

**THE EFFECTS OF PULL-OUT AND PUSH-IN READING INTERVENTION  
MODELS ON FIRST AND SECOND GRADE STUDENTS**

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Submitted to the Graduate Department and Faculty  
of the School of Education of Baker University in  
partial fulfillment of the requirements for the degree

Doctor of Education  
In  
Educational Leadership

March 2010

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## ABSTRACT

Public school accountability for developing proficient readers has risen to an all-time high as sanctions and consequences threaten schools who fall short of AYP benchmarks (Langdon, 2006). Schools are adopting various practices to fuel their quest for reading proficiency including employing reading specialists to provide push-in or pull-out remedial reading services. The purpose of this study was to determine the most effective reading intervention model for first and second grade students at Scott Elementary School, a low-socioeconomic school in Belton, Missouri, a midsize suburban public school district. This study sought to determine if there was a statistically significant difference in the change in reading level for qualifying students receiving intervention via a push-in model and those receiving pull-out services as measured by the Developmental Reading Assessment (DRA). The study also sought to determine if there was a statistically significant difference in DRA level changes for non-qualifying students in push-in classrooms and those in classrooms without the push-in model.

A quantitative research design was selected and independent sample *t*-tests were used for hypotheses testing. Remedial reading students had a statistically significant higher mean change in reading levels when served through a push-in model rather than a pull-out model. However, there was not a statistically significant difference in reading level gains for non-remedial readers placed in push-in classes when compared to those in classrooms without push-in services. Additional research could compare reading intervention models for differentiated student needs or subgroups. This study supports a push-in model for remedial readers. Further research would assist in finding the most effective way to implement push-in programming and maximize the benefits.

## ACKNOWLEDGEMENTS

I would like to extend my love and appreciation for my family who has shown tremendous support during all of my doctoral work. My husband Jeff; daughters Ellie, Macy, and Lexi; and my parents have been instrumental in this venture.

Jeff, your kindness and patience continually abound. You are a true example of unconditional love, friendship, and support. I appreciate the freedom you gave me to embrace this lifelong goal without concern.

Ellie, I appreciate all of your help and willingness to assume increased independence and responsibility even as you enjoyed your final years of high school. You seem to be able to do it all and keep a great balance in your life. Thank you for your understanding and patience.

Macy and Lexi, thank you for encouraging and supporting me in your own special ways. Your many questions about my progress and cheerful nature carried me when I would have much preferred to do something fun with you. You never complained about the time I had to devote to my studies. I promise to make it all up to you and then some.

Mom and Dad, I would not have been able to engage in this doctoral venture without your contributions. Thank you for modeling and instilling an impeccable work ethic throughout my life. A doctorate is the highest degree in my field, and you made me into a person that aims for the highest mark.

My undergraduate experience at William Jewell College confirmed my love for learning. Education professor, Dr. Ronilue Garrison, was especially inspiring. My doctorate now brings me one step closer to pursuing a career goal of college teaching. As

my Baker University doctoral advisor, Dr. Harold Frye has been a supportive, encouraging facilitator in this journey. I appreciate his sincere interest in me as a person.

I would also like to express my appreciation to Dr. Beverly Phillips, Dr. Sara Jones, and Dr. Kenneth Southwick. As my supervisors, colleagues, and friends, they have inspired and supported me professionally and personally. I owe much of my positive school administration experience and doctoral pursuit to their leadership and faith in me.

I have been richly blessed. Thank you, God. You make all things possible.

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## CHAPTER ONE

### INTRODUCTION

Schools are asked to educate the most diverse student body in history under progressively higher academic standards and public scrutiny. Communication skills and reading proficiency continue to be in the spotlight within the educational reform arena (Pipes, 2004). Days where high levels of literacy are not as necessary for employment or completion of daily tasks are in the distant past. Today's high school graduates must have strong literacy skills or risk being underemployed and underutilized in today's society (Rodriguez, 2005). According to the National Council of Teachers of English (NCTE) (2006), lower literacy skills predict employment difficulties for high school graduates. High school students require complex literacy skills to attain success in today's information-driven economy (NCTE, 2006). "Without a highly literate pool of job applicants, employers are forced to look off-shore for well-trained and highly literate workers from other countries. In other words, our nation cannot afford an under-literate workforce" (NCTE, 2006, p. 4).

The No Child Left Behind Act of 2001 (NCLB) launched consequences for public schools that academically leave students behind by establishing Adequate Yearly Progress (AYP) benchmarks. Schools are expected to meet or exceed these benchmark percentages which incrementally increase each year reaching the 2013-2014 benchmark when 100% of students in United States public schools are expected to attain proficient levels according to each state's assessment of choice (*No Child Left Behind*, 2002).

In addition, schools receiving Title I funding due to larger low socio-economic populations are subject to further sanctions when they fail to meet AYP. Sanctions

include but are not limited to written communication of the school's deficit status distributed to all district patrons, supplementary education opportunities, replacing school staff with other candidates meeting prescribed qualifications, increasing site-based management, developing new curriculum, and extending the school day or year (*No Child Left Behind*, 2002). Local and state associations such as the Wichita NAACP (2009) are vigilant in monitoring these sanctions and other major restructuring efforts that join the list and increase in restrictive nature the longer the school does not make the necessary student achievement improvements. "The accountability requirements of [the] No Child Left Behind Act put responsibility for student achievement squarely on the schools" (Protheroe, 2008, p. 34).

State legislation has also increased accountability for public school districts. Missouri's 2001 Senate Bill 319 (SB 319) mandates retention for regular education, English proficient fourth graders who are reading below a third grade level; requires districts to provide tutoring programs and develop individualized reading improvement plans for fourth through sixth grade students who are reading more than one grade level below; and calls for districts to establish systematic reading assessment procedures (Missouri DESE, 2008). In addition, a majority of states base their individual school district accreditation decisions on whether or not districts meet NCLB's AYP benchmark levels. Out of the 50 states and the District of Columbia, 28 base their state accountability system on AYP alone while an additional 7 integrate multiple measures which include AYP (The Council of Chief State Officers, 2007).

Marie Carbo (2007), executive director of the National Reading Styles Institute, analyzed performance trends on the National Assessment of Educational Progress

(NAEP) assessment finding less than one-third of students in grades 4, 8, and 12 achieve proficient levels in reading. According to Carbo (2007), NAEP performance has either remained the same or declined since NCLB. Carbo (2007) also believes that reading failure in elementary school reduces a person's chances of success in later grade levels and throughout life. If students are not able to read proficiently and independently by fourth grade they are greatly hampered as they cannot read to learn until they have learned to read. In addition, teachers become overwhelmed as they must teach basic reading to those who struggle while also covering the more advanced curriculum that is hampered when students are deficient readers (Carbo, 2007). "We can agree that our students face serious problems in reading. But what are we doing to solve these problems?" (Carbo, 2007, p. 42)

Society has historically placed trust in educators' ethical commitment to ensuring students' reading skills continually progress toward and beyond grade-level. Before enacted legislation held school districts responsible for insufficient levels of student achievement, schools rarely experienced consequences. Instead, consequences were passed along adversely to students in the form of failing grades, retention, and limited opportunities. However, legislation such as NCLB and MO SB 319 has changed the consequence scenario, as it is no longer a question of whether or not accountability will be placed. It will be placed, indeed, on the school. Because legislation mandates proficiency regardless of demographics and most poor-performing schools are comprised of many students from economically challenged households, high percentages of minorities, and a significant number of English-language learners, districts are driven to launch efforts for dramatic and quick improvement (Protheroe, 2008).

## Statement of the Problem

Since reading proficiency has become an essential skill, school accountability has risen to an all-time high, and consequences and sanctions threaten schools that do not produce the mandated results, public school districts are adopting policies and practices in an effort to improve student performance and assure AYP (Langdon, 2006). Various efforts address students who fall short of expected reading levels including employing reading specialists; implementing interventions beyond the school day; and/or providing remedial reading services during the school day (Pipes, 2004; C.S. Mott Foundation, 2007). Remedial services during the school day are generally categorized into either a push-in or pull-out model. Push-in models include a specialized teacher co-teaching with the classroom teacher in the general classroom. Pull-out services remove identified students from the general classroom to work with a special teacher for a period of time (Shanahan, 2008; Nebraska Department of Education, 2009).

The review of literature reveals strengths and weaknesses of push-in and pull-out intervention models in various instructional arenas such as remedial reading, special education, gifted education, and English Language Learner programs. However, comparative research on the two models was not found. “The classroom should be a positive place for students—and with the right reading interventions, it can be” (Musti-Rao & Cartledge, 2007, p. 60). What is the right reading intervention model? That is the focal question.

## Background and Conceptual Framework

The Belton School District is a public school district serving the community of Belton, Missouri, a suburb of Kansas City. During the 2008-2009 school year, Belton

School District had an approximate enrollment of 4,600 students in kindergarten through twelfth grade (Belton School District, 2009). According to Dr. Sara Jones (personal communication, December 4, 2009), Belton School District receives Title I federal funding and utilizes that funding to support early intervention through targeted assistance for students pre-kindergarten through second grade. Jones (personal communication, December 4, 2009) explained, when providing targeted assistance, Title I guidelines require districts to establish a multiple criteria identification process to determine those students who will qualify for the services. The district has discretion in determining the multiple criteria to be used.

According to Belton School District's 2006-2007 multiple criteria (Jones, 2006), determining the targeted first graders included assessing all students using an informal letter-sound recognition assessment that included upper and lower case letters, utilizing a portion of the districts Pathways to Reading phonemic awareness program assessment entitled Spell-a-sound where the examiner makes a sound and the student observes the mouth shape and listens to the sound to offer ways to spell the sound, their current Developmental Reading Assessment (DRA) instructional level, and teacher referral. Out of the 79 points possible on the informal letter-sound recognition assessment, students who scored within determined percent ranges received a defined number of qualifying points: 30 points for 80-100%, 20 points for 70-79%, 10 points for 60-69%, and 0 points for 59% or lower. Point values were also awarded to performance score ranges on the 36-point Spell-a-sound assessment: 25 qualifying points for 25-36 spell-a-sound points, 15 for 13-24, and 0 qualifying points for the 0-12 point range. Each student received 25 qualifying points if they were reading at an instructional DRA level of 4 or

more, 15 points if they were at a DRA level 3, and 0 points for a DRA level of 2 or less. Teachers categorized their students for reading support as not necessary, maybe necessary, or greatly needed where points were awarded in the amounts of 25, 15, and 0 respectively. Out of 105 qualifying points possible, first graders who scored 50 or less qualified for formal remedial reading services (Jones, 2006).

Qualifying criteria for 2006-2007 second graders included the current DRA level, the Spell-a-word assessment from the Pathways to Reading program, and teacher referral. DRA instructional levels of 18 and above resulted in 25 qualifying points, levels 12-16 received 15 points, and levels of 10 or below resulted on 0 points. The Spell-a-word assessment had 94 possible. Score ranges were awarded qualifying points as follows: 79-94 received 25 points, 58-78 received 15 points, and 0-57 resulted in 0 points. Teacher recommendation categories and point values were the same as described for first grade. From the 75 qualifying points possible, a cut-off of 50 was established. All second graders scoring 50 or below qualified for remedial reading services (Jones, 2006).

According to Belton School District's 2008-2009 multiple criteria (Jones, 2008), the teacher recommendation portion from previous years was replaced with sight word recognition. The revised process also used raw scores for each category rather than qualifying points awarded to categories or ranges of performance on each criterion. The 79 points possible on the letter-sound recognition was divided in half with each correct answer being worth .5 for a total of 39.5 possible. The Spell-a-sound test from the kindergarten year was used with a raw score of 23. The DRA level was multiplied by 2 for a raw score (i.e. DRA level 10 resulted in 20 qualifying points). The sight word assessment assessed 25 words from the district's kindergarten list for a raw score of 25.

There were 114.5 points possible. The cut-off score of 80 was established. All students scoring 80 or below qualified for formal remedial reading services (Jones, 2008).

Similar criteria were used for 2008-2009 second graders. Like 2006-2007 second grade criteria, the DRA and the Pathways to Reading word spelling assessments were used. Like first grade, a sight word assessment score replaced the subjective teacher recommendation portion. The Pathways Spell-a-sound first grade assessment was added as a criterion for second grade qualification. Like 2008-2009 first grade criteria, raw scores were also used for second grade qualification. The DRA level was doubled with 48 points as a maximum; there were 52 and 32 raw points possible for Spell-a-sound and word spelling assessments respectively. With 100 words on the district's first grade sight word list, .5 points per correct response resulted in 50 points possible for the second grade criteria. Out of the 182 total points possible, second graders with the cut-off of 126 points or lower qualified for remedial reading services (Jones, 2008).

According to Dr. Jones (personal communication, December 4, 2009), Belton School District has utilized the DRA to monitor each student's instructional reading level in kindergarten through fourth grade since 2002. Jones (2009) also explained, in an effort to minimize testing time and limit the students' exposure to the DRA's limited texts needed for testing the same student in future years, the district self-implemented a top-out level for DRA testing in 2006. Pearson Learning established general guidelines for DRA levels that approximately represent on-grade-level reading skills. The district utilized the highest DRA level determined as on-grade-level at the end of the school year in the subsequent grade as the top-out level for DRA testing within a particular grade level. For example, since DRA level 24 is determined to be the approximate on-grade-level DRA

level at the end of second grade, it was adopted as the top-out level for first grade students. If a first grader indicated they needed to be tested beyond a DRA level 24 to identify their instructional level, the examiner recorded 24 as the highest DRA level tested and the classroom teacher implemented other assessments to inform their instruction further.

Scott Elementary School, a Title I school, served students qualifying for remedial reading support for more than a decade through a pull-out model in which identified students were pulled out of their regular classrooms to receive 30 minutes of reading intervention from a reading specialist in small groups of approximately six students. Reading specialists did not provide services for students who did not meet the district's Title I qualifications. The reading specialists' entire day was scheduled with servicing small groups outside of the classroom.

In an effort to accelerate reading progress, the school began the process of replacing the pull-out reading intervention model with a push-in approach in 2007-2008. Because this year of transition was one of mixed practice, 2008-2009 is considered the first year for comprehensive push-in reading intervention. With the push-in model, a reading specialist joined a classroom teacher for 30-45 minutes daily to co-teach all students. Students qualifying for Title I remedial reading services remained in the regular classroom with their non-qualifying peers. The reading specialist and classroom teacher integrated practices to meet the needs of all students. The co-teaching team also collaborated outside of this time for instructional planning. Data from 2006-2007 represented reading progress resulting from a pull-out model and 2008-2009 data represented reading progress resulting from a push-in model. The two sets of data were

compared to conduct this study. Data from 2007-2008 was not considered as previously explained.

### Significance of the Study

Schools face a paramount challenge—educate the most diverse student body in history under the highest academic standards and public scrutiny that has ever existed (Pipes, 2004). While literacy lays the foundation for students to function successfully in their employment and daily living, the task of facilitating proficient readers is far from basic. Teaching reading and learning to read is complex and is now a primary benchmark for the success of an educational institution (National Institute of Child Health and Human Development, 2000; *No Child Left Behind*, 2002). Determining the most effective intervention model for those students who need remediation in their reading development will significantly contribute to Scott Elementary School’s program-planning decisions. A comparative study of the pull-out and push-in reading intervention models will inform Scott Elementary School’s quest to meet this imperative, essential challenge.

