THE DEVELOPMENT AND IMPLEMENTATION OF RESPONSE TO INTERVENTION IN AN ELEMENTARY SCHOOL SETTING

Keith R. Collins

Dissertation submitted to the faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Doctor of Education
In
Educational Leadership and Policy Studies

William J. Glenn
Kami M. Patrizio
Walter D. Mallory
Stacey Timmons

November 19, 2014
Falls Church, Virginia

Keywords: Response To Intervention, RTI, Reading Grouping

The Development and Implementation of Response to Intervention in an Elementary School Setting

Keith Collins

Abstract

RTI has gained popularity in recent years. RTI uses research-based instruction, data based decisions, and early interventions to identify and remediate students early. However, little research exists regarding the effects of RTI implementation in schools. This embedded case study looks at how a subject school implemented RTI, how it intervened with its most at-risk students, and the relationship between reading scores in first grade and at the end of fourth grade. The findings show that the school implemented RTI utilizing a hybrid model, incorporating components of both the standard protocol and problem-solving approaches to RTI. To monitor student progress, the school also utilized a hybrid model incorporating components of both the direct approach and the progress monitoring approach. To provide a common understanding of the RTI model, the district created a manual that documented the RTI expectations and a manual that documented the problem-solving process. The district addressed fidelity of implementing these expectations by holding the schools accountable for instructional fidelity. The district monitored instructional fidelity through quarterly superintendent reports, monthly data meetings, and by hiring an outside consultant. The data regarding the relationship between first and fourth grade scores suggested that RTI does not differ from current research, suggesting there is a relationship between first grade reading scores and fourth grade reading scores.

ACKNOWLEDGEMENTS

I would like to express my sincere appreciation to my co-chairs, Dr. William Glenn and Dr. Kami Patrizio. This work is possible because of the support provided by the two of you, but more importantly you have taught me more than I could ever fit into a dissertation. Over the last few years my life and research changed course several times, yet you have always supported me. I also want to thank the rest of my committee: Dr. Walt Mallory and Dr. Stacey Timmons. Dr. Mallory you were my first professor as I started this research and your guidance has been beneficial to me as I have moved throughout this process. Dr. Stacey Timmons, thanks for what seems like a lifetime of support. You have known me longer than many people in my life and for that I have sincere gratitude. I also want to acknowledge and thank the district in which this research took place.

A special thanks to my mentors whom I am fortunate enough to also call friends: Cathy, Angelique, Karie, Susan, Linda, and Gina. You have taught me so much about myself, leadership, education, and life. I appreciate your support and help every step of the way.

Thanks to my family, my mother and father who provided me with the skills and childhood necessary to achieve this degree. Thanks to Matt Enders who has spent many hours reading about RtI and, in all honesty, should probably have his own honorary degree. Finally, I must thank Sophie for constantly wagging her tail to show her support and giving up numerous car rides, walks in the park, and chasing squirrels for me to have one “extra” hour of work.

TABLE OF CONTENTS

Chapter 1 1

Statement of the Problem 1

Study Background 2

Purpose of the Study 4

Need for the Study 4

Research Questions 5

Definition of Terms 5

Limitations and Delimitations of the Study 7

Summary 8

Chapter 2 10

RTI and Special Education 10

RTI Fundamentals 12

RTI Models 20

Grouping 23

History of the Effects of Reading Grouping Research 26

Why Further Research is Needed 36

Chapter 3 39

Research Questions 39

Ethics, IRB Approval, and Confidentiality 40

Research Design 41

Units of Analysis 42

Procedures 43

Validity 52

Reliability 54

Bias 55

Summary 55

Chapter 4 57

Question 1: How Did the Subject Elementary School Implement RTI? 58

Standard Protocol 60

Problem Solving Model 64

Question 2: How Did the School Intervene with the Tier II Students Identified in First Grade by the School's Universal Screener? 70

Student A 72

Student B 76

Student C 79

Student D 82

Student E 86

Student F 91

Question 3: What is the Relationship Between First Grade Scores and Fourth Grade Scores? 96

Summary 97

Chapter 5 99

Discussion of Findings 99

Conclusions 114

Implications 115

Recommendations for Further Study 117

References 118

Appendix A: Interview Protocol 126

Appendix B: Analytic Matrix 129

Appendix C: Master Schedule 130

Appendix D: Expected Growth 131

LIST OF FIGURES

2.1: Example of RTI Model 10

2.2: Summary of Research on Reading Grouping 35

4.1: PES RTI Model.....59

4.2: Student A and the PES RTI Model 75

4.3: Student B and the PES RTI Model 78

4.4: Student C and the PES RTI Model 81

4.5: Student D and the PES RTI Model 85

4.6: Student E and the PES RTI Model 90

4.7: Student F and the PES RTI Model.....95

5.1: PES RTI Model.....101

LIST OF TABLES

4.1: AimsWeb Tier Cut-Points 60

Chapter 1

Statement of the Problem

An educational philosophy known as Response to Intervention (RTI) may be the long awaited answer to closing achievement gaps and ensuring all students have access to their entitled education. RTI's use of research based instruction, data based decision making, and early interventions allow for it to identify and remediate students early, making future educational success more likely. Research demonstrates that a child's academic achievement in primary grades is a significant indicator of future academic success. Using a series of assessments, Juel (1988) found that students performing poorly in first grade had an 88% chance of performing poorly in fourth grade. Juel's (1988) study identified and tracked students that received a score no better than 1.2 grade equivalent (GE) on the Iowa Test of Basic Skills (ITBS) at the end of their first grade year on the Reading Comprehension subtest.[1] At the end of their fourth grade year, 21 of the 24 students had scores that fell below grade level on the ITBS Reading Comprehension subtest, with a mean of 3.5 GE, which is 1.5 years below expectations.

The finding that low performing students typically remain low performing students as they progress through grades is consistent with other research in the field (Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Phillips, Norris, Osmond, & Maynard, 2002). These results lead one to conclude that reading achievement in first grade accurately predicts reading achievement at the end of fourth grade. These findings suggest that schools must provide early interventions to struggling readers to ensure that

[1] A GE represents the median score in a given month of a specific grade. A score of 1.2 would represent the median student's score in first grade after two months.

each child receives an appropriate education regardless of the child's preschool preparation, race, ethnicity, or socio-economic status in order to be successful in school.

An educational model known as Response to Intervention (RTI), which uses early intervention and specialized instruction, could provide the support needed for struggling primary students to succeed in upper elementary school. RTI received a lot of attention in education within the last decade (Hollenbeck, 2007). The National Association of State Directors of Special Education (NASDSE) defines RTI as "the practice of providing high quality instruction/intervention matched to student needs and using learning rate over time and level of performance to make important educational decisions" (NASDSE, 2005 p. 5). Essentially, RTI consists of educators delivering high quality instruction and interventions in response to data that identifies specific needs over a period of time.

Study Background

The RTI models in schools today evolved from the work of various researchers and education models (NASDSE, 2005). The Data-Based Program Modification Model, developed by Deno, used short assessments that measured academic growth through repeated measurements (NASDSE, 2005). These curriculum-based measures (CBMs) provided data necessary to evaluate the effectiveness of classroom instruction and to modify instruction when needed. The use of these CBMs to monitor learning is an integral component of modern day RTI models.

In 1977, Bergan created the Consultation Model, which focused on observing individual behaviors of students to identify problematic areas in both behavior and academics. Once issues were identified, a consultant would work with educators to problem solve in order to implement various interventions. This model worked with

identified students, but was limited in its ability to work with large groups of students because of its focus on individual student needs. The Consultation Model also required a problem to arise before identifying interventions (NASDSE, 2005). However, the concept of identifying students and then delivering specific interventions to those identified students is an essential element of today's RTI models.

Vaughn (2003) developed a three-tiered intervention model that incorporated components from Deno and Bergan's model and allowed student movement among instructional tiers based on educational needs. Vaughn's (2003) model required screening students for appropriate tier placement, similar to Deno's use of CBM. Each child then received research-based instruction at the appropriate tier, an adaptation of Bergan's Consultation Model. Students with greater levels of academic risk received more frequent monitoring of their academic progress to determine if the instruction and intervention were effective. This combination of all these models would help form the basic components of RTI.

Schools using RTI proactively screen all students to determine academic problems and provide targeted early interventions based on the results of screening and diagnostic assessments. These early interventions enable some students to become proficient in the basic skills they lacked and allow teachers to supplement the core curriculum with more intensive interventions to attain proficiency (NASDE, 2005). Students in different tiers, and sometimes students in the same tier, will receive different instruction, at varying intensities, to achieve mastery. The most common RTI models today incorporate Curriculum Based Measures, universal screeners, early intervention,

research-based instruction, progress monitoring, data driven decisions, problem-solving teams, and tiered instruction (Johnson, Mellard, Fuchs, & McKnight, 2006).

Purpose of the Study

I used an embedded case study approach to research the RTI model in a Title I elementary school in a mid-Atlantic state. The school, and its district, worked closely with its state department of education to implement an RTI model that would eventually be implemented statewide. As a result, the school has multiple years of data associated with an RTI model and knowledge surrounding RTI practices.

As a researcher I was interested in three major areas: how the school implemented RTI, how the school intervened with its most at-risk students, and the relationship between a cohort's first grade reading scores and their fourth grade reading scores. I used school documents, archived records, and interviews to examine implementation. These findings were supported through the analysis of the embedded units of analysis. The embedded units of analysis were examined through a review of individual student records. A correlation and regression analysis allowed me to examine the relationship between reading scores.

