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A PROGRAM EVALUATION OF DEVELOPMENTAL FIRST GRADE AND READING RECOVERY

A DISSERTATION APPROVED FOR THE DEPARTMENT OF EDUCATIONAL LEADERSHIP AND POLICY STUDIES

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Dedication Page

"I can do everything through Him who gives me strength" Philippians 4: 13

I would like to dedicate this dissertation to my parents, Marylu Tignor Jaggers and James Wesley Tignor. I learned perseverance, hard work, integrity, tenacity, and most importantly, how to serve God through their example and teaching. I am what I am because of their sacrifice and love. I pray that my children and grandchildren will have the same love and discipline that I learned in my parent's home.

Whenever I have thought the path was too difficult or the journey was too long, I remembered my father's encouragement, "You can always take one more step". My father and sister's (Sandra Patterson) courage in the face of death have inspired me to make my days on earth count for good.

"Therefore, since we are surrounded by such a great cloud of witnesses, let us throw off everything that hinders and the sin that so easily entangles, and let us run with perseverance the race marked out for us. Let us fix our eyes on Jesus, the author and perfecter of our faith, who for the joy set before him endured the cross, scorning its shame, and sat down at the right hand of the throne of God." Hebrews 12: 1 – 2

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ABSTRACT

A PROGRAM EVALUATION OF DEVELOPMENTAL FIRST GRADE AND READING RECOVERY

This program evaluation investigated differences in reading achievement for students receiving Reading Recovery or Developmental First Grade. The researcher examined DRA reading scores during the first and second grade and STAR reading scores from second grade through middle school for students in a rural public school district in Northeastern Oklahoma. The purpose was to measure the differential achievement effect attributed to Reading Recovery or Developmental First Grade. Results showed that there were no significant differences between the two groups of students in reading growth during first and second grade. Results for the long-term reading achievement reveal that Reading Recovery students began second grade with a higher STAR reading score while Developmental First Grade students had a greater reading growth over time. Post-hoc data to compare the reading achievement of students who were reading on grade level at the end of Kindergarten and those who required a reading intervention of Reading Recovery or Developmental First suggest significant differences in reading achievement. Students without a reading intervention began second grade at a higher reading level and continued to grow at a greater rate over time.

CHAPTER ONE

READING RECOVERY AND DEVELOPMENTAL FIRST GRADE

Introduction

Former Oklahoma Superintendent of Instruction, Sandy Garrett, stayed ahead of the federal government in requiring high standards for Oklahoma public schools. Before *No Child Left Behind* mandated reading proficiency levels for students, Oklahoma adopted the Reading Sufficiency Act in 1997. This Act required schools to assess students throughout the year, and it established a goal that each student would attain the necessary reading skills by completion of the third grade. Partly as a result of this legislation, schools began exploring and implementing additional reading intervention strategies to assist the lowest achieving students. The school district in which this evaluation study is set has used both Reading Recovery and Developmental First grade as two distinct early literacy interventions to address students' reading competencies.

Budget cuts from the state and federal levels have forced schools to make difficult decisions regarding which programs they can afford to fund. This local school district must cut ten percent from the budget as a result of the decrease in state and federal funding. The school district utilizes both Reading Recovery and a transitional grade between kindergarten and first grade to improve early literacy delays in students. The probability of continuing both programs in the current economic environment is low.

Reading Recovery is an early reading intervention program that supplements daily reading and writing instruction. It provides thirty minutes a day of individual tutoring on reading and writing strategies that lasts an average of 12-20 weeks (Swartz, 1996). The goal of Reading Recovery is to bring the reading level of the lowest achieving first grade students to that of their peers. As soon as students reach grade level literacy and demonstrate they can continue to learn through their own efforts, they are discontinued from Reading Recovery and new students take their place in the program.

Reading Recovery's objective is to promote accelerated learning so that students will be able to close the achievement gap as soon as possible and become independent learners. Typically, Reading Recovery teachers tutor four or five students per day in individual lessons. They are trained to use *An Observation Survey of Early Literacy Achievement* (Clay, 1985) to assess each student. The observation survey measures the following six literacy tasks: letter identification, word test, concepts about print, writing vocabulary, hearing and recording sounds in words, and text reading. When a student participates in the full program of Reading Recovery lessons, there are two possible outcomes:

1. Students who demonstrate grade level proficiency are discontinued.
2. Students who do not achieve grade level proficiency within a reasonable amount of time are dropped from the program and

may be referred to special education or alternative support services.

Developmental First grade, in contrast to Reading Recovery, is a transition year for students not yet developmentally ready for first grade. This added year between kindergarten and first grade is designed to serve fewer students than a typical first grade class with a more formal setting than kindergarten but more play-oriented experiences than first grade (Malone-Duty, 1992). Developmental First grade has a rich curriculum of two and a half hours of reading instruction and two hours of math instruction per day plus the benefit of allowing students another year to mature. It is not retention, students are taught a new curriculum and do not just repeat the same curriculum for another year.

Purpose of the Study

The purpose of this program evaluation is to evaluate the relative effectiveness of a local school district's Reading Recovery and Developmental First Grade early literacy interventions. Currently, no comparative data on the effectiveness of the interventions exist. The study will use a theory-based evaluation approach to better understand which of the two programs has produced better reading outcomes, the cost/benefit of achievement outcomes, and the reasons for these outcomes. Three questions guided the evaluation: 1) Is there a difference in the short-term reading performance between Reading Recovery and Developmental First grade students? 2) Is there a long-term

difference in reading performance of students who had Reading Recovery or Developmental First grade? 3) What is the observed benefit of each program relative to its cost?

Assumptions

The following assumptions are made regarding this study:

1. District and school-level data were collected and measured without error.
2. Level one errors are independent and normally distributed with a common variance.
3. The Reading Recovery intervention was implemented with fidelity and followed the prescribed curriculum.
4. Residuals across testing periods are uncorrelated with residual across students.
5. Observations across students are independent.

Limitations

Limitations affect all research. This study had the following limitations:

1. The study was a program evaluation of a local school district. The results of the evaluation cannot be generalized to others schools or districts.
2. Data were collected by school year instead of by grade. This placed Reading Recovery students a year ahead in curriculum than the Developmental First students.

3. This study did not include qualitative evidence. This lack of qualitative evidence limited the explanation of findings to theoretical and empirical explanations.
4. Long-term effects of early literacy interventions are difficult to measure. Factors such as subsequent instruction, program implementation, teacher effectiveness, student attendance, and individual life circumstances affect student success (Askew, Fountas, Lyons, Pinnell, & Schmitt, 1998).
5. Historical data were used rather than an experimental design that randomly assigned students to one of two interventions. Thus, it was difficult to control for all possible alternative explanations of the findings.

Definitions of Terms

For the purposes of this study, the following definitions were used:

Clay's Observation Survey: Six reading subtests individually administered to students to identify the lowest 10-20% of first grade students. These six tests consist of letter identification, word test, concepts of print, writing vocabulary, dictation test, and text reading (Clay, 1993).

Developmental First Grade: A year between Kindergarten and first grade. The State of Oklahoma does not have a mandated curriculum for Developmental First and each school district must determine the appropriate curriculum.

Hierarchical Linear Growth Modeling: A type of regression model that estimates change in a dependent variable over time and variability around the average change.

Reading Recovery: It is an early individual reading intervention. It is a reading program for first grade students who are identified as the most at-risk in learning to read in their peer group.

Overview of Dissertation

This study is organized in six chapters. Chapter one includes an introduction, the purpose of the study, research questions, assumptions, limitations, and definitions of terms. Chapter two is a comprehensive review of related literature on Reading Recovery and Developmental First Grade. Chapter three is a discussion of the logic models of Developmental First grade and Reading Recovery. Chapter four provides a description of the research design including sample, measures, and analytical technique. Chapter five presents the data findings. Chapter six includes a discussion of the findings and implications of the study.

CHAPTER TWO

LITERATURE REVIEW

Introduction

The purpose of this study is to examine the short and long-term reading outcomes of Reading Recovery and the Developmental-First grade in a rural Oklahoma school district of 1900 students. To better understand the program features of both interventions, it is necessary to compare both interventions with the theoretical and empirical evidence on effective early literacy instruction. The following review begins with a review of Reading Recovery and its guiding principles. Next, empirical and theoretical evidence on early literacy is synthesized within the context of Reading Recovery principles. The review concludes with an examination of Developmental First and its alignment with effective early literacy practice.

Reading Recovery: Principles

Reading Recovery is a short-term, individual reading intervention that is used to serve the lowest achieving (the bottom 15-25 percent) first-grade students. Reading Recovery is conducted as a pullout session that takes place for 30 minutes daily over 12-20 weeks depending on the progress of the individual student. The What Works Clearinghouse (www.whatworks.ed.gov) rates Reading Recovery as having positive effects on alphabetics and general reading achievement and potentially positive effects on reading fluency and comprehension.

Reading Recovery uses a structured instructional framework as well as required professional development to assist teachers in making instructional decisions that accelerate the literacy growth for each student (Swartz, 1996). Each Reading Recovery lesson has seven distinct parts: (1) The student rereads a familiar book; (2) The student rereads a book introduced from the day before while the teacher records the student's reading behaviors; (3) The student works with letter identification; (4) The student writes a story with the teacher's assistance as needed; (5) The teacher writes the story on a sentence strip, cuts it apart and has the student put it back together; (6) The teacher introduces a new book; and (7) The student reads the new book. The instructional principles of Reading Recovery are designed to develop early literacy competencies in students.

Reading Recovery principles provide the basis for instruction during the 30-minute daily instructional session. The principles were derived from the literature on early literacy practices. These principles are listed below:

1. Students are taught to hear the sounds in words. (Phonological Awareness)

2. Students are taught how to perceive and identify letters of the alphabet. (Visual Perception of letters)

3. Students are taught how to recognize words. (Word Recognition)

4. Students are taught to use simple and complex letter-sound relationships to understand challenging words in reading and writing. (Phonics and Decoding skills)

5. Students are taught to recognize structural analysis of words and learn spelling patterns. (Word Analysis)

6. Students are taught to develop speed and fluency in reading and writing. (Fluency)

7. Students are taught to construct meaning from print. (Comprehension)

8. Students are taught to apply skills in reading and writing in an interrelated set of learning experiences. (Balanced, structured approach)

9. The students are entered into Reading Recovery at age 6 or during first grade in order to intervene early. (Early Intervention)

10. Students receive one-to-one tutoring. (Individual Tutoring)

To better explain the alignment between Reading Recovery principles and effective literacy strategies, the ten principles are grouped into four broad instructional practices that are supported by empirical and theoretical evidence on effective early literacy development. These categories are: phonological awareness and decoding skills, visual perceptions of letters, word recognition/word analysis, and comprehension and fluency. Each category of effective literacy strategies is addressed in the Reading Recovery process. The following sections address the alignment between Reading Recovery and effective literacy strategies.

Phonological Awareness/Phonics and Decoding Skills

Research on phonological processing abilities has been divided into three clusters: phonological awareness, phonological access to lexical store, and phonological memory (Wagner & Torgesen, 1987). These three cognitive abilities are necessary for later word decoding success (Burgess & Lonigan, 1998; Lonigan, Burgess, & Anthony, 2000; Wagner, Torgesen, Laughon, Simmons, & Rashotte, 1993; Wagner, Torgesen, & Rashotte, 1994; Wagner et al., 1997). The 2008 report of the National Early Literacy Panel conducted a research synthesis on early literacy development to ascertain a relationship between phonological awareness and reading success. Results of the meta-analysis revealed a significant relationship ($r = 0.4$, $p < 0.01$) between phonological awareness and reading success (Lonigan, Schatshneider, & Westberg, 2008). The researchers concluded that there is a linkage between phonological processing success, print knowledge, and oral language during the preschool period and success as a reader during the early grades of school (Lonigan, 2006).

Students' ability to decode words effectively begins with recognition of sounds and rhymes. The ability to rhyme means, in part, that students are able to focus on the individual sounds (i.e. phonemes) in language. The ability to recognize sounds of speech in language (i.e. phonological awareness) provides students with the knowledge necessary for identifying words. Understanding that words are made up of sequences of individual sounds is the building block

for learning to decode individual words. Blending and segmenting are two strategies for sound recognition that students must develop to become successful readers (Adams, Foorman, Lundberg, & Beeler, 1998). Blending is a reading strategy where individual sounds or syllables in a word are pulled together. Segmenting a word involves breaking the word down into individual sounds or syllables.

Readers have a mental dictionary or lexicon that stores the pronunciation and meaning of words. Lexical access is the term which refers to the process of mapping a printed word onto the meaning of the word (Ashby & Rayner, 2006). Phonological access to the lexical store is defined as the efficient retrieval of phonological codes from long-term memory (Wagner & Torgesen, 1987). Measures of lexical access are significant predictors of success in decoding skills in school-age children (Wagner et al., 1994; Wagner et al., 1997). Efficient lexical access could increase the success of a reader's ability to retrieve phonological information associated with letters, word segments, and whole words. Therefore, efficient lexical access enables the reader to use phonological information in decoding (Lonigan, 2006).

Phonological Memory is defined as the coding of information in a sound-based system for short-term storage (Braddeley, 1986). Phonological Memory is usually measured by immediate recall of verbally presented material. A reader with efficient phonological memory is able to accurately process phonemes associated with the letters of a word and therefore leave more

cognitive resources free to decode and comprehend the words they are reading (Lonigan, 2006). Wagner and colleagues (Wagner et al., 1994; Wagner et al., 1997) concluded that while phonological memory has a significant correlation to growth in decoding skills it does not explain unique predictive variance to growth in decoding above the growth provided by phonological awareness in school-age children. In other words, while phonological memory increases decoding skills, the growth in decoding skills could also be explained by an increase in phonological awareness.

Phonological awareness is the strongest predictor of reading skills (McBride-Chang & Manis, 1996; Wagner et al., 1993; Wagner, Torgesen, & Rashotte, 1994; Wagner et al., 1997). Phonological memory, phonological access to lexical store, and phonological awareness are relatively distinct ability clusters in older students, but the three ability clusters are less distinct in younger children (Wagner & Torgesen, 1987; Wagner et al., 1993). The progression in developing young readers is first they are taught phonological awareness then this knowledge is placed in phonological memory then they learn to access this phonological memory by the process of phonological access to lexical store. The progression of instruction in phonological awareness and practice of accessing the lexical store helps students go from phonological awareness to phonological memory.