### Purpose of the Study

The purpose of this study was to determine the most effective reading intervention model. The study compared the effects push-in and pull-out reading intervention models had on first and second grade students in a low-socioeconomic school from a midsize suburban public school district.

### Delimitations

Delimitations clarify boundaries of a study that were made in an effort to narrow the scope. They are controlled by the researcher (Roberts, 2004). The delimitations of

this clinical research study follow:

1. Student data from one school year of pull-out intervention and one year of push-in were compared.
2. Reading progress was based on one measure, the Developmental Reading Assessment.
3. The population included only first and second grade students.
4. The study included one school.

#### Assumptions

Assumptions are the postulates that are considered operational for the purpose of the study (Lunenburg & Irby, 2008). The study was based on the following assumptions:

1. The students who qualified for reading intervention at Scott Elementary represented remedial readers in other schools of similar demographics.
2. Reading instruction in the regular classroom for the general student population in one classroom at Scott Elementary School represented literacy instruction in other first and second grade classrooms within and outside of Scott Elementary.
3. Reading intervention instruction by one reading specialist at Scott Elementary School represented instructional services by all reading specialists within and outside of Scott Elementary.
4. Push-in classroom teachers and their reading specialist colleagues were collaborative in planning, teaching, assessment, and reflection practices and possessed a positive attitude about the collaborative model and co-teacher relationship.

5. All examiners implemented the Development Reading Assessment according to the official examiner's manual.
6. The results of the Developmental Reading Assessment were independent of the examiner and accurately reflected each student's reading level.
7. Overall changes in reading levels based on the intervention model were indicative of potential change in any primary level classroom mirroring the demographics of Scott Elementary.
8. All teachers and reading specialists providing instruction to first and second grade students at Scott Elementary continually facilitated quality learning experiences for all students.
9. All DRA data were accurately entered in the archival records.

#### Research Questions

Research questions provide direction for the study and capture the essence of the study for those that review them (Lunenburg & Irby, 2008). They also provide a structure for presenting the results of the study (Roberts, 2004). The following research questions guided this clinical research study:

1. Is there a statistically significant difference in the change in reading level from September to May for qualifying first and second grade students receiving intervention via a push-in model and those serviced through a pull-out model as measured by the Developmental Reading Assessment?
2. Is there a statistically significant difference in the change in reading level from September to May for non-qualifying first and second grade students

in push-in classrooms and those in classrooms without the push-in model as measured by the Developmental Reading Assessment?

#### Definition of Terms

The following terms are defined for the purpose of this study:

*Coach.* A coach is someone who has a professional responsibility to bring research-based instructional practices into classrooms by working with adults. They model classroom practices, provide supportive feedback, and observe specific, individual teaching practices (Steiner & Kowall, 2007). This term is used interchangeably with facilitator, reading coach, literacy coach, and instructional coach throughout educational literature.

*Developmental Reading Assessment (DRA).* Pearson Education's Developmental Reading Assessment (DRA) is a set of individually administered criterion-referenced reading assessments for students in kindergarten through eighth grade (Rathvon, 2006). It includes a series of leveled books and recording sheets designed to allow teachers to determine students' reading accuracy, fluency, and comprehension levels (San Diego Unified School District, 2009). Modeled after an informal reading inventory, the DRA is intended to be administered, scored, and interpreted by classroom teachers (Rathvon, 2006). The DRA is supported by validity and reliability data and has been utilized in many district for over 20 years as a method to document progress and drive effective reading instruction as assessment results can aid teachers in identifying areas of need (Pearson Education, 2009).

*Direct Instruction.* Direct instruction is a method designed to enhance academic learning time. Direct instruction does not assume that students will develop insights on

their own. It is teacher-driven. Teachers explain the specific learning objectives to students and demonstrate the steps needed to accomplish the academic task. Teachers follow a sequence of teacher-generated events: stating the objective, reviewing skills necessary for new information, presenting new information, breaking down a task into small steps, modeling the skill or task, questioning students, providing group instruction and independent practice, providing individual pacing, assessing performance, providing feedback repeatedly and giving more practice (The Access Center, 2009).

*Differentiated Instruction.* Differentiated instruction is an instructional concept that maximizes learning for all students regardless of their varied skill levels, abilities, learning styles, personalities, interests, motivation levels, or background. When a teacher differentiates instruction by offering varied learning experiences, he or she uses the best teaching practices and strategies to create different pathways that respond to the needs of diverse learners (Staff Development for Educators, 2006).

*Explicit Instruction.* Explicit instruction is referred to and defined by various educational entities. Utah's State Office of Education (2007) defines explicit instruction as teaching that is clear, overt, and visible. Explicit instruction is a sequence of supports: setting the purpose for learning, clarifying expectations, and extending opportunities for applying new learning. It systematically evolves from primarily teacher input to minimal teacher involvement as the student becomes more independent. It is also referred to as instruction for mastery (Weber University, n.d.).

*Extended School Day.* Extended school day refers to time outside of, but in addition to, a student's official school day. It includes before and after-school structures that offer programs aligned with the regular school day's academic goals (C.S. Mott

Foundation, 2007). This format offers students who need more time the support they need to understand what they are learning in school (Connelly, 2008).

*Non-qualifying Students.* Non-qualifying students refers to those students who did not meet the criteria set forth by the school district to receive Title I reading support. Title I federal guidelines do not specify the qualifications but commit districts to developing a multiple-criteria format and defines a percentage of the student population that can be served. In this study, non-qualifying students received no direct instruction from reading specialists in the pull-out format. In the push-in model, non-qualifying students who were in classrooms with their qualifying peers potentially received some instruction from the reading specialist during the push-in, co-teaching time frame. However, non-qualifying students who were in classrooms with no qualifying peers did not receive instruction from the reading specialist, as those classrooms did not have a reading specialist involved.

*Professional Development.* Professional development is a continuous process of individual examination, reflection, and improvement of practice. It empowers educators to connect theory, practice, and student outcomes. Professional development strengthens pedagogy, increases knowledge about the teaching and learning process, and supports the integration of the new knowledge so that it may become standard practice. It is research-based, aligns with standards and curriculum, and aims to improve student achievement. Quality professional development is job-embedded and applicable to the site's needs (American Federation of Teachers, 2009).

*Pull-out Model.* A pull-out model is a structure in which students are taken out of their regular classroom to receive individual or small group specialized instruction in

another location (Nebraska Department of Education, 2009). For the purpose of this study, pull-out models were for small group instruction.

*Push-in Model.* A push-in model refers to the reading specialist collaborating with the regular classroom teacher and co-teaching within the same classroom with all students present. This model guides struggling students to gain from general classroom instruction and also includes working separately with one or more students within the classroom to support their areas of need (Shanahan, 2008). Reading specialists are not limited to working only with identified remedial readers while in the regular classroom. Instead, it is the co-teaching approach creating a lower student-teacher ratio that provides the support needed.

*Qualifying Students.* Qualifying students are students who met the criteria set forth by the Belton School District to receive Title I reading support as previously explained. Title I federal guidelines do not specify the qualifications but commit districts to developing a multiple-criteria format and defines a percentage of the student population that can be served. Qualifying students and remedial readers are synonymous for the purpose of this study. The qualification process and criteria were described previously.

*Reading Intervention.* A reading intervention is an instructional program or structure intended to guide more intensive instruction in one or more of the essential components of reading instruction: phonemic awareness, phonics, fluency, vocabulary, and comprehension (Florida Center for Reading Research, 2006).

*Reading Specialist.* Reading specialist is a general term referring to educational personnel with advanced training in reading education. Types of reading specialists may

include reading teacher, reading consultant, reading supervisor, or reading coordinator (Nebraska Department of Education, 2009). The above terms may vary in meaning among schools. There is a graduate degree entitled Reading Specialist. For the purpose of this study, the term reading specialist does not imply that the professional bears the Reading Specialist degree but that he/she has specialized knowledge in developing, implementing, and evaluating literacy instruction and has the capacity to serve as a literacy resource to other educators, parents, and the community (International Reading Association, 2000).

*Remedial Readers.* Remedial readers are those students who demonstrate reading skills that are significantly below grade level. For the purpose of this study, remedial readers are also referred to as qualifying students and struggling readers.

*Remedial Reading Instruction.* Remedial reading instruction refers to specialized reading instruction adjusted to the needs of a student who does not perform satisfactorily with regular reading instruction. The process is intended to correct the deficiency (Nebraska Department of Education, 2009).

*Systematic Instruction.* Systematic instruction refers to a carefully planned sequence for instruction that is strategic, and deliberately designed. Lessons build on previously taught information, from simple to complex, with specific objectives. Students are provided appropriate practice opportunities which directly reflect instruction. Ongoing assessment drives instructional progression (Florida Center for Reading Research, 2006).

*Title I.* The Title I-Elementary and Secondary Education Act of 1965 was amended to read as the Title I-Improving the Academic Achievement of the

Disadvantaged in the No Child Left Behind Act of 2001. The act specifies eligibility criteria for schools to receive federal funding for the purpose of assisting low-achieving students in economically disadvantaged areas (U.S. Department of Education, 2009). Many schools finance remedial reading programs with Title I funding and therefore refer to staff who implement the programming as Title I staff, the intervention efforts as Title I programs, and the students who qualify for the interventions as Title I students. Title I staff or programs in one school may look very different in another though both meet the criteria for Title I funding and, therefore, bear the same label. For the purpose of this study, both the push-in and pull-out models analyzed are funded by Title I and therefore Title I teachers are the reading specialists directly involved in the pull-out and push-in reading intervention efforts, also referred to as Title I programs.

#### Overview of the Methodology

A quantitative research design was selected to measure the change in reading levels resulting from the push-in and pull-out reading intervention models for qualifying students and from push-in and no-push-in classroom placements for non-qualifying students. Purposeful sampling was used to narrow data collection to first and second graders enrolled at Scott Elementary School in 2006-2007 and 2008-2009. The first hypothesis (H1) included two samples, first and second grade students who were identified for remedial reading instruction and pulled-out for those services in 2006-2007 and those who were identified for remedial reading instruction and served through a push-in model in 2008-2009. Remedial reading services were only provided through a pull-out model in 2006-2007. Data from 2007-2008 was not considered as it was a

transitional year in which services were not purely pull-out or push-in. Remedial reading services were exclusively provided via push-in programming in 2008-2009.

A third sample was considered for the second hypothesis (H2) data, all 2008-2009 first and second grade students who were not identified for remedial reading services. This sample was divided into subsets, students with push-in classroom placement and those in classrooms with no push-in services. H2 testing did not consider 2006-2007 non-qualifying students in an effort minimize the variance in curriculum programming, teaching initiatives, and demographics.

Pearson Learning's DRA was individually administered to each student by a reading specialist in September and May of each school year to determine each student's instructional reading level. The DRA places a numerical value on each reading level. Archival data was accessed to gather data for each sample. The change in reading levels was calculated by comparing each student's fall and spring DRA levels.

An independent sample *t*-test was selected to address both research questions (RQ1 and RQ 2). The independent sample *t*-test for RQ1 established whether there was a statistically significant difference between the mean May-to-September reading level change for students qualifying for pull-out reading interventions and the mean change for qualifying students receiving push-in services. A separate independent sample *t*-test for RQ2 established whether there was a significant difference between the mean May-to-September reading level change for non-qualifying students placed in push-in classrooms and the mean change for non-qualifying students in classrooms without push-in services.

### Organization of the Study

This study consists of five chapters. Chapter One introduced the need for intervention services to support remedial readers and addressed the background of the study, research questions, overview of the methodology, delimitations of the study, and definition of terms. Chapter Two presents a literature review with specific information pertaining to reading specialists, supplemental instruction through extended school day models, and supplemental instruction models within the school day differentiating push-in, pull-out, and push-in/pull-out combination models. Chapter Three describes the methodology used for the research study including the selection of participants, design, data collection, and statistical procedures of the study. Chapter Four presents the findings of the research study. Finally, Chapter Five discusses the results, conclusions, and implications for further research and practice.

## CHAPTER TWO

### REVIEW OF LITERATURE

The No Child Left Behind (NCLB) Act of 2001 augmented student-achievement accountability for public schools. As previously referenced, NCLB's Adequate Yearly Progress (AYP) benchmarks prescribed a minimum percentage of students that must attain proficient levels in reading and math according to state standards and measures. The initial AYP target for reading proficiency was set at 64% in 2002-2003 and progressed according to the established incremental increase scale. To avoid sanctions, public school districts must be vigilant as they progress toward 2013-2014 when 100% of students in United States public schools are to be deemed proficient according to the AYP scale (*No Child Left Behind*, 2002). While the targets are the same for every state, the tool for determining student proficiency is within the state's jurisdiction (Protheroe, 2008). As previously stated, schools receiving federal Title I funding due to their economically-challenged populations are subject to further sanctions when they fail to meet AYP (*No Child Left Behind*, 2002). In addition, state legislation such as Missouri's 2001 Senate Bill 319 mandating retention for fourth graders reading below a third grade level has brightened the accountability spotlight with public schools at center-stage (Missouri DESE, 2008).

Before federal and state legislation implicated school districts for sub-par student achievement, schools imposed sanctions on the students themselves through failing grades, retention, and limited opportunities rather than reflecting on systems and professional practice. However, with current legislation such as NCLB and MO SB 319, students are no longer being held responsible for failed teaching. Schools are required to

ensure reading success for each student regardless of their special needs, home life, socioeconomic status, primary language, ethnicity, or other demographic scenario. Though adopted with good intention, many policies and practices are not necessarily consistent with best practices (Langdon, 2006).

According to Shobana Musti-Rao and Gwendolyn Cartledge (2007), special education professors at the University of Cincinnati and Ohio State University respectively, students from low-income and minority backgrounds are less likely to speak Standard English and are more likely to enter kindergarten lacking pre-literacy and oral language skills. “Reading is a survival skill, and the failure to read during the elementary school years reduces a person’s chances of success in school and life” (Musti-Rao & Cartledge, 2007). Musti-Rao and Cartledge (2007) researched reading instruction strategies and purport underperforming and underprepared readers do not respond to indirect efforts such as literacy-rich classrooms focusing on the readiness skills the young students are lacking. Early identification; explicit, intensive, and systematic core reading instruction; and ongoing support are beneficial for all learners but imperative for remedial readers (Musti-Rao & Cartledge, 2007).

There are several intervention models offering supplemental support that exist in schools as they attempt to address students who fall short of expected reading levels. This chapter presents the review of literature and organizes the findings using three categories of instructional support: reading specialists, extended school day models, and supplemental instruction within the school day. Support within the school day is divided into push-in and pull-out models.

## Reading Specialists

Many experts and activists in the education arena believe that teachers are inadequately prepared to teach children to read. With increased accountability and more diverse populations, one may wonder if public schools have the expert personnel necessary to reach the AYP targets. As schools invest efforts to make sure that their students are not “left behind,” reading specialists are often viewed as the key personnel to provide answers and proactive solutions to the perplexities associated with low levels of reading proficiency (Pipes, 2004). According to the International Reading Association (IRA), schools must have reading specialists who can provide support for all students through expert instruction, assessment, and leadership for reading programs (Pipes, 2004).