Need for the Study

The 2004 reauthorization of the Individuals with Disabilities Education Improvement Act (IDEIA) allowed districts to use RTI practices to identify, students with learning disabilities, which has resulted in an increase of RTI use. RTI's basic fundamentals of implementing research-based interventions with fidelity, monitoring student progress, and making data driven instructional decisions through a tiered

instructional approach may prevent early entry at-risk students from remaining at-risk throughout their primary school education (NASDSE, 2005). Helping at-risk children achieve grade level expectations early in their schooling will help to ensure they have equal access to the benefits associated with education.

Little research exists regarding the effects of RTI implementation in schools (Hollenbeck, 2007; Fuchs & Deshler, 2007). This gap may be the result of RTI's flexible and adaptable nature. RTI models differ based on locality, need, and available resources. As a result, my research focused on the following research questions.

Research Questions

1. How did the subject elementary school implement RTI?
2. How did the school intervene with the Tier III students identified in first grade by the school's universal screener?
3. What is the relationship between first grade scores and fourth grade scores on the school's universal screener's oral reading fluency assessment?

Definition of Terms

At-Risk Students: For the purpose of this study, at-risk students will be defined as students who are not meeting grade level expectations based on AIMSweb default cut scores (AIMSweb, 2011).

Curriculum Based Measures (CBM): Simple, accurate, standardized, and efficient indicators of student achievement in a specific domain, such as reading or math, over a period of time. CBMs are an assessment technique and are not tied to a specific curriculum (AIMSweb, 2012).

Data Based Decision Making: The use of data to guide the instructional program.

Early Intervention: Identifying and providing remediation to students when a deficient has been identified in the general education setting in an effort to prevent the potential misidentification of a student with a learning disability.

Fidelity of Implementation: Ensuring that the content and instructional strategies are delivered as intended by properly trained personnel within a clearly defined model working toward a goal based on current research and best practices (Telzrow, C., McNamara, K., & Hollinger, C., 2000).

Problem-solving Teams: "The RTI Problem-Solving Team is a multi-disciplinary group of educators that create intensive, customized intervention plans for struggling general-education students who have not responded to lesser levels of academic or behavioral support" (Intervention Central, n.d., Introduction to RTI problem-solving teams, para 1).

Progress: For the purpose of this study, progress will be defined as a student making measurable growth in a specific area on a standardized assessment.

Progress Monitoring: "Progress monitoring is a scientifically based practice that is used to assess students' academic performance and evaluate the effectiveness of instruction. Progress monitoring can be implemented with individual students or an entire class" (National Center on Progress Monitoring, n.d., What is progress monitoring, para 1).

Research Based Instruction: The use of instructional programs and practices that have been scientifically validated.

Response to Intervention (RTI): This study used the National Association of State Directors of Special Education (NASDSE) definition of RTI which is "the practice of providing high quality instruction/intervention matched to student needs and using learning rate over time and level of performance to make important educational decisions" (NASDSE, 2010 p. 5).

Tiered Instruction: Tiered Instruction is an approach that enables schools to diversify instruction to meet individual needs of students. The most common approach is three tiers in which Tier I consists of delivering a scientifically validated, research based core program to all students, Tier II offers services to tailor to students whose discrepancy between achievement and benchmark is not large enough to suspect severe learning challenges, and Tier III offers more individualized programs for students with large gaps between benchmark and achievement ("Tiered Instruction/Intervention," 2013).

Universal Screener: A Universal Screener is an assessment administered to a population of students to identify those at risk for potential learning challenges ("Universal Screening," 2013).

Limitations and Delimitations of the Study

Limitations

This mixed methods research incorporate components of both qualitative and quantitative methods. The qualitative aspect of this research would be difficult to replicate. Qualitative research is difficult to replicate because it occurs in the natural setting (Wiersma, 2000). Furthermore, case studies provide an analysis of a specific group, organization, company, etc., limiting the ability to generalize findings to other

groups (Miles & Huberman, 1994). The results of this study may not be generalizable to all schools implementing RTI programs; however, it will be generalizable to schools similar to the school in the case study. These schools can generalize information from this research to learn more about RTI, how one school implemented RTI, and how the school intervened with its most at-risk students. Furthermore, the research shows the effects of the school's interventions over a three-year period, an area documented in the field as needing additional research.

Delimitations

This study is delimited to include only students in one Title I school in a rural area in the mid-Atlantic. The selected school has a state recognized RTI program, history of RTI, and an abundance of data relating to its RTI program. The study looks at students who attended the subject school during the course of the study, including students who transferred into and out of the school from within the district. The decision to include students who transferred within the district to the subject elementary school allowed the sample population to go from two to six students. All schools in the district were implementing the same RTI models during the course of this study. I selected this population because of my interest in researching how schools implemented RTI intervened with its most at-risk students.

Summary

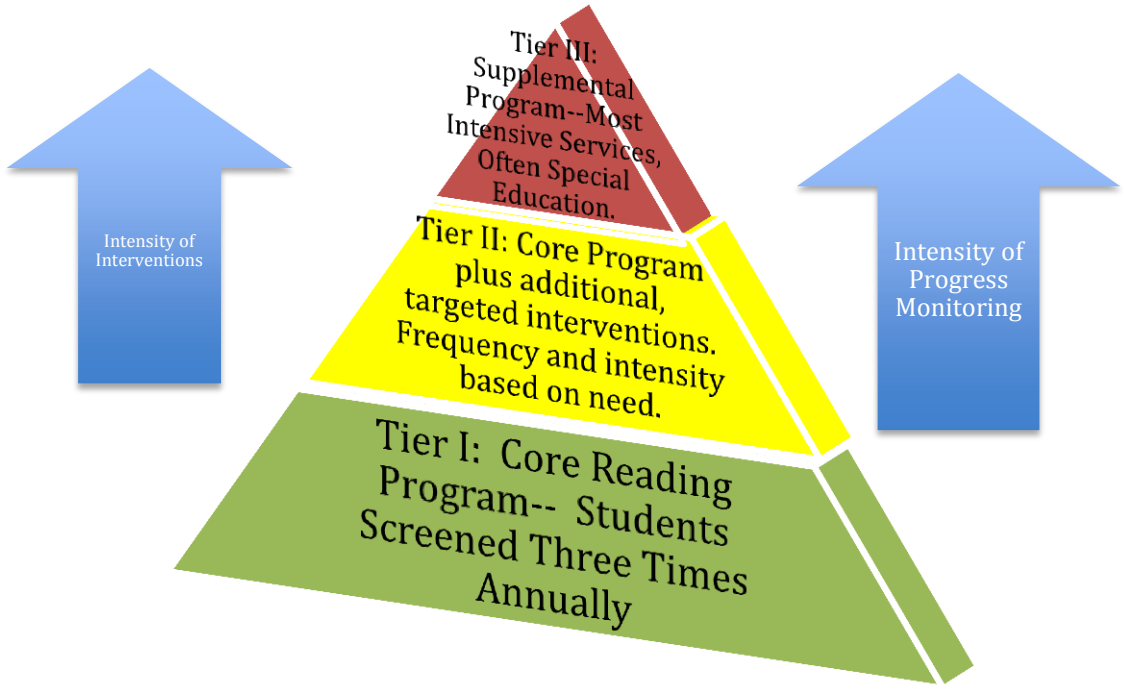
Student achievement in early grades strongly predicts student achievement in upper elementary grades. Consequently, educators always look for ways to increase student achievement, especially for those students who are at risk in the primary grades. A model known as RTI has evolved over the last few decades as a possible solution to

increase student achievement. However, more research is needed to determine its effects on student achievement. This study looks at how one school implemented RTI.

Chapter 2

This chapter discusses recent legislation changes that have accelerated the usage of RTI in special education. It will then provide an in-depth look at the various components of RTI with a common RTI model depicted in Figure 1. The review will conclude with a comprehensive look at literature regarding grouping. Grouping research is important because schools often group students to deliver RTI interventions.

Figure 1. Example RTI Model



RTI and Special Education

RTI has gained momentum due to legislative actions within the last decade (Hollenbeck, 2007). The 2004 reauthorization of the Individuals with Disabilities Education Improvement Act (IDEIA) allowed districts to identify students with Specific Learning Disabilities (SLD) based on their responsiveness to research-based interventions as an alternative to the traditional ability-achievement discrepancy model

(IDEA, 2004). The discrepancy model has been termed by some as the "wait-to-fail" model, as it prevents the delivery of special education services to students until a significant discrepancy is evident through a comprehensive evaluation (Fuchs, Compton, Fuchs, Bryant, & Davis, 2007). Because of the legislation mentioned above, and the desire of practitioners to find an alternative to the discrepancy model, RTI has become a new, government-supported alternative to identifying SLD (Fuchs, et al.).

When Congress revised the IDEIA to include RTI it was trying to address three issues. First, it wanted to control the increased costs associated with special education. The special education population had surpassed 10% of the student population, specifically the SLD category that accounts for more than 40% of students with disabilities (Ciolfi & Ryan, 2011). Second, many people in the field began to question the validity of the ability-achievement discrepancy model used to identify SLD (Ciolfi & Ryan, 2011). Third, Congress wanted to address the over representation of minority students in special education (Ciolfi & Ryan, 2011). Congress had a belief that RTI may be an accurate approach to identify which students had a learning disability and which students were receiving poor or inappropriate instruction. Furthermore, it held schools accountable by requiring schools using RTI to provide data-based documentation of achievement to parents at reasonable intervals (Zirkel, 2011).

Congress passed additional revisions to encourage, but not require, the use of RTI. First, it allowed school districts to use up to 15% of their special education funds for early intervention services (EIS) for low achieving and at-risk students, and mandated districts with an overrepresentation of minorities receiving special education services to use 15% of special education funds for pre-referral interventions. Second, Congress held

districts accountable for instruction by requiring that a child be exposed to high quality instruction before eligibility, knowing that RTI focuses on providing scientifically validated interventions with fidelity. Finally, Congress required schools to exclude all other explanations for poor achievement before determining whether a child has a learning disability (IDEIA, 2004).