There has been a debate for the last thirty years regarding whether skilled readers use phonological coding (the process or assigning speech-based code to

words we read) or direct access (the process of gaining meaning directly from the visual word form) to decode words (Ashby & Rayner, 2006), but since the 1990's, the debate has changed to phonics instruction versus whole-language. Current research shows that phonological coding is important for reading and that systematic instruction in phonological awareness is a necessity for early reading development (Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001).

Reading Recovery gives direct instruction in phonological awareness, phonics and decoding skills. Some of the strategies used to enhance phonological awareness are playing rhyming games, reading and listening to rhyming books, and identifying a rhyming pattern. To enhance a student's ability to decode words, the Reading Recovery teacher and student clap out the individual sounds or syllables in a word. A student must develop their decoding skills to an automatic level in order to become an effective reader (Adams et al., 1998; Blanchman, Ball, Black, & Tangel, 2000; Hall & Moats, 1999; Levine, 1998). The Reading Recovery teacher explicitly teaches students how letters and letter groups correspond to distinct speech sounds. Teachers also give instruction in rhyming, syllable counting, blending and segmenting words.

One of the strategies that Reading Recovery teachers use to teach phonics is to link the decoding of words with the spelling of the word. Spelling is enhanced by knowledge of letter-sound interactions and the ability to identify sequences of phonemes in words (DeGraff & Torgesen, in press). Phonemic

awareness makes phonemic decoding and phonemic spelling comprehendible. Another important literacy skill is to know what good readers do while reading. The Reading Recovery teacher explicitly articulates, to the student, his/her thinking as they encounter difficult words during the reading session. When the student hears what strategies the teacher uses as they are reading, those strategies become a habit for the student. As the student reads, the teacher gives instruction on phonics and decoding strategies.

Students spend a portion of their daily Reading Recovery lesson practicing hearing sounds in words and using letter-sound relationships to understand words in reading and writing activities. Sound recognition is the basis for phonemic awareness and Reading Recovery practices are designed to enhance word recognition. Direct instructions during the Reading Recovery tutoring session provide the student with strategies for phonological awareness and decoding skills.

Visual Perception of Letters

Eye movement experiments have indicated that phonological coding occurs at the word level (Ashby & Rayner, 2006). Skilled readers process the written word automatically from the letter level to the word level (Ashby & Rayner, 2004; Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2002; Rayner et al., 2001). When students are able to recognize letters automatically they can assign sounds to the letters. This process of visual perception must be in place before the student becomes a successful reader. The National Early Literacy

Panel discovered that interventions which focused on helping children learn to decipher the alphabet and to develop phonological awareness had statistically significant effects on early literacy development (Schatschneider, Westberg, & Shanahan, 2008).

Teachers can use different visual strategies to develop letter recognition. One helpful strategy for visual perception of letters is to use pictures to recall a letter or sound. An example would be a picture of an apple for the letter "A", a ball for "B", and a cat for "C". Word walls containing frequently used words also help students assign letters to sounds (Share & Stanovich, 1995). Teachers refer students to the word wall during reading and writing activities. These constant reminders of both the symbolic and verbal representation of words help students commit the words to their long term memory and the words become automatic to them. Another strategy is to label the objects in the classroom so the student associates the letter with the object (Ehri, 2002). Both of these strategies combine the written word with its verbal representation and connect the written and spoken word with its meaning.

Reading Recovery interventions use strategies similar to the ones mentioned above to ensure students understand alphabetics. Reading Recovery spends part of each daily thirty-minute session on direct instruction for alphabetics. Reading Recovery lessons include instruction and practice in identifying letters of the alphabet along with phonics instruction and word chunking (which is recognizing a small word or phoneme embedded in a larger

word) to give students strategies for decoding words. Sessions address word recognition for the one hundred most used words. Reading Recovery uses explicit instruction in assigning sounds to letter, phonemes, and words. These strategies help students to successfully decode words. Juel and Miden-Cupp (2000) conducted a year-long classroom analysis of four first grade classes and discovered that direct instruction in alphabetics, phonemic awareness, sounding out words in writing, word families, and word chunks were successful strategies for students with the least literacy skills (Juel & Minden-Cupp, 2000).

Word Recognition/Word Analysis

Growth in literacy is dependent on a child's experience, exploration and the meta-linguistic insight that language is the object of inspection and reflection (Halliday, 1982; Olson, 1995). Children gain the ability to think about language, analyze language, and judge correct forms of language from their parents or caregivers (Pratt, Tunmer, & Bowey, 1984). Children's ability to read begins at birth and research suggests that children with parents who provide a rich early literacy experience are more successful readers (Roskos & Vukelich, 2006). Erica Hoff's (2006) videotaped conversations between 61 mothers and their children who ranged in ages 18-29 months old revealed that children had significant growth in their vocabulary if their mothers used a vocabulary that was rich and complex.

There is evidence that emergent literacy, which is the phase of literacy that refers to a child's ability to recognize alphabetic letters, understand book

and print concepts, and phonemic awareness, has a positive relationship to reading in elementary school (Bryant, McLean, Bradley, & Crossland, 1990; Ehri, 1994; Juel, 1991; Richgels, 1995). The National Research Council published a report on early reading research in 1998 (Snow, Burns, & Griffin, 1998) that identified risk factors for lower emergent literacy ability, such as a deficit in vocabulary, which had a significant negative effect on children's success in reading. Three salient risk factors are: 1) Parents without educational and economic resources (Dickinson, McCabe, & Essex, 2006); 2) Students' first language is not English (Dickinson et al., 2006); and 3) Parents who do not have conversations with their children which develop early literacy skills (Dickinson et al., 2006).

Early vocabulary deficits can be traced to parent interactions with their children during infancy (Hart and Risley, 1995). In a longitudinal study that charted the length of parents' speech to their children, Hart and Risley (1995) discovered that parents from lower economic backgrounds used fewer than 100 different vocabulary words in one hour compared to 500 different vocabulary words per hour for parents from a higher socioeconomic background. Parental conversations with children developed a literacy foundation of vocabulary acquisition and background knowledge which is vital to later success in literacy (Bridges, 1979; Smith, Landry, & Swank, 2000, 2006). By the time a child is four years old, the amount of root-word meanings in their vocabulary is determined by the number of different words the parent uses and by the total

number of words the parent speaks (Hart & Risley, 1995, 1999, 2003; Wells, 1985). In short, home not school has more significant effect on the size of a child's vocabulary by the end of second grade (Cantalini, 1987; Christian, Morrison, Frazier, & Massetti, 2000).

During the preliterate period, the aforementioned risk factors can lead to a difference of up to 2,000 root-word meanings in vocabulary acquisition (Biemiller, 2006). This difference creates a gap that is difficult to overcome. A study by Nagy and Anderson (1984) estimated that middle-school children who love to read will read 10,000,000 words in one year while students who struggle with reading will read only 100,000 words per year. A reading gap could lead to the Matthew effect (the rich get richer and the poor get poorer) (Stanovich, 1986) where a student who is behind his/her peers in reading will also fall behind in other academic classes since all classes rely on reading (Chall, Jacobs, & Baldwin, 1990).

Reading Recovery addresses the risk factors associated with the social environment through its intensive individual instruction in phonemic awareness, phonics instruction, comprehension strategies, and fluency and by involving the parent or guardian in the student's reading instruction. Reading Recovery teachers meet regularly with parents or guardians to give them individual instruction in how they can assist their child during the daily home reading assignment. Parent instruction is based on the particular student and his/her reading weaknesses. Instructing parents in proper literacy development has

support in the literature. Whitehurst et al. (1994) found that students who received high-quality focused early literacy instruction and parents who provided the same early literacy experiences at home were successful readers. A randomized intervention study that focused on mothers from low socioeconomic backgrounds found that after the mothers received coaching to implement early literacy strategies they did in fact increase support for early literacy (Smith et al., 2000).

Comprehension and Fluency

Reading comprehension can be defined as the accurate construction of the authors intended meaning (Pressley, 1998). The National Early Literacy Panel (2008) analyzed five studies, which included 700 students, to determine the effect of reading comprehension on reading success. The study determined that comprehension did have a moderate effect on reading success ($r = 0.52$, $p < 0.01$) (Schatschneider et al., 2008).

Reading strategies of previewing (thinking ahead about the text), self-monitoring (judging how well you understand what you are reading), and pacing (reading at a speed that fits the text) are necessary for reading comprehension (Deiner, 1999; Hoover & Patton, 1997; Manzo & Manzo, 1995; Marzano & Paynter, 1994; Pressley, 1998). Other strategies to assist comprehension include introducing key terms, new vocabulary words, and important concepts of the book before the student begins reading (Deiner, 1999). Opportunities for students to automatize their word-decoding skills by re-reading the story and

introducing the new book by looking at the pictures, names, and dates as well as asking the student what they think about the concepts in the book are helpful strategies to develop comprehension skills (Marzano, Pickering, & Pollock, 2001; Pressley, 1998; Reichardt, 1992).

Reading Recovery incorporates similar approaches to developing comprehension. The daily practice of reading helps Reading Recovery students develop speed and fluency in both reading and writing. Reading instruction includes teaching students what skilled readers do when they read. In so doing, students learn to read fluently without thinking about the reading process (Ashby & Rayner, 2006). Each Reading Recovery lesson also includes direct instruction in writing. The writing instruction is designed to correct spelling patterns and give instruction in the structure of words. The student dictates a story and then attempts to write the story. The teacher gives clues to assist the student to spell the words correctly. During this activity the teacher uses phonics and word chunking as spelling and reading strategies. The teacher selects books that match the student's interest as a strategy for comprehension. If a student wants to read a book and is interested in the content of the book, they are more likely to pay attention to information in the book (Ashley & Rayner, 2006).

Summary

In summary, the Reading Recovery principles align with the effective cognitive skills underpinning successful reading found in research conducted by

the National Early Literacy Panel (Shanahan et al., 2008). The panel's meta-analysis of 500 experimental studies on literacy interventions identified the following skills as having a medium to large predictive relationship to literacy achievement: alphabet knowledge, phonological awareness, rapid automatic naming of letters and numbers, rapid automatic naming of objects or colors, writing, and phonological memory (Schatschneider et al., 2008). As previously explained, Reading Recovery utilizes phonological awareness, word recognition, phonics, decoding, word analysis, fluency, comprehension, early intervention, daily individual tutoring, and parental instruction to maximize the benefit a student receives from direct instruction. In short, instructional practices identified as being effective for literacy development are practices used in Reading Recovery.

Reading Recovery Research

Reading Recovery has a strong tradition of success with low achieving children. Developed in New Zealand in the 1970's by Marie Clay, Reading Recovery operates in most states in the United States, the Department of Defense Dependents Schools (domestic and foreign), Bureau of Indian Affairs Schools, Canada, the United Kingdom, and Australia. Since 1984 when Reading Recovery was introduced in the United States, approximately 76 percent of students who complete the full 12- to 20-week intervention can meet grade-level expectations in reading and writing (Gomez-Bellenge, Rogers, & Schulz, 2005). Empirical research on Reading Recovery included studies

conducted out of The Ohio State University, along with studies that used a similar research design as the early Ohio State studies. Longitudinal studies of reading Recovery have also been conducted.

The Ohio State Studies

The primary purpose of the Ohio State studies was to determine if Reading Recovery would be an effective reading intervention for at-risk students in Ohio. Six inner-city schools in Columbus were chosen as pilot sites and fifty-five students were given Reading Recovery interventions and fifty-five students were selected as the control group. At the conclusion of the 1984-85 school year, two-thirds of the students served by Reading Recovery were discontinued (n=36) meaning they were reading on grade level and no longer received Reading Recovery. Reading Recovery students made substantial reading gains compared to the control group, with an estimated large effect size of 0.87 attributed to Reading Recovery (Deford, Lyons, & Pinnell, 1991). The limitation of this study was that it only measured reading achievement for the year of the intervention and did not look at long-term achievement. Additionally, the sample size was small and only covered six schools.

Another study was conducted during the 1985-86 school year. This study of 184 students compared a random sample of average first grade students to first grade students from six schools who had the lowest scores on a reading pretest. The low-performing students were randomly assigned to one of three groups: 1) A Reading Recovery Program class (n = 96) where students received

daily Reading Recovery from a trained Reading Recovery teacher; 2) A Reading Recovery Regular class (n = 51) where the students received daily individual Reading Recovery instruction from a reading specialist who was not trained in Reading Recovery; 3) A comparison group (n = 37) that received a skill-based and drill oriented reading intervention taught by a paraprofessional and a classroom teacher not trained in Reading Recovery. Students in the first group taught by a trained Reading Recovery teacher had a 73 percent success rate for attaining grade level reading achievement. This group of discontinued Reading Recovery students performed better than the third group that received the alternative intervention. Students in the second Reading Recovery group significantly outperformed students in the comparison group (third group) on all reading assessments except letter identification and the writing sample (Pinnell, 1988). While all three groups of students had a reading intervention the study did not determine whether the Reading Recovery interventions were more successful because of the specific instructional strategies used by Reading Recovery or if the success was because of individual tutoring for 30 minutes per day. Another confounding variable was that a highly trained reading specialist taught both the first and second groups while the third group was taught by a teacher not trained as a reading specialist and a paraprofessional, making it difficult to attribute the achievement difference to the Reading Recovery intervention or teacher differences.

Studies comparable in design to the Ohio State Research found similar evidence on the effectiveness of Reading Recovery. Pinnell, Lyons, Deford, Bryk, and Seltzer (1994) studied 403 students from ten school districts who were randomly assigned to either Reading Recovery, Reading Success, Direct Instruction Skills Plan, or a Reading and Writing Group. The researchers found that Reading Recovery was the only intervention that showed a mean treatment effect on two standardized reading measures (effect sizes from 0.19 to 1.5 comparing treatment to comparison students at each site). The discrepancy of the effect sizes could be attributed to the differential experience and training of teachers, instructional time, and the number of students instructed per period of time at each site (Rasinski, 1995). The researchers determined that Reading Recovery had the most success because of individual instruction, instructional emphasis, and teacher professional development (Pinnell et al., 1994). Again, like in the Ohio State study, not controlling for teacher quality was a limitation. The Reading Recovery teachers had two years of previous training in Reading Recovery and were veteran teachers while the Reading Success teachers only had two weeks of training and were substitute teachers.