In the area of instruction, the IRA (2000) proposes that reading specialists are to support, supplement, and extend classroom teaching. For assessment, the IRA maintains that reading specialists have specialized knowledge vital for developing, implementing, and evaluating literacy programs and individualizing instruction. The IRA states that the leadership role of reading specialists is fulfilled as they serve as a resource to other educators, parents, and the community (IRA, 2000). In an effort to examine actual practice of reading specialists, Christine Mallozzi and Chet Laine (2004) conducted a study through the University of Cincinnati where eight reading specialists were interviewed. All participants were female and taught in primary or intermediate schools in rural, suburban, and urban Ohio school districts. Responses indicated overall concern with the IRA’s expectations for reading specialists in the area of instruction. They felt the multiple roles they were to serve were overwhelming at times. Many planned their

lessons alone with only some input from classroom teachers, as they had to coordinate with an average of eight different teachers. In the area of assessment, two of the eight reported involvement with assessing to identify students for remedial support and felt there was little consistency in eligibility standards. Only one of the participants actually fulfilled the IRA's position on utilizing assessments to individualize instruction. Five out of the eight interviewed reported they served as leaders through modeling reading lessons for classroom teachers. General consensus, however, was that they only provided their opinions about specific students when solicited by the teacher. The parental resource role was common among all eight (Mallozzi & Laine, 2004).

The role of the reading specialist is often combined with direct student-service responsibilities providing instruction for students leaving little or no time to facilitate program implementation and instructional improvement for teachers. As a University of Alabama doctoral student, Georgina Pipes (2004) examined the role of elementary reading specialists in the Alabama Reading Initiative. This study revealed reading specialists spent a portion of their day working with struggling readers and a portion of their day working with teachers. Reading specialists strongly indicated support from the principal as the key to their effectiveness. There was a positive link between the principals' views of the reading specialist as an instructional coach for teachers with the level of progress schools experienced in reading achievement. The amount of time they spent working as an intervention teacher was negatively linked to the level of progress in school-wide reading achievement. When they absorbed most of their day working with students, their opportunities for professionally developing teachers was left to general

professional development days which did not fully meet their professional learning needs (Pipes, 2004).

The role of the reading specialist is changing in schools where many students struggle. The reading specialist's role is transforming from someone who delivers instruction by working directly with students to someone who works directly with teachers as a coach and mentor. Title I of the 1965 Elementary and Secondary Education Act (ESEA or Title I) was the first federal initiative specifically designed to fund remedial reading education in public schools. The goal was reading achievement in high-poverty schools. Title I was actually a funding source but quickly became the general term used to label the program and even the reading specialist who implemented the services. These "Title I teachers," often reading specialists, worked with struggling students primarily in a pull-out setting where very limited success was found (Dole 2004). In 2000, Congress revised 1965's ESEA. Still targeting schools with large low-income populations and focusing on improved reading achievement, the process of ensuring this achievement changed requiring all teachers be highly qualified to teach reading, scientifically-based reading instruction, and assessment-driven instruction. Rather than focusing on the needs of identified struggling readers, as in 1965, the ESEA of 2000 supports high-quality reading instruction for every student.

Title I has shifted from focusing solely on remedial readers to providing quality reading instruction for all students. This shift has led many reading specialists to assume the role of reading coach and mentor in schools with many struggling readers as they have the knowledge base to support classroom teachers with quality content and research-based practices (Dole, 2004). "The first order of business in making sure that students do

well in learning to read is to make sure that classroom instruction is of high quality. High-quality classroom reading instruction has many dimensions, but none is more important than a well-prepared teacher” (Shanahan, 2008, p. 110). The most useful professional development emphasizes active teaching, assessment, observation, and reflection rather than abstract discussions. Professional development that focuses on student learning through developing pedagogical skills for specific content, such as the reading specialist coaching teachers on specific strategies for teaching reading, has the strongest impact on instructional practice (Darling-Hammond & Richardson, 2009).

In this new role, the reading specialist supports teachers in daily instruction through collaborative planning, modeling, team-teaching, and lesson feedback. The reading specialist as a teacher coach also assists teachers as they utilize assessments to drive instruction (Dole, 2004). In NCLB legislation, the Reading First Initiative views reading coaches as an important professional development component (U.S. Department of Education, 2002). Reading specialists can play a critical role in the professional development of teachers. Most reading specialists have deep knowledge about the reading process and quality reading instruction. Feedback and job-embedded coaching increase the likelihood that teachers will embrace new knowledge and skills. In schools where a large number of students are struggling, a reading specialist is often in the role of directly teaching students. However, too many students who need support cannot rely on a few minutes of quality instruction when the specialist is available to them. As a coach rather than a reading teacher, reading specialists can play a critical role to develop teachers as quality reading instructors continuously for all students.

Developing general education teachers in literacy instruction facilitates achievement and accelerates learning for all students thus minimizing the need for formal intervention and targeted-instruction programming (Institute of Education Sciences, 2009). For example, the Response to Intervention (RtI) model involves three tiers. The first tier is classroom instruction for all. A menu of additional interventions for those who continue to struggle comprise Tier 2. The final tier is reserved for those who continue to display severe deficiencies or lack significant progress in Tier 2 programming. The more quality instruction students experience through Tier I, regular-classroom experiences, the less they will struggle and need Tier 2 interventions. Classroom teachers differ in how successful they are in facilitating and differentiating learning. When reading specialists are in the role of coaching and mentoring teachers, they improve basic classroom instruction and the within-class interventions preventing the need for formal, supplemental intervention programming (Shanahan, 2008).

As a University of Nevada doctoral candidate, Dorothy Kulesza (2001) conducted a descriptive study of the role of secondary school reading specialists in the Clark County, Nevada, school district. The district's 144 reading specialists were surveyed and 77 were completed and returned. In addition, 22 were interviewed and 3 were observed. Kulesza's research found that respondents perceived administrators and classroom teachers to view reading specialists as support personnel and often wanted to decide and define their role and function to meet the needs of the educators rather than the students. In addition, the responsibility for remediation belonged to the reading specialists in most of the school's reading intervention models. The data revealed the reading specialists spent more than 90% of their instructional time with small groups of primary students in

a pull-out model. The administrators directed the grade levels served, reading program format, and additional responsibilities. Regardless of how their role was defined, Kulesza's (2001) study found that the reading specialists perceived themselves to be very influential in the progress of struggling readers.

In schools where reading specialists serve as reading coaches deployed to the classrooms, they facilitate authentic, on-the-job professional development for the classroom teacher (Goldstein & Noguera, 2006). This role would likely be in addition to other reading professionals who spend a majority of their time in direct instructional roles rather than professionally developing teachers. This requires financial resources but would be an investment in teacher development on behalf of the most struggling learners. After all, teacher expertise does not happen in a vacuum (Lose, 2008).

Renee Schuster (2004), a Saint Louis University doctoral student, conducted a program evaluation of literacy coaching in a large Missouri school district. Schuster (2004) examined the link between using reading specialists as literacy coaches for teacher professional development and improved student achievement in reading and writing. Data was collected from experimental schools where a total of 3 literacy coaches serviced 15 classrooms. Criterion-referenced and norm-referenced reading and writing measures for first and second grade students from these experimental schools were compared to first and second grade scores in schools without the literacy coaching model. The program evaluation found that literacy coaching did make a positive difference in student achievement in reading and writing on both criterion- and norm-referenced measures. The difference was more significant for writing than reading. The study also found that the difference made by literacy coaching was not affected by school and student

demographic factors. Participants' reactions to literacy coaching experiences were very positive, participants' learning was evident, and their new learning was implemented in the classroom (Schuster, 2004).

Kathryn Au, president of the International Reading Association (IRA), is concerned that legislation has been too standards-based minimizing the importance of professional development. IRA views professional development as the key to improved literacy learning for students (*Focus Should be on Teachers*, 2009). As the National Governors' Association and the Council of Chief State School Officers worked in tandem to develop national standards, the IRA made a proposal to them to include three components in their final product: (a) rigorous goals which raise the bar for academic performance; (b) assessment for student progress monitoring; and (c) professional development that assists teachers in meeting students' instructional needs (*Focus Should be on Teachers*, 2009). According to Au, "We already know that new standards and new text books alone, no matter how rigorous, are not enough to give us the higher levels of student achievement we desire as a nation. The professional development of teachers is the missing ingredient needed for success" (*Focus Should be on Teachers*, 2009, p. 1). When schools have limited resources and the reading specialists' schedules are primarily or completely devoted to providing direct instruction to students, the opportunity for them to provide professional development for classroom teachers in literacy instruction is minimal or does not exist at all. Reading specialists can improve classroom reading instruction via professionally developing, coaching, or mentoring classroom teachers. In addition, they can also improve reading achievement by working directly with students providing quality reading interventions (Shanahan, 2008). Despite the varied and

changing demands of reading specialists, students' needs should determine the role of the reading specialist. "As students' needs change, so does the role of the reading specialist" (Mallozzi & Laine, 2004, p. 9).

#### Supplemental Instruction through Extended School Day Models

The Time, Learning and Afterschool Task Force issued "A New Day for Learning," a report recommending that learning opportunities should be comprehensive and seamless for all students. The report includes many after-school programs and suggests they be aligned with the in-school academic goals (C.S. Mott Foundation, 2007). This format offers students who need more time the support they need to understand what they are learning in school (Connelly, 2008). According to Visher and Hartry (2009), "...many educators have high hopes that after-school programs will help boost students' academic achievement. As they see it, after-school programs may be a venue for students who are struggling academically to catch up through a little more 'seat time' and exposure to instruction in reading, mathematics, and other academic content areas" (p. 1). With current federal and state accountability goals, several states and federal funding sources such as the U.S. Department of Education's 21st Century Learning Centers grants support academic-based after-school programs as a key strategy to "keep children learning after the school bell rings" (p. 1).

Though after-school academic interventions have increased, there is a lack of research to address whether such interventions make a difference in test scores which may represent the lack of consensus about whether academics should be central to after-school programs (Visher & Hartry, 2009). To inform the discussion about the efficiency of after-school academic programming, the William T. Grant Foundation conducted a

study in 2005–2006 with the Brockton Public School District to assess the impact of the READ 180 intervention program adapted for an after-school format. Brockton is a large, ethnically diverse, low-income urban school district of approximately 16,000 students in southeastern Massachusetts that routinely struggled to meet AYP (Visher & Hartry, 2009).

Scholastic Inc.'s READ 180 intervention program addresses individual needs through differentiated instruction, instructional software, high-interest and non-fiction literature, and direct instruction in reading, writing, and vocabulary (Scholastic Inc., 2009). This study's after-school format required 60 minute blocks four times per week. Daily blocks included three rotations: small group direct instruction, independent and modeled reading, and READ 180 software or computer (Visher & Hartry, 2009).

The impact of READ 180 was measured in three ways: attendance and attitudes toward the program; self-efficacy, behavior, and attitudes toward reading; and reading skills in decoding, oral fluency, word recognition, comprehension, and vocabulary. Data indicated students participating in READ 180 enjoyed and benefited from the program, but few differences were observed between students in the control and treatment groups in their attitudes toward reading and their reading behavior. The impact on oral reading fluency was positive and significant in places but inconsistent as it varied by grade and schools. There was a positive, statistically significant effect on word recognition but no statistically significant differences in the vocabulary and comprehension scores. Its largest impact was on raising the test scores of students who started the year with a low interest in reading and on fourth graders. This study indicated that a rigorous, structured intervention, such as READ 180, can be implemented as an after-school program. It also

demonstrated that elementary school students can become highly engaged in academics in an after-school setting and motivated to attend. Third, the findings indicated that an after-school reading intervention can result in small but positive gains in word recognition and fluency (Visher & Hartry, 2009).

Amy Kopchain (2006), a special education teacher in New York City, analyzed her urban school's current conditions to determine how she could best serve her special needs students. She commented on general classrooms where adequate adaptations, individualized instruction, and sufficient support were missing and, therefore, were not candidates for a push-in model to support her learning-disabled students. In addition to these missing components, there were management or behavioral concerns and little or no time to co-plan with all general education classroom teachers. With pull-out instruction being her second option, Kopchain recalled her small six foot by seven foot classroom on the fifth floor of a three-in-one school where she is to serve elementary and junior high school students. Due to her caseload, groups ranging from nine to fifteen students were too large for her small room. She decided to pursue action research and began serving her five most difficult students before school for 37 ½ minutes.

Kopchain (2006) conducted interviews before she began which revealed that her students sometimes felt embarrassed by her presence in their regular classrooms and distracted by other students. Follow-up interviews six months later indicated her students preferred working with her in the extended day program. She reports that parents and family members supported her efforts. Instructional time increased by 50% since she no longer had to run between floors to search for students. Data indicated the greatest gains to be in student motivation and effort. There was also some improvement in grades.

The Texas A & M International University (TAMIU) Hinojosa Reading Research Center (HRRC) implemented several reading intervention programs in its after-school clinic and in Laredo, Texas, elementary schools. With a student population that was 97.8% Hispanic and 86.1% economically disadvantaged, an extended school day model was selected to attempt to close the gap and assist students in becoming proficient readers at six Title I elementary schools in Laredo Independent School District during the 2004-2005 academic year. First and second grade English language learners scoring the lowest on district-wide reading assessments were targeted for the project. Seventy-two bilingual teachers were trained to implement the model in 90 minute blocks, twice weekly for 22 weeks. Instruction was carried out in two languages with all children, one block in Spanish and one block in English, in small groups with a 3:1 student-teacher ratio. Preliminary data was gathered using the English and Spanish versions of the Jerry Johns Informal Reading Inventory as pre and post test measures. The difference in mean scores indicates that both the first and second grade students made substantial gains in reading in both Spanish and English, although the improvement of second graders was more accelerated than that of first graders.

The Manpower Demonstration Research Corporation (MDRC) is best known for mounting large-scale evaluations of real-world policies and programs targeted to low-income people. The increase in after-school academic programs as a chosen method to answer to the rising pressures of improving student achievement definitely affects low-income children as they incur more academic struggles than their mid-to-high-socio-economic peers do. Therefore, MDRC has a viable interest in after-school programming and has performed much research. The U.S. Department of Education's 21st Century

Community Learning Centers (21st CCLC) program provides approximately \$1 billion annually to states for efforts to help students meet standards which is often in the form of after-school programs. A national evaluation of the 21st CCLC program indicated program grants awarded between 1999 and 2002 had a limited impact on elementary school students' academic achievement. However, most sites' academic activities consisted of only homework sessions in which students received limited academic assistance (Rebeck-Black, Somers, Doolittle, Unterman, & Baldwin-Grossman, 2009).

In response, the Institute of Education Sciences funded the development of highly structured and engaging instructional resources that could be used in after-school programs for elementary school students (Rebeck-Black, Somers, Doolittle, Unterman, & Baldwin-Grossman, 2009). The program included 45-minute modules that did not require students to attend the program every day. The program was implemented in 27 after-school centers for second through fifth grade students. The location of after-school centers and number of students served were not specified. One year of this after-school structure produced statistically significant impacts on students' mathematics achievement with a 10% gain on the Stanford Achievement 10<sup>th</sup> Edition (SAT-10) total math score. However, additional gains were not made after the second year. In the area of reading, there were no significant gains in the first year and even less in the second as determined by the SAT-10 and the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessments. The Institute of Education Sciences purported highly-structured instructional approaches produced better academic results than after-school services for homework assistance or of site-developed activities that do not follow a structured curriculum (Rebeck-Black, Somers, Doolittle, Unterman, & Baldwin-Grossman, 2009).