The implementation of RTI models has been controversial. Advocates argue that RTI provides the ability to intervene early and provide additional support whereas the discrepancy model required a documented discrepancy prior to receiving special education services (Ciolfi & Ryan, 2011). Opponents point out that RTI may prevent a student from receiving identification for special education services and all the associated procedural and substantive protections, such as discipline safeguards. Additionally, RTI and its repeated attempts of interventions may delay a referral to special education, which could provide intensive services for students. To address some of these concerns, regulations require schools to request an evaluation promptly if the child does not make adequate progress after an appropriate period of instruction, delivered by qualified personnel in a regular education setting (Zirkel, 2011). Furthermore, RTI cannot delay a special education referral if a disability is suspected.

RTI Fundamentals

It is important to note that RTI is a framework for educators and not a specific program. As a result, RTI models may look differently from school to school; however, there are common components essential to most RTI models. RTI's fundamental components include: (1) implementing high-quality scientifically validated, research-based interventions with fidelity, (2) monitoring student performance and progress, and

(3) making data driven instructional decisions (Mellard, 2004; Brown-Chidsey & Steege, 2005; Fuchs & Fuchs, 2001; NASDSE, 2005; NRCLD, 2003). Typically, schools deliver these components with a three-tiered approach; universal core instruction, strategic intervention, and intensive intervention. This three tiered approach is commonly known as Tier I, Tier II, and Tier III. All students receive instruction at the tier that matches their needs. Most researchers and practitioners refer to general classroom instruction with minor interventions as Tier I core instruction (Fuchs & Deshler, 2007). The frequency and intensity of interventions needed for a student to experience meaningful academic progress separate Tier II and Tier III services from the general classroom instruction at Tier I (Lembke, McMaster, & Stecker, 2010). It is important to note that the instruction is tiered and delivered as appropriate to students, in contrast to students being tiered to receive instruction. The student is matched to the instruction that he or she needs. This, along with the focus on achievement, and not the ability, distinguishes RTI from tracking.

Additionally, the use of scientifically validated interventions at Tier II and Tier III may result in changes in the instructional program. These instructional changes are often supplemental to the core program, but could supplant core instruction in some RTI models, based on student need. Fluidity amongst the tiers is an essential component of RTI (Lembke et al., 2010). As students demonstrate success, or become unresponsive to the intervention, they are placed in an appropriate tier. A suggested length of how long the child should remain in the tier, the intervention to be provided, and the frequency of progress monitoring is predetermined and clear. Schools have some flexibility when developing an RTI model that identifies and monitors students.

Interventions and Fidelity. As RTI gains popularity, resources are appearing that claim to have identified scientifically validated research-based interventions. Several websites now offer resources to schools looking for scientifically validated resources: www.FCRR.org, www.bestevidence.org, www.centeroninstruction.org, www.interventioncentral.org, www.gosbr.net, and www.rti4success.org. The United States Department of Education's Institute of Education Sciences maintains a "What Works Clearinghouse" website that reviews various programs and states "Our goal is to provide educators with the information they need to make evidence-based decisions" (About the WCC section, 2012, para 1,). As a result, finding, using, and implementing scientifically validated research-based interventions is now easier for schools that implement scientifically validated interventions.

Unfortunately, identifying an intervention does not guarantee it will be implemented with fidelity. Davis-Bianco (2010) state that one of the most challenging goals in implementing an RTI model is maintaining the fidelity of implementation of the prescribed interventions. Fuchs and Fuchs (2001) have brought more focus to program implementation by stating that implementation fidelity is a key issue in RTI. Noell and Gansle (2006) state that ensuring program fidelity of implementation is essential to avoid creating a system with false results. Schools therefore need not only to identify appropriate interventions, but determine ways in which to ensure the implementation of the intervention occurs as prescribed.

Davis-Bianco (2010) looked at one elementary school's ability to implement interventions with fidelity through a Student Intervention Tracking Form (SITF), interviews, observations, reading coaches, and video clips. The SITF documented

frequency, duration, intensity, and student response to interventions attempted. The reading coaches reviewed the data collected on the SITF, and offered assistance when needed. The coaches demonstrated lessons, provided problem-solving strategies, and offered professional development to teachers when appropriate. The school also trained para-educators to record lessons and interventions, providing additional support. After lessons were recorded, staff selected exemplar video clips that were recorded to a disc and shared with other teachers for professional development. These videos provided a training resource in which teachers could view lessons that were taught as intended by the program used for the intervention. Furthermore, RTI websites shared with the staff allowed individuals to find additional resources. After implementing these strategies the district improved its performance in most areas of literacy, experienced a decrease in referrals for to the child study team, and observed a decline in the number of students being found eligible for special education (Davis Bianco, 2010). These findings suggest that implementing the appropriate interventions as intended by the developer increases the effectiveness of the intervention.

How schools ensure the fidelity of implementation will depend on the school's resources; however, future research in this area is needed to identify effective practices to ensure program fidelity (Davis Bianco, 2010). Consequently, providing high quality, scientifically validated, research based interventions with fidelity is more successful if the instruction provided is relevant, meaningful and appropriate to the student. Once an intervention has been selected and implemented as intended the intervention must be monitored. Monitoring the intervention provides insight to its effectiveness over a period of time.

Monitoring student progress. When monitoring student progress and identifying students for interventions, schools typically use one of two approaches: Direct Route and Progress Monitoring (Jenkins, Hudson, & Johnson, 2007). The Direct Route administers a one-time, short assessment to all children at the start of the school year to identify students performing below a pre-determined cut point. A strength of this approach is identifying potentially at-risk students quickly and allowing Tier II services to begin immediately (Jenkins et al., 2007; Vellutino, et al., 1996; Vellutino, Scanlon, Zhong, & Schatschneider, 2007). This model's one time assessment makes it more logistically feasible for schools to implement, so it is the model most commonly used in schools (Mellard, Byrd, Johnson, Tollefson, & Boesche, 2004). A drawback to the Direct Route approach is that placement is based on a single piece of data, which may misidentify students. The misidentification of students results in some students receiving instruction inappropriate for their abilities and delays the delivery of suitable instruction.

The second approach, Progress Monitoring, involves administering short, frequent probes to screen students who have previously been identified as at-risk within a given period (Compton et al., 2006). Compton et al. (2006) found that multiple screenings helped increase identification accuracy by reducing the need to rely on one data set to identify students. One potential drawback of this model is that it relies on a period of student monitoring. As a result, the access to the intervention is delayed, potentially allowing students who are eventually confirmed to be in need of additional support to fall further behind. However, the data collected during progress monitoring could be useful when determining an intervention.

As noted above, there are strengths and weaknesses of both identification models. The Direct Approach's ability to use one screener allows for immediate interventions, but using one data set may misidentify students. The Progress Monitoring approach allows for multiple sets of data to accurately identify at-risk students; however, the time required to collect data could delay interventions. In both approaches, the identification accuracy of the screener used is of utmost importance because the RTI model is most effective if it accurately identifies the correct students and limited school resources are thus targeted in the most efficient way possible. If a screener inaccurately identifies students, they may receive instruction above or below their needs and thus lose instructional time at their present level.

Once a school has established how it wishes to identify students, it must select a tool to screen students and monitor student progress. For practical purposes universal screeners and progress monitoring tools should be affordable, easy to administer, short, and accurately identify students (Johnson, Jenkins, Petscher, & Catts, 2009). Schools typically select a Curriculum-Based Measurement (CBM) as their universal screener and progress monitoring tool because these tools have the vast majority of research supporting them (Fuchs, n.d.).

Curriculum based measurements. The CBM differs from most classroom assessments in two ways (Fuchs & Deno, 1991). First, research has endorsed the test's validity and the standardized procedures used to administer the test. Second, each test is of equivalent difficulty and represents what the student should be able to do at the end of the year (Fuchs, n.d. WEB BLOG). In the areas of reading, there are multiple forms of CBM's with each measuring a different component of reading. These CBM's are often

referred to as Reading Curriculum Based Measures (R-CBM). Some examples of R-CBM assessments would be assessments that measure phoneme segmentation fluency, rapid letter naming, letter-sound fluency, nonsense word fluency, comprehension, and reading passage fluency depending of course on the grade level (Fuchs & Fuchs, 1998). In a Reading Fluency Curriculum Based Measure, students read a passage for one minute. The total number of words read is then subtracted by the number of errors made, to create a words read correctly per minute score. This practice is repeated three times and the final score is the median of the three scores (Daniel, 2010).

Reading Curriculum Based Measures (R-CBM) for fluency have decades of research to support their ability to predict reading achievement (Fuchs, n.d.; NRCLD, 2007). It is then reasonable to utilize R-CBMs as a tool when operating under an RTI model and monitoring the progress of a potentially at-risk students (Deno, 2003). R-CBMs are standardized, research validated, and interpreted in a standard way (Shinn & Shinn, 2002). As a result, R-CBMs are frequently used to monitor student progress because of their ability to demonstrate student growth within a relatively short period of time, are quickly administered, and their reliability allows staff members to make decisions regarding program changes for individual students. Of course, the data collected is only effective if it leads to changes in the instructional program.

Data driven decisions. When making data driven decisions several factors need consideration such as time, intensity, and frequency required for the intervention. Good and Brophy (2008) suggest that using extra instruction for low-ability students through the use of additional instructional time and small group sizes is beneficial. Torgesen et al. (2001) found that an average 8-10 year old student with a reading disability who

received two 50-minute sessions per day over 8 to 9 weeks made substantial improvements in fluency and comprehension. These students would be considered responsive to the intervention, so the intervention should continue until the desired benchmark has been achieved. In order to receive the additional instruction, time spent in other academic areas may be compromised. School personnel must find an appropriate balance between time spent on interventions and time spent out of class.

