some developmental and predictive precursors of reading disabilities: A six year follow-up. *Dyslexia: An appraisal of current knowledge*, 457-501.

Salinger, T., Mueller, L., Song, M., Jin, Y., Zmach, C., Toplitz, M., Partridge, M., & Bickford, *A Study of Teacher Preparation in Early Reading Instruction* (NCEE 2010-4037). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education.

Salvia, J., & Ysseldyke, J. E. (2001). *Assessment* (8th ed.). Boston, MA: Houghton Mifflin.

Scammaca, N., Vaughn, S., Roberts, G., Wanzek, J., & Torgesen, J. K. (2007). *Extensive reading interventions in grades k–3: From research to practice.* Portsmouth, ME: RMC

Research Corporation, Centeron Instruction.

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

Simmons, D.C., Coyne, M.D., Kwok, O.M., McDonagh, S., Ham, B.A., Kame'enui, E.J., (2008). Indexing response-to-intervention: A longitudinal study of reading risk from kindergarten through third grade. *Journal of Learning Disabilities*, 41(2), 158-173.

Simmons, D. C., Kame'enui, E. J., Stoolmiller, M., Coyne, M. D., & Harn, B. (2003). Accelerating growth and maintaining proficiency: A two-year intervention study of kindergarten and first-grade children at risk for reading difficulties. In B. R. Foorman (Ed.), *Preventing and remediating reading difficulties: Bringing science to scale* (pp. 197-228). Timonium, MD: York Press.

Slavin, R. E. (2008). Perspectives on evidence-based research in education – What works? Issues in synthesizing educational program evaluations. *Educational Researcher*, *37*(1), 5-14.

Smith, G. J., Schmidt, M. M., Edelen-Smith, P. J., & Cook, B. G. (2013). Pasteur's quadrant as the bridge linking rigor with relevance. *Exceptional Children*, 79(2), 147-161.

Spear-Swerling, L., & Brucker, A. O. (2004). Preparing novice teachers to develop basic reading and spelling skills in children. *Annals of Dyslexia, 54,* 332-364.

Spear-Swerling, L., & Sternberg, R. J. (1996). *Off track: When poor readers become "learning disabled.*" Boulder, CO: Westview Press.

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasiexperimental designs for generalized causal inference.* Boston: Houghton Mifflin.

Stanovich, K. E. (2000). *Progress in understanding reading: Scientific foundations and new frontiers*. New York: The Guilford Press.

Stanovich, K. E., Nathan, R. G., & Vala-Rossi, M. (1986). Developmental changes in the

cognitive correlates of reading ability and the developmental lag hypothesis. *Reading Research Quarterly*, 267-283.

Tallal, P. (2004). Improving language and literacy is a matter of time. *Nature Reviews Neuroscience*, *5*(9), 721-728.

Tankersley, M., Harjusola-Webb, S., & Landrum, T. J. (2008). Using single-subject research to establish the evidence base of special education. *Intervention in School and Clinic, 44*, 83-90. doi:10.1177/1053451208321600

Thistlethwaite, D., & Campbell, D. (1960). Regression-discontinuity analysis: an alternative to the ex-post facto experiment. *Journal of Educational Psychology 51*, 309–317.

Tindal, G., Marston, D., & Deno, S. L. (1983). *The reliability of direct and repeated measurement* (Research Rep. 109). Minneapolis, MN: University of Minnesota Institute for Research on Learning Disabilities.

Torgesen, J. K., Alexander, A. W., Wagner, R. K., Rashotte, C. A., Voeller, K. S., & Conway, T. (2001). Intensive remedial instruction for children with severe reading disabilities: Immediate and long-term outcomes from two instructional approaches. *Journal of Learning Disabilities, 34*, 33-58, 78.

Torgesen, J. K., Wagner, R. K., & Rashotte, C. A. (1994). Longitudinal studies of phonological processing and reading. *Journal of Learning Disabilities*.

Torgesen, J. K., Wagner, R. K., & Rashotte, C. A. (1999). *Test of Word Reading Efficiency.* Austin, TX: Pro-Ed.