## Supplemental Instruction within the School Day

### *The Push-in Model*

Push-in services may be delivered in two ways. One involves the reading teacher guiding identified struggling students to gain from the general classroom instruction delivered by the classroom teacher. In the second format, the reading teacher works separately with one or more deficient students providing reteaching in their areas of need (Shanahan, 2008).

Academic Intervention Services (AIS) is a New York state-mandated program to assist students who need extra support in all four core curricular areas. AIS targets each school's students who are identified as meeting qualifications for Title I services. In an AIS program at Glenn H. Curtiss Elementary School in Hammondsport, NY, classroom time was maximized for those students who deemed additional support in mathematics through push-in classroom support for 45 minutes four days per week with one day each week for skill-specific, data-driven instruction to targeted groups. With its branding of prescriptive, targeted, push-in instruction, Glenn H. Curtiss Elementary School's AIS allowed and benefited students of all ability levels to receive individualized instruction appropriate for their instructional levels while maintaining a push-in service model (Bower, 2008).

When two teachers team together to address one classroom during reading instruction, there are many advantages for all students. Among them, teacher-directed small groups and one-on-one conferencing can occur more frequently. The increased opportunities to break out of a traditional whole-group lesson format enriches reading instruction as at-risk readers tend to be tactile, kinesthetic learners who prefer to work in

different groupings (Carbo, 2007). Gail Connely (2008), Executive Director of the National Association of Elementary School Principals (NAESP), recommends that learning should be a seamless approach for all students. If identified students were to leave the classroom for a portion of the day to receive specialized reading instruction, their day would be less seamless. Connely (2008) believes we should not “write them off as slow learners who can’t make it in the classroom” (p. 64). A push-in model allows remedial reading students to remain in the classroom as two teachers work with all of the students.

As a professor of teacher education at Michigan State University, Mary Kennedy (2006) observed a sample of 45 upper-elementary classrooms to determine factors that contribute to quality teaching. Among her findings, teacher quality was threatened each time a teacher had to deal with a student situation including every time a student left and returned mid-class. Kennedy (2006) also discovered that students being pulled out of class for various reasons meant that students were leaving and returning to class mid-lesson. Pull-out service schedules seemed designed to meet the time needs of the resource teachers rather than the schedule needs of the classroom teacher and students (Kennedy, 2006). The push-in remedial reading minimizes interruptions, as remedial readers do not leave and return mid-lesson for intervention services.

According to Musti-Rao and Cartledge (2007), students who misbehave are often low-performers. As classroom teachers address misbehaviors, low-performing students are often found separated from the classroom activities, separated from the literacy instruction they need (Musti-Rao & Cartledge, 2007). Having two teachers present

during reading instruction in a push-in model would assist with classroom management and increase teacher proximity and student redirection thus minimizing separation.

While ESEA of 1965 focused Title I funding on programs that addressed the needs of only the struggling readers, the ESEA revisions of 2000 target quality reading instruction for all students in the funded school (Dole, 2004). The push-in program provides an opportunity for the reading specialist to partner with the classroom teacher in a variety of ways serving all students in the classroom. Musti-Rao and Cartledge (2007) analyzed strategies that are used in response to urban students having reading difficulties. Their study provided supplemental intensive, systematic phonemic awareness instruction over three years to kindergarten students with reading risks. They supported small-group instruction in the kindergarten and first grade general classroom for all students three to five times per week for twenty to thirty minutes. At the end of the second year, forty percent of those identified were reading at grade level. While 7% of those identified regressed, 28% of students not receiving these services regressed (Musti-Rao & Cartledge, 2007).

According to Goldstein and Noguera (2006), as co-teachers collaboratively execute all aspects of teaching including planning, implementing, assessing, and analyzing information, a push-in model supports each co-teacher's professional development through their opportunities to learn with and from other teachers on-the-job. Peer assistance is an approach to supporting teachers of all experience levels. Student achievement is directly related to the overall effectiveness of the teacher (Goldstein & Noguera, 2006). However, acquiring high levels of effectiveness is an obstacle for schools because improvement often occurs through trial and error in isolation. When

specialized reading teachers partner with classroom teachers regularly, the push-in model assists with overcoming this obstacle (Goldstein & Noguera, 2006).

According to Shanahan (2008), quality push-in programs can be more effective than pull-out structures as they require co-planning and collaboration that results in the careful coordination which is speculated to be one of the key missing components of pull-out programs resulting in their failure. However, the potential of push-in will only be met if the reading and classroom teachers meet the challenge of careful and sufficient collaboration for harmonized teaching (Shanahan, 2008).

Swenson and Clutter (2000) define class-within-a-class (CWC) as a push-in model of service delivery for mild to moderately disabled students. To facilitate this inclusion model, a special educator is paired with a regular education classroom teacher for co-planning and co-teaching within the general classroom. Emphasis is on equalizing learning opportunities through effective teaching strategies and not curriculum adaptations. Students with disabilities that impair their abilities to learn remain with and among their age- and grade-level peers allowing students with the best understanding to summarize and model communication and learning behaviors. The learning opportunities are presented so that all students can understand and apply the concepts. Swenson and Clutter (2000) found over 14 years of data to support CWC. This push-in model is preferred over pull-out special education support by many educators and experts as results of the CWC model have indicated that all students benefit rather than only the disabled students. When implemented correctly, general education students in a CWC classroom achieve higher than their non-CWC peers on standardized tests and their general classroom performance (Swenson & Clutter, 2000).

Programs meant to serve students with special needs were historically designed to provide intensive interventions in isolated settings. Swenson and Clutter (2000) found that the assistant secretary for the Office of Education, Madeleine Will, gave a report on the status of special education in 1986, nearly a decade after the enactment of the Federal Free and Appropriate Education (FAPE) legislation of 1975. Will reported that many of these special education programs seemed to be “watering down” the curriculum and leaving students who were already behind the mark of grade-level expectations even further behind. Exclusionary, pull-out models subjected students to social isolation, teasing, and a lowered self concept. Pull-out, resource special education programs developed with the best of intentions were falling short of their goals of providing intensive and higher quality educational programs and resulting in an added social stigma putting already-disadvantaged students at an even higher risk for failure.

Clutter (1997) completed a study of nine schools implementing the CWC model in Belton, Missouri, public schools. Data collected consistently showed that student grades, standardized test scores, social acceptance, and use of learning strategies were enhanced by participation in the CWC model. In addition, they found supporting research revealing CWC had a positive impact on school attendance for the disabled students. According to Swenson and Clutter (2000), “Inclusion alone does not provide the setting special learners need. It is the collaborative team who can provide the strategic instructional setting to support learning with the potential of increasing the learning curve for all students” (p. 4).

In addition to remedial readers and special education students, English language learners have also received support through push-in models. Northfield School District

in Minnesota has joined the list of districts deciding to have their English-as-a-second-language (ESL) teachers join classroom teachers to serve their 278 English-language-learners in the general classroom rather than pulling them out for specialized instruction after the district went into “program improvement” status under NCLB (Zehr, 2009).

In a study at the University of Cincinnati, Mallozzi and Laine (2004) interviewed reading specialists to gather perception data that would clarify the roles of reading specialists in schools. Respondents engaged in push-in programming had mixed feelings. They perceived noise, the need for careful planning, and toting supplies with them as disadvantages to the program. However, they did believe their students experienced a sense of community and had a more positive self-concept. They also found an advantage of push-in being that students in the building acknowledge the reading specialists assisting all students. One participant responded,

“I really like working in the regular teacher’s classroom because kids aren’t missing much from that classroom...I see what’s going on. It helps me to support what’s going on in reading and writing in the classroom...I see how my kids perform as opposed to what might be the median in the class as well as the top of the class. I see how they are grasping things...and get to see an awful lot of their interactions in the classroom with their teachers, their peers, with the subject matter that is being taught. The kids I deal with, by and large, are the least capable of going back and picking things up in the classroom” (Mallozzi & Laine, 2004, p. 3).

According to Kulesza (2001), co-teaching increases the chances that classroom teachers perceive remediation as a shared responsibility. As a result, remedial efforts are

not confined to only a portion of the time spent with students in need; it exists throughout the entire day's instructional opportunities. Pipes (2004) suggests that some students who have the potential to be able readers are not reading proficiently due to inadequate or inappropriate instruction which can be enhanced through the push-in model. The push-in, co-teaching experience impacts reading instruction on a larger scale as the classroom teacher's professional growth resulting from the co-teaching period improves their reading instruction even in the absence of the reading teacher. There is a positive link between reading specialists serving as instructional coaches for the teachers and student progress. The converse is true, however; when reading specialists are in the role of reading interventionists for students (Pipes, 2004). As budgets may limit the possibility of having both a reading specialist developing teachers and an additional reading specialist instructing students, placing reading specialists in the general classroom with the classroom teacher for literacy instruction may come closer to serving both purposes.

Mallozzi and Laine's (2004) study revealed that reading specialists working in push-in models admitted that the classroom teachers' directives had the stronger influence in overall planning even over individual assessment results the specialists have for remedial students. They also reviewed a 1987 case study by Fraatz that included interviews with regular classroom teachers and reading specialists working collaboratively. In this study, reading specialists often define the special needs of their students in terms of the needs of the regular classroom teacher. The reading specialists often set aside their own expertise and opinion to be supportive of the classroom teacher. "Too often...the reading specialist (in a push-in program) feels compelled to support the

classroom teacher's existing program, rather than draw on her own expertise and training to help the children" (Mallozzi & Laine, 2004, p. 8).

According to Zehr (2009), Minnesota's Northfield School District joined the trend to replace their pull-out ELL service model with push-in support in June 2009 after being placed on program improvement under NCLB when their ELL subgroup failed to make AYP. Results of this plan are not yet available. In light of the ELL/ESL push-in trend, one ESL teacher from Washington, DC, commented on her experience serving her ESL students through the push-in model, "Lesson planning was a nightmare having to collaborate with five general education teachers and one special education teacher" (Jefferson, 2008). This teacher also pointed out that successful push-in services depend heavily on teaming skills and the time for co-planning (Jefferson, 2008).

MacDonald (2008) points out that some ELL/ESL teachers see push-in services as inappropriate as they are either co-teaching with the classroom teacher which supports content but not English development or are quietly communicating on-the-spot accommodations to ESL students while the regular classroom teacher teaches to the English learners. In either case, this can be viewed as being a disservice to the students requiring specialized support (MacDonald, 2008).

#### *The Pull-out Model*

A pull-out model is another service plan for delivering remedial reading support to identified struggling students. Students leave the classroom to travel to another place within the school where the reading teacher works with them. Shanahan (2008) suggests pull-out models can offer the reading teacher greater flexibility in providing for students' individual needs and allow for the homogeneous grouping of students with similar needs

from different classrooms. In some cases, the gap between grade-level performance and a student's current abilities calls for instructional assistance that does not coalesce with general classroom instruction. It is also possible for students to not benefit from a reading lesson due to inattention and distractions in the classroom. In these cases, proponents of pull-out believe the isolated setting maximizes student learning as they can see the teacher's lips and hear the sounds more distinctly (Shanahan, 2008). In addition, push-in models require careful collaboration and two teachers who can work in harmony. Sometimes teachers do not work well together causing efforts to be essentially separate anyway or one party to have minimal impact in the classroom.

When students who are identified as needing support in reading are pulled out of their classroom for regularly scheduled sessions with a reading teacher, it is commonly perceived that the reading teacher has the sole responsibility for remediation services (Kulesza 2001). In addition, the premise of reading specialists positively impacting student achievement serving as instructional models and support for teachers does not support using a majority of reading specialist's time to pull students out of the classroom as it isolates the teachers from professional development opportunities that can only take place when they are physically working together in the instructional setting.

According to Dole (2004), Title I of the 1965 ESEA funded remedial reading programs with an instructional focus on supplementary intervention for students who struggle with reading. Classroom teachers continued to teach a majority of the students. Failing students were sent to the Title I teacher for support. Despite the large amount of time, energy, and money spent on these programs, there was very little success in this

model. Student assistance in these programs did not result in their continued success once they were mainstreamed back into the classroom (Dole, 2004).

Lose (2008) proposes that schools must identify slow learners early and implement effective instructional intervention programs. She guards against a one-size-fits-all model and suggests that some students need the most intensive individualized instruction. Mallozzi & Laine (2004) interviewed reading specialists to analyze their roles and perceptions. Several participants responded in favor of the pull-out model recognizing that it is a more informal, comfortable, quiet atmosphere. One respondent believed that remedial students in the pull-out model take more risks to do things such as attempt to sound out a word where their small-group peers will give them the time they need to respond while their peers in the regular classroom often quickly corrected them when they sensed their struggles. Another participant commented, “Instructionally, I’m making more progress when I pull them out as far as the amount of material and really getting at their individual needs” (Mallozzi & Laine, 2004, p. 3).

The Institute of Education Sciences (IES) (2009) published *Assisting Students Struggling with Reading: Response to Intervention (RtI) and Multi-Tier Intervention in the Primary Grades*. The Response to Intervention (RtI) model of assisting struggling students categorizes instruction into three tiers: (a) quality instruction for all students in the general classroom, (b) targeted instruction in a small group, and (c) intensive one-on-one assistance. Students who do not achieve at benchmarked, expected levels or make little to no progress as a result of Tier 1 instruction qualify for Tier 2 instruction. RtI recommends supplemental, intensive, systematic targeted instruction in homogenous groups of three to four students meeting twenty to forty minutes three to five times per

week for at least five weeks for Tier 2 students (Institute of Education Sciences, 2009). This would align with the pull-out concept of servicing identified remedial reading students. “RtI is valuable because it is a particularly effective institutional way to be aggressive about kids’ learning” (Shanahan, 2008, p. 105). IES’s panel rates each recommendation as strong, moderate, or low based on the strength of research and evidence that is available to support them. Tier 2, small-group instruction is rated as *strong* based on 11 studies that met The What Works Clearinghouse (WWC) Standards which address evidence for causal validity of instructional programs and practices. These studies support supplemental reading support in the Tier 2 format as a way to improve decoding skills. Ten studies showed positive effects on decoding. Four of those also showed positive effects on comprehension. Only one study found significant effects in reading fluency. All studies reflected explicit instruction (IES, 2009).

Rodriguez (2005) compared results of a pull-out small-group reading intervention program to one-on-one intervention with fifth grade students. While the duration of the lessons varied based on student needs and content, the interventions took place over an eight-week period. Pre and post tests were given to all participants. The study failed to yield statistically significant results between small-group and one-on-one pull-out configurations. One reason pull-out programs may have not worked well is the lack of sufficient coordination between the classroom teacher and reading teacher. Typically, pull-out programs utilize separate programming and materials which make the extra teaching unlikely to help the struggling student learn what they need to do well in the classroom. In addition, remedial readers need additional instruction and, too often, pull-

out programs only replace the classroom instruction due to scheduling problems (Shanahan, 2008).

### *Combining Push-in and Pull-out Models*

Regardless of the intervention model selected, optimal results rely on coordination and collaboration between general classroom instruction and intervention efforts including curriculum, materials, and strategies. In addition, all instructional attempts should be assessment-driven, prescriptive, and progress-monitored. The intervention should truly be supplemental to and enhancements of all reading instruction opportunities in the general classroom. According to the National Institute of Child Health and Human Development's report on teaching children to read (2000), targeted instruction in phonemic awareness, phonics, oral reading fluency, vocabulary, and comprehension can have a positive impact on reading achievement. Simply placing any kind of specialist in a regular classroom is no assurance that appropriate accommodations, differentiated instruction, or coordinated teaching is taking place. There are relationships, skills, and efforts that must be developed and carefully orchestrated.