Another study comparing the effectiveness of daily individual reading instruction provided by Reading Recovery to a small group remedial reading instruction was conducted by Iverson and Tunmer (1993). Iverson and Tunmer (1993) concluded that Reading Recovery was more effective than small-group remedial instruction in their study of three matched groups of 32 students each

who were pre-tested and post-tested on several reading measures. The first group received Reading Recovery, the second group received a modified Reading Recovery program, and the third group was the control group (Iverson & Tunmer, 1993). Iverson and Tunmer (1993) conducted a well-designed quasi-experimental study, however, the control group was taught in small groups and their literacy intervention was not defined. The reading advances the Reading Recovery students experienced could be attributed to individual tutoring and a well-defined curriculum.

Shanahan and Barr (1995) conducted an independent evaluation of Reading Recovery and examined published and unpublished studies concerning the effectiveness of Reading Recovery. They concluded that Reading Recovery brought students' reading levels to that of their average-achieving peers. Center, Wheldall, Freeman, Outred, and McNaught, (1995) conducted a research study with randomized experimental and control groups. After 15 weeks of instruction, the Reading Recovery students outperformed the control students on text-reading and word-reading tests. The data indicated that 65 percent of the Reading Recovery students improved their reading skills to average class levels (Center et al., 1995). Short-term benefits of Reading Recovery have been demonstrated by many studies; however, some of the studies did not control for teacher quality, raising questions about the causal factors on improved literacy.

Longitudinal Studies

Whereas the previous studies measured reading achievement during the academic year in which Reading Recovery occurred, longitudinal studies measured the sustainability of reading achievement gains after the initial year. Askew, Fountas, Lyons, Pinnel and Schmidt (1998) tracked Reading Recovery students over a four year period and found that students who were successfully discontinued from Reading Recovery performed within the average range for their grade level at the end of the first grade and continued to do so each year through the fourth grade (Askew et al.,1998). Ohio State University continued to study the effects of Reading Recovery for two years after its pilot study in 1984. Students were followed to find out if they could maintain initial reading gains. Both Reading Recovery and the control group continued to make progress but the Reading Recovery students had significantly higher reading levels by fourth grade than comparison students (Pinnell, 1988).

Brown et al. (1999) conducted a study from 1993-1998 in California to determine if Reading Recovery gains were sustained in subsequent years. The authors measured the achievement of 760 Reading Recovery students through fifth grade. Results showed that 75 percent of students who were successfully discontinued from Reading Recovery achieved standardized test scores in the average or above average range through the fifth grade (Brown, Denton, Kelly, & Neal, 1999). Ruhe and Moore (2005) studied 1,260 Reading Recovery and 14,000 non –Reading Recovery students three years after the Reading Recovery

intervention and found that discontinued Reading Recovery students performed at average levels in reading and writing in the fourth grade (Ruhe & Moore, 2005).

Contrary evidence on the sustainability of Reading Recovery effects is found in studies by Wasik and Slavin (1993) and Shanahan and Barr (1995). The study by Wasik and Slavin was a quantitative synthesis of four studies. The authors did not identify the criteria used to select each study. The researchers showed that Reading Recovery effects diminished from average effect sizes around 0.72 in the first year to an average effect size of 0.25 after the second year (Wasik & Slavin, 1993). Center et al. (1995) found a similar trend of significant gains during the intervention but less gains afterwards.

Several authors (Elbaum, Vaughn, Hughes, & Moody, 2000; Shanahan & Barr, 1995) attribute the positive short-term effects from Reading Recovery to flaws in Reading Recovery research, student selection, failure to control for regression to the mean effects and the omission of basic statistics, demonstration data, and the exclusion of students who did not complete their Reading Recovery lessons from the experimental sample. These are serious research design flaws that could jeopardize conclusions about the effectiveness of Reading Recovery. That stated, this evidence of gains during the intervention but diminishing effects during the following years seems to imply that Reading Recovery has immediate benefits but these benefits are not always sustained throughout a student's school experience.

Other Studies

Three other studies contribute to the understanding of the effects of Reading Recovery. The first is a meta-analysis of Reading Recovery in the United States, the second and third are studies about students who begin Reading Recovery but do not complete the program. Jerome D'Agostino and Judith Murphy (2004) conducted a meta-analysis of Reading Recovery in the United States. They analyzed 109 studies and concluded that 36 met the following criteria for inclusion in their meta-analysis: treatment fidelity was provided; the number of students in the treatment or comparison group was provided; the data were not duplicated in another study; pre or posttests scores were provided; the data were adequate to determine effect size; and a measure of reading achievement was provided. The studies were required to take place in the United States, could not be comprised of only Special Education students, and Reading Recovery had to be taught in English.

D'Agostino and Murphy (2004) found that Reading Recovery students whether or not they had successfully completed the program began with significantly lower pretest scores than low-achieving and regular students. While students who successfully completed Reading Recovery scored significantly lower on achievement tests when compared to regular students, they appeared to close the pre-post reading achievement gap. When compared to other students who had low pre-test reading achievement scores, the Reading Recovery group widened the gap from pre-test to post-test. The meta-analysis

also examined the sustainability of Reading Recovery effects beyond the first grade and found that Reading Recovery had lasting effects through the end of second grade and narrowed the gap between Reading Recovery students and regular second grade students at the end of second grade in broad reading skills (D'Agostino & Murphy, 2004).

Some studies have been conducted on the students who begin Reading Recovery but do not complete the program. Lyon (2003) found that Reading Recovery had an appropriate completion rate of 81% from 1984 to 1997 in the United States for students throughout the nation. In 2003-2004, according to the study by Gomez-Bellenge et al. (2005), 76 percent of students in the Reading Recovery program were successfully discontinued. However, including the students who began the program the percentage of discontinuation falls to a 59 percent (Gomez-Bellenge et al., 2005). Neither of these studies identified what percent of the students had identified disabilities, moved to another district, or did not make progress in their reading achievement after 20 weeks of Reading Recovery intervention. To imply that Reading Recovery was not effective the researcher would need to identify what percent did not make progress during the 20 weeks and were therefore dropped from the program.

Conclusion

In short, evidence strongly supports reading achievement gains of Reading Recovery students during the year of the interventions, but evidence is less conclusive about the sustainability of these initial gains. That stated, design

limitation make it difficult to rule out alternative hypotheses for achievement differences. D'Agostino and Murphy's (2004) meta-analysis of 36 studies of Reading Recovery in the United States summarizes this evidence. These researchers concluded that there is a paucity of well-designed studies on the effects of Reading Recovery. Effects of Reading Recovery must be considered in the context of the studies. Teacher quality and reasons for a student to be dropped from the program should be controlled for to determine effectiveness. Evidence does however, indicate that Reading Recovery has had positive effects on participating students across literacy outcomes (D'Agostino & Murphy, 2004).

Developmental First Grade

A transitional year added between kindergarten and first grade can have an impact on a student's reading ability if an effective reading curriculum is in place (Gredler, 1984). The research on an added year has been inconclusive with few well-designed longitudinal studies being conducted (Gredler, 1984). The problem with research on Developmental First grade is that programs vary across schools, districts and states. It is difficult to account for such variation in research designs.

In contrast to Reading Recovery, there is no standard approach to curriculum for Developmental First grade. The strength of an added year will come from the local school district. If a district has a strong reading curriculum that places emphasis on the strategies identified by the National Early Literacy

Panel, then students should improve in their reading skills. If, however, the school does not have a strong reading curriculum in place and each teacher does his/her own thing regarding reading instruction, it is unlikely reading skills will improve. Variability across different developmental grades makes valid assessments of an extra year difficult. For this reason, empirical and theoretical evidence on early literacy development will be examined in the context of the local school district's Developmental First Grade model.

The Developmental First Grade program in the district at the center of this proposed study has a well-defined reading curriculum, teachers are trained in Literacy First, and two and one half hours per day are devoted to reading. The language arts block includes shared and guided reading, silent sustained reading, word work, writers' workshop, and literacy centers. When guided reading is taking place, other students are involved in literacy centers that reinforce previously taught strategies and skills for automaticity. Automaticity refers to the ability to complete a task without thinking about it. For instance, one can read this sentence without having to sound out every word or struggle to comprehend the meaning of the words. Teacher assistants support teachers during guided reading by monitoring centers and interacting with students to enhance the learning process. Guided reading libraries, professional libraries and classroom libraries are utilized to support the reading program in the Developmental First class.

All classrooms in the school, including the developmental first grade, use the philosophy and strategies of Literacy First. Some of the principles of Literacy First include selecting a book to enable the student to read between 80 – 90% of the words, reinforce letter patterns, decoding, syntax, comprehension strategies, and assistance to students as they problem solve to decode and comprehend text (Pinnell & Fountas, 1989). As previously mentioned, alphabet knowledge, phonological awareness, rapid automatic naming of letters, numbers, objects, and colors, writing and phonological memory are necessary skills for literacy achievement (Lonigan, Schatshneider, & Westberg, 2008). These skills are met by the strategies of Literacy First. The following narrative describes how Literacy First supports the reading strategies identified by research of the National Early Literacy Panel.

Literacy Skills

The Literacy First strategy of conducting word study activities to teach letter patterns, words, and decoding is utilized in the Developmental First Grade class. Vocabulary activities also assist with the acquisition of phonological awareness and decoding and increase the visual perception of letters and words. The Developmental First grade teacher uses the strategy of introducing books to give the students a framework of meaning and visual clues to recognize words. The teacher also gives explicit instruction in word chunking and word attack strategies. These strategies have been identified by the National Early Literacy

Panel as effective literacy practices (Report of the National Early Literacy Panel, 2008).

Students in the Developmental First grade class have opportunities to develop automaticity in decoding so they are able to concentrate on comprehension. Teacher introduces new words to them before they read a new book and connects the new word with a familiar concept. The Developmental First grade teacher helps students select books that match their interest and reading ability. When students are interested in the subject of the story, they will be more motivated to comprehend the text (Report of the National Early Literacy Panel 2008). The teacher also gives explicit instruction in using pictures and familiar words in the text to assist with comprehension (Bridges, 1979; Smith, Landry, & Swank, 2000, 2006).

Literacy research identifies alphabet knowledge, phonological awareness, rapid automatic naming of letters, number, objects, colors, writing, and phonological memory as necessary skills for literacy achievement (Report of the National Early Literacy Panel, 2008). Literacy First principles guide literacy instruction in the Developmental First grade class to address identified literacy research strategies. The word study activities support alphabet knowledge, phonological awareness, phonological memory, and automaticity (rapid automatic naming of letters and words). Comprehension activities such as clarifying, summarizing, predicting and questioning the text are all explicitly taught in the Developmental First Grade class. As cited earlier, the National

Early Literacy Panel (2008) determined that comprehension had a moderate effect on reading success ($r = 0.52$, $p < 0.01$) (Schatshneider et al., 2008).

Developmental First Grade Research

Developmental first grade is an added year between kindergarten and first grade. The purpose of a transitional grade is to allow students another year to mature, to focus on reading and math skills, improve motivation, and instill a sense of responsibility (Uphoff, 1990). Oklahoma still uses the intervention method of providing students with an extra year. According to the State Department of Education, Oklahoma had 59 school districts in the year 2008-09 which used a transition or developmental year.

There are mixed results regarding studies for transitional programs like Developmental First grade. Some studies have found initial achievement differences that favor the transition experience, but these differences diminish over time (Banerji, 1989, 1991; Brent, DiObilda, & Gavin, 1986). Malone-Duty (1992) conducted a study using the California Achievement Test and followed students who attended a pre-first grade and students who did not. The non-pre-first students outscored their peers by an average of 7.4 points on the reading portion of the California Achievement Test beginning in the third grade. These non-pre-first grade students continued this same pattern and outscored their peers from the third grade through the tenth grade.

Mantzicopoulos (2003) conducted a study of a transition program for a middle-class, high achieving and affluent suburban school in the Midwest. His

study followed students through the third grade. Students who participated in the developmental transition program preceding the first grade showed some academic and socio-emotional advantages over their peers who had been recommended for the program but whose parents had refused to allow them to be placed there. The effects across comparisons of social skills and behavior problems indicate that the observed differences between the groups were not statistically significant (Mantzicopoulos, 2003). Students who attended the transitional class performed better on the reading and mathematics subtest of the achievement test administered each year than their peers who were referred but did not attend. This achievement difference was statistically significant the first year in both reading and math and continued to be statistically significant each year in math; however, the size of the difference decreased after years two and three (Mantzicopoulos, 2003). By third grade, the transition group did not differ in reading achievement. The benefits of the transitional grade seem to diminish after the third grade.

Mantzicopoulos (2003) attributes the success of the transitional class students to the developmental, child-centered curriculum of the local school district (Mantzicopoulos, 2003). Mantzicopoulos contends that other studies which found that a transitional class did not lead to positive results were a result of the curriculum used in the transitional classes. Mantzicopoulos captures the dilemma of transitional classes well when he postulates that it is not possible to determine the context under which positive or negative results occur since many

of the added year studies fail to include information on the instructional environments of those programs

Gretzula (2007) conducted a study in a suburban school district in Pennsylvania for his dissertation and found that the pre-first grade program was beneficial for the social, emotional, and academic development of the students (Gretzula, 2007). Other studies have found no achievement differences between transition-placed and transition-eligible children (Dennebaum & Kulberg, 1994; Ferguson, 1991; Matthews, May, & Kundert, 1999; May & Welch, 1984). Lawrence Wang and Witcomb Johnstone (1997) conducted a four-year study in Texas in the late 1990's regarding the impact of developmental first grade. They found that student achievement did not improve as a result of having an extra year of instruction as compared to students who did not receive the extra year. . Wang and Johnstone (1997) did not articulate the curriculum of the developmental first grade class which would impact the effectiveness of an added year. Shepard (1989) conducted a review of sixteen controlled studies regarding an extra year of schooling. Shepard concluded that the extra year of schooling made no academic difference between students who participated in the extra year and those who did not. He also found that the reason a student was placed in the transition program made no difference in the student outcomes (Shepard, 1989). Again, one wonders if the curriculum was well defined and developmentally appropriate would the extra year have been a benefit to the students.