Einstein is often credited as to saying “insanity is doing the same thing over and over again and expecting different results”. Providing ineffective interventions may be viewed in a similar fashion. When a student receives an intervention and does not experience success, offering more of the same intervention and expecting different results could be viewed as inane by Einstein’s definition. Sometimes students have a low, or no, response to an RTI intervention. Wanzek & Vaughn (2008) found that providing more of the same intervention to low responsive students was not beneficial. Consequently, schools must not continuously implement the same interventions and expect different results. Schools must review and respond to intervention data in order to make appropriate instructional changes.

Wanzek & Vaughn (2008) completed a study that analyzed the benefits of a single dose intervention to double dose interventions in students who had demonstrated a low response to previous interventions. A single dose intervention was defined as one 30 minute session daily, whereas the double dose interventions were defined as two 30 minute sessions daily of continued intervention. The study found that low responsive students receiving increased interventions by doubling the intervention did not benefit over students receiving a single dose of the same intervention. Essentially, more of the

same intervention was not beneficial to low responsive students. However, the responsive students in the treatment groups did increase their scores on pre/post tests compared to their low responsive peers in the treatment group. This finding suggests that low responders require interventions that are instructionally different from their intervention responsive peers (Wanzek & Vaughn, 2008). In addition to developing alternative interventions for non-responding, or low responding, students and determining the appropriate amount of time needed to deliver interventions, schools must determine an appropriate group size in which to deliver the intervention and it still be effective. Researchers have found that one-on-one interventions yield no greater impact than interventions delivered in small groups of four or less (Vaughn, et al., 2003; Elbaum, Vaughn, Hughes, & Moody, 2000).

RTI Models

An RTI model can become operational when schools have established a system that delivers high-quality, scientifically validated, research based interventions with fidelity that efficiently monitors student progress and allows for data driven instructional decisions. As mentioned above, models typically include three tiers of instruction with interventions, monitoring student progress, and services increasing based on individual needs of each child. There are two commonly accepted models that incorporate the basic components of RTI, the Standard Protocol Model and the Problem-solving Model (Fuchs & Fuchs, 2006; Johnson, Mellard, Fuchs, & McKnight, 2006).

In general, practitioners implement a problem-solving approach, while researchers prefer the standard protocol model (Fuchs & Fuchs, 2006). Researchers may prefer the Standard Protocol approach because its driving force is the use of scientifically based

interventions (Fuchs & Fuchs, 2006). This model suggests that the student will succeed if the intervention is good; therefore, the student is placed into an established intervention that matches his or her needs. In contrast, the Problem-solving Model places the student first, which may appeal to the practitioner. This allows the student's needs to be matched with a plethora of interventions created by a team with an individual student in mind. Fortunately, RTI is flexible enough that schools can operate on a hybrid model, combining elements of both models.

Standard Protocol. Fuchs, Moch, Morgan, and Young (2003) state that the standard protocol "requires use of the same empirically validated treatment for all children with similar problems in a given domain" (Fuchs et al., 2003, p. 166). The standard protocol approach typically takes place outside the classroom (Fuchs & Fuchs, 2006). This model focuses on individual children, but is applied to a group of students. Students in Tier I of instruction are progress monitored. When a student or group of students fails to meet the expected academic gain, they begin receiving an intervention for a fixed period of time within Tier I. Students who respond to the treatment are returned to the core program, but students not responding to the intervention are moved into Tier II. In Tier II students receive additional, targeted interventions for varying amounts of time and frequency depending on the model. If students are unresponsive in Tier II, the school may either place the child directly into Tier III for further interventions, or refer the child for a special education evaluation if it suspects a learning disability. As a result, Tier III interventions may occur through general education, special education, or special education staff delivering a targeted intervention based on need, not disability, outside the realm of special education services. Data collected from

the previous Tiers and intervention would assist in the special education referral process (Fuchs et al., 2003; Fuchs & Fuchs, 2006). Once a child is placed in special education, the child may have access to additional resources.

Problem-Solving Model. Fuchs et al. (2003) describe the problem-solving model as a process where "solutions to instructional and behavioral problems are induced by evaluating students' response to a four-stage process comprising problem identification, problem analysis, plan implementation, and problem evaluation" (Fuchs et al., 2003, p. 160). Typically, the problem-solving model occurs within the classroom (Fuchs & Fuchs, 2006). When a student is suspected of experiencing academic difficulties, a process begins to target the individual student. The Heartland (Iowa) Educational Agency and Gustafson (Ikeda & Gustafson, 2002) have constructed an example of a four level problem-solving model. Level 1 takes place within the classroom through teacher intervention and communication with parents. Level 2 involves a referral to a school based team. The school based team works with the teacher to identify weaknesses in order to create and monitor an appropriate intervention. Level 3 is the result of a student making inadequate progress in Level 2 and involves a similar process with the intervention being reevaluated and redesigned. If success is not evident, the child moves into Level 4, which results in a referral to special education. Regardless of the model, both philosophies incorporate the core components of RTI, including providing high-quality, scientifically validated, research based interventions with fidelity.

The information above is based on common models prevalent in current research. It is important to remember there is no predetermined prescription for the number of tiers, and frequency and duration of interventions in RTI. The lack of decisive and objective

answers in these areas may indicate why there is insufficient research analyzing the effects of RTI implementation on student achievement. RTI's flexibility may be both a strength and a weakness, as it allows vast discrepancies to exist from model to model.

Grouping

Grouping students based on their instructional needs has been a controversial issue puzzling teachers for several decades. However, grouping students is one way to deliver specific interventions to selected students in an RTI model. Schools have grouped students since the beginning of public education in the United States. One room school houses contained multiple aged peers at varying ability levels in one classroom and provided instruction tailored to meet the needs of individuals or small groups. As populations grew, a restructuring took place that grouped students by chronological age. Today, many people no longer think about this as a method of grouping.

A review of the last three decades of reading research indicates there are advantages and disadvantages of ability grouping students. When discussing ability grouping, there are two models commonly practiced; between-class and within-class. Between-class takes place across a grade level resulting in a homogenous classroom. Within-class grouping takes place when a heterogeneous classroom is divided into ability groups creating small, homogeneous groups for a portion of instruction within a heterogeneous classroom (Slavin, 1987). To better understand ability grouping one must further understand individual characteristics of each grouping methodology.

Between class. Slavin's (1987) review of the research found six common forms of between-class ability grouping; ability, regrouping for reading and/or math, Joplin

Plan, Nongraded plans, gifted programs, and special education. For the purpose of this review, we will look at three of these methods.

The Ability Grouping method places students in self-contained classes based on general achievement, IQ, and/or teacher judgment with students remaining homogeneously grouped during the school day. The Regrouping for Reading and/or Mathematics method is similar to Ability Grouping. However, students remain heterogeneously grouped during most of the day so social stratification is limited. Group placement is specific to the child's reading or math ability and regrouping is more flexible as a student's achievement changes. The Joplin Plan groups students by instructional level, not their grade level. Slavin's (1987) review found that the most effective between-class and within class ability grouping occurred when the following guidelines were followed:

1. Students remain in heterogeneous classes most of the day and are regrouped by performance level only in such subjects as reading and mathematics in which reducing heterogeneity is particularly important.
2. The grouping plan reduces heterogeneity in the specific skill being taught.
3. Group assignments are flexible and are frequently reassessed.
4. Teachers adapt their level and pace of instruction in regrouped classes to accommodate students' levels of readiness and learning rates. (Slavin, 1987, pp. 116)

Research has also identified disadvantages of ability grouping. A review of the literature identifies the following disadvantages; focuses on rote memorization, fails to teach content meaningful to students, utilizes less stimulating materials, devotes more time to behavior management and less to instruction, delivers content at a slower pace, covers less curriculum, promotes low teacher expectations, and promotes a learning gap (Grant & Rothenberg, 1986; Oakes, 1995; Oakes, Gamoran & Page, 1992; Rowan & Miracle, 1983; Trimble & Sinclair, 1987). Many researchers argue that these negative

effects are the result of low-ability students requiring a wide-spectrum of learning needs and therefore instruction is more challenging (Eder, 1981; Felmlee & Eder, 1983; Oakes, 1985; Reuman, 1989; Rosenbaum, 1980).

Within Class. Slavin's (1987) review of the literature on within-class ability grouping found that grouping plans generally conform to the above four requirements and found two common types of within-class ability grouping: mastery learning and cooperative learning. In mastery learning students are assessed, then grouped homogeneously based on data analysis to receive instruction at a rate and level appropriate for them. In cooperative learning, students are heterogeneously grouped with the idea that students will be motivated to organize materials, problem solve, and help each other learn material in order to demonstrate group achievement. A meta analysis of research on within-class grouping by Lou et al. (1996) found that research supports the practice of utilizing within-class grouping systems, with low ability students performing better in heterogeneous ability groups, average ability students in homogenous groups, and high achieving students performing equally in either heterogeneous or homogenous groups. The best within-class grouping occurred when instruction methods and materials were adapted for the groups. Both Slavin (1987) and Lou et al. (1996) found that research on cooperative learning suggests that it is most successful when group rewards are provided based on the individual learning of each group member, not a single assessment that evaluates the group's achievement. Providing individual assessments based on the group's work, or assigning various tasks to group members are some ways in which teachers could meet this recommendation. Finally, Lou et al.'s (1996) meta analysis found that grouping was most effective when students were in groups of three to

four and of medium ability. However, low-ability students benefited more in mixed-ability groups. Meijnen and Guldemond (2002) found results similar in that low achieving students performed better in heterogeneous grouping.