Like many learning practices, balance is the key. Previously reviewed literature related to push-in and pull-out models indicate both positive and negative claims for each model. Therefore, the answer may not be to select push-in or pull-out but rather to utilize both depending on the situation. Shanahan (2008) supports a more isolated approach such as pull-out when something new is presented to a student who is far behind his grade-level peers. He then suggests integrated work in the classroom be utilized once the strategy is better understood, which aligns with push-in. The service model can be

determined by many factors including the student's distractibility and the skills to be taught. A combination of push-in and pull-out may be the preferred model rather than one over the other (Cattaraugus County, 2008). ESL teacher Zoe Ann Brown (2008) believes the success of the push-in delivery depends on the ESL students' needs; the larger the deficit, the more appropriate pull-out services may be. Jane Wagner (2008), an ESL teacher, believes the push-in model for her ESL students "muddles the teaching of content and the teaching of language" and proposes that ESL students should receive pull-out services for instruction in the English language but push-in for support in content instruction. Wagner (2008) also blogged, "I have co-taught ESL with mainstream teachers who were willing and able to work with ELLs. [All] students, not just ELLs, benefited enormously ... Pull-outs likewise can be very effective or useless and stigmatizing. Teachers need to be well prepared and then given the flexibility to choose the best options for their students."

### Summary

This chapter was a review of literature to discover research that may help determine the "right reading intervention" model. Because reading intervention programming shares the focus of remedial instruction with other programs such as special education and English language learning, the literature review expanded beyond reading instruction to explore push-in and pull-out structures. Though strengths and weaknesses of push-in and pull-out intervention models were found, comparative research on the two models was not identified in reading or any other service areas. Chapter three addresses the topics of research design, population and sample, instrumentation, data collection, data analysis, hypotheses testing, and limitations of the study.

## CHAPTER THREE

### METHODOLOGY

The purpose of this study was to determine if there was a statistically significant difference in reading level changes for qualifying first and second grade remedial reading students receiving services through a pull-out vs. push-in reading intervention model. An additional purpose of this study was to determine if there was a statistically significant difference in reading level changes for non-qualifying first and second grade students receiving regular literacy instruction in classrooms with push-in reading services vs. classrooms with no push-in services.

This chapter discusses the research design, population and sample, sampling procedures, instrumentation, data collection, data analyses, hypotheses tests, and the study's limitations. The instrumentation section explains measurement, validity, and reliability.

#### Research Design

A quantitative research design was selected to measure the September-to-May change in reading levels resulting from the push-in and pull-out reading intervention models for qualifying students and from push-in and no-push-in classrooms for non-qualifying students. Archival data from 2006-2007 and 2008-2009 DRA results provided objective, numerical measures. Statistical methods were utilized to determine if any differences in overall reading level changes were significant (Gall, Gall, & Borg 2005).

#### Population and Sample

This study's samples were first and second grade students from Scott Elementary School, a low-socioeconomic school within the Belton School District. The first sample

consisted of all first and second grade students (n=32) who were identified for remedial reading instruction and pulled-out for those services in 2006-2007. This sample represented the target population of all first and second grade students in a pull-out reading intervention model. The second sample included all first and second grade (n=30) students who were identified for remedial reading instruction and served through a push-in model in 2008-2009 which represented the target population of all remedial readers receiving push-in reading intervention services.

A third sample consisted of all 2008-2009 first and second grade students who were not identified for remedial reading services. The sample had two subsets, non-qualifying students in push-in classrooms (n=44) and non-qualifying students in classrooms with no push-in services (n=56). The subset sample of non-qualifying students in push-in classrooms represented the target population of all general education first and second grade students in push-in classrooms. The subset sample of non-qualifying students in classrooms with no push-in services represented the target population of all general education first and second grade students in traditional classrooms with no push-in intervention services.

Table 1 represents the specific samples utilized for this study. An overview of Scott Elementary School's total population can be reviewed in Table 2.

Table 1

*Scott Elementary School Sample Data*

	1 <sup>st</sup> Grade	2 <sup>nd</sup> Grade	Total
2006-2007 Title I Qualified: Pull-out	14	18	32
2008-2009 Title I Qualified: Push-in	24	6	30
2008-2009 Non-qualified: Push-in	30	14	44
2008-2009 Non-qualified: No Push-in	16	40	56

*Note:* Belton School District, 2009

Table 2

*Scott Elementary School Population Data*

	2006-2007		2008-2009	
	N	%	N	%
Total Enrollment	352	100	345	100
Total Free/Reduced Meal Qualification	150	42.6	207	60
Total Enrollment-White	284	80.7	248	72
Total Enrollment-Black	40	11.4	83	24
Total Enrollment-Hispanic	23	6.5	10	2.9

*Note.* Demographic enrollment data are from the Missouri Department of Elementary and Secondary Education, 2009; Title I data are from the Belton School District, 2009.

### Sampling Procedures

Purposeful sampling was used to narrow data collection to first and second graders enrolled at Scott Elementary School in 2006-2007 and 2008-2009. This topic was of particular interest to the researcher who serves as the principal of that school and seeks to establish the most effective reading intervention model for future programming. Though the data was readily available to the researcher given her role in the school, selecting the sample from Scott Elementary School was not a strategy of convenience. The researcher planned to apply the findings of the study, and selecting the sample from the very school where study findings will influence future programming decisions reduces the chance of sampling error. The sample encompassed all qualifying first and second grade students from 2006-2007 and all qualifying and non-qualifying first and second grade students from 2008-2009 that were enrolled from September through May.

### Instrumentation

Pearson Learning's Developmental Reading Assessment (DRA) is a set of criterion-referenced reading assessments for students in kindergarten through eighth grade. The DRA is to be individually administered to each student and does not require a certified diagnostician. The DRA is an informal reading inventory designed to be administered, scored, and interpreted by classroom teachers. Beaver (n.d.) claims the DRA was designed to reflect the characteristics of good readers as observed by teachers and reported in the research literature. The theoretical rationale includes a review of the premises underlying the DRA, with citations from the literature (Beaver, n. d.).

The first edition of the DRA includes two instruments: the DRA for kindergarten through third grade and the DRA for fourth through eighth grade (Beaver, n. d.).

Because this study focused on first and second grade students, the DRA for kindergarten through third grade was used. Since this study is based on archival data, the DRA was not selected nor necessarily preferred by the researcher but was the pre-existing consistent measurement available for both school years from which the samples were drawn.

### *Measurement*

The DRA can be used to identify each student's independent and instructional reading levels as defined by the DRA text where students meet specific accuracy and comprehension criteria. The instructional level is the level at which the student's accuracy/word-calling rate is 95% or better with at least 80% comprehension accuracy on recall-level questions. A student's independent level is the level at which he/she reads with 99% accuracy percent accuracy and 100% comprehension on recall questions. The DRA is utilized at Scott Elementary School to identify instructional reading levels. This is the best level for learning new vocabulary and is where the best progress is made in reading (ReadingHelp.com, 2010). A student's independent level is typically one or two levels lower than his/her instructional level. Additional purposes for administering the DRA include identifying students' reading strengths and weaknesses to inform instructional planning (Rathvon, 2006).

The DRA consists of leveled paperback books. Each book is assigned a level number and is accompanied by a reproducible teacher observation guide. Levels progress from lowest to highest as follows: A, 1, 2, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 28, 30, 34, 38, 40, 44. The examiner selects a text from the two fiction texts provided at each

level. Level A only has one text available. Two additional non-fiction texts are provided at levels 16, 28, and 38 (Beaver, n. d.).

The DRA guide instructs teachers to select texts on which they believe students can achieve the desired level and includes suggested DRA text levels for readers on, at, and above grade level, as well as lists of comparable trade books relative to DRA levels. Each student reads the text provided. The examiner follows the student's reading on his/her observation guide to mark and denote six types of errors: (a) substitutions, (b) omissions, (c) insertions, (d) reversals, (e) incorrectly sounded out words, and (f) words told by teacher. The examiner may mark the errors as the child reads or may choose to record the student's reading and mark errors when replaying the recording. The first is less time consuming but recording may increase scoring accuracy by allowing the examiner to replay areas of uncertainty, confirm rating accuracy, or allow other examiners to provide input. Scott Elementary School examiners did not record.

If the student attains an accuracy rate below 95%, the process is repeated with a lower level text. If they achieve 95% or higher, they are orally administered the prescribed comprehension questions corresponding to the text. The child verbally responds to the questions. If they do not attain an 80% comprehension score, the process is repeated with the lower level text. If they attain 99-100% accuracy and 100% on comprehension, their independent level has been defined and the process is repeated with a higher level text. There are no time limits for the DRA, it is estimated to take approximately 30 to 45 minutes to administer based on students who are reading on grade-level. Struggling readers are likely to require more time. Though the manual

indicates that the DRA can be administered over several days, Scott Elementary School students complete the DRA in one testing session (Beaver, n. d.).

### *Validity and Reliability*

Joetta Beaver (n.d.), in cooperation with primary classroom teachers, began developing the DRA in 1988 in Ohio's Upper Arlington City School District. Beaver and her DRA colleagues field-tested the assessment in 1996. The field test consisted of 84 teachers with 346 students in kindergarten through third grade in 10 states and one Canadian province. The resource guide explained the procedures, forms, and benchmarks changed in response to the teachers' suggestions and feedback. The guide also specifies the field-test teachers approved the revisions in the fall of 1996 (Beaver, n.d.).

According to Beaver (n.d.), classroom teachers across the United States and Canada used the DRA from 1996 to 2000 and provided feedback on the assessment. There were many requests for alternative texts to provide more than one benchmark book per reading level. Alternative texts were developed by selected authors and illustrators according to established guidelines and features of the original texts (Beaver, n. d.). This alternative set was field-tested in May 2000 by 157 teachers representing 39 American and Canadian school districts to verify the following: comparability of the original and alternative texts, text order according to difficulty level, and effectiveness of the respective observation guides. Further field-testing was done in September 2000 by "a small group of teachers" with 95 students in first through third grade from central Ohio. Because student performance is keyed to text level, the administrator's subjective text selection presents a critical validity issue (Rathvon, 2006). Specific criteria used to

determine difficulty level for individual texts are not presented (Beaver, n.d.). There are no additional validity or reliability measures specified in the resource guide (Beaver, n.d.).

Natalie Rathvon, Ph.D. (2006), Assistant Clinical Professor at George Washington University and private practice psychologist and school consultant in Bethesda, MD, reviewed two additional inter-rater reliability studies. She compared DRA teacher ratings with expert ratings establishing both scorer accuracy and consistency. An expert administered the DRA to four students who completed between two and four DRA text levels. Ten teachers observed behind a one-way mirror. The expert and all observers marked each student's responses. All observers' ratings were within the 3% of the expert for accuracy. However, differences between DRA accuracy categories are very small and even a 2% disagreement can represent different performance levels. Seventy percent of the raters were within less than 2% of the expert's accuracy score. Teacher-expert agreement for fluency and comprehension requiring a greater degree of subjective judgment was not evaluated (Rathvon, 2006).

In the second study reviewed by Rathvon (2006), both teacher-teacher and teacher-expert DRA ratings were analyzed. Three elementary students were videotaped during a DRA conference followed by 44 teachers rating their recorded reading for six students (one each in kindergarten and Grades 1, 2, 3, 4, and 7). Each of the six students completed between one and three DRA levels. Percent agreement with an expert was highly variable (51.7% to 70%), with generally high levels of agreement for phrasing and fluency and much lower levels of agreement for other scores including comprehension and accuracy (Rathvon, 2006).

Rathvon (2006) also analyzed the test-retest reliability based on a 3-week interval for a sample of 306 students in first through third grades ( $n = 100$  to  $104$  per grade). The test-retest reliability coefficient was high for all three grades ( $r = .92$  to  $.99$ ), but it is unclear whether students were tested twice on the same text, on alternative texts within the same level, or on texts from different level so practice effects cannot be adequately evaluated (Rathvon, 2006). According to Rathvon (2006), studies examining the extent to which individual students obtain identical performance levels on the DRA and validated reading measures are especially needed.

#### Data Collection Procedures

In January 2010, an Institutional Review Board (IRB) form was submitted to Baker University, and an application to complete the study and publish school and district information was submitted to Dr. Kenneth Southwick, the superintendent of the Belton School District. The IRB proposal is located in Appendix A. Dr. Southwick's application approval and response letter were received in February 2010 and are located in Appendixes C and D respectively. The Baker IRB approval letter, located in Appendix B, was received in March 2010.

Archival data was accessed from Scott Elementary School's Title I records to compose grade-level specific lists for all 2006-2007 first and second grade students qualifying for Title I remedial reading services who were enrolled for the entire school year. September 2006 and May 2007 DRA reading levels for each of the students were used to calculate the change in reading levels. This provided the May-to-September reading level change for the pull-out population considered in the first hypothesis (H1).

Likewise, 2008-2009 archival data was accessed to gather data for qualifying students receiving push-in reading intervention. All 2008-2009 students who were enrolled for the entire school year were listed along with their September and May DRA levels which were used to calculate the change in reading levels. From that list, the students who qualified for Title I remedial reading services were extracted and placed on a separate list. This provided level change data for qualifying push-in students in H1.

The remaining 2008-2009 students comprised the sample of non-qualifying students for this study. This roster of students and their DRA level changes from fall to spring was further divided into two subgroups based on their class assignment in 2008-2009: a classroom with push-in reading services or a classroom with no push-in services. This data served as the foundation for the second hypothesis (H2).

The progression of DRA reading levels was closely observed when calculating the level changes. The DRA level progression with varying increments was previously explained. Table 3 illustrates examples of level change calculations. Student A began on level 2 and ended the year at level 6. Though the actual difference between 6 and 2 is 4, the DRA level change is actually 3 because there is not a DRA level 5. Student B began the year on a level 12 and ended with a 16. Though the actual difference between 16 and 12 is 4, the DRA level change is only 2; there are no leveled texts for 13 or 15. In the final example, Student C began the year reading on level 28 and ended with a level 34. Though simple subtraction would indicate a difference of 6 ( $34 - 28 = 6$ ), the student actually progressed only 2 DRA levels; there are no texts for 29, 31, 32, or 33.

Table 3

*Reading Level Change Calculation Examples*

	Fall	Spring	DRA Levels	Overall
	DRA Level	DRA Level	Advanced	DRA Level
				Change
Student A	2	6	2→3→4→6	3
Student B	12	16	12→14→16	2
Student C	28	34	28→30→34	2

*Note:* This is hypothetical data for the sole purpose of demonstrating DRA level change calculations.

The DRA Levels Advanced column aligns with the DRA level progression previously explained: A, 1, 2, 3, 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 28, 30, 34, 38, 40, 44. “→” symbolizes 1 level change.

### Data Analysis and Hypothesis Tests

Data analysis for all hypothesis testing was conducted utilizing the Statistical Package for the Social Sciences (SPSS) software version 16.0 automating analysis of the statistical measures. Separate independent sample *t*-tests were run to address both research questions.