Ferguson (1996) conducted a longitudinal study and followed a pre-first grade school readiness population through eighth grade to identify contextual factors associated with student progress (Ferguson, 1996). He found that the pre-first grade students underachieved relative to all other subgroups from second grade forward and were placed in special education more often than those students who had not attended the pre-first grade program. Francis, Shaywitz, Stuebing, Shaywitz, and Fletcher (1996) compared students with transitional services to students who had none and concluded that any student, either in the transitional grade or not, who was a poor reader at the end of the first grade almost never became a proficient reader (reading on grade level) by the end of elementary school (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996). Amanda Reenders (2006) also conducted a study for her dissertation, An Analysis of Developmental Kindergarten and Pre-First Program and Their Effects on Academic and Behavior Outcomes, and no academic benefits were found for the students who attended the developmental kindergarten program as compared to students who did not attend an additional year (Reenders, 2006).

In short, Developmental First grade does not have a mandated state or national curriculum and therefore each school district designs their program. Without the structured curriculum and required teacher training that Reading Recovery demands, Developmental First grade student achievement cannot be validly compared across schools. The strength of a Developmental First grade depends on the local curriculum and teacher training.

Conclusion

Chapter two presented a review of literature and research related to Reading Recovery and Developmental First grade programs in order to evaluate the evidence on the effectiveness of both interventions. The evidence for Reading Recovery suggests a short-term reading achievement benefit but the effects fade during the subsequent grades. It is also important to note that limitations in research designs raise attributional questions about reading differences and the performance of students who do not complete the program. The evidence for improving reading achievement by providing Developmental First grade is mixed. Since there is no defined curriculum for a transitional year either between kindergarten and first grade or between a pre-kindergarten and kindergarten class, research is not definitive regarding the benefits of an added year. Next, logic models for Reading Recovery and Developmental First in the local district are presented and described.

CHAPTER THREE

CONCEPTUAL FRAMEWORK

Introduction

The purpose of this chapter is to provide a conceptual blueprint for the two reading interventions that are the object of the study. Logic Models are used to identify the primary components of each intervention and to depict how these components are assumed to be related to the outcome of interest, reading achievement. A challenge of evaluation studies is to address the question of attribution (McDavid & Hawthorn, 2006). That is, to what extent are outcomes attributed to program characteristics. The attributional question is more of a challenge in this study given the shared features between the two interventions. In spite of shared features, there are differences in the two interventions that are illustrated and described in the following logic models. The logic model for Developmental First is presented and explained first followed by Reading Recovery.

Developmental First Logic Model

This local school district spends about $3,166.67 per student to offer Developmental First for 15 students per school year. Developmental first grade is an added year between kindergarten and first grade. The purpose of a transitional grade is to allow students another year to mature, to focus on reading and math skills, to improve motivation, and to instill a sense of responsibility in students (Ilg, Ames, Haines, & Gillespie, 1978; Uphoff, 1990). The school

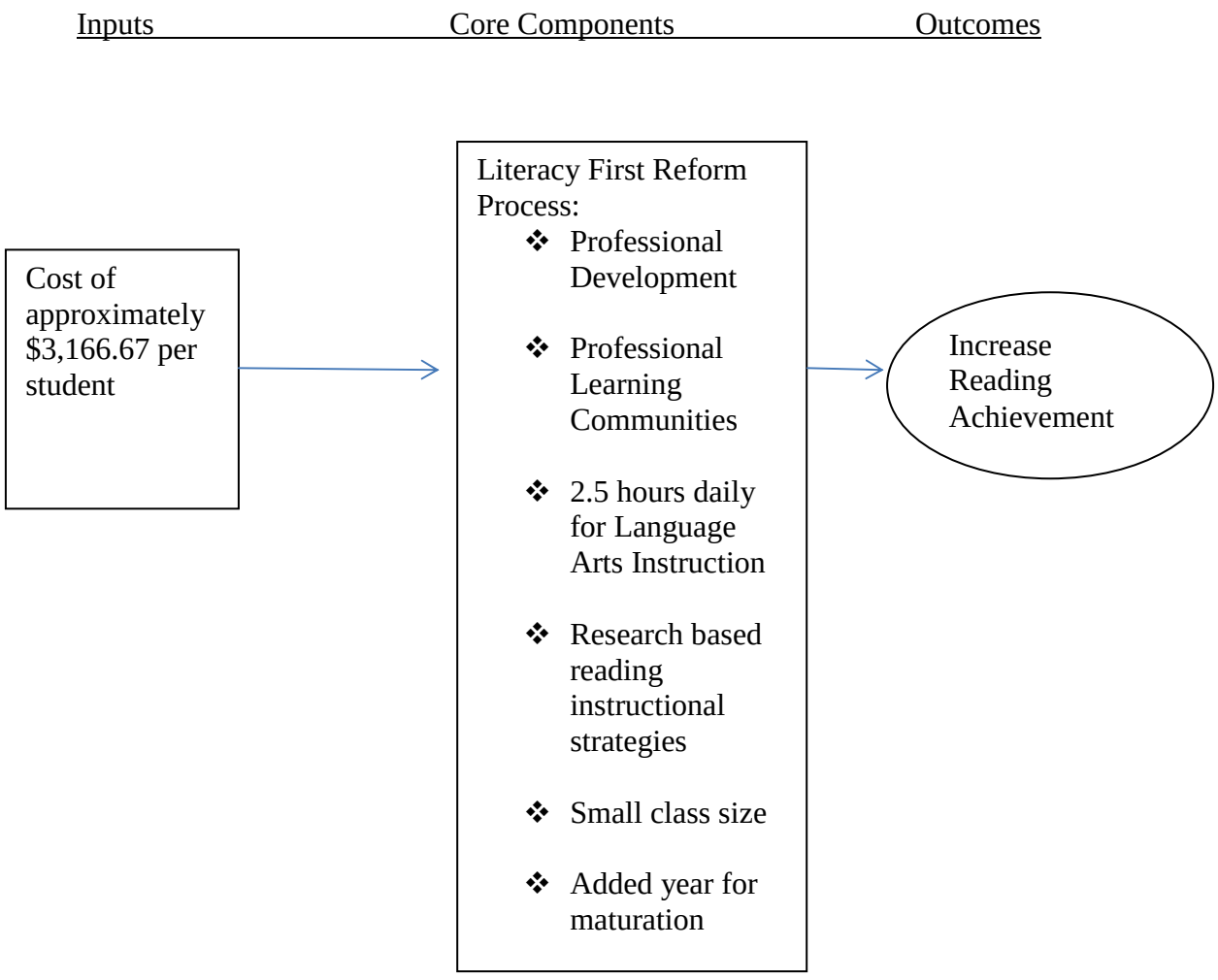
district uses a curriculum based on the second semester of kindergarten and the first semester of first grade. The added year of Developmental First is not considered retention because students are taught a new curriculum and they do not just repeat the curriculum of kindergarten. The specific components of the local district's Developmental First intervention are described in the following paragraphs.

Figure one displays the components of Developmental First Grade in the local school district. As indicated in the model, the intervention follows the components of Literacy First. In 2001-2002 this local elementary school became a Literacy First Phase Four school. Every teacher attended eight days of professional development, a literacy coach was hired, and a consultant worked with the leadership team to effectively implement a 3-year Strategic Reading Plan. The staff began using Literacy First assessments, which quickly changed the instructional focus. Report cards were changed to reflect specific reading skills allowing parents to become more involved in their child's education. Guided reading, shared reading and independent reading were started in every classroom. Teachers began using word walls and doing word work with their students. Grade Level meetings (Professional Learning Communities) focused on the needs of students, the literacy coach provided the best practices for teachers and teachers began sharing their knowledge with one another. Leveled reading books were purchased to develop a literacy library that all teachers used in guided reading. Professional literacy study groups were started to increase

the knowledge of teachers, and the whole staff became intent on producing strong, independent readers. The guiding principles of Literacy First provided the direction of Developmental First in the absence of state and national guidelines.

Figure One: Logic Model

Developmental First Grade Logic Model for the Local School District



All classrooms, including the developmental first grade use the philosophy and strategies of Literacy First. Some of the elements for Literacy First are articulated below:

1. Select books purposely to enable the students to read 16-18 of each 20 words.
2. Conduct word study activities to reinforce letter patterns, words, decoding, syntax, etc.
3. Introduce text by giving a framework of meaning and visual information to enable students to have success as they process text.
4. Assist students as they problem solve with as little teacher input as necessary.
5. Reinforce students as they use effective problem solving without breaking their reading momentum.
6. Make observational notes to use for re-teaching and determining which skill to teach.
7. Use same text to reinforce important reading skills or concepts.
8. Complete word study activities to teach letter patterns, words, decoding, syntax, etc.
9. Complete vocabulary activities to enable students to understand unknown words.

10. Complete comprehension activities such as clarifying, summarizing, predicting and questioning (Pinnell & Fountas, 1989).

Literacy First borrows from existing literacy research and provides professional development that is sustained and capacity building across the five components of effective reading instruction: phonemic awareness, phonics and word study, vocabulary, comprehension and fluency (Report of the National Reading Panel, 2000). All elementary grades, Kindergarten through third, provide two and a half hours of Language Arts. Both Reading Recovery and Developmental First grade are delivered within this larger literacy culture provided by the principles of Literacy First.

The administration has been supportive through this process and has hired teacher assistants to serve each classroom during guided reading and supplied funding for other necessary components. Teachers now reflect on their teaching and teach with purpose allowing students to succeed. As a Phase Four, Literacy First School, students enjoy the benefits of research based literacy instruction. The Literacy First components of professional development, professional learning communities, a 2.5 hour block of literacy instruction, and research based reading instructional strategies combine to increase reading achievement for students. Developmental First also adds the benefit of smaller class size and an added year for students to mature. Evidence on the benefit of the Developmental First is considered next.

Small Class Size

Class size is differentiated as follows: a small class would have 13-17 students and a larger class would have 22-26 students in an elementary school. The class size research has been inconclusive with some studies showing that small class size had a positive effect for minority students (Finn & Achilles, 1990) while other studies show no evidence of a smaller class size benefiting students (Nye, Hedges, & Konstantopoulos, 2000). This local school keeps the class size below 15 students for the Developmental First Grade while the traditional first grade classes have 18-22 students. The small class size makes it easier for teachers to manage student performance to provide more individual help for students. Differentiation and individualization are crucial for students reading below grade level (Finn & Achilles, 1990).

Professional Development

Teachers make a difference in student achievement. Barbara Nye, Spyros Konstantopoulos, and Larry Hedges (2004) conducted a study utilizing data from a four-year experiment where teachers and students were randomly assigned to classes to measure teacher effects on student achievement. The findings from their study indicated that a one standard deviation improvement of teacher quality results in one-third to one-half standard deviation increase in student achievement (Nye et al., 2004). Another finding from Nye et al. (2004) was that teacher effects were larger than school effects on student achievement. Several studies show a strong relationship between teacher practices and

academic achievement in reading, mathematics, science and social studies (Boreman & Kimball, 2005; Gallagher, 2004; Heneman, Milanowski, Kimball & Odden, 2006; Holtzapple, 2003; Kimball et al., 2004). The professional development and professional learning communities at the local school district can improve teacher effectiveness which in turn improves student achievement.

A study by Susan Neuman and Linda Cunningham (2008) examined how professional development effected teacher knowledge and early language and literacy practices. Their study included participants from 291 sites. These sites were both home based and early childhood centers from four different cities. The participants were randomly selected to one of three groups. The first group of teachers received a course in early language and literacy. The second group received the same course in addition to ongoing coaching. The third group was the control group and did not receive the course or coaching. Neuman and Cunningham (2008) found there were significant improvements in literacy practices for teachers who participated in professional development and continuing coaching. As a Phase IV Literacy First school, the Developmental First teachers participate in ongoing literacy professional development activities.

The Eisenhower Professional Development Program (Garet et al., 2001) developed a model for effective professional development. This model has since been validated in several different contexts (Desimone, Porter, Garet, Yoon, & Birman, 2002; Garet et.al., 2001; Penuel, Fishman, Yamaguchi, & Gallagher, 2007). The Eisenhower Professional Development Program

identified three core features of effective professional development and three core structural features. The core features of effective professional development are: focus on content, active learning, and coherence. The structural features are: collective participation, form and duration. These core ideas mesh well with the standards articulated by the Association of Supervision and Curriculum Development (ASCD). Those standards for effective professional development are: 1) focused on helping to achieve student learning goals; 2) collaborative endeavor; 3) school-based and job-embedded; 4) long-term commitment; 5) differentiated; 6) tied to district goals (Association for Supervision and Curriculum Development, 2002). The professional development provided by the district focuses on literacy strategies, individual student achievement, and a coherent district literacy curriculum.

The most effective component of professional development used for Developmental First grade is participation in Professional Learning Communities where specific components of early literacy are studied and modeled along with yearly workshops of literacy strategies. Professional Learning Communities focus on literacy strategies in the local school. Teachers meet weekly to discuss literacy strategies from research literature. They model the techniques in their classroom before their peers and their principal. This continual learning environment enhances the quality of teaching in the local school district. Doppelt et al. (2009) linked professional learning communities to improved student achievement. Rosenholtz (1989) found that teacher

collaboration in professional learning communities was a strong predictor of student achievement gains in reading and math.

Maturation

Students who have an extra year of school as a result of attending Developmental First grade are allowed an extra year to mature. Malcolm Gladwell discusses the idea of maturity and success in sports and academics in his book, Outliers. Gladwell refers to a study by Kelly Bedard and Elizabeth Dhuey which found that fourth grade students who were oldest scored between four and twelve percentile points higher than the youngest fourth grade students on the Trends in International Mathematics and Science Study (TIMSS) assessment (Gladwell, 2008). Gladwell found that this maturity advantage lasts into college. Dhuey and Bedard (2006) analyzed college reports and found that the youngest group of students in a class was underrepresented by 11.6 percent (Gladwell, 2008).