History of the Effects of Reading Grouping Research

To best understand the controversial history of reading grouping one must review the literature of the last few decades. A review of the literature from the 1980s and 1990s reveals that researchers found that grouping high ability students together came at a cost for the learning needs of low-ability students (Oakes, 1985, 1995; Welner & Oakes, 1996; Zirkel & Gluckman, 1995). Research regarding grouping methods in schools was inconsistent, with the methodology of some studies being questionable (Slavin, 1987; Gamoran, 1986). The literature shows that opponents of grouping typically argued that grouping was a disadvantage to low achievers because they lacked peer models, had low expectations from their teachers, and encountered a slow instructional pace (Slavin, 1987). Opponents further argued that these characteristics lead to wider instructional inequities, poor peer social development, and continued to enhance the achievement gap (Slavin, 1987). However, the research showed no grouping effects on a child's self-rating of academics, character, or responsibility (Pallas et al., 1994). Advocates of grouping argued that ability grouping lets high achievers move rapidly and gave low achievers attainable goals at their instructional level. Both groups state that classroom management was a concern when employing ability grouping (Slavin, 1987).

Webb (1982, 1991) found that average-ability students in homogeneous groups receive more explanations in math settings. As a result mixed ability groups may be at a disadvantage for average-ability students because the teacher-student relationship may

not be as strong between high and low achievers and the average ability student may receive fewer opportunities to participate. In homogeneous groups, average-ability students played active roles in the learning process and learned more than their average-ability peers in heterogeneous groups.

Pallas, Entwisle, Alexander, and Stluka (1994) researched possible instructional, social, or institutional effects of ability grouping. The researchers analyzed data found in a previous longitudinal study that followed a cohort of first graders from the fall of 1982 through the spring of 1986. The study analyzed data collected from parents, students, teachers, California Achievement Test, and school records. A two-stage stratification process identified 756 students. The study followed a subset of these students. The researchers found evidence of instructional effects on grouping noting that the students placed in the highest group attained the highest scores on the final standardized assessment. Reviewing survey information, the researchers found no evidence that ability grouping had an effect on a child's academic self-concept, nor their sense of responsibility. Furthermore, there was no connection between a child's behavior and ability group. However, institutional expectations and perceptions of significant others, were impacted through grouping. The researchers found evidence of instructional effects on grouping noting that teachers and parents perceived students in higher reading groups to be more competent, regardless of the child's actual achievement. Alarmingly, the data analysis revealed that students performing equally on standardized assessments did not receive the same reading group placement. This discrepancy indicates that non-academic indicators played a significant role in student placement. RTI's use of data driven decision-making, if used as intended, would address this issue. The results did not

distinguish how students performed when placed in groups above or below their ability level, only on the overall achievement of the various groups. It would be difficult to argue against the idea that a high achieving student placed in a high achieving group would excel academically and that placing a high achieving student in a low achieving group would hinder academic growth. Of course, the converse of putting a low achieving student in a high achieving class could inhibit growth. RTI's use of data driven decision making, monitoring student progress, and providing scientifically validated interventions would prevent students being placed in groups above/below their instructional ability. Furthermore, an RTI model would ensure the instruction was tailored to meet the learning needs of the various students, and not simply an adjustment in instructional pace.

Recently, researchers have begun to look at reading grouping from a different approach from that of the 1980s and 1990s. Hong, Corter, Hong, & Pelletier (2012) argue that placing a low-achieving student in a high achieving group may not result in the low-achieving student learning at the same rate as the high achieving peer. Hong et. al, (2012) are critical of previous research for failing to determine how much more or less low-ability students learn by being grouped versus what their achievement would have been had they not been grouped. Furthermore, they state the gap between high-ability and low-ability students widens because of several factors outside of any grouping, or non-grouping methodology. Hong et. al, (2012) hypothesize that homogeneous grouping with instruction tailored to meet individual needs of students will sustain student engagement in the task and increase performance. However, high intensity grouping with limited individualized instruction would limit the benefits of ability grouping for low-ability students. The researchers wanted to compare grouped low-ability students to their

non-grouped low-ability peers to determine the effects of grouping in low-ability students.

To complete their study, Hong et. al. (2012) "applied marginal mean weighting through stratification to investigate the differential effects of time and grouping for students of different ability levels" (Hong, et al., 2012 p. 75). Information collected from the Early Childhood Longitudinal Study Kindergarten Class of 1998-1999 provided data for the study. In addition to the formal assessments, the researchers used surveys of parents and teachers of each child. The researchers used a predetermined set of criteria to identify students as low-, medium-, or high-ability.

The results suggested that homogeneous grouping for high ability students had little effect on academics. There were beneficial effects of homogeneous grouping for medium-ability students in literacy growth and learning behavior when teachers spent more than one hour per day on literacy instruction. There was clear evidence that high-intensity grouping was detrimental to low-ability literacy growth when there was a limited time allocation to literacy instruction. However, when more than one hour was given to literacy instruction, homogeneous grouping appeared to improve low-ability students' general learning behaviors and reduced behavior problems.

The researchers suggested these findings are the result of high-ability students to better self-regulate and remain on task, even while the teacher works with other students, whereas the low-ability students have a lower capacity for self-regulation and less self-control requiring more direct guidance and assistance from the teacher. Therefore, allocating a small amount of time to literacy instruction while using high-intensity grouping can be instructionally detrimental to low-ability groups.

The study had its limitations. The researchers did not have access to instructional practices at the group level, which limited their ability to determine time-by-grouping effects to more detailed components of instruction such as the use of progress monitoring and the degree of differentiation. As a result, a study such as this is unable to determine best strategies for teacher interactions with students and use of curricular materials. Furthermore, the authors of the study acknowledge that their results contradict previous research and the results of their study need to be verified by future studies (Hong, et al., 2012).

In a study looking at grouping and elementary science Mohammad, Lazonder and Ton De Jong (2005) found neither form of grouping (heterogeneous/homogeneous) to be superior to the other. The research showed that heterogeneously grouped students out performed homogenously grouped low and average ability students. However, heterogeneously grouped students did as well as homogeneous groups of high ability students. Individual posttest scores demonstrate significant benefits of heterogeneous grouping for low-ability students. However, learning in homogeneous groups appears to be more effective for average-ability students, where as high ability students learn as much in either group (Mohammad et al., 2005). These findings suggest that low ability students do better in heterogeneous groups, average students do better in homogeneous groups and high performing students will be successful in either.

Homogenous grouping has higher collaboration for average ability grouped students, but less collaboration for low ability grouped students. It appears that low-ability students are motivated in heterogeneous groups whereas the scores of high-ability students do not change based on the group's composition. Because low ability students

learn better with high ability students, grouping formations do not inhibit the growth of high achievers, and heterogeneous grouping holds back average-ability students, the researchers propose that teachers create heterogeneous groups of high and low-ability students and place the remaining average-ability students in homogeneous groups (Mohammad et al., 2005). Hooper et al. (1989) also found that high ability students perform well regardless of grouping.

Hong and Hong (2009) found an interdependent relationship between time and within-class homogenous grouping in kindergarten classes. The researchers obtained results by applying the method of marginal mean weighting through stratification to multilevel educational data. Researchers collected data from the Early Childhood Longitudinal Study-Kindergarten Cohort of 1998-1999 and contained a nationally representative sample of 21,260 children in 3,197 Kindergarten classes in over 1,000 schools. Reading scores on pre and post assessments administered at the start and end of the school year determined growth. Researchers also compiled information from parent, teacher, and administrator surveys. Teacher reports provided rich information about the classroom and children's instructional experiences.

When the Language Arts period was at least 60 minutes, students who received some homogeneous instruction achieved more than students who did not receive homogeneous instruction. When the Language Arts period was less than an hour, homogenous grouping showed no effect on reading growth when compared to heterogeneous grouping. Furthermore, when heterogeneously grouped Language Arts periods exceeded 60 minutes there was no increase in academic achievement. However, increasing the Language Arts period beyond 60 minutes and increasing the amount of

time spent homogeneously grouped, reading growth was demonstrated. Students grouped homogeneously for 40% of the 60 minute Language Arts period demonstrated the largest growth in the study. This study demonstrates that kindergarten students' reading achievement is maximized when homogeneous grouping is used during their Language Arts period. This finding may be the result of students receiving instruction at their instructional level for an extended period of time.

When analyzing the schools in the study, researchers found that schools with longer Language Arts periods and utilizing with-in class ability grouping were usually high poverty schools with a large minority population. This study is significant because it supports the idea that students learn best when actively engaged for a sustained period with instruction tailored to their ability level. Practitioners wishing to implement within-class ability groups should consider using at least a 60 minute period with 40% of the time spent in homogeneous groups to achieve maximum benefit. Reading blocks longer than an hour utilizing heterogeneous grouping, or less than an hour utilizing homogeneous grouping, need further evaluation. Furthermore, the research suggests that universally abolishing homogenous grouping in kindergarten may inadvertently harm academic growth. Opponents of grouping may point out that the study did not address variances in instructional practices and programs within the sample size, and that ability grouping has a more significant social-emotional impact.

McCoach, O'Connell, & Levitt (2006) researched the relationship between the frequency with which teachers reported using within-class ability grouping and a child's reading growth. Data was collected from the National Center for Education Statistics' Early Childhood Longitudinal Study—Kindergarten Cohort. The researchers used a

multistage probability sample design to gather a nationally representative sample of American kindergarten children. The sample excluded learning disabled students, English language learners, and students that moved during the school year, which creates limitations to the study. The researchers subtracted fall and spring reading scores to determine individual gain scores and student growth. The researchers used surveys to determine the frequency of ability grouping. Using self-reporting surveys does create a limitation to the study. However, they found that teachers using ability groups once a week resulted in growth for all children and scores increased 1.5 points more, on average, for schools in which teachers used ability groups daily compared to those who reported no use.