An independent sample *t*-test was conducted to test H1: There is a statistically significant difference in September-to-May change in reading levels, as determined by the DRA, for qualifying students when comparing pull-out and push-in reading intervention models. With the assumptions that the fall-to-spring reading level changes of qualifying students represented a normal population distribution, an independent sample *t*-test established if any difference between the two sample means, pull-out and push-in, was statistically significant (Argesti & Finlay, 2009).

A separate independent sample *t*-test was selected to test H2: There is a statistically significant difference in the September-to-May change in reading levels, as determined by the DRA, for non-qualifying students when comparing classrooms that have push-in services and those that do not. With the assumptions that the fall-to-spring reading level changes of non-qualifying students represented a normal population distribution and a simple random sample, an independent sample *t*-test established if any difference between the two sample means, push-in and no push-in, was statistically significant (Argesti & Finlay, 2009).

#### Limitations of the Study

Roberts (2004) defined the limitations of the study as those features of the study that may affect the results of the study or the ability to generalize the results. The study has the following limitations:

1. Behaviors of the classroom teachers and/or reading specialists would differentiate the learning experiences of their students including but not limited to classroom management practices, efforts to partner with parents in literacy instruction, instructional methodology, attitudes about the intervention model and literacy instruction, training levels, questioning skills, levels of diagnostic and assessment-driven instruction, individualized student achievement expectations, proportions of instructional time spent in whole group, small group, and individual instruction, and many other variables that affect the classroom experience. Therefore, the intervention model may not be the sole factor in the reading level change over the course of the school year as the sample extends beyond one teacher.

2. Qualification criteria for pull-out services in 2006-2007 varied from 2008-2009's criteria.
3. There were demographic differences between 2006-2007 and 2008-2009 total school enrollment with the percentage of students qualifying for free and reduced meals being the most significant. In 2006-2007, 42.5% of the students held free and reduced meal status. This rose to 60% in 2008-2009 indicating a lower socio-economic population. In addition, there was a minority population increase with black students representing 11.4% of the total enrollment in 2006-2007 and 24% in 2008-2009. While the archival data did not include the demographic breakdown for the specific sample, if the sample represents the same demographic proportions as the total school enrollment as previously represented in Tables 1 and 2, there is a potential demographic difference between the samples being compared.
4. This is not a cohort study. The students representing the push-in model are a different group of students than those in the pull-out model.
5. Pull-out interventions were 30 minutes while reading specialists pushed in to classrooms from 30 to 45 minutes depending on their schedules. DRA testing conditions varied. Students were not all tested in the same room by the same person within the same sample or between samples. Tests were given at a various times of the day. While all students were pulled out of their classrooms for one-on-one testing, they were potentially exposed to varied levels of distractions and testing environments. During both school years, the reading specialists at Scott Elementary administered the DRA to all students

individually outside of the classroom. There were three reading specialists in 2006-2007 and two in 2008-2009. However, due to staff changes between the two years, only one reading specialist from 2006-2007 remained on the reading staff through 2008-2009.

#### Summary

This chapter described the research design, population and sample, hypotheses, data collection, and analysis used in this research study. Independent sample *t*-tests were used to compare the mean change in reading levels for qualifying students in pull-out and push-in reading intervention models and determine the statistical significance of any difference between the means. A separate independent sample *t*-test was also utilized to compare the mean change in reading levels for non-qualifying students in push-in classrooms and regular classrooms with no push-in services. The analysis further determined the statistical significance of any difference between the means. The results of this study are presented in Chapter Four.

## CHAPTER FOUR

### RESULTS

The purpose of this study was to determine the most effective reading intervention model comparing the effects push-in and pull-out models had on first and second grade students in a low-socioeconomic school from a midsize suburban public school district. This study was implemented to determine if there was a statistically significant difference in reading level change from September to May for students who qualified for remedial reading services when comparing the pull-out and push-in service models. Since push-in classrooms were comprised of students who qualified for remedial reading and some who did not, this study also intended to determine if there was a statistically significant difference in reading level change from September to May for students who did not qualify for reading intervention when comparing placements in push-in classroom and regular classrooms with no push-in services. Results of the data analysis for the two stated research question are presented in this chapter.

#### Hypothesis Testing

In this section, results of the hypothesis testing are reported in conjunction with the descriptive statistics for the respective data set. The first hypothesis stated a statistically significant difference in the change in reading levels, as determined by the DRA, for students who qualify for remedial reading services when comparing pull-out and push-in reading intervention models. Data used for H1 testing originated from two samples of Scott Elementary School students. The first was all first and second grade students ( $n = 32$ ) who were identified for remedial reading instruction and pulled-out for those services in 2006-2007. The second sample included all first and second grade ( $n =$

30) students who were identified and served through a push-in model in 2008-2009. These samples were comprised of all qualifying students who were enrolled from September to May including those who reached the top-out level as explained in chapter one.

The mean September-to-May change in DRA reading levels for qualifying students in the pull-out intervention model was 3.4839 levels ( $s = 3.55967$ ). The push-in model resulted in an average gain of 6.1333 levels ( $s = 3.4839$ ). The push-in model's mean level change was 2.6494 DRA levels higher than the pull-out model. An independent sample  $t$ -test determined that difference to be statistically significant ( $t = 3.521$ ,  $df = 59$ ,  $p = .001$ ). Table 4 presents the results of H1 testing.

Table 4

*Qualifying Students' Mean Reading Level Change by Model: Includes Top-out Students*

	N	Mean Level $\Delta$	Difference Between Means	$p$ -value Significance of Difference
Qualified: Pull-out	32	3.4839		
Qualified: Push-in	30	6.1333		
Pull-out v. Push-in			2.6494	<sup>s</sup> .001

*Note:* Statistics are based on independent sample  $t$ -test analysis using SPSS software version 16.0.

<sup>s</sup>The  $p$ -value supports a statistically significant difference between the means.

The second hypothesis supported a statistically significant difference in the change in reading levels, as determined by the DRA, for students who do not qualify for

remedial reading services when comparing classrooms that have a push-in reading specialist and those that do not. The H2 testing sample consisted of all 2008-2009 first and second grade students who were not identified for remedial reading services. This sample had two subgroups: non-qualifying students in classrooms receiving push-in reading support ( $n = 44$ ) and non-qualifying students in regular classrooms with no push-in reading support ( $n = 56$ ).

The mean September-to-May change in DRA reading levels for non-qualifying students in push-in classrooms was 5.75 levels ( $s = 2.95804$ ) while the results of non-qualifying students placed in classrooms without push-in services resulted in a gain of 5.2857 levels ( $s = 2.40238$ ). The push-in model resulted in a mean level change that was .46429 DRA levels higher than the classrooms without a push-in reading specialist. An independent sample  $t$ -test did not determine the difference to be statistically significant ( $t = -.866, df = 98, p = .388$ ). Table 5 contains the results of the independent sample  $t$ -tests for H2.

Table 5

*Non-qualifying Students' Mean Reading Level Change by Model: Includes Top-out Students*

	N	Mean Level $\Delta$	Difference Between Means	<i>p</i> -value Significance of Difference
Non-qualified: Push-in	44	5.7500		
Non-qualified: No Push-in	56	5.2857		
Push-in v. No Push-in			.46429	<sup>NS</sup> .388

*Note:* Statistics are based on independent sample *t*-test analysis using SPSS software version 16.0.

<sup>NS</sup> The *p*-value does not support a statistically significant difference between the means.

#### Additional Analyses

H1 and H2 testing was repeated using sample subsets of interest. The first additional analysis excluded students who attained top-out levels from the sample. Independent sample *t*-tests were performed for H1 and H2 based on the revised samples. The second set of additional hypotheses testing disaggregated H1 and H2 data by grade level utilizing separate independent sample *t*-tests for each.

The district's DRA top-out practice may cause each student's actual reading level gain to be inaccurately reflected. There is no notation to confirm if it is recorded as an actual instructional level or as a top-out level. It is possible for a student to have successfully attained levels higher than the top-out level recorded. Therefore, the mean

level change would actually be higher than the current numbers allow. Excluding top-out readers is also excluding the highest readers.

H1's sample data included 5 top-out second grade students in the original sample of 32 first and second grade qualifying students in the pull-out model. There are 27 students in the revised pull-out sample when excluding top-out students. Their mean September-to-May change in DRA reading levels was 2.9231 levels ( $s = 1.80938$ ). The push-in sample included 7 top-out first grade students in the original sample of 30 first and second grade qualifying students. After excluding the top-out students, the push-in sample size became 23. Their results indicated a gain of 4.6364 levels ( $s = 2.53632$ ). When excluding top-out student scores, qualifying students in the push-in model gained an average of 1.71329 levels more than those in the pull-out model, the independent sample  $t$ -test determined that difference to be statistically significant ( $t = 2.723$ ,  $df = 46$ ,  $p = .009$ ). When the data set included top-out scores, push-in gains were 2.6494 levels higher than pull-out. This respective difference reduced to 1.71329 when excluding top-out scores, as the higher readers were eliminated from the sample. Table 6 presents the H1 independent sample  $t$ -test results when excluding students that attained top-out levels.

Table 6

*Qualified Students' Mean Reading Level Change by Model: Excluding Top-out Students*

	N	Mean Level $\Delta$	Difference Between Means	<i>p</i> -value Significance of Difference
Qualified: Pull-out	27	2.9231		
Qualified: Push-in	23	4.6364		
Pull-out v. Push-in			1.71329	<sup>s</sup> .009

*Note:* Statistics are based on independent sample *t*-test analysis using SPSS software version 16.0.

<sup>s</sup>The *p*-value supports a statistically significant difference between the means.

H2's sample data included two subgroups of non-qualifying students. With no remedial readers, these samples had more students reaching the top-out level. The original sample of 44 non-qualifying students in push-in classrooms included 17 first graders and 7 second graders who attained the top-out level. After excluding these top-out students, the sample size reduced to 20. This push-in sample of non-qualifying students increased an average of 4.7000 levels ( $s = 2.73573$ ).

The original sample of 56 non-qualifying students in classrooms with no push-in support included 7 first grade and 16 second grade students who attained the top-out level reducing the sample to 33. These non-qualifying students made an average gain of 4.8788 levels ( $s = 2.72440$ ) which was .17879 levels higher than their counterparts placed in push-in classrooms. However, this difference is not statistically significant ( $t = .231$ ,  $df = 51$ ,  $p = .818$ ). Original H2 analysis with top-out students supported a statistically

significant difference with push-in placements having a mean increase of .46429 more than classrooms without push-in. This additional analysis which omits top-out students countered this finding showing no significant difference between the two models. Once again, excluding top-out students omitted the highest readers from the analysis. Table 7 presents the H2 independent sample *t*-test results when excluding top-out students from the samples of non-qualifying students.

Table 7

*Non-qualified Students' Mean Reading Level Change by Model: Excluding Top-out Students*

	N	Mean Level $\Delta$	Difference Between Means	<i>p</i> -value Significance of Difference
Non-qualified: Push-in	20	4.7000		
Non-qualified: No Push-in	33	4.8788		
Push-in v. No Push-in			.17879	<sup>NS</sup> .818

*Note:* Statistics are based on independent sample *t*-test analysis using SPSS software version 16.0.

<sup>NS</sup> The *p*-value does not support a statistically significant difference between the means.

All previous H1 and H2 testing combined first and second grade student data for statistical analysis. One may also be interested in the grade-level breakdown for each intervention model. Each hypothesis was further analyzed by conducting separate independent sample *t*-tests for each grade level. Top-out students were omitted from data for this analysis, as well.

There were 13 first graders who qualified for pull-out reading intervention in 2006-2007 with no top-outs. They advanced an average of 3.3077 levels ( $s = 1.97419$ ). There were 24 first grade students who qualified for push-in reading support in 2008-2009. Seven students attained the top-out level making this sample size 17. These qualifying first graders in the push-in model had an average increase of 4.3529 levels ( $s = 2.39638$ ), 1.04525 more levels than their pull-out counterparts. However, this difference between the means is not considered to be statistically significant ( $t = 1.275$ ,  $df = 28$ ,  $p = .213$ ). Table 8 presents H1 testing for first grade qualifying students excluding those that reached the top-out level.

Table 8

*1<sup>st</sup> Grade Qualifying Students' Mean Reading Level Change by Model: Excluding Top-out Students*

	N	Mean Level $\Delta$	Difference Between Means	$p$ -value Significance of Difference
Qualified: Pull-out	13	3.3077		
Qualified: Push-in	17	4.3529		
Pull-out v. Push-in			1.04525	<sup>NS</sup> .213

*Note:* Statistics are based on independent sample  $t$ -test analysis using SPSS software version 16.0.

<sup>NS</sup> The  $p$ -value does not support a statistically significant difference between the means.

Eighteen second grade students qualified for pull-out reading intervention in 2006-2007. Five achieved the top-out score leaving 13 who advanced an average of

2.4615 DRA levels ( $s = 1.71345$ ). Six second grade students ( $n = 6$ ) qualified for push-in reading support in 2008-2009 with no top-out scores. These push-in students increased an average of 5.3333 levels ( $s = 2.80476$ ), 2.87179 more levels than their pull-out counterparts which was determined to be statistically significant ( $t = 2.778$ ,  $df = 17$ ,  $p = .013$ ). Table 9 includes results of H1 testing for qualifying second grade students who did not top-out.

Table 9

*2<sup>nd</sup> Grade Qualifying Students' Mean Reading Level Change by Model: Excluding Top-out Students*

	N	Mean Level $\Delta$	Difference Between Means	$p$ -value Significance of Difference
Qualified: Pull-out	13	2.4615		
Qualified: Push-in	6	5.3333		
Pull-out v. Push-in			2.87179	<sup>s</sup> .013

*Note:* Statistics are based on independent sample  $t$ -test analysis using SPSS software version 16.0.

<sup>s</sup>The  $p$ -value supports a statistically significant difference between the means.

There were 30 first graders who did not qualify for remedial reading in 2008-2009 but were placed in classrooms with push-in support. Seventeen of them attained the top-out level leaving 13 for data analysis. These students advanced an average of 5.6154 reading levels ( $s = 2.56705$ ). There were 16 non-qualifying first graders placed in regular classrooms with no push-in reading specialists. Seven of these students topped out

leaving 9 for data analysis. Their mean reading level change was 5.5556 ( $s = 2.45515$ ). Non-qualifying first graders with no push-in services increased an average of .05983 levels more than those with push-in services which is not statistically significant ( $t = -.055$ ,  $df = 20$ ,  $p = .957$ ). Table 6 represents the disaggregated H1 data for first grade students omitting those who achieved the top-out level. Table 10 contains the results of H2 testing for first grade students with no top-out levels.

Table 10

*1<sup>st</sup> Grade Non-qualifying Mean Reading Level Change by Model: Excluding Top-out Students*

	N	Mean Level $\Delta$	Difference Between Means	$p$ -value Significance of Difference
Non-qualified: Push-in	13	5.6154		
Non-qualified: No Push-in	9	5.5556		
Push-in v. No Push-in			.05983	<sup>NS</sup> .957

*Note:* Statistics are based on independent sample  $t$ -test analysis using SPSS software version 16.0.

<sup>NS</sup> The  $p$ -value does not support a statistically significant difference between the means.