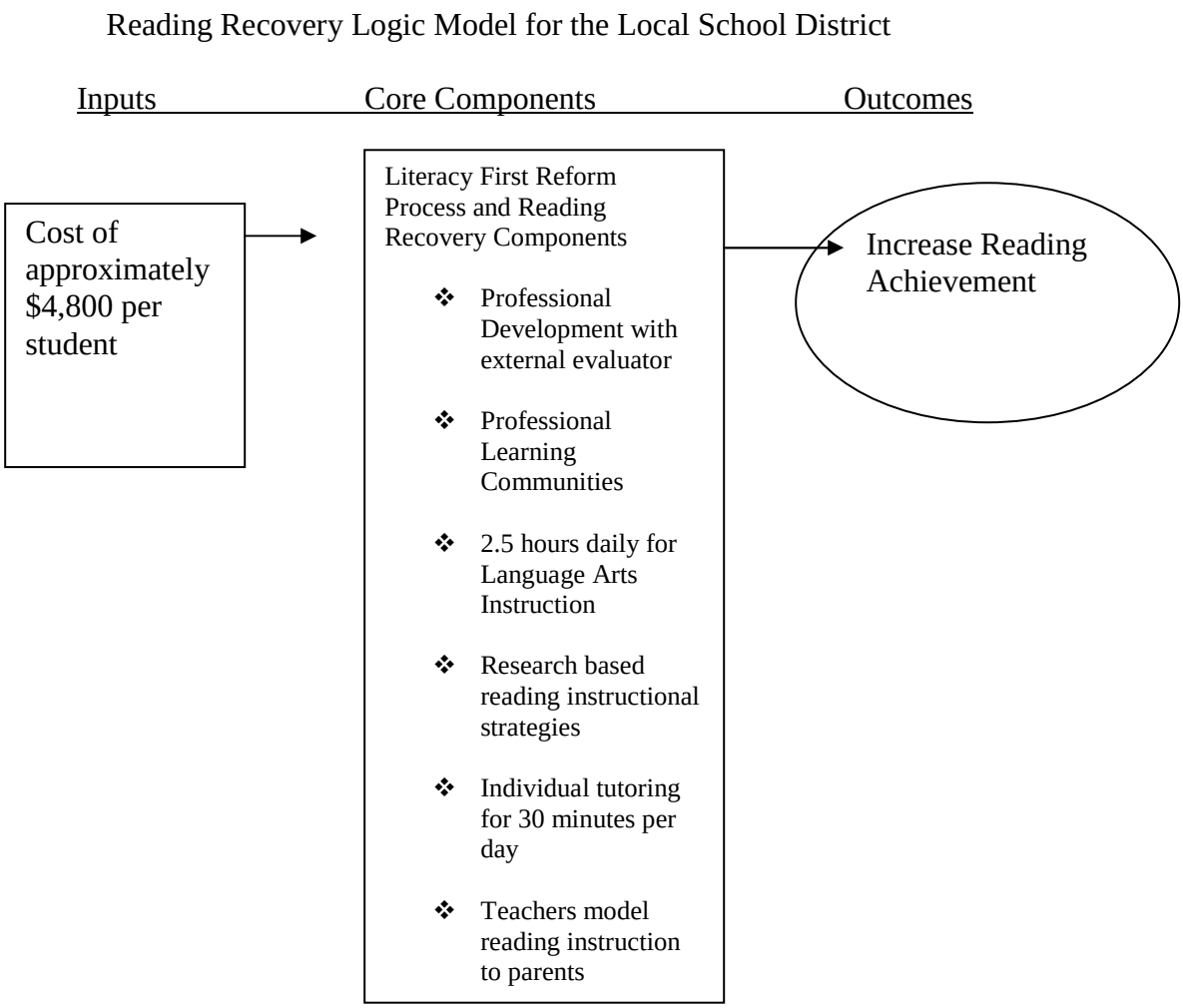
. The Developmental First grade not only used the strategies from Literacy First but also dedicated two and a half hours per day for reading instruction. The students in Developmental First grade received benefit from an extra year of reading instruction and another year to mature emotionally, physically, and academically. The logic model for Reading Recovery will be presented in the next section.

Reading Recovery Logic Model

This local school district began using Reading Recovery in 1998. They began by training one teacher. They now have three teachers who are dedicated to providing Reading Recovery to first grade students. The cost to the school district for providing Reading Recovery is about $4,800.00 per student. Each teacher serves 8 to 12 students per year. The school district follows the Reading Recovery protocol during each thirty- minute instructional session.

This local school district is a Literacy First Phase IV school and therefore students receiving Reading Recovery intervention also have a strong research based literacy curriculum in place in their regular classroom. Reading Recovery utilizes professional development with accountability provided by an external evaluator, professional learning communities, research based reading instructional strategies, individual daily tutoring, and teacher/parent collaboration along with two and a half hours of daily classroom language arts instruction. The logic model for Reading Recovery is displayed in Figure two.

Figure Two: Logic Model



Professional Development and Professional Learning Communities

The Reading Recovery teachers participate in Reading Recovery professional development activities called "continuing credit". This enables them to continually hone their craft under the supervision of a Reading Recovery teacher-trainer. Teachers must teach a lesson while the trainer

observes their techniques behind an observational mirror. This added accountability helps to ensure the fidelity of Reading Recovery interventions.

The professional development and professional learning communities required by Reading Recovery meet the goals set forth by DuFour (2004) related to effective professional development: focus on content, active learning, and coherence. Teachers are partnered with a reading specialist for an entire school year. The teacher watches experienced teachers "behind the glass" as they give individual student instruction. Then the teacher demonstrates to the "expert" as he/she gives individual student instruction "behind the glass". The reading instructor then helps the teacher reflect on their practice and improve instruction. These professional development activities are linked to the district's overall goal of literacy.

Professional Learning Communities have been linked to improved student achievement (Doppelt et al., 2009). In a two year evaluation of the impact of professional learning communities, Doppelt et al (2009) found that students whose teachers participated in professional learning communities had a one standard deviation advantage in their achievement over students whose teachers did not participate in professional learning communities. Rosenholtz (1989) conducted a large-scale statistical analysis of the relationship between professional learning communities and student achievement and found that teacher collaboration was a strong predictor of student achievement gains in

reading and math. These gains were measured over a three year period from a sample of 78 elementary schools in eight different school districts.

Teacher models reading instruction to other teachers and parents

The practice of ongoing coaching for Reading Recovery teachers and coaching of classroom teachers in grade level professional learning communities help teachers at the local school district improve their literacy instruction. Reading Recovery teachers not only mentor their fellow teachers, but they also mentor parents as they meet with them and give them specific reading strategies to meet their child's particular reading difficulty. Teachers in the local school request coaching by the Reading Recovery reading specialists to aid them in their professional growth and help them with literacy strategies for students not reading on grade level. Tschann-Moran (2010) argues that effective instructional coaching is valuable for improving teacher quality and instructional effectiveness. There is evidence that social factors can place students at risk of entering school with a deficit in literacy skills (Hart & Risley, 1995; Hoff, 2006; Leseman & Van Tuijl, 2006). Three risk factors are: 1) Parents with limited educational and economic resources (Dickinson, McCabe, & Essex, 2006); 2) Students' ethnicity or first language is not the majority culture (Dickinson et al., 2006); and 3) Parents do not use conversations conducive to developing early literacy skills (Dickinson et al., 2006). Home, not school, has a more significant affect on the size of a child's vocabulary by the end of second grade (Cantalini, 1987; Christian, Morrison, Frazier, & Massetti, 2000). This dilemma highlights

the importance of schools and parents working together to ensure that children have the opportunity to become effective readers.

A meta-analysis conducted by the National Early Literacy Panel (2008) indicated that parent education programs yielded a moderate to large effect on general cognitive ability and oral language outcomes of students. Interventions with the greatest success included the developers of the intervention delivering the instruction to parents or the developer of the intervention closely supervising the person delivering the instruction. Reading Recovery uses the teacher who works directly in Reading Recovery tutoring with the student to instruct the parent in the same strategies they use during the 30-minute per day intervention.

Individual tutoring

Reading Recovery offers a specific guideline for the daily 30-minute instruction. These reading strategies were discussed in the Principles of Reading Recovery section of the Literature Review. Since students receiving Reading Recovery will also have the benefit of the Literacy First literacy instruction, the difference between Reading Recovery and Developmental First will be the 30-minute daily individual tutoring, an external evaluator to ensure the fidelity of the program, and coaching of parents and classroom teachers to provide continuity of the Reading Recovery literacy strategies. Students enrolled in Developmental First will have an extra year of reading instruction. However, it will be in small groups; whereas, Reading Recovery students will have individual daily tutoring.

Additional Time for Reading

In the local school district all students have a 2.5 hours block of time for literacy instruction and activities. The students enrolled in Reading Recovery also have an extra 30 minutes per day of individualized tutoring. This individual 30 minute block allows the Reading Recovery teacher to tailor literacy instruction to the student's needs. This one-on-one time also helps the student focus, and they will gain more insight than when instructed as part of a classroom group or small group. A meta-analysis conducted by Elbaum et al. (2000) measured the effectiveness of one-to-one tutoring programs for reading. They concluded that additional time in tutoring had a mean weighted effect size of 0.41 when compared with the control students (Elbaum et al., 2000).

Summary

There are three major differences between Reading Recovery and Developmental First. The first is the intensive professional development provided by the teacher leader who observes the Reading Recovery teacher "through the glass" as they instruct their students. This teacher leader is external to the school district. Secondly, Reading Recovery also provides individual tutoring for 30 minutes a day while the Development First students are taught in small groups. The third difference between the two interventions is that Reading Recovery teachers meet with the parents to provide individualized instructions regarding reading strategies that the parent is asked to provide at home during their fifteen minute a day home reading assignment.

Chapter three presented and described the theories of action for Reading Recovery and Developmental First grade. The purpose was to align components of both interventions with evidence on the achievement effects attributed to program components. Chapter four describes the research methods used in this program evaluation.

CHAPTER FOUR

RESEARCH METHOD

Introduction

The purpose of this evaluation was to provide a school district with information regarding the short and long-term benefits of Reading Recovery and Developmental First grade. The research was retrospective in design. That is, the researcher used historical achievement data from the school years 2002-2003 through 2008-2009. The district has been using Reading Recovery and Developmental First grade as literacy interventions since the 1998 school year. However, because of budget cuts, it cannot afford to keep both programs. The superintendent and principals will use the results of this study to assist in the evaluation of each program.

This evaluation addressed the following questions:

1. Is there a short-term difference in the reading performance between Reading Recovery and Developmental First grade students?
2. Is there a long-term difference in reading performance of students who had Reading Recovery or Developmental First grade?
3. What is the observed benefit of each program relative to its cost?

Research Design

The design of this study was a theory-based program evaluation that drew on ex post facto data. Data were based on historical reading achievement records. The theory-based evaluation design enables explanations of observable outcomes to be based on the assumptions and evidence underlining interventions (Creswell, 2007). Relative to traditional evaluation models that assess the degree to which intended outcomes resulted from the intervention, theory-based models can be used to explain findings. This study tested whether or not there was a difference in reading growth that could be attributed to either the Reading Recovery intervention or Developmental First Grade. The independent variable was the specific reading intervention students were exposed to; it was measured on a dichotomous scale with students either in Reading Recovery or Developmental First grade. The dependent variable was reading growth and it was measured as a continuous variable over time.

District Population

In 2009, the rural school district in northeastern Oklahoma had a student population of approximately 1,900 students with 476 students at the elementary PK- second grade school. The elementary school had a 51.65 percent free and reduced lunch rate compared to a district percentage of 41.73. The district had a graduation rate of 94 percent. The student population in the district consisted of 47.6 percent American Indian, 45.72 percent Caucasian, 4.38 percent Hispanic, 2.3 percent African American, and 0 percent Asian.

Data Source and Sampling

Students were the unit of analysis for the study. Criterion sampling was used to sample students who had either Reading Recovery or Developmental First grade and remained in the local school district through their eighth grade year. Criterion sampling involved using all the population that met a specific criterion (McDavid & Hawthorn, 2006) while random sampling used a complete list of the population and randomly chose a subset to study (Aron, Aron, & Coups, 2005). Student characteristics that could confound results were controlled through the analytical process. Socio-economic status was measured by whether or not the student qualified for the federal lunch subsidy. Students not receiving the lunch subsidy were coded as 0 and students receiving the subsidy were coded as 1. Female students were coded a 0 while male students were coded a 1.

With a study on individual change over time, data was multi-level with testing periods nested in students. Reading scores at testing periods varied as a function of a student's growth trajectory and personal characteristics of the student (Raudenbush & Bryk, 2001). The reading intervention students were exposed to was the primary student characteristic this evaluation was interested in.

Measures

Two different reading measures were used to assess achievement differences between Reading Recovery and Developmental First students: Developmental Reading Assessment (DRA) and the STAR reading test. The DRA assesses accuracy, fluency, and comprehension and was administered from kindergarten through second grade. The DRA is a group of individually administered criterion-referenced reading assessments for students in kindergarten through eighth grade. It is administered and scored by classroom teachers and is intended to identify the independent reading level of a student. The target DRA score for beginning second grade students is an 18. DRA scores were used to answer the first research question regarding the short-term difference in reading achievement.

The STAR reading assessment assesses reading comprehension. It is administered twice a year beginning with the second grade. The STAR reading assessment is a computer adaptive test that selects every item based on student performance on previous items. The target STAR reading score for students ending the second grade is 348 or a 3.0 grade equivalence level. STAR data are used to answer the second research question regarding the long-term reading achievement for students in either Reading Recovery or Developmental First grade.

Financial information to answer the third research question regarding the benefit of each reading intervention relative to the cost to the district was

obtained from district expenditure reports for salaries and training costs for Reading Recovery and Developmental First grade. The costs were divided by the number of students served by each program on a yearly basis.

Benefits from Reading Recovery and Developmental First grade were derived from the linear growth models used to determine short and long-term reading achievement gains. The school district received benefits from the Reading Recovery program that cannot be measured solely by reading achievement gains made by students. The Reading Recovery teachers serve as mentors for classroom teachers, provide leadership in the Professional Learning Communities, and serve as a literacy resource for the school district.

Analytical Technique

The primary research questions were addressed by testing linear growth models using H.L.M. 6.4. Linear growth modeling assessed variation around the average reading growth of students. Growth models assumed that residuals were normally distributed and constant, that level I and level II residuals were not correlated, and that the observations at the highest level were not correlated (Raudenbush & Bryk, 2001). Changes in reading achievement were modeled across four testing periods with DRA data and eight testing periods with STAR data. Level II student characteristics, such as SES, minority status, gender and reading intervention were included as predictors of reading growth. This allowed for the plausible effects of other student characteristics on reading growth to be accounted for.