A review of the literature suggests that there are both strengths and weaknesses of grouping. The argument that reading grouping promotes poor peer social development has been challenged by the research of Pallas et. al. (1994). Meanwhile many argue that homogenous grouping promotes lower expectations, covers less curriculum, and promotes a learning gap in low achieving students. While the research of Hong & Hong (2009), McCoach et. al. (2006), and Hong et. al. (2012) challenges the belief that ability grouping fosters the development of an achievement gap in low ability students, unfortunately, decades of grouping research have brought little certainty to this topic.

The research on grouping over the last three decades is contradictory to say the least. However, common trends are starting to emerge that deserve some consideration; time and homogenous grouping in high and medium ability students. The time dedicated to grouping seems to be of utmost importance, two studies suggest one hour to be the benchmark for the overall effectiveness of homogenous grouping. If this one-hour

benchmark continues to emerge in research we should question the amount of emphasis placed on previous studies where grouping was less than one hour. Furthermore we must consider the growing body of research regarding ability grouping with medium and high achieving students. The literature reviewed above suggests that medium ability students typically do better grouped by ability then thier low ability peers; however, high ability students appear to be successful regardless of being grouped homogenously or heterogeneously.

Grouping benefits are less clear and consistent for low-ability students. However, the research above suggests that being in a low-ability group has limited impact on a student socially/emotionally (Pallas et al., 1994) and that low-ability students may benefit from homogenous grouping if it is longer than an hour (Hong, et. al., 2012; McCoach, et. al, 2006). Otherwise, heterogeneous grouping may be more effective (Lou et. al., 1996; Meijnen & Guldemond, 2002; Mohammad et. al., 2005). Consequently, the implications of homogenous grouping of low-ability students are still unclear and further research is needed in this area. Figure 2.2 represents a synthesis of findings on reading grouping.

Low Performing Students	Medium Performing Students	High Performing Students
Heterogeneous grouping most effective (Lou et al., 1996; Meijnen et al., 2002; Mohammad et al., 2005) Homogeneous grouping most effective if longer than one hour (Hong, et. al., 2012; McCoach, et al., 2006)	Homogeneous grouping most effective (Mohammad et al., 2005; Webb, 1982; Webb, 1991) Students benefited in literacy and behavior when homogeneously grouped at least one hour per day (Hong et. al., 2012)	Performs well heterogeneously or homogeneously grouped (Hooper et al., 1989; Mohammad et al., 2005) High achieving Homogeneously grouped students performed the best (Pallas et al., 1994) Homogeneous grouping little effect on high achieving students (Hong et. al. 2012)

Common Findings Among All Groups

- Groups of 3-4 most effective (Lou et al., 1996)
- Students homogeneously grouped for extended times demonstrate largest growth (Hong & Hong, 2009)
- Grouping has no effect on academic self-concept, sense of responsibility, or behavior (Pallas et al., 1994)
- Teachers using ability groups once a week have increased scores (McCoach et al., 2006)

Figure 2.2 Summary of Research on Reading Grouping

RTI and reading grouping. Reading grouping is relevant to RTI research. RTI promotes the delivery of an instructional program at the child's level. Due to resources, time, and other constraints many schools deliver this instruction to groups of students of the same instructional needs. If a school is developing an RTI model in which students are grouped by instructional needs, it is imperative that reading research is reviewed in order to address the weaknesses, and support the strengths of grouping.

Why Further Research is Needed

Many of the components essential to RTI began to emerge as early as the 1970s. The reauthorization of IDEIA in 2004 allowing RTI to serve as an alternative identification process for determining a SLD has resulted in RTI implementation to grow faster than RTI research. Hollenbeck's literature review (2007) found that when discussing RTI there is "currently more unknown than known about the construct" (Hollenbeck, 2007, p. 144). Furthermore, Fuchs and Deshler (2007) stated "it is untrue and misleading to claim that we currently have a necessary and sufficient knowledge base to guide the implementation of RTI" (Fuchs & Deshler, 2007, p. 134)

The fundamental concepts of RTI are firmly founded in research (Hollenbeck, 2007). However, the body of knowledge surrounding the impact of RTI is relatively small or nonexistent (Gersten & Dimino, 2006). Furthermore the research supporting a tiered instructional system is in its early stages (Fuchs, Deshler, & Reschly, 2004; Mellard, et al., 2004). Current studies pertaining to RTI focus on its implementation in special education related services and not its integration in the general education setting environment (McMaster et al., 2005). These gaps in research leave the application of RTI in general education relatively unstudied (Hollenbeck, 2007).

Scruggs and Mastropieri (2006) warned that RTI has not been clearly defined and that models and standard practices are lacking, considering the claims being made around RTI. This review illustrated several relevant discrepancies in grouping research and discussed why and how discrepancies can exist with various RTI models. The review attempted to synthesize information and present the most common elements accepted by experts in the field and provide an operational definition. My research analyzes how a

school implemented its RTI model and then how it intervened with its most at-risk students.

Many schools, districts, and states are struggling to find a solution to the ever increasing demands of the public and the accountability movement. However, research simultaneously shows that reading achievement in first grade accurately predicts reading achievement in later grades. Creating an RTI model by synthesizing what we know about reading groups, the consequences of low reading achievement in first grade, and the potential success of RTI, can we prevent Juel's (1988) findings that 88% of low achieving students will be considered low achieving in fourth grade? Is RTI's ability to identify at-risk students early, its use of research-validated instruction, and the focus on data driven decision making challenging previous findings indicating that low achieving readers in first grade will be low achieving readers in later grades? Or alternatively, is RTI simply a new way of promoting an ever-increasing achievement gap by tracking students in instructional tiers?

This research attempts to answer these questions by researching the following questions:

1. How did the subject elementary school implement RTI?
2. How did the school intervene with the Tier III students identified in first grade by the school's universal screener?
3. What is the relationship between first grade scores and fourth grade scores on the school's universal screener's oral reading fluency assessment?

In the following chapter, I review the methodology used to research the above questions. The research methodology pulls from both qualitative and quantitative

methodology to appropriately answer these questions. In the next chapter, I will discuss how the site was selected, how the research methodology was selected, how data was collected, and how the data was analyzed.

Chapter 3

As mentioned in Chapter One, students performing below grade level in first grade are likely to perform below grade level in future grades. As a result of this and changes in federal regulations, schools began to look at an educational framework known as Response to Intervention (RTI) to identify and intervene with students performing below grade level. However, research surrounding the effects of RTI on student achievement is lacking. As I discussed in Chapter Two, many schools are grouping students homogeneously in order to deliver targeted interventions through an RTI model. Unfortunately, the research behind grouping practices is contradictory, leaving some to wonder if it benefits students. In this chapter, I outlined how my research provides additional information to the field of knowledge regarding RTI and reading grouping.

This mixed methods case study reliesd on quantitative and qualitative data sources to answer the research questions below. Quantitative and qualitative research each had unique strengths that allowed me to analyze a case in different ways. For this research, I used quantitative data from the school's universal screener, AIMSweb, to provide descriptive statistical information and data anchor points. Qualitative data came from student cumulative folders, school documents, interviews, and district documents. Utilizing quantitative and qualitative data together provided the opportunity to explore program implementation, the relationship between scores after four years exposure to RTI, and how a school intervened with its most at-risk readers.

Research Questions

I used the case study approach (Yin, 2003) to answer the following research questions:

1. How did the subject elementary school implement RTI?
2. How did the school intervene with the Tier III students identified in first grade by the school's universal screener?
3. What is the relationship between first grade scores and fourth grade scores on the school's universal screener's oral reading fluency assessment?

In the next section, I outlind the research design and how I used an embedded case study approach to answer the above questions. When using the embedded case study approach, it is possible to have multiple units of analysis where the research questions determine the unit of analysis (Yin, 2003). As a result, I provided an explanation regarding my units of analysis and how they connected to the research question. In order to provide a roadmap for my research, I then discussed the procedures I followed, starting with the site selection and how I will identified the embedded units of analysis within the case study. Afterward, I provided information regarding the collection of data and how the analysis procedures coincided with the collection of the data using protocols, a thematic analysis, and two forms of triangulation. To address the validity of the research I gave an overview of the steps taken to ensure construct and external validity and then discussed internal validity's role with this type of research. Finally, I concluded by considering my biases in this research.

Ethics, IRB Approval, and Confidentiality.

This research looked directly at a specific school's RTI model, how it intervened with specific students, and how the school's actions affected student achievement. As a result, the research was sensitive in nature. In order to protect the identity of the district, the school, and individuals I used pseudonyms for all people, places, committee names,

and organizations. My research involved human subjects and required a submission to the Internal Review Board (IRB). I submitted my IRB plan and received approval from Virginia Tech's IRB.

District representatives collected, copied, and deidentified data before I received it. I used a password-protected laptop to contain my dissertation, my notes, and digital files. I kept the computer back up in a locked cabinet, to which I had sole access. A secure location, separate from the computer back up, housed all paper documents, records, and assessments.

Research Design

Often, many small cases make up a single case study (Patton, 2002). These cases can serve as embedded units of analysis for the main case (Yin, 2003). In this research, identified students from Pace Elementary School (PES) served as the embedded units of analysis within the larger case, which took place within the context of the school. As a result, this research utilized an embedded case study approach. Using embedded units of analysis provided an opportunity for extensive analysis and provides additional insights into a case (Yin, 2003).

I utilized the case study method for a number of reasons. Case studies are appropriate when asking "how" and "why" questions because they allow investigators to provide a holistic study of real life events (Yin, 2003). In this research, I wanted to know more about how PES intervened with Tier III students as I endeavor to understand the ecology of RTI enactment at a school. Second, case study research contributes to the field of knowledge for individual, group, and organizational phenomena (Yin, 2003). In my research I discussed how PES intervened with its most at-risk students, an area that

has been documented as needing additional research. In addition, I provided a detailed example of how PES implemented an RTI model, which other schools can replicate. Third, my research needed to use both qualitative and quantitative evidence to best answer my research questions and this mixed method approach was appropriate in case studies (Yin, 2003).