Fourteen second graders in push-in classes did not qualify for remedial reading in 2008-2009. Seven attained the top-out level leaving 7 for data analysis. These students advanced an average of three reading levels ( $M = 3.0000$ ,  $s = 2.30940$ ). There were 40 non-qualifying second graders placed in regular classrooms with no push-in reading specialists. Sixteen topped out leaving 24 for data analysis. Their mean reading level

change was 4.2917 ( $s = 2.88141$ ). Non-qualifying first graders with no push-in services increased an average of 1.29167 DRA levels more than those with push-in services which is statistically insignificant ( $t = 1.084$ ,  $df = 29$ ,  $p = .287$ ). Table 11 presents the disaggregated H2 data for second grade students omitting those who achieved the top-out level.

Table 11

*2<sup>nd</sup> Grade Non-qualifying Students' Mean Reading Level Change by Model: Excluding Top-out Students*

	N	Mean Level $\Delta$	Difference Between Means	$p$ -value Significance of Difference
Non-qualified: Push-in	7	3.0000		
Non-qualified: No Push-in	24	4.2917		
Push-in v. No Push-in			1.29167	<sup>NS</sup> .287

*Note:* Statistics are based on independent sample  $t$ -test analysis using SPSS software version 16.0.

<sup>NS</sup> The  $p$ -value does not support a statistically significant difference between the means.

### Summary

This chapter included sample descriptions and a summary of the statistical testing and analysis. Primary hypothesis testing combined first and second graders and included students with top-out levels. Analysis of H1 testing supported a statistically significant difference between the mean September-to-May reading level change for qualifying students receiving support through the pull-out model and those being serviced via push-

in services. For remedial readers, push-in intervention had a more positive impact on DRA level gains than the pull-out model. This testing supports H1. Analysis of H2 testing did not find a statistically significant difference in the mean reading level change when comparing non-qualified students in push-in classrooms with non-qualifying students in classrooms absent of a push-in reading specialist. This testing did not support H2.

Additional analysis extended hypothesis testing by excluding students who topped-out. Mirroring the original analysis, the push-in model yielded a statistically significant higher mean reading level change than the pull-out model for remedial readers and did not provide a statistically significant difference in mean reading level change for non-qualifying students compared to those in classrooms with no push-in. Further analysis disaggregated this sample by grade level. Independent sample *t*-tests found first grade qualifying students in push-in programming did not have a statistically significant higher mean reading level change than those pulled out for service which contradicted the findings of the sample that combined first and second grade students. Independent sample *t*-tests found second grade qualifying students in push-in programming had statistically significant higher mean reading level change than their pull-out peers. All other grade level specific findings were determined to be statistically insignificant by independent sample *t*-tests.

## CHAPTER FIVE

### INTERPRETATION AND RECOMMENDATIONS

#### Introduction

The results of the study were reported in the previous chapter. Chapter Five consists of the summary of the study, an overview of the problem, purpose statement and research questions, and a review of the methodology. It also includes major findings resulting from this study. Chapter Five concludes with implications for further action, recommendations for further research, and a summary of the study's major points.

#### Study Summary

##### *Overview of the Problem*

Public school accountability for developing proficient readers has risen to an all-time high as sanctions and consequences threaten schools who fall short of AYP benchmarks (Langdon, 2006). Schools are adopting various practices to fuel their quest for adequate reading proficiency levels. Initiatives include employing reading specialists to provide push-in or pull-out remedial reading services. While the review of literature revealed strengths and weaknesses of push-in and pull-out intervention models in various instructional arenas, there were no comparative studies to determine which model results in the most reading gains. What is the best model? With no research to answer that focal question, the problem prevailed.

##### *Purpose Statement and Research Questions*

The purpose of this study was to determine the most effective reading intervention model. The study compared the effects push-in and pull-out reading intervention models had on first and second grade students in a low-socioeconomic school from a midsize

suburban public school district. The following research questions guided this clinical research study:

1. Is there a statistically significant difference in the change in reading level from September to May for qualifying first and second grade students receiving intervention via a push-in model and those serviced through a pull-out model as measured by the Developmental Reading Assessment?
2. Is there a statistically significant difference in the change in reading level from September to May for non-qualifying first and second grade students in push-in classrooms and those in classrooms without the push-in model as measured by the Developmental Reading Assessment?

#### *Review of Methodology*

A quantitative research design was selected to measure the September-to-May change in reading levels resulting from push-in and pull-out reading intervention models for qualifying students and from push-in and no-push-in classroom placements for non-qualifying students. Purposeful sampling was used to narrow data collection to first and second graders enrolled at Scott Elementary School from September through May in 2006-2007 and 2008-2009. H1 testing included two samples, first and second grade students who were identified for remedial reading instruction and pulled-out for those services in 2006-2007 and those who were identified and served through a push-in model in 2008-2009. Remedial reading services were exclusively provided through a pull-out model in 2006-2007 and via push-in programming in 2008-2009. Data from 2007-2008 were not used, as it was a year of mixed practice.

A third sample was considered for H2 data, all 2008-2009 first and second grade students who did not qualify for remedial reading services. This sample of non-qualifying students was divided into subsets, those placed in push-in classrooms and those assigned to classrooms with no push-in services. Purposeful sampling did not consider 2006-2007 non-qualifying students in H2 testing in an effort minimize the variance in curriculum programming, teaching initiatives, and demographics.

Archival data was accessed to gather data for each sample. The change in reading level was calculated by comparing each student's September and May DRA levels. Independent sample *t*-tests were used for all hypotheses testing and additional analyses.

### *Major Findings*

Testing and data analysis supported H1 in answering RQ1. First and second grade students who qualified for reading intervention services had a statistically significant higher mean change in reading levels when served through a push-in model rather than a pull-out model. This testing considered all students including those that topped-out according to the district's DRA implementation guidelines described in Chapter One's Background section.

Testing and data analysis did not support H2 in answering RQ2. First and second grade students who did not qualify for reading intervention services did not have a statistically significant higher mean change in DRA levels when served in a push-in classroom versus those in a classroom with no push-in services. As explained above, this testing also included students whose scores were capped due to the top-out level.

When students with top-out scores were removed from the data set for additional analyses the statistical significance remained the same: remedial readers served through

the push-in model continued to have a statistically significant higher change in reading level when compared to those in a pull-out program and non-qualifying students had no statistically significant difference between classroom placements with and without push-in services. Further disaggregation of samples without top-out students by grade level resulted in small sample sizes which weakened the significance of the push-in model's effects. Though qualifying students had a higher reading level change with push-in services in both aggregate groups, the difference for first grade was not considered significant while the difference for second grade was statistically significant. When considering non-qualifying students excluding those who topped-out, there was little variance between the two models and neither had any statistical significance.

#### Findings Related to the Literature

Relationships between the findings of this study and information revealed through the literature review are presented in this section. Though Scott Elementary School's pull-out programming did result in a reading level gain of 3.4839 for qualifying remedial reading students, it was limited in comparison to the 6.1333 levels gained through push-in services. Claims and findings reviewed in the literature concur with these results.

Dole (2004) found limited success in settings where Title I teachers worked with remedial readers primarily in a pull-out setting. Carbo (2007) preferred push-in as the model that enriched instruction for at-risk readers by enabling the more kinesthetic students to break-out of traditional instruction into various groupings and structures supported by two teachers. Kennedy's (2006) observations of 45 upper-elementary classrooms found that teacher quality was threatened each time a student left and returned mid-class as it was often mid-lesson. Struggling readers leaving for pull-out classes were

experiencing fractured instruction. Remedial students receive a more seamless instruction when they remain in their classrooms (Connely, 2008). This was further supported by Shanahan (2008) who suggested pull-out programs typically utilized separate programming and materials and only replaced classroom instruction rather than enhancing it while push-in programming included more coordination between the reading specialist and general education teacher.

Musti-Rao and Cartledge (2007) found that after pushing into urban kindergarten and first grade general classrooms to provide intensive instruction for all students 40% of the remedial readers in kindergarten attained grade level achievement by the end of first grade. According to Swenson and Clutter (2000), the CWC push-in model allowed special education students to remain with their grade-level peers who were the best models for communication and learning behaviors. They found over 14 years of data to support this inclusion model and claimed that pull-out special education programs subjected students to social isolation, a lower self concept, and a “watered-down” curriculum putting already-disadvantaged students at an even higher risk for failure. Clutter’s (1997) study of nine schools implementing CWC showed that special education students’ grades, standardized test scores, social acceptance, attendance, and application of learning strategies were enhanced through the push-in approach. Kulesza (2001) suggested that push-in programs resulted in classroom teachers perceiving themselves as having more of a responsibility in remediating identified students which carries over throughout the school day. While CWC is for students who have been identified as disabled rather than remedial, its general philosophy of maximizing progress by

supporting students with academic struggles in their general education classroom closely aligns the practice with push-in reading intervention models.

As stated previously, pull-out services did result in a mean reading level change of 3.4839 levels. Despite this studies statistically significant push-in advantage, literature included research and opinions in favor of pull-out services rather than push-in programs. Mallozzi and Laine's (2004) interview of reading specialists revealed respondents' mixed feelings about push-in services. They perceived noise as a distracter for struggling learners in a push-in setting. Shanahan (2008) suggested pull-out models offered the reading teacher greater flexibility in providing for remedial students' individual needs and allowed for homogeneous grouping of students from different classrooms. In addition, Shanahan (2008) proposed pull-out as away to maximize student learning avoiding distractions. Mallozzi & Laine's (2004) interviews with reading specialists also revealed the perceptions that the pull-out model provides a more comfortable atmosphere which encourages risk-taking for struggling learners and the time they need to respond. Zehr (2009) revealed push-in as a trend for English Language Learner programming. There was no quantitative data but many negative perceptions from practitioners including the dilemma of supporting the English speaking teacher with content or whispering accommodations or translations to the foreign speaking student in a push-in situation rather than focusing on developing the English language in a specialized class (MacDonald, 2008). This study looked at the mean reading level change for all qualifying students and found push-in results to be higher than pull-out. While this study's quantitative results strongly supported push-in for remedial readers, the literature

review did not produce the same findings for ELL. However, the ELL findings are qualitative rather than quantitative.

The Institute of Education Sciences (IES) (2009) recommended Tier 2 interventions of the Response to Intervention (RtI) model for those students who do not achieve benchmarked levels as a result of general education efforts. The IES described Tier 2 as a pull-out type structure with small groups meeting three to five times per week for targeted instruction. The Tier 2 model is rated as *strong* based on 11 studies that addressed evidence of causal validity of instructional programs and practices. Ten of the studies showed positive effects on decoding and four studies for comprehension. This research related to the CRS in the following way. Pull-out interventions do have positive results as indicated by the Tier 2 studies. Likewise, the results of this study reported a 3.4839 DRA level increase for remedial readers in the pull-out model. However, the study also showed that push-in had an even greater result with a 6.1333 mean level increase, 2.6494 levels higher than the pull-out.

Testing for H2 focused on the results of non-qualifying students, those without the need for remedial reading services. Non-qualifying students in the push-in classrooms increased 5.75 DRA levels and non-qualifying students in classrooms without push-in services increased 5.2857 levels, .46429 levels less which was not statistically significant. According to the International Reading Association (IRA), schools can address the perplexities of reading proficiency with a program that allows the reading specialist to support all students, remedial and non-remedial (Pipes, 2004). A push-in model supports all students not only when the reading specialist is present in the classroom but also throughout the day as the co-teaching experience provides the

classroom teacher with professional growth that improves teaching (Pipes, 2004). This study's results for non-qualifying students in push-in classrooms did not indicate a statistically significant advantage over classrooms with no push-in services.

Implementing the state-mandated Academic Intervention Services (AIS) program to assist students who needed extra support in core areas, New York's Glenn H. Curtiss Elementary School supported remedial math students through a push-in model. This program benefited students of all ability levels (Bower, 2008). Specific benefits and data analysis were not shared. While Pipes (2004) suggested that push-in services supported non-qualifying students and Bower (2008) claimed push-in programming benefited non-remedial students, this study's findings caution educators against assuming that a supportive, beneficial program provides statistically significant acceleration or enhanced progress. Raw data from this study may lead some to assume push-in programming benefited and supported non-qualifying students in a push-in classroom as their DRA level change was .46429 higher than their counterparts in classrooms absent of push-in services. However, data analysis indicated otherwise. This difference was not statistically significant.

Swenson and Clutter's (2000) CWC research supported inclusion as a way to maximize benefits for not only special education students but also found it positively impacted all students in the CWC classroom. The learning opportunities are presented so that all students can understand and apply the concepts. When implemented correctly, general education students in CWC classrooms achieved higher than their non-CWC peers on standardized tests and their general classroom performance (Swenson & Clutter, 2000). Hypothesis testing determined that Scott Elementary School's push-in model did

not result in more reading level gains for non-remedial students which possibly conflicts with the findings of the CWC research. Reading level gains were not specifically measured in the CWC study.

## Conclusions

### *Implications for Action*

Qualifying students benefited more from push-in intervention models than from pull-out. However, non-qualifying students did not experience significantly greater reading level changes when placed in a push-in classroom rather than a classroom without push-in. This implies that push-in models should be employed rather than pull-out whenever possible to enhance the gains of the remedial reader. The results may be enhanced depending on the quality of the push-in program. Enhanced push-in implementation may result in more statistically significant results for non-remedial readers and an even larger advantage for remedial readers.

Research suggested conditions for effective, quality push-in programming. Optimal results rely on the co-teachers collaboratively executing all aspects of teaching including on-going instructional planning, implementation, assessment, and data analysis (Goldstein & Noguera, 2006). Putting two teachers together in the same place at the same time is not the prerequisite to positive results. Inclusion alone does not meet the needs of struggling learners because the teachers must be a team that works strategically to support the learning of all students (Swenson & Clutter, 2000). Push-in models must be carefully planned making sure that the co-teachers are compatible and trained to work as a collaborative team. Reading specialists should have a schedule that affords them sufficient opportunity to develop collaborative relationships and adequately plan, assess,

and reflect with their co-teachers. The partnership must be cultivated and monitored as it is common for the classroom teachers' directives to become the stronger influence in overall planning (Mallozzi & Laine, 2004). Reading specialists often define the special needs of their students in terms of the classroom teacher's needs setting aside their own expertise to be supportive of the teacher (Mallozzi & Laine, 2004).

Student placements must be limited to the number of classrooms the reading specialist can adequately serve. Each classroom means another co-teaching relationship that must be developed and maintained and another person to meet with on a regular basis outside of student contact time. Scheduling must also be considered when creating co-teaching teams making sure that adequate planning and instructional time is available.

Though the district had good intention in their reasons for implementing the top-out procedure, this practice should be reviewed. Only looking at each individual student and the top-out effect on their educational programming, the practice is not limiting. There are many ways to continue to assess the student to inform instruction and meet their individual needs. However, the varied data are not helpful in evaluating programming or in making comparisons between individual or aggregate groups of students.

#### *Recommendations for Future Research*

A parallel study absent of top-out practices would make the results more robust. Excluding top-out students with the existing data as was done in chapter four's Additional Analyses section was not a sufficient way to discover what each model's impact would have been if top-out procedures were not present. Excluding the top-out students actually omitted all of the higher readers from the study. In addition, it reduced

the sample size which especially impacted the attempt to disaggregate even further by grade level. These sample breakdowns resulted in sample sizes too small to accurately determine statistical significance.