The first analytical step was to examine the variability of reading growth across testing periods with an unconditional random coefficient regression model. This model allowed variance in reading growth to be partitioned between time period and student characteristics. Results of the random coefficient model provided a mean achievement trend for students and an estimate of the level two variability around the mean achievement trend. The random coefficient regression was modeled as:

$Y_{ti} = \pi_{oi} + \pi_{1t}a_{ti} + e_{ij}$

$\pi_{oi} = \beta_{00} + r_{oi}$

$\pi_{1t} = \beta_{10} + r_{1i}$

Where:

Y_{ti} = Is the observed status at time t for student i

π_{oi} =The true ability of student i at time = 0

π_{1t} = The growth rate for student i across the testing periods

e_{ij} = error

The second model was to test the individual variation around changes in reading growth by using an intercepts and slopes as outcomes model. The purpose of this model was to use student characteristics to predict achievement changes. Using SES and Reading Recovery as an example, the intercepts and slopes as outcomes was modeled as:

$\pi_{oi} = \beta_{00} + \beta_{01}\,(SES) + \beta_{02}\,(RR) + r_{oi}$

$\pi_{1t} = \beta_{10} + \beta_{11}\,(SES) + \beta_{22}\,(RR) + r_{1i}$

Where:

β_{01} = Is the poverty effect on reading achievement at time period 1.

β_{02} = Is the RR effect on reading achievement at time period 1.

β_{11} = Is the poverty effect on changes in reading achievement over time.

β_{22} = Is the RR effect on changes in reading achievement over time.

Threats to Validity

Potential threats to validity of findings largely consisted of differences in student characteristics such as prior achievement levels, minority status, and economic conditions. The study controlled for differences in student characteristics by including these variables in the models and accounting for their unique effect on reading growth. Also of concern was the grade gap between students in the reading interventions. Students in Reading Recovery and Developmental First entered kindergarten together but then were separated in first grade. This grade difference was accounted for by considering the curriculum effect on student performance in the analysis of findings. Finally, because the data were historical records there was no way to control for teacher differences.

Summary

DRA reading scores were used to answer the first research question regarding the short-term reading achievement of students enrolled in either Reading Recovery or Developmental First grade. The STAR reading

assessment scores were used to address the second research question regarding the long-term reading achievement for the Reading Recovery and Developmental First grade students. District expenditure reports were used to address the cost for Reading Recovery and Developmental First grade. Chapter Five will provide an analysis of the research data.

CHAPTER FIVE

ANALYSIS OF DATA

Introduction

This theory-based program evaluation investigated differences in reading achievement for students receiving Reading Recovery or Developmental First Grade as a reading intervention. The study utilized DRA and STAR reading assessments. Findings from the descriptive analysis were reported first followed by evidence addressing the research questions.

Findings

Descriptive Statistics

Descriptive statistics were used to describe level one and level two variables; that is, reading achievement over time (level I) and student data (level II). Level one data (Table One) reflected the average reading achievement as measured by DRA over four testing periods and the reading achievement as measured by the STAR reading assessment from second grade through the school year ending in 2009. A mean of 15.78 represented the average DRA score across the four testing periods. A mean of 467.6 represented the average STAR reading score across six testing periods.

Table One: *Level One Descriptive Statistics*

	N	Mean	SD	Minimum	Maximum
DRA	788	15.78	9.21	0.00	38.00
STAR	1086	467.6	249.64	22.00	1319.00

Level two data (Table Two) are student characteristics and reflect the socioeconomic status, minority status, gender, reading intervention group, and students on an IEP. A mean of 0.39 for SES indicates that approximately 40 percent of the students in the sample qualified for the lunch subsidy. A mean of 0.55 indicated that approximately 55 percent of the students were minority. In the district from which data were collected, Native American students represent 48 percent of the total student population. A mean of 0.59 for gender indicates that there was a close distribution of males and females in the sample with males out numbering females. A mean of 0.06 for IEP indicates that 6 percent of the students in this sample had an IEP, this is a relatively small portion of the sample. A mean of 0.51 indicates that 50 percent of the sampled students received Reading Recovery and another 50 percent received Developmental First grade as a reading intervention.

Table Two: *Level Two Descriptive Statistics*

	N	Mean	SD	Minimum	Maximum
SES	195	0.39	0.49	0.00	1.00
Minority	195	0.55	0.50	0.00	1.00
Gender	195	0.59	0.49	0.00	1.00
Cluster	195	0.51	0.50	0.00	1.00
IEP	195	0.06	0.23	0.00	1.00

Short-Term Reading Achievement

The first research question regarding short-term reading achievement for students enrolled in Reading Recovery or Developmental First grade was addressed by testing an unconditional random effects regression model with DRA scores as the dependent variable. Results from the unconditional random effects regression model was used for the following purposes: 1) to examine changes in reading achievement across four testing periods for students in Reading Recovery and Developmental First Grade; 2) to access achievement differences attributed to reading intervention at the baseline year; and 3) to determine if changes in reading achievement differed across students. Table Three reports the final variance components of the unconditional model, which estimates differences in achievement growth across students. Results suggest that there were no significant differences in reading growth attributed to student characteristics ($\chi^2 = 101.07$, $p > 0.05$). That is, students in the Reading Recovery

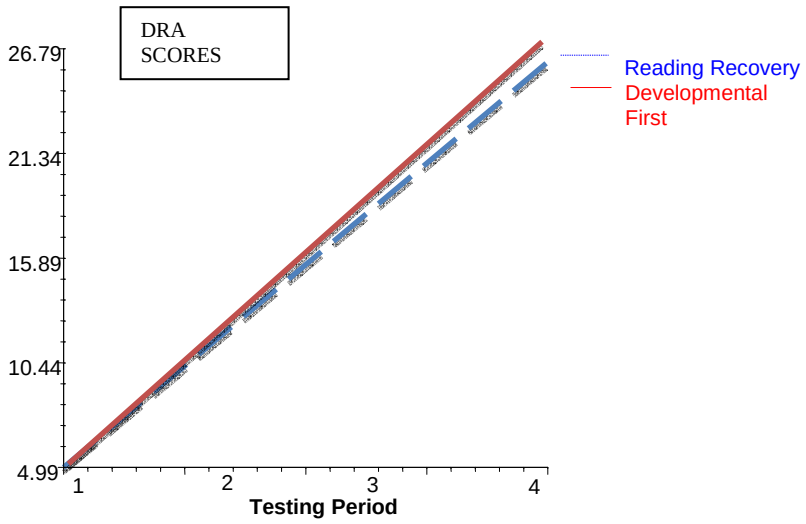
and Developmental First had similar achievement trends over the four testing periods. Similarly, reading growth did not differ significantly from other student background characteristics.

Table Three: *Final estimation of variance components*

Random Effect	Standard Deviation	Variance Component	df	Chi-square	P-value
Intrcpt 1	2.03	4.11	194	374.62	0.00
TstTPSlo	0.59	0.35	194	101.07	>0.50
Level-1	4.09	16.7		101.23	

The graph in Figure three illustrates the average reading growth for Reading Recovery and Developmental First Grade students on their DRA assessment during first and second grades. As indicated in the graph, the average growth trajectory nearly overlaps for both groups. The slope and direction of the line represents the average growth of both groups over four testing periods. Average reading gains for students receiving Reading Recovery were similar to reading gains for students receiving Developmental First.

Figure Three: Average reading growth as measured by DRA in grades one and two.



A random coefficient regression model was used to test for student differences in DRA scores at time period one. Even though these results do not address the first evaluation question, the researcher was interested in determining if there were differences in reading achievement attributed to student background characteristics. Results (Table Four) suggest that average reading achievement did not differ between the two intervention groups at testing period one ($\beta_{03} = 0.36$, $p = 0.33$). Results did indicate a significant difference in DRA scores at the first testing period between minority and non-minority students ($\beta_{02} = -1.05$, $p < 0.01$). Of the independent variables, minority status was the strongest predictor of differences in reading achievement with minority students scoring on average 1.05 points behind non-minority

students. There were no other significant achievement differences attributed to student characteristics.

Table Four*: Fixed Effects for Reading Achievement on DRA at testing period one*

Fixed Effect	Coefficient	Standard Error	T-Ratio	df	Approx P-Value
INTRCPT	16.15	0.36	44.36	191	0.00
SES	-0.23	0.38	-0.60	191	0.55
Minority	-1.05	0.38	-2.80	191	0.01*
Reading Inter.	0.36	0.37	0.97	191	0.33
Gender	0.11	0.42	0.25	191	0.80

Note * $p \leq 0.01$

A similar random coefficient model was tested with the intercept set at the fourth testing period. This model tested for achievement differences in student background characteristics at the fourth DRA testing period. Results were similar to findings from test period one. There were no significant achievement differences between Reading Recovery and Development First students. The achievement difference between minority and non-minority students remained constant with minority students scoring on average 1.05 points lower than non-minority students ($\beta_{02} = -1.05$, $p \leq 0.01$).

Table Five*: Fixed Effects for Reading Achievement on DRA at testing period four*

Fixed Effect	Coefficient	Standard Error	T-Ratio	df	Approx P-Value
INTRCPT	27.41	0.56	49.38	191	0.00
SES	-0.18	0.38	-0.49	191	0.63
Minority	-1.05	0.38	-2.78	191	0.01*
Reading Inter.	- 0.12	0.09	-1.4	191	0.16
Gender	0.19	0.37	0.50	191	0.62

Note * $p \leq 0.01$

In conclusion, the evidence suggests that there were no significant differences in short-term reading growth between Reading Recovery and Developmental First students. The average student in both interventions gained in reading ability over the four testing periods. A difference in reading achievement was found between minority and non-minority students at the first testing period. This difference remained at the fourth testing period.

Long-Term Reading Achievement

The second research question on long term reading achievement was addressed by testing a random effects regression model with performance on the STAR reading test as the outcome variable. In contrast to short term achievement difference, long term reading achievement did differ significantly by student characteristics ($\chi^2 = 734.15$, $p < 0.01$). With a difference established,

it was important to compare the average long-term reading growth of Reading Recovery students with the average long-term reading growth of Developmental First students. Results (Table Six) show that the rate of growth was significantly higher for the average Developmental First student than the average Reading Recovery student ($\beta_{22} = -59.53$, $p < 0.01$). This suggests that the rate of long-term reading growth was better for Developmental First students than Reading Recovery students.

Table Six*: Fixed Effects for Long-term Reading Achievement Growth*

Fixed Effect	Coefficient	Standard Error	T-Ratio	df	Approx P-Value
INTRCPT	144.17	5.39	26.74	223	0.00
Read Recov	-59.53	5.89	-10.12	223	0.00

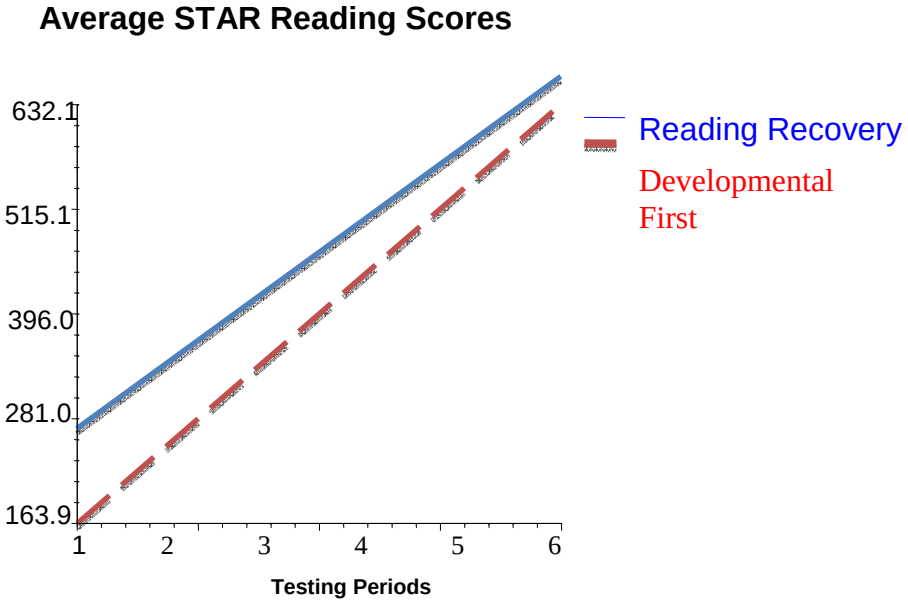
The next test was to determine the net effect of Developmental First on reading growth after controlling for other student background characteristics. Results (Table Seven) indicated the achievement difference of long-term reading growth between Reading Recovery and Developmental First held up when accounting for SES, gender, and minority status. The average Developmental First student had a reading growth 17 points higher than the average Reading Recovery student after controlling for student characteristics.

Table Seven*: Fixed Effects for Long-term Reading Achievement Growth accounting for student characteristics*

Fixed Effect	Coefficient	Standard Error	T-Ratio	df	Approx P-Value
INTRCPT	70.00	4.88	14.35	220	0.00
Read Recov	-17.21	0.90	-18.9	220	0.00
SES	0.28	4.12	0.07	220	0.95
Gender	-2.26	4.05	-0.56	220	0.58
Minority	-5.94	4.01	-1.48	220	0.14

Figure four illustrates the difference in long-term reading achievement between the two intervention groups without student background characteristics included in the model. As shown, the rate of growth for the average Developmental First student exceeds the rate of growth for the average Reading Recovery student. It is also important to point out the achievement difference between the two groups at the first STAR testing period. The average Reading Recovery student scored significantly higher than the average Developmental First student. The average Developmental First student however, demonstrated a higher improvement across the testing periods. This finding has important implications for evaluating the effectiveness of the reading interventions. These implications are addressed in the discussion section.

Figure Four: *Average Star Reading Scores Comparing Reading Recovery Students to Developmental First Students*



Given differences in STAR reading scores at the first testing period, it was important to model these differences as a function of student characteristics. Table Eight depicts the differences in reading achievement at time period one as measured on the STAR reading assessment. The net difference between students enrolled in Developmental First and Reading Recovery was an average of 69 points below those who received Reading Recovery. This difference was statistically significant ($\beta_{03} = -69.64$, $p < 0.05$). There was also a significant achievement difference between free/reduced lunch students and non free/reduced lunch students with a difference of 73 points in their average reading achievement. Boys scored an average of 21 points below girls at time period one, but the difference was not statistically significant. Average STAR performance at the sixth testing period was not significantly different between

Reading Recovery and Developmental First students. As reported in Table Nine, the difference in STAR reading performance closed from approximately sixty-nine points to eight points between Reading Recovery and Developmental First grade students.