Units of Analysis

The research questions determine the unit of analysis in a case study (Yin, 2003). My first research question examined how PES implemented RTI, so the school served as a unit of analysis in the study and served as the case study. My second question explored the relationship between students' test scores at the end of first grade and at the end of their fourth grade year, this cohort of students served as the embedded unit of analysis. My third question investigated how PES intervened with students identified as Tier III, and this cohort of students served as individual embedded units of analysis. In this research, I focused on multiple units of analysis; the school, the cohort, and the students identified as Tier III.

To identify the cohort of students to serve as the embedded unit of analysis for my second question, I selected students enrolled in the district as first grade students in the fall of 2008 and then cross-referenced the data to students in fourth grade in PES for the spring of 2012. I eliminated students who left the district, or had incomplete scores for the fall, winter, and spring of each grade between first and fourth grade. The students remaining participated in RTI between first and fourth grade within the same school and served as the embedded units of analysis.

To identify the students in Tier III, I applied the Spring 2008 AIMSweb cut scores to the cohort of students identified above at the end of their first grade year. This allowed me to sort the students into Tiers, based on national norms. The students identified as Tier III in the spring of 2008 served as the embedded units of analysis to answer my third research question. I eliminated students receiving special education services for a learning disability at the end of first grade from the study, as they already had a known learning disability. This process allowed me to identify Tier III students so that I can research how PES intervened with its most at-risk students.

AIMSweb is a series of Curriculum Based Measurements (CBM) commonly used for universal screening and progress monitoring (AIMSweb, 2012). There are various CBM assessments measuring a variety of skills. My research focused on a Reading Curriculum Based Measurement (R-CBM), specifically the Oral Reading Fluency (ORF) component of the assessment. The AIMSweb assessment is a nationally normed test and provides quantitative cut-points for each tier. These cut-points established Tier benchmarks that I used throughout my study.

Procedures

Case studies are "research situations where the number of variables of interest far outstrips the number of datapoints" (Yin, 1994, p. 13). In my research, I looked at program implementation of an educational framework and its effects on student achievement. As a result, there were an overabundance of variables such as classroom instruction, home environment, frequency of intervention, instructional materials used, and socioeconomic status. Therefore, it was important to have a clear chain of evidence, allowing the reader to understand how I went from initial questions to final conclusions

(Yin, 1994). Below I discuss how I selected the site, selected the cases, collected and analyzed data, addressed validity, and discussed bias.

Site selection. Pace Elementary is a school wide Title I school in the Paix School District (PSD) in a rural area in the mid-Atlantic. According to the State's department of education's website, PSD serves around 8,000 students. The 2010 census documented that around 65% of the population served by the district is Caucasian, with Hispanic and African American making up the largest minority populations. According to the National Center for Education Statistics the PES demographics were as follows; American Indian/Alaskan .7%, Asian/Pacific Islander 1%, black 16%, Hispanic 13%, white 64%, two or more races 4%. The school of 582 students was 52% male, 48% female, 51% free and reduced lunch, and had a student teacher ratio of 16.17:1 and classified as rural fringe for the 2011-2012 school year when the data collection for this research stopped. A Title I school wide program is possible when more than half of the students qualify for free and reduced lunch. To become a school wide Title I school the school must have an approved plan in which Title I federal funding is used to improve the academic program for all students (US Department of Education, 2002). PES's website reported that the 83,000 square foot facility was originally built as an open floor plan school in 1972, but has under gone renovations in 1989 and 1990 which included an addition and the construction of walls to define classroom spaces. This specific site was selected because of its long history of RTI and the principal's involvement in RTI development.

In 2004, PES's principal, Penny, and special education administrator, Amy, attended a conference on problem-solving presented by an RTI expert. At the conference, the two administrators learned about a problem-solving model used in a

different state. The two brought the idea back to PES and began training personnel in developing local norms and the various steps of the problem-solving process in Penny's school, which was the subject school.

The district then brought the RTI expert from the conference, and the expert from the other state to PSD further training. The PES problem-solving team, P.E.A.C.E., began meeting that November, after local norming had taken place. PES documented the involvement, responsibilities, and duties of P.E.A.C.E. in a manual. P.E.A.C.E. became the foundation of the PES RTI program, functioning as a problem-solving model.

A representative from the state's department of education heard about the work taking place in PES and met with the special education administrator, Amy, to discuss the work. The representative indicated state interest in initiating an RTI pilot program, allowing schools to opt into becoming RTI schools. PSD asked to serve as a pilot district; however, the state denied their request stating the district would serve as a "pilot advisor", guiding the pilot divisions. Penny and Amy began attending state department of education meetings on a regular basis to plan and implement pilot trainings at the state level. As a pilot advisor division, PSD had access to the state's resources and trainings, at no cost to the division. As the state became more interested in RTI, additional funds became available to the cause and RTI experts began hosting training sessions. This gave Penny and Amy direct access to some of the largest names in RTI. Consulting with the experts further developed Penny and Amy's understanding and knowledge of RTI.

As Penny learned more about the various components of RTI, specifically the importance of having a quality core academic program, she began to look at PES's core program. After reviewing the data, Penny decided to change the core program at PES.

Citing sources from the Florida Center for Reading Research, RTI Action Network, What Works Clearing House, and the district's special education staffing as resources Penny began looking for alternative programs. Eventually, PES developed a core academic program that could offer different instruction to different students based on their needs. Students took probes and various assessments to determine who needed more, different instruction. Offering multiple instructional programs and placing students into program based on need became the foundation of the school's use of the standard protocol model to RTI. The problem-solving model, P.E.A.C.E. continued to exist because of its ability to target individual students with unique needs. As a result, the school began operating on a hybrid RTI model that incorporated components of both the standard protocol and problem-solving models of RTI. Currently, PES and PSD operate on a hybrid RTI model, incorporating components of the standard protocol and problem-solving models of RTI.

Selection of Cases. The site selected, Pace Elementary School (PES), served as the basis for the case study. This was the result of the case study taking place within the context of PES. As mentioned above, within the case study at PES there were multiple embedded units of analysis. Utilizing embedded units of analysis also supported the case. Yin (2003) states that embedded units of analysis increase the opportunity for extensive analysis and provide additional insights into the case. In addition, PES's history of RTI implementation and the recognition the program received contributed to me selecting it as the site and case for this research.

Data Collection. Data should come from multiple sources (Yin, 2003). In this research, I used records, documents, interviews, and assessments to collect data. School records and documents provided data sources for information regarding the

implementation of RTI at PES. The district's RTI manual provided details regarding RTI implementation at PES, assessments used, and common guidelines. The Literacy Coach's excel spreadsheets provided reading assessment scores for the identified sub units of analysis and provided data derived from assessments that occurred within the parameters of the implemented reading program, and data from assessments outside the implemented reading program. Meeting minutes from the outside coaching agency, Paz, provided insight on the conversations had by administration and the consultants regarding appropriate placement, anecdotal information regarding the child, and possible areas for remediation. RTI letters, memoranda, and school letters documented how the school presented RTI to the community. Reviewing the school schedule allowed me to see how the school utilized human resources and the time dedicated to reading. These district and school documents and records acted as data regarding PES's RTI implementation and enactment. Interviews with the principal Penny, and special education administrator Amy, provided additional information regarding RTI, its implementation, and how it affected students.

When looking at the embedded units of analysis, the data sources originated from the student's cumulative file and AIMSweb scores. PES personnel collected student data between the fall of 2008 to the spring of 2012. Various assessments, such as state standardized assessment scores, PALs, ESOL assessments, and AIMSweb, provided benchmarks and allowed for comparisons with peers. Meeting minutes from the problem-solving teams provided information regarding actions taken, rational, and background information not found in other documents. Report cards provided information regarding student performance in the classroom. Finally, documents such as

parent notes, teacher notes, school attendance letters, behavior reports, and placement forms gave insight to academic and non-academic influences that may affect student performance.

Data Analysis. In case study research the researcher is collecting and analyzing data simultaneously (Cousin, 2005). When working with documents it is essential that I determined their authenticity and their origins, purpose, accuracy, author, and context (Merriam, 1988). To achieve this purpose, and to address issues of bias that may arise by virtue of my existing knowledge of the site, I used the following document review protocol for all documents (Merriam, 1988, p. 121-122).

- What is the history of the document?
- How did it come into my hands?
- What guarantee is there that it is what it pretends to be?
- Is the document complete, as originally constructed?
- Has it been tampered with or edited?
- If the document is genuine, under what circumstances and for what purposes was it produced?
- Who was/is the author?
- What was he trying to accomplish? For whom was the document intended?
- What were the maker's sources of information? Does the document represent an eyewitness account, a secondhand account, a reconstruction of an event long prior to the writing, an interpretation?
- What was or is the maker's bias?
- To what extent was the writer likely to want to tell the truth?

- Do other documents exist that might shed additional light on the same story, event, project, program, context? If so, are they available, accessible? Who holds them?

While researching the case study, I uncovered large amounts of data. To manage the data I followed the subsequent steps. First, when reviewing documents I followed the document review protocol outlined in Chapter Two. Second, when reviewing data I color-coded text utilizing the following categories: pink represented fidelity, blue represented interventions, yellow represented monitoring progress, and orange represented making data-driven decisions. Often in RTI these categories are concurrent with each other, as a result some data received multiple codes. These categories also align with what the experts in the field considered to be agreed upon components of RTI. Information from the archived records, school documents, and interviews were subject to the above coding.