Further research disaggregating the impact of intervention models by grade level with no top-out and larger sample sizes would determine the best model for each grade level. Disaggregating the data even further and running independent sample *t*-tests to determine the impact each model had on the respective subgroups would also inform program planning efforts. Examples of subgroups would be students who read considerably above grade level, students with attention deficits, children with special education plans, males, females, students with comprehension deficits, and students who struggle with decoding. Since this study compared means with no regard for various types of student needs or situations, one could focus on specific student types and compare reading intervention models that produce the best results. While push-in intervention resulted in the highest mean reading level change for qualifying students, it may be true that particular needs are best served through pull-out. That specificity was not present in this study.

A similar study using a different instrument other than the DRA would also present new information that would either concur and strengthen this study's findings or conflict and support further research. Individual reading inventories reflect the students' actual reading abilities while whole-group assessments cannot measure individual students' in areas such as accuracy and fluency.

Research indicated a trend where reading specialists are being utilized in more of a literacy coaching capacity rather than providing direct instruction to students.

According to Darling-Hammond and Richardson (2009), the most useful professional development emphasizes active teaching, observation, and reflection that is job-embedded rather than through abstract, sporadic discussions. Reading specialists coaching teachers on specific reading instruction strategies has the strongest impact on instructional practice (Darling-Hammond & Richardson, 2009). Developing classroom teachers into strong reading teachers facilitates achievement and accelerates learning for all students and minimizes the need for formal intervention and targeted-instruction programming (Institute of Education Sciences, 2009). With this in mind, another research pursuit would be a comparative study of schools similar in demographics using reading specialists in different capacities: one as a coach working directly with teachers and the other for direct student instruction. This type of study could provide helpful information to schools and districts who long to find the best use of their resources as they strive to develop proficient readers.

With push-in being the prevailing model based on this study's findings, one may delve further into the push-in model to find the best way to facilitate push-in programming. Example questions to launch research follow: Does the number of qualifying students in a push-in classroom matter? What is the best ratio of qualifying and non-qualifying students? Is there a difference between 10 qualifying students being in one classroom with a reading specialist pushing in 60 minutes daily or 10 qualifying students being divided among 2 classrooms with the reading specialist spending 30 minutes in each of those rooms? Is there a minimum amount of time a reading specialist can spend in the push-in room, and at what point do the gains begin to diminish? When analyzing the length of time reading specialists spend co-teaching with the classroom

teacher, is there a duration point in which the benefits begin to taper off? Such time parameters and class/group ratio information can guide schools to make efficient decisions when designing their push-in program.

### *Concluding Remarks*

As educators strive to maximize limited resources and attain ever-increasing local, state, and federal achievement standards, it is crucial that they make efficient programming decisions. “The classroom should be a positive place for students—and with the right reading interventions, it can be” (Musti-Rao & Cartledge, 2007, p. 60). While the review of literature produced several references to push-in and pull-out models pointing out strengths and weaknesses of each one, existing research fell short of comparative, quantitative studies. The results of this clinical research study suggest that the push-in model yields a significantly higher mean September-to-May reading level change for qualifying students but does not have a significant impact on non-qualifying students. Suggestions for further research can potentially offer educators even more information to design the best programming as we work toward developing all children into proficient readers.

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APPENDIX A: BAKER UNIVERSITY IRB PROPOSAL

Date: December 18, 2009

School of Education  
Graduate Department

IRB PROTOCOL NUMBER \_\_\_\_\_

(IRB USE ONLY)

**IRB Request**  
**Proposal for Research**  
**Submitted to the Baker University Institutional Review Board**

**I. Research Investigator(s)**

**Department(s)**      **School of Education Graduate Department**

Name	Signature	
1. Dr. Harold Frye	_____	X Major Advisor
2. Dr. Peg Waterman	_____	X Check if faculty sponsor
3. Dr. Susan Rogers	_____	X Check if faculty sponsor
4. _____	_____	Check if faculty sponsor

Principal investigator or faculty sponsor contact information:

Name: Starr R. Rich \_\_\_\_\_

Mailing address of Principal Investigator

733 Cottonwood Terrace

Liberty, MO 64068

Phone: 816-415-2334

Email: [srich@bsd124.org](mailto:srich@bsd124.org)Expected Category of Review:  Exempt     Expedited     Full**II: Protocol Title**

THE EFFECTS OF PULL-OUT AND PUSH-IN READING INTERVENTION  
MODELS ON FIRST AND SECOND GRADE STUDENTS

**Summary**

The following summary must accompany the proposal. Be specific about exactly what participants will experience, and about the protections that have been included to safeguard participants from harm. Careful attention to the following may help facilitate the review process:

**In a sentence or two, please describe the background and purpose of the research.**

The purpose of this study is to determine the most effective reading intervention model by measuring the change in reading levels resulting from push-in and pull-out reading interventions with first and second grade students from Scott Elementary School in Belton, Missouri. Scott Elementary School is a low-socioeconomic school from a midsize suburban public school district. The change in reading level of students

receiving push-in reading instruction in a regular classroom with a reading specialist and classroom teacher co-teaching will be compared to the reading level change of students receiving intervention services in a small-group, pull-out model.

**Briefly describe each condition or manipulation to be included within the study.**

There are no manipulations in this study as historical data from programming prior to and independent from this study will be utilized. Scott Elementary School served students qualifying for remedial reading support for more than a decade through a pull-out program and concluded this support model with the 2006-2007 school year. The school began replacing the pull-out reading intervention model with a push-in approach in 2007-2008. Because this transition year was one of mixed practice, 2007-2008 data will not be considered. Data from 2006-2007 will represent the pull-out model and 2008-2009 data will represent the push-in model. The study involves a comparison of the two historical data sets.

**What measures or observations will be taken in the study? If any questionnaire or other instruments are used, provide a brief description and attach a copy.**

There will be no treatment, measurement, or observation of students as a result of this study. Historical student data will be analyzed. Change in reading levels will be determined by analyzing fall and spring results from the Developmental Reading Assessment which was administered to each student during the two data years being compared, 2006-2007 and 2008-2009.

**Will the subjects encounter the risk of psychological, social, physical or legal risk? If so, please describe the nature of the risk and any measures designed to mitigate that risk.**

There is no risk to students. There will be no treatment of students as a result of this study. This study will analyze historical data only.

**Will any stress to subjects be involved? If so, please describe.**

There is no stress to the subjects involved as all data is historical and subjects will not be identified.

**Will the subjects be deceived or misled in any way? If so, include an outline or script of the debriefing.**

Subjects will not be deceived or misled. There is no need to identify or contact students due to sole reliance on historical data.

**Will there be a request for information that subjects might consider to be personal or sensitive? If so, please include a description.**

No information will be requested; students will not be contacted in any way.

**Will the subjects be presented with materials that might be considered to be offensive, threatening, or degrading? If so, please describe.**

No, materials will not be presented to students.

**Approximately how much time will be demanded of each subject?**

No time will be required of any subject. All data is historical and currently available in Scott Elementary School's paper archives.

**Who will be the subjects in this study? How will they be solicited or contacted? Provide an outline or script of the information which will be provided to subjects prior to their volunteering to participate. Include a copy of any written solicitation as well as an outline of any oral solicitation.**

This study's subjects were first and second grade students enrolled at Scott Elementary School in Belton, MO, in the fall and spring of 2006-2007 and the fall and spring of 2008-2009. Their identity will not be considered or revealed in this study.

**What steps will be taken to ensure that each subject's participation is voluntary? What if any inducements will be offered to the subjects for their participation?**

Not applicable.

**How will you ensure that the subjects give their consent prior to participating? Will a written consent form be used? If so, include the form. If not, explain why not.**

The study's use of historical data can be accessed through Scott Elementary School's paper archives. Consent from individuals is not necessary. There will be no association with personal identities.

**Will any aspect of the data be made a part of any permanent record that can be identified with the subject? If so, please explain the necessity.**

Results of the study will have no impact on individual students' records. Individual identification will not occur in this study.

**Will the fact that a subject did or did not participate in a specific experiment or study be made part of any permanent record available to a supervisor, teacher or employer? If so, explain.**

Not applicable.

**What steps will be taken to ensure the confidentiality of the data?**

All collected data will be aggregated by the principal researcher. Final reports will represent this aggregated data. No individual identification will occur in any final report. All archival information that reveals individual student identity will be destroyed or remain in the school's possession.

**If there are any risks involved in the study, are there any offsetting benefits that might accrue to either the subjects or society?**

There are no risks involved.

**Will any data from files or archival data be used? If so, please describe.**

Aggregate data will be retrieved from Scott Elementary School's paper archives located in the administrative offices including school-wide and individual student files. Only data from students enrolled in the fall and spring of the 2006-2007 and 2008-2009 school years will be analyzed. Students will not be identified.

APPENDIX B: BAKER UNIVERSITY IRB APPROVAL

March 01, 2010

Starr Rich  
733 Cottonwood Terrace  
Liberty, MO 64068



Dear Mrs. Rich:

The Baker University IRB has reviewed your research project application (M-00888-0225-0301-G) and approved this project under Exempt Review. As described, the project complies with all the requirements and policies established by the University for protection of human subjects in research. Unless renewed, approval lapses one year after approval date.

The Baker University IRB requires that your consent form must include the date of approval and expiration date (one year from today). Please be aware of the following:

1. At designated intervals (usually annually) until the project is completed, a Project Status Report must be returned to the IRB.
2. Any significant change in the research protocol as described should be reviewed by this Committee prior to altering the project.
3. Notify the OIR about any new investigators not named in original application.
4. Any injury to a subject because of the research procedure must be reported to the IRB Chair or representative immediately.
5. When signed consent documents are required, the primary investigator must retain the signed consent documents for at least three years past completion of the research activity. If you use a signed consent form, provide a copy of the consent form to subjects at the time of consent.
6. If this is a funded project, keep a copy of this approval letter with your proposal/grant file.

Please inform Office of Institutional Research (OIR) or myself when this project is terminated. As noted above, you must also provide OIR with an annual status report and receive approval for maintaining your status. If your project receives funding which requests an annual update approval, you must request this from the IRB one month prior to the annual update. Thanks for your cooperation. If you have any questions, please contact me.

Sincerely,

*Charmaine B. S. Henry*

Charmaine Henry, PhD  
Chair, Baker University IRB

APPENDIX C: BELTON SCHOOL DISTRICT IRB APPROVAL

Date: December 20, 2009

**Proposal for Research**  
Submitted to  
**Dr. Kenneth Southwick, Superintendent**  
**Belton School District**  
**110 W. Walnut**  
**Belton, MO 64012**

**I. Research Investigator(s)**

Principal investigator

Name: Starr R. Rich

Mailing address of Principal Investigator

733 Cottonwood Terrace

Liberty, MO 64068

Phone: 816-415-2334

Email: [srich@bsd124.org](mailto:srich@bsd124.org)

**II. Protocol Title**

THE EFFECTS OF PULL-OUT AND PUSH-IN READING INTERVENTION  
MODELS ON FIRST AND SECOND GRADE STUDENTS

**III. Research Summary**

**Background and purpose of the research:**

The purpose of this study is to determine the most effective reading intervention model by measuring the change in reading levels resulting from push-in and pull-out reading interventions with first and second grade students from Scott Elementary School in Belton, Missouri. The change in reading level of students receiving push-in reading instruction in a regular classroom with a reading specialist and classroom teacher co-teaching will be compared to the reading level change of students receiving intervention services in a small-group, pull-out model.

**Conditions or manipulations to be included within the study:**

There are no manipulations in this study as historical data from programming prior to and independent from this study will be utilized. Scott Elementary School served students qualifying for remedial reading support for more than a decade through a pull-out program and concluded this support model with the 2006-2007 school year. The school began replacing the pull-out reading intervention model with a push-in approach in 2007-2008. Because this transition year was one of mixed practice, 2007-2008 data will not be considered. Data from 2006-2007 will represent the pull-out model and 2008-2009 data will represent the push-in model. The study involves a comparison of the two historical data sets.

**Measures or observations to be taken in the study:**

There will be no treatment, measurement, or observation of students as a result of this study. Historical student data will be. Change in reading levels will be determined by analyzing fall and spring results from the Developmental Reading Assessment which was administered to each student during the two data years being compared, 2006-2007 and 2008-2009.

**Social, physical or legal risk to subjects and offsetting benefits:**

There is no risk to students. There will be no treatment of students as a result of this study. This study will analyze historical data only.

**Stress imposed on subjects:**

There is no stress to the subjects involved as all data is historical and subjects will not be identified.

**Deceiving or misleading subjects:**

Subjects will not be deceived or misled. There is no need to identify or contact students due to sole reliance on historical data.

**Requests for information that subjects might consider as personal or sensitive:**

No information will be requested; students will not be contacted in any way.

**Offensive, threatening, or degrading materials presented to subjects:**

No materials will be presented to students.

**Time required from each subject:**

No time will be required of any subject. All data is historical and currently available in Scott Elementary School's paper archives.

**How subjects will be solicited or contacted:**

This study's subjects were first and second grade students enrolled at Scott Elementary School in Belton, MO, in the fall and spring of 2006-2007 and the fall and spring of 2008-2009. Their identity will not be considered or revealed in this study. Subjects will not be solicited or contacted.

**Subjects' voluntary participation and consent:**

The study's use of historical data can be accessed through Scott Elementary School's paper archives. Consent from individuals is not necessary. There will be no association with personal identities.

**Affect on subjects' permanent records:**

Results of the study will have no impact on individual students' records. Individual identification will not occur in this study.

**Ensuring confidentiality:**

All collected data will be aggregated by the principal researcher. Final reports will represent this aggregated data. No individual identification will occur in any final report. All archival information that reveals individual student identity will be destroyed or remain in the school's possession.

**Data files or archival data:** Aggregate data will be retrieved from Scott Elementary School's paper archives located in the administrative offices including school-wide and individual student files. Only data from students enrolled in the fall and spring of the 2006-2007 and 2008-2009 school years will be analyzed. Students will not be identified.

**IV. School and District Identity:**

Scott Elementary School will be identified in the study. It will be described as a low-socioeconomic school in the Belton School District. Belton School District will be described as a mid-size, suburban school district. No one will be personally identified including students or staff.

**V. Approval:**

**Dr. Kenneth Southwick, Superintendent**



Signature/Date

APPENDIX D: BELTON SCHOOL DISTRICT APPROVAL LETTER



**Dr. Kenneth Southwick**  
*Superintendent*

**Dr. Michael Slusher**  
*Deputy Superintendent  
Pupil Services*

**Dr. Tanya Shippy**  
*Assistant Superintendent  
Human Resources*

**Dr. Sandy Clutter**  
*Assistant Superintendent  
Special Services*

**Dr. Sara Jones**  
*Assistant Superintendent  
Elementary Education*

**Central Office**

**Dr. Kenneth Southwick**  
*Superintendent*

110 W. Walnut  
Belton, Missouri 64012  
[www.beltonschools.org](http://www.beltonschools.org)

Phone 816-348-1084  
Fax 816-348-1083  
[ksouthwick@bsd124.org](mailto:ksouthwick@bsd124.org)

January 11, 2010

To Whom it May Concern:

After reading the proposal for research submitted by Starr Rich on December 20, 2009, please accept this letter as my approval of this project. This approval includes the use of the Belton School District name as well as that of Scott Elementary School. It is my understanding that this data will be examined and presented in the form of a dissertation by Mrs. Rich. I would only ask the information be shared with the Belton School District upon its completion.

If there are any questions or concerns regarding the support for this project, please don't hesitate to give me a call. I look forward to the findings of this research.

Sincerely,

Kenneth E. Southwick, Ed.D