Table Eight*: Final Estimation of Fixed Effects for Reading Achievement for STAR at time one*

Fixed Effect	Coefficient	Standard Error	T-Ratio	df	Approx P-Value
INTRCPT	241.03	37.90	12.95	190	0.00
SES	-73.66	35.44	-2.08	190	0.04
Minority	2.97	34.72	0.08	190	0.93
Develop. First Intervention	-69.64	34.44	-2.02	190	0.04
Boys	-21.43	34.51	-0.61	191	0.54

Table Nine*: Final Estimation of Fixed Effects for Reading Achievement for STAR at time six*

Fixed Effect	Coefficient	Standard Error	T-Ratio	df	Approx P-Value
INTRCPT	561.03	37.90	12.95	190	0.00
SES	-53.66	35.44	-1.88	190	0.06
Minority	2.97	34.72	0.08	190	0.93
Develop. First Intervention	-8.64	34.44	-0.54	190	0.24
Boys	-17.43	34.51	-0.61	191	0.54

Cost effectiveness

The third research question concerned the cost-effectiveness of both Reading Recovery and Developmental First. The Developmental First grade program was the most cost effective with an approximate cost of $3,166.67 per student while Reading Recovery had an approximate cost of $4,800.00 per student. This calculation was based on the school district's expenditure reports for salaries and training costs for Reading Recovery and Development First grade. The costs were divided by the number of students served by each program on a yearly basis.

Reading Recovery teachers spend 12-20 weeks of individual instruction of approximately six students per day. When those students meet their reading goals, the teacher begins instruction with another group of students. Reading Recovery teachers also mentor classroom teachers as a reading instruction coach, hold literacy circles with a group of students who do not qualify for the program but need a little extra reading instruction, lead Professional Learning Communities, and serve as a literacy resource expert for the school district. Reading Recovery teachers usually teach eight to twelve students per year depending of the length of intervention required for each student.

The linear growth models used to evaluate the short and long-term reading achievement of students in either Reading Recovery or Developmental First grade show that both programs result in short-term reading gains.

However, the data indicates that Developmental First grade is the most beneficial in long-term reading achievement.

Developmental First grade teachers usually have an average of 15 students per year. The smaller class size permits the teacher to have more one-on-one instruction time for her/his students. Other first grade teachers might have more students to allow the Developmental First grade teacher to keep her/his classroom with 15 or under students per year.

Post-Hoc

Based on the original findings a post-hoc analysis was performed to compare the reading achievement of students who received an intervention and students who did not. Another research question was developed: How does the average reading growth of students with an identified reading difficulty (those in Reading Recovery and Developmental First) compare to students reading on grade level during their kindergarten year?

Table Ten depicts the difference in the beginning reading ability as measured by the STAR reading test in the second grade and the long-term reading growth of students who did not need a reading intervention compared to those who received Reading Recovery or Developmental First grade. Scores from the 2004-2005 through 2008-2009 school year were used from a random sample of 30 students from a population of 480 students. Additionally, scores from a random sample of 30 intervention students were used.

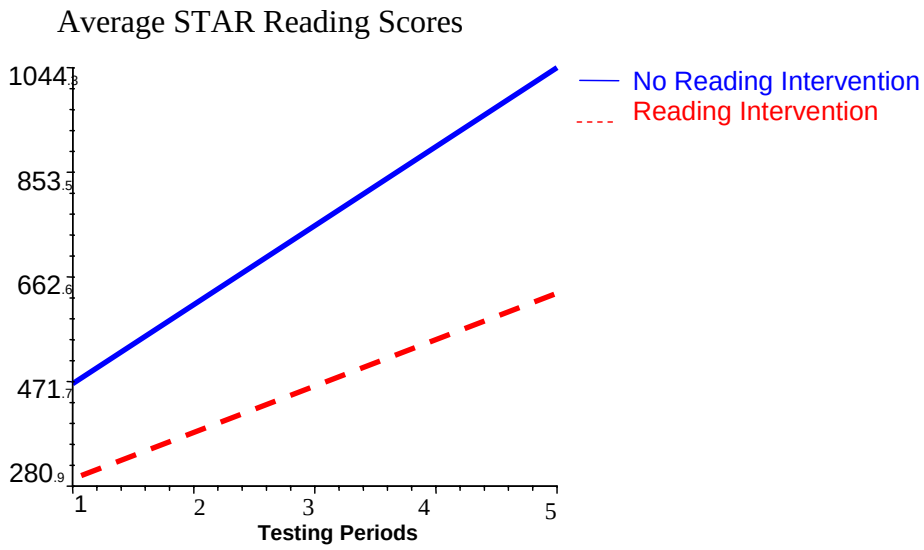
Results revealed a statistically significant difference in the beginning reading achievement at the second grade year. Students who required either Recovery or Developmental First grade scored an average of 313 points lower than the control group. There was also a significant difference in reading growth. Intervention students had a rate of growth approximately 59 points lower than the control group. Gender, ethnicity, or socio-economic differences were not statistically significant in either the initial score or the long term growth of reading achievement.

Table Ten*: Fixed Effects for Reading Achievement at time period five and achievement growth for intervention and non-intervention students*

Fixed Effect	Coefficient	Standard Error	T-Ratio	df	Approx P-Value
INTRCPT	813.53	51.27	15.87	220	0.000
SES	-62.64	32.47	-1.93	220	0.055
Gender	-23.15	32.091	-0.72	220	0.471
Intervention	-313.13	46.62	-6.72	220	0.000
TESTING Period					
INTRCPT	138.52	6.61	20.96	1025	0.000
SES	7.21	4.47	1.61	1025	0.107
Intervention	-58.92	5.93	-9.94	1025	0.000
Gender	0.53	4.41	0.12	1025	0.906

Figure five depicts the average reading achievement of students on grade level at the end of Kindergarten (the control group) and those who were not on grade level and required a reading intervention (the intervention group). Results indicate that students reading on grade level during their kindergarten year scored at a higher reading level during their second grade year and their rate of reading growth was significantly higher than those students who required either Reading Recovery or Developmental First grade.

Figure Five: *STAR reading achievement scores for Control Group and Intervention Group.*



Summary

In summary, there was not a difference in the short-term reading growth of students receiving Reading Recovery or Developmental First grade. There was an initial difference in the average STAR scores between the intervention groups. This initial group difference closed over the elementary years with the average Developmental First student scoring on level with the average Reading Recovery student even with the grade discrepancy. The only difference attributed to student characteristics was between minority and non-minority students.

A post-hoc study to compare the long-term reading achievement between a control group and the intervention group was conducted. The control group was made up of students who were reading on grade level at the end of Kindergarten while the intervention group was made up of students achieving in the bottom 25 percent of their peers, which included both Reading Recovery and Developmental First grade students. The post-hoc study indicated that if students were in the lowest 25 percent at the end of Kindergarten their reading achievement remained below their peers during elementary school. In fact, the reading achievement for the intervention group increased at a lower rate than that of the control group. A discussion of these findings along with implications and recommendations are addressed in chapter six.

CHAPTER VI

DISCUSSION

Introduction

This study examined the relative achievement benefits of Reading Recovery and Developmental First grade in a rural school district. Reading Recovery has been studied extensively and the evidence suggests it can be an effective early literacy intervention (D'Agostino & Murphy, 2004). General evidence on the effectiveness of Developmental First, however, is less conclusive. The achievement benefits of these two early literacy interventions have never been compared in an evaluation study. Additionally, the school district in which this evaluation occurred has been using both interventions for ten years but has not analyzed the achievement data to determine which strategy has been more effective at enhancing the short-term and long-term reading achievement of students. This comparative evaluation provided evidence on the short-term and long-term achievement differences between students who experienced one of the interventions.

The research questions guiding this program evaluation were: 1) Is there a difference in short-term reading performance between Reading Recovery and Developmental First Grade students? 2) Is there a difference in long-term reading performance of students who had Reading Recovery or Developmental First grade? 3) What is the observed benefit of each program relative to its cost? Students were selected to participate in Reading Recovery or Developmental

First grade by scoring in the lowest quartile on the Developmental Reading Assessment (DRA) at the end of their Kindergarten year. Students could also be placed in Developmental First grade by parent request.

The purpose of the discussion section is to explain findings from the linear growth models and to present evidence that addresses the research questions. In explaining the findings, emphasis is placed on understanding and making sense of the results in order to better inform future decisions about literacy interventions in the local school district. The chapter is organized by the following sections: 1) an explanation of findings on short-term reading achievement differences; 2) an explanation of finding on long-term reading achievement differences; 3) a discussion of the cost-effectiveness of each program; 4) implications for practice; and 5) a conclusion.

Short-term Reading Achievement

Linear growth modeling was used to examine the average reading growth of students in Reading Recovery and Developmental First grade over four testing periods and to evaluate variability in reading growth between students in the reading interventions. Data from DRA scores of reading achievement were collected at the beginning of first grade, the end of first grade, the beginning of second grade, and the end of second grade. Results of the growth analysis revealed no significant differences at testing period one and testing period four between students who had Reading Recovery and Developmental First. Additionally, there were no significant differences in

reading growth over the four testing periods between the two groups of students. That is, both groups of students had a similar rate of reading improvement. In short, the findings suggest an equal short term reading achievement distribution between students in Reading Recovery and Developmental First. Finding no significant difference in reading achievement between the two interventions was surprising when considering the research literature supports the effectiveness of Reading Recovery (Pinnell et al., 1994; Iverson & Tunmer, 1993) but does not provide conclusive evidence on Developmental First grade (Gredler, 1984).

Two possible explanations for the lack of significant differences in short-term reading growth relate to a strong literacy culture in the school and similar instructional practices of Developmental First and Reading Recovery. First, a strong literacy culture is partly a result of Literacy First practices. The school district is a Literacy First Phase IV school. Phase IV is the highest stage of Literacy First which certifies the school has established a literacy culture that is consistent with evidence-based practice. The school at the center of this evaluation provides two and a half hours of literacy instruction daily where teachers address the five essential components of reading instruction: phonemic awareness, phonics, vocabulary development, fluency, and comprehension (Report of the National Reading Panel, 2000). As a Literacy First school, teachers meet in professional learning communities weekly to discuss best practice for literacy instruction. Students, irrespective of their literacy

intervention, receive the benefit of a consistent literacy approach that is part of the Literacy First culture.

Reading Recovery and Developmental First are not isolated interventions; rather, they are embedded in the overall Literacy First environment of the school. This environment shapes the instructional practices of teachers, teachers' professional development, and the learning experience of students. Quite simply, there is a consistent approach to literacy development that all students, including students in Reading Recovery and Developmental First, are exposed to. Without significant differences in the literacy environment, it is not surprising to find similar reading achievement trends attributed to the two interventions. Even though students were exposed to different interventions, the instructional culture that shapes the values, beliefs, and practices of teachers was quite similar.

The second possible explanation for the somewhat surprising results relates to the use of similar instructional practices between Reading Recovery and Developmental First. As previously described in the theories of action, the main difference between the two interventions as operationalized in the district was that Reading Recovery students receive an additional thirty minutes per day of individual instruction for twelve to twenty weeks while students in Developmental First receive an additional year to mature. Both interventions include outreach to parents, professional learning communities, and two and a half hours of daily literacy instruction. Given the use of strategies that align

with research from the National Literacy Panel, finding reading growth for students in both reading interventions was expected. With a strong focus on developing foundational literacy skills, literacy was expected to improve.

An interesting finding that was not related to the first research question, but is worth noting, has to do with the stagnation of reading growth between testing period two and testing period three (the summer months). Graph four in Appendix A shows a slight dip for all students during the summer when students did not have access to any formal reading instruction. This "summer dip" in reading achievement has implications for practice that will be explored later.

Long-term Reading Achievement

Similar to the research question on short-term reading achievement, linear growth modeling was used to examine the average reading growth of students in Reading Recovery and Developmental First grade from 2003 – 2009. Data from the STAR reading test were collected at the beginning and end of each school year. Even though reading achievement differences were not significant with DRA at the end of the fourth testing period, there was a significant reading achievement difference on the beginning STAR reading assessment score, with the average Reading Recovery student significantly outscoring the average Development First student. The initial achievement gap narrowed until there was no significant difference in STAR performance by the 2009 school year. Three possible explanations for these findings include: 1)

Curriculum differences in the grade level in which the test was given; 2) Maturity level of the Reading Recovery students; and 3) The program effect decay function (Donaldson, 2007).

First, students in Reading Recovery experienced first grade curriculum while those in Developmental First had a year in which they reviewed the second semester of Kindergarten and were introduced to the first semester of first grade curriculum. While the final DRA test revealed no significant difference in the reading achievement of students in the two interventions, the first STAR reading test did reveal significant differences with Reading Recovery students outscoring Developmental First students. It is important to note that data were collected in cohort groups with students who started Kindergarten together being kept together for the whole study. Students in Reading Recovery had the vocabulary taught during the second semester of first grade before the first STAR reading score was evaluated for this study. Students in Developmental First, on the other hand, had only been taught vocabulary of the first semester of first grade by the time of the first testing period. It is plausible the discrepancy in curriculum content at the first testing period of the STAR reading test was a likely contributor to differences in reading outcomes on the first STAR reading test.

The DRA is a group of individually administered criterion-referenced reading assessments which measures accuracy, fluency, and comprehension. The DRA assessment places more weight on fluency while the STAR is

primarily a measure of comprehension. Curriculum differences between the cohort groups would not make as large a difference in fluency as it would in reading comprehension since students in second grade would be expected to have a larger vocabulary than those in first grade.

The second possible explanation of significant differences in long-term reading achievement growth of the two reading interventions is the age of the Developmental First students. The most powerful result of long-term growth was that the initial reading achievement gap closed between the students in Reading Recovery and those in Developmental First grade. This finding suggests that reading gains were significantly better for Developmental First students.