Torgesen, J.K., Wagner, R.K., Rashotte, C.A., Rose, E., Lindamood ,P., Conway, T., Garvan, C. (1991). Preventing reading failure in young children with phonological processing disabilities: Group and individual responses to instruction. *Journal of Educational Psychology*, (4), 579–593.

Torres, C., Farley, C. A., & Cook, B. G. (2012). A Special educator's guide to successfully implementing evidence-based practices. *Teaching Exceptional Children*, *45*(1), 64-73.

Troia, G. A., & Whitney, S. D. (2003). A close look at the efficacy of Fast ForWord Language for children with academic weaknesses. *Contemporary Educational Psychology*, *28*(4), 465-494.

U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, What Works Clearinghouse.

Vadasy, P. F., Jenkins, J. R., Antil, L. R., Wayne, S. K., & O'Connor, R. E. (1997). The effectiveness of one-to-one tutoring by community tutors for at-risk beginning readers. *Learning Disability Quarterly*, *20*(2), 126-139.

Vadasy, P. F., Jenkins, J. R., & Pool, K. (2000). Effects of tutoring in phonological and early reading skills on students at risk for reading disabilities. *Journal of Learning Disabilities*, *33*(6), 579-590.

Vadasy, P. F., Sanders, E. A., Peyton, J. A., & Jenkins, J. R. (2002). Timing and intensity of tutoring: A closer look at the conditions for effective early literacy tutoring. *Learning Disabilities Research & Practice*, *17*(4), 227-241.

Vadasy, P. F., Sanders, E. A., & Peyton, J. A. (2005). Relative effectiveness of reading practice or word-level instruction in supplemental tutoring: How text matters. *Journal of Learning Disabilities*, *38*(4), 364-380.

Vadasy, P. F., & Sanders, E. A. (2008). Code-oriented instruction for kindergarten students at risk for reading difficulties: A replication and comparison of instructional grouping. *Reading and Writing: An Interdisciplinary Journal, 21*(9), 929-963.

Vadasy, P. F., Sanders, E. A., & Peyton, J. A. (2006a). Code-oriented instruction for

kindergarten students at risk for reading difficulties: A randomized field trial with paraeducator implementers. *Journal of Educational Psychology*, *98*(3), 508.

Vadasy, P. F., Sanders, E. A., & Peyton, J. A. (2006b). Paraeducator-supplemented instruction in structural analysis with text reading practice for second and third graders at risk for reading problems. *Remedial and Special Education*, *27*(6), 365-378.

Vadasy, P. F., Sanders, E. A., & Abbott, R. D. (2008). Effects of supplemental early reading intervention at 2-year follow up: Reading skill growth patterns and predictors. *Scientific Studies of Reading*, *12*(1), 51-89.

Vadasy, P. F., & Sanders, E. A. (2010). Efficacy of supplemental phonics-based instruction for low-skilled kindergarteners in the context of language minority status and classroom phonics instruction. *Journal of Educational Psychology*, *102*(4), 786.

Vadasy, P. F., & Sanders, E. A. (2011). Efficacy of supplemental phonics-based instruction for low-skilled first graders: How language minority status and pretest characteristics moderate treatment response. *Scientific Studies of Reading*, *15*(6), 471-497.

Vadasy, P. F., & Sanders, E. A. (2012). Two-year follow-up of a kindergarten phonics intervention for English learners and native English speakers: Contextualizing treatment impacts by classroom literacy instruction. *Journal of Educational Psychology*, *104*(4), 987-1005.

Vellutino, F., Scanlon, D., Sipay, E., Small, S., Chen, R., Prat, A., & Denckla, M. (1996). Cognitive profiles of difficult-to-remediate and readily remediated poor readers: Early intervention as a vehicle for distinguishing between cognitive and experiential deficits as basic causes of specific reading disability. *Journal of Educational Psychology, 88,* 601-638.

Vellutino, F., Scanlon, D., Small, S., & Fanuele, D. (2006). Response to Intervention as a

Vehicle for Distinguishing Between Children With and Without Reading Disabilities: Evidence for the role of kindergarten and first-grade interventions. *Journal of Learning Disabilities*. *39 (2*) 157-169.

Williams, R. (1985). *Keywords: A vocabulary of culture and society*. Oxford, UK: Oxford University Press.