Even though STAR scores measured the reading performance of similar aged students, Developmental First grade students were a grade behind Reading Recovery students, allowing Developmental First students more time to mature and an extra year of instruction. Developmental First students closed the initial reading achievement gap even though they were behind Reading Recovery students one year in curriculum. On average, the growth rate for Developmental First students was 59 standard points higher than Reading Recovery. Developmental First students remained a year older than their classmates while students in Reading Recovery could be the youngest in their class. This finding lends support for the maturation effect in that Developmental First students made up the gap even though they were a year behind in Language Arts

curriculum. Inferring from the results, Developmental First students would likely exceed the reading achievement of Reading Recovery students by the end of their 8th grade year.

Maturity can make a difference in academic achievement. Dhuey and Bedard (2006) tracked the scores on the Trends in International Mathematics and Science Study (TIMSS) and found that the oldest fourth grade students scored between four and twelve percentile points better than the youngest fourth grade students. Similarly, Gladwell (2008) cites studies which showed that older students outscored their younger counterparts in achievement, and the achievement advantage attributed to maturity lasted into college. This maturation difference could account for the larger reading growth rate for the Development First students since a more mature student is more likely to be ready to learn than her/his younger counterpart. The extra year of reading instruction combined with an extra year to mature could account for the higher reading achievement growth rate of students who attended Developmental First as compared to their peers who received Reading Recovery. Although this study did not test the performance of the Developmental First students as compared to a control group in their class, it is reasonable to predict that their literacy competencies were near or above the average for their class; whereas, Reading Recovery students would still likely be performing below average. The extra attention and affirmation that comes with proficient performance has a potential positive effect on motivation and behavior.

A third possible explanation for the results in long-term reading growth relates to the program effect decay function. While an intervention may have an immediate impact, effects from an intervention may not persist over time. Program effect decay function is an explanation of what happens over time as a result of an intervention. Donaldson (2007) postulates that there are four possible program-effect decay functions: 1) the program has a significant effect on the outcome and there is no decay of effect over time; 2) the program has a delayed outcome; 3) the program has an immediate effect but then the effect quickly decays; or 4) the program has an early effect with a slow decay over time.

STAR assessment data seemed to imply that Reading Recovery as implemented in this local school district fits best with an immediate effect and a quick decay (Donaldson, 2007). If the effects of Reading Recovery had no decay over time, we would expect the growth in literacy development that occurred when students were in the program to continue over the six years of the study. This, however, was not the case. The average Reading Recovery student compared to the average Developmental First student did not sustain as strong of a growth in reading achievement. Moreover, the post-hoc result suggests that growth in reading achievement for intervention students was not as strong when compared to students without an early literacy intervention. This trend was consistent with existing evidence that suggests Reading Recovery effects were not sustained over time (D'Agostino & Murphy, 2004).

The decay of the benefits of Reading Recovery could be a result of the continued social factors that place students at risk for literacy success in the first place. Research highlights three risk factors that can affect literacy development: parents without educational and economic resources (Dickinson, McCabe, & Essex, 2006); the primary language spoken in the family is not English (Dickinson et al., 2006); and parents who do not have regular literacy building conversations with their children (Dickinson et al., 2006). Studies have shown that by the time a child is four years old, the amount of root-word meanings in their vocabulary is determined by the number of different words the parent uses and by the total number of words the parent speaks (Hart & Risley, 1995, 1999, 2003, Wells, 1985). Home, not school has more significant effect on the size of a child's vocabulary by the end of second grade (Cantalini, 1987; Christian, Morrison, Frazier, & Massettti, 2000). Since the social factors which place students at high risk for literacy difficulties will probably continue throughout the students' school career, it makes sense that a one-time reading intervention will not solve the early literacy problems. Students who enter school behind their peers in literacy readiness require ongoing and sustained reading support.

STAR assessment data seem to imply that Developmental First as implemented in this local school district fits best with a delayed outcome. The average Reading Recovery student outscored the average Developmental First student on the first STAR assessment. This achievement difference narrowed

during the late elementary and middle school years. Results also seem to indicate that Developmental First had more of a delayed effect since significant growth in reading achievement, relative to Reading Recovery students, occurred during the late elementary and middle school years.

If Developmental First had more of an immediate effect, one would expect the reading achievement of the average Developmental First student to be on par or higher than the average Reading Recovery student at the first STAR reading test. The achievement growth of Developmental First students, relative to Reading Recovery students, did not materialize until the late elementary and Middle School years when these students could have benefited from the maturation effect.

Cost-effectiveness

Schools stand on the brink of a funding cliff. Stimulus money from the federal government will run out at the end of this school year and the condition of the overall economy to recover indicates that states may not have the revenue needed to adequately fund local schools. Each school district must find strategies to enhance the quality of education while drastically reducing spending. This local school district is considering which programs can be cut without reducing the quality of education. One of the purposes of this program evaluation was to examine the cost-effectiveness of Reading Recovery and Developmental First grade. This study found that the Developmental First grade program was the most cost effective with an approximate cost of $3,166.67 per

student while Reading Recovery had an approximate cost of $4,800.00 per student. This calculation was based on the school district's expenditure reports for salaries and training costs for Reading Recovery and Development First grade. The costs were divided by the number of students served by each program on a yearly basis. The greatest cost is of course for the salaries of teachers. The Developmental First served fifteen students with one teacher while Reading Recovery requires a classroom teacher and an intervention teacher.

Implications

Implications from the results of the comparative evaluation of Reading Recovery and Developmental First address both the short term and long term literacy needs of students in the respective school district. Evidence from the growth models and knowledge about the school district provide helpful information for practical implications that can be used to improve early literacy interventions in the district. Implications address the design and implementation of effective intervention strategies, as well as consideration of the costs associated with maintaining both programs.

The first implication is that more study and careful consideration is needed to find strategies that merge the benefits of both Reading Recovery and Developmental First in this local school district. Developmental First seems to be the most cost-effective reading intervention; however, there could be unintended consequences of eliminating a supplemental service like Reading

Recovery. If Reading Recovery were eliminated the only intervention option would be Developmental First and many families might choose not to hold their child back an academic year. Holding a child back may also be too large of a prescription for a child whose only deficiency is in literacy. A supplemental service like Reading Recovery may have a better effect in this case. An important question for the district to consider is whether or not a supplemental service can be provided internally without paying the cost of adopting and implementing Reading Recovery. As a phase IV Literacy First School, this may be possible.

There are students who clearly benefit from an effective developmental year, so for such students it makes sense to keep this option. The benefits of a developmental year are not dependent on a developmental class. If a child could benefit from remaining an extra year in kindergarten, support can be provided for kindergarten teachers so they can effectively differentiate their instruction to meet the needs of all students. In short, the decision to eliminate one intervention over the other is not easily answered from the evaluation data in this study. Developmental First appeared to be the most cost-effective program over the years but abandoning a supplemental literacy intervention like Reading Recovery for a Developmental First only approach does not appear to be viable given the diverse needs of students and the interests of families.

The second implication of these results addresses achievement stagnation during the summer months. The average student in both literacy interventions

did not improve his/her reading skills during the summer. This is not surprising given the prevalence of the summer achievement dip other researchers have found (see Borman & Dowling, 2006). All students benefit from literacy development during the summer, but for students who show early literacy deficiencies continuing interventions during the summer months is critical.

The school district needs to work with families to ensure students are provided formal reading instruction through the school's summer program or an informal reading program that can be facilitated by parents or through the local public library. When the educational faucet is turned off during the summer, many students do not have opportunities to continue their learning. Schools and communities must work together to provide reading interventions during the summer so the achievement gap does not continue to widen.

The third implication from this study is based on results of the post hoc analysis that compared the average reading achievement of students receiving an intervention with a random sample of students who did not receive an intervention. A one-year, or one shot reading intervention, whether Reading Recovery of Developmental First is not enough to close the reading gap between intervention and non-intervention students. Although Developmental First students caught up with their original Reading Recovery peers, the reading achievement gap continued to widen between the average intervention and average non-intervention student.

It is likely that the achievement gap would not be as large if only Developmental First students were compared to a random sample of non-intervention students. Developmental First students had a significantly higher reading growth than Reading Recovery students. That stated, one intervention does not provide the continuous support that struggling readers need to improve their literacy competencies. The school district should ensure that reading interventions will be provided for students reading below grade level throughout their public school career, not just during the early elementary years. Conditions that affect struggling readers usually continue to exist throughout their school career and support must continue over time in order to give all students the chance to become successful readers.

The final implication addresses the need for school leaders to measure the effectiveness of programs that are often legitimized by claims of being research based. Programs and interventions may be supported by research evidence but such slogans should not be construed to mean programs work in every situation or in every context. In fact, a quick review of clearinghouses on school reforms and interventions, such as The What Works Clearinghouse, suggest that most programs have limited evidence as to their effectiveness. When programs have produced positive results, such outcomes are often the factor of human and social conditions more so than the program itself (Forsyth, Adams, & Hoy, 2011). Human and social factors are so critical to effective

program interventions that Honig (2009) argues questions about what works should be replaced with question about what works for whom, when, and where.

The point is that school leaders need to measure the performance capacity of programs and not simply accept blank claims of effectiveness. Continuous improvement is fueled by evidence that reports on the results of interventions and the determinants of effective interventions (Ingram, Louis, & Schroeder, 2004). Without studying the implementation or effectiveness of programs, strategic decisions are subject to conjecture and not based on valid and reliable evidence.

Conclusions

While Reading Recovery and Developmental First both resulted in short-term reading achievement gains for students in this local school district, the data confirmed previous research which indicated students who start school with literacy deficits continue to fall below their peers throughout their school career (Biemiller, 2006). Developmental First was the most cost effective program and data indicated that students who were enrolled in Developmental First grew in their long-term reading achievement at a faster rate than students in Reading Recovery. Students in both Reading Recovery and Developmental First experienced a "summer dip" in reading achievement. This was not surprising, since students were not in a formal school setting during the summer months.

The students who received Reading Recovery or Developmental First began their educational career in the lowest 25% of reading achievement as

compared to their peers. The data showed that early intervention students did not experience the same long-term growth rate in reading achievement as their peers. The gap in reading achievement actually widened. This evidence demonstrates the importance of providing ongoing reading support for students identified with early literacy delays. Reading Recovery and Developmental First can address early problems, but without continued support it is unlikely the reading gaps will narrow

Two of the issues identified in this study have prompted immediate action in the local school district. The need for continued reading interventions throughout a student's public school experience and the need for continued literacy instruction during the summer months. The school district has established a secondary reading lab for middle and high school students reading below grade level. The reading lab is designed to resemble a coffee house and contains books of high interest to teenagers written at a lower reading level. The students are given individual or small group reading lessons and participate in book clubs. The middle school and high school teachers have been led in a literacy professional learning community by a reading specialist for the last two years. Teachers have been trained to give the DRA2 reading assessment. STAR reading scores and DRA2 reading assessment scores follow the students to each successive grade to insure that instruction is based on assessments. The reading scores will be analyzed yearly to determine the effectiveness of literacy strategies. The second issue of summer literacy programs is being addressed by

individual teachers conferencing with parents of students reading below grade level to encourage the parent to ensure that their child participates in the free summer school program during the month of June. Reading scores will be analyzed to compare the literacy growth of students who attend the summer program and students who do not participate. It is crucial for school districts to use data to evaluate their programs and make decisions based on the effectiveness of programs (Morris and Hiebert, 2011).

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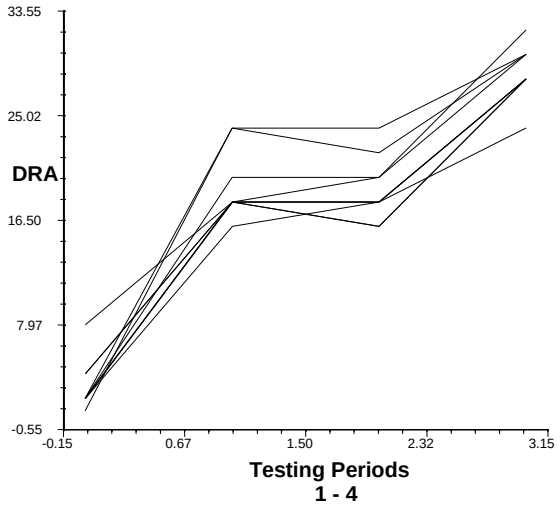
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APPENDIX A:

FIGURE SIX:

DRA SCORES OVER FOUR TESTING PERIODS



APPENDIX B:

FORT GIBSON PUBLIC SCHOOLS
500 South Ross
Fort Gibson, Oklahoma 74434
Telephone (918) 478-2474 **FAX (918) 478-8533**
Derald Glover, Superintendent
Linda Clinkenbeard, Assistant Superintendent

June 19, 2009

To Whom It May Concern:

I give Marilyn Dewoody permission to conduct a program review of Fort Gibson Public School's Reading Recovery and Developmental First Grade as reading intervention programs for her research project. She is a student at the University of Oklahoma and will use the data from these programs to complete her dissertation. She will de-identify all data before entering it into a data base and will protect the identity of the students enrolled in both programs.

Sincerely,

Derald Glover
Superintendent
Fort Gibson Public Schools

APPENDIX C:

The University of Oklahoma

OFFICE FOR HUMAN RESEARCH PARTICIPANT PROTECTION

IRB Number: 12646
Category: 4
Approval Date: July 24, 2009

July 28, 2009

Marilyn Dewoody
Dept. EASC
P.O. Box 2085
Fort Gibson, OK 74434

Dear Ms. Dewoody:

RE: Short and Long Term Reading Performance of Students Who Attended Developmental First Grade Compared to Reading Recovery Students

On behalf of the Institutional Review Board (IRB), I have reviewed the above-referenced research project and determined that it meets the criteria in 45 CFR 46, as amended, for exemption from IRB review. You may proceed with the research as proposed. Please note that any changes in the protocol will need to be submitted to the IRB for review as changes could affect this determination of exempt status. Also note that you should notify the IRB office when this project is completed, so we can remove it from our files.

If you have any questions or need additional information, please do not hesitate to call the IRB office at (405) 325-8110 or send an email to irb@ou.edu.

Cordially,

Aimee Franklin, Ph. D
Vice Chair, Institutional Review Board

Ltr_Prot_Fappv_X

660 Parrington Oval, Suite 316, Norman, Oklahoma 73019-3085 PHONE: (405) 325-8110 FAX:(405) 325-2373