After reviewing the school documents, archived records, and student cumulative folders, I conducted an interview with principal, Penny and the special education administrator, Amy. During the interview, I asked questions regarding RTI and its early beginnings, implementation, fundamentals, and interventions. I utilized a semi-structured interview protocol to complete the interviews. The interview protocol is in Appendix A. The interviews were subject to the same coding as mentioned above and assisted with data triangulation.

I utilized a different approach in the embedded case studies. Each cumulative record was subjected to a file review and each document underwent a document review protocol. While completing the file review, I created a chronology for each child using

the information found in the cumulative folder. This helped me organize the documents in the file and better understand the student's progression through RTI. After I created the timeline, I created a detailed case study with each child, including information found from each document in the cumulative file. I then created summaries for each file containing only the information pertinent to research question three, which asks how the school intervened with its most at-risk students. Patton (1990) states "synthesis of different qualitative studies [case study] on the same subject is a form of cross-case synthesis" (p. 55). Patton goes on to say, "for scholarly inquiry, the qualitative synthesis is a way to build theory through induction and interpretation. For evaluators, the purpose of the qualitative syntheses is to identify and extrapolate lessons learned" (p. 425).

This process allowed me to review both qualitative and quantitative data simultaneously. Chronological arrangement is an important analytic purpose because the cause and effect sequence cannot be temporarily inverted (Yin, 2003). Analyzing data chronologically allowed me to consider the interrelationships of multiple units of analysis and how they changed over time, allowing me to consider many different variables and their relationships. This provided a rich, insightful account into the effects of RTI on selected students over a four-year period. The goal of this technique was to compare chronological data with a predicted theory, that the school implemented RTI and that RTI had an impact on student achievement. Finally, because all of the embedded units of analysis start and end at the same time, having them in chronological order assisted me in completing a cross case synthesis to find common characteristics amongst the various embedded units of analysis.

Originally, I intended to perform a content analysis using the analytic matrix found in Appendix B to perform an analytic matrix on the data gathered from the embedded units of analysis to perform a thematic analysis. The matrix focused on the interventions, frequency of team meeting, frequency of intervention, length of intervention, duration of intervention, and the reading program used. However, when I began my research one of my first findings was that the school's problem-solving model expected teachers to complete two levels of interventions prior to any formal intervention by the school. The teachers did not document these interventions, which is a finding of this research, but prevented the use of the analytic matrix found in Appendix B. The process of using chronology, then creating a narrative, followed by a visual representing how the school intervened with each child allowed for a thematic analysis in place of the analytic matrix.

To determine the relationship between scores in first grade and scores in fourth grade I performed two analyses, a Pearson's correlation and a simple regression. A correlation coefficient (r) demonstrates how strongly two variables are related; however, it does not imply causation. The possible range for a correlation coefficient is -1 to +1. If r is 0 then there is no relationship between the variables. If r is positive, it means that when one variable increases the other variable increases, suggesting a stronger correlation. If r is negative, the relationship is inverse, meaning that as one variable increases the other variable decreases.

In this research, I used the correlation coefficient to determine the relationship between student scores in first grade and at the end of fourth grade to determine the strength of the relationship between the two scores. For example, if a child's score in

first grade is not strongly connected (r is close to 0) to the child's score in fourth grade it could suggest that in this RTI model a child's first grade score is not a strong indicator of the child's fourth grade score. This finding would suggest that further research would be needed to determine if these findings are consistent in other RTI models. In addition to correlation, I completed a simple regression analysis.

A regression analysis allowed me to predict the value of a dependent variable based on independent variables (Howell, 2011). In this research I tried to determine if a child's first grade reading score, independent variable, predicts the child's fourth grade reading score, the dependent variable. Because RTI is designed to intervene early and provide interventions to targeted areas, a possible hypothesis would be that there is a limited, or non existent, relationship between the two scores. If the analysis results in a p value < 0.05 I will know that the first grade scores are an accurate predictor of fourth grade scores. If it is greater, then there is no significant relationship between the scores. Knowing whether or not there is a relationship between the two scores may lead to changes in RTI delivery.

Validity

Validity and reliability are issues in research. Qualitative research ensures validity when data collection and analysis represent what the research is trying to measure. An analysis of multiple data sources allows triangulation to occur and hopefully leads to the convergence of evidence (Yin, 2003, 2009). In my research, triangulation occurred with both analytic methods and data sources. It occured analytically through statistics, content analysis, chronologies, and the document protocol. Cumulative folders, policy documents, and various assessments allowed for triangulation

through data sources. As a result, I could identify themes and patterns that emerged within the embedded units of analysis and the case study context.

Construct Validity. Construct validity ensures the reader that appropriate operational procedures are developed and followed. Construct validity for case studies is often problematic because critics argue that an investigator may fail to make objective judgments when collecting data (Yin, 1994). Yin (2003) suggests that case study research can further improve construct validity using triangulation. As mentioned above, triangulation will occur through my use of analytic methods and data sources. Furthermore, Denzin (1970) states that data triangulation can occur by combining quantitative research and qualitative research to arrive at convergent findings. My research used various standardized assessments and nationally normed tests as anchor points to report on student achievement. The use of these assessments allowed decisions to be more objective, thus enhancing the construct validity of the study.

Internal Validity. Internal validity allows for the establishment of a causal relationship where one event relates to another event. This case study was exploratory in nature. Exploratory case studies explore areas relatively unknown (Yin, 2003). Application of this method is common in areas where a hypothesis requires additional data (Yin, 2003). As a result, this method does not seek to connect or explain how one event connects to a separate event and is not subject to internal validity (Yin, 2003). Exploratory case studies explore general questions that lead the way for further research in the field (Yin, 1993). The exploratory case study was appropriate for this research because current literature documents a need for additional research in the area of RTI (Hollenbeck, 2007; Fuchs & Deshler, 2007). This case study explored the

implementation of RTI, how a school intervened to assist its lowest performing first graders, and the relationship between scores in first grade and fourth grade.

External Validity. External validity allows the study's findings to be generalized and replicated (Yin, 1989). However, case studies can utilize analytical generalization to increase external validity (Gibbert & Ruigrok, 2010). Eisenhardt (1989) argues that case studies start theory development and that a cross case analysis of four to ten case studies may provide a sound basis for analytical generalization. Eisenhardt's findings are in agreement with Lincoln and Guba's (1985) findings that suggest cross-case analysis increases external validity. My research utilized a single case study approach with multiple cases embedded within the case study, thus allowing for cross case analysis and analytical generalization.

Reliability

Reliability is the ability for similar results to occur through replication of the research. (Denzin & Lincoln, 1994). Silverman (2005) explains that all case studies are subject to underlying assumptions, but detailed data allows for minimal inferences and can account these assumptions. My research utilized statistical data, content analysis protocols, and document protocols to provide detailed data to the reader and allow for minimal inferences. Gibbert & Ruigrok, (2010) state the transparency and replication are essential for case study reliability. Careful documentation and clarification of procedures can ensure transparency. The use of my content analysis and document protocol addressed this transparency in my research. My research addressed replication with the creation of a case study database. My case study database contained all data collected during my research.

Bias

I worked in the school district in which the subject school is located. My knowledge of the school and district served as an advantage of the study. I had a strong understanding of the RTI model, available resources, and knew key district personnel. This knowledge allowed me to predict, to some extent, what type of documents may be available, what documents I should seek, and where to go for additional clarification in ambiguous situations. Working in the district allowed me to know more about the school and its approach to RTI.

While I am no longer employed in this district, never worked in the subject school, and do not know any of the students or teachers who taught them, I undoubtedly carry some assumptions by virtue of my experience in the district and my experience with RTI. Because of this, assumptions and inferences have the possibility of being biased. To address this I followed the research design outlined in this chapter and utilized the document review protocol (Merriam, 1988, p. 121-122), triangulation, and quantitative data.

Summary

This case study researched how a school implemented RTI, how it intervened with its most at-risk students, and the relationship between scores in first grade and fourth grade after being exposed to three years of RTI. To accomplish this I employed the embedded case study approach. The case study took place within the context of the school and used both quantitative and qualitative data. I used quantitative data to determine tier placement and identify the most at-risk students to serve as the embedded units of analysis and qualitative data to chronologically document the school's response

to identified at-risk students. Triangulation occurred in both data sources (cumulative folders, policy documents, assessments) and analytic methods (statistics, content analysis, chronologies, and the document protocol). As a result, the study produced findings that provide insight on RTI implementation, how a school intervened with students, and the relationship between scores at the end of the first grade and the end of fourth grade.

Chapter 4

I present the findings in this chapter within the context of each research question. I begin by describing the RTI model used in Pace Elementary School (PES) in Paix School District (PSD). Then, I discuss how the school implemented RTI. Once I established a general understanding of the PES RTI model, I provided a summary analysis of each of the embedded units of analysis. These embedded units of analysis provide additional data and connect policy to practice. I ended with a correlation and regression analysis to look at the relationship between first and fourth grade reading fluency scores in an RTI model.

Response to Intervention is a complex educational philosophy. Although key fundamentals have emerged as RTI models have evolved over the last three decades, the implementation of RTI remains subject to the state, district, and school in which it is implemented. In 2004 PES began RTI implementation. This study analyzed how the school implemented RTI, how RTI impacted students, and the relationship in reading scores between first grade and fourth grade as a result of implementation. In this chapter I look at RTI implementation within the context of the following three questions:

1. How did the subject elementary school implement RTI?
2. How did the school intervene with the Tier III students identified in first grade by the school's universal screener?
3. What is the relationship between first grade scores and fourth grade scores on the school's universal screener's oral reading fluency assessment?

As mentioned earlier, this research utilized an embedded case study. The school served as the overall case study and individual students served as embedded units of

analysis. This case study utilized interviews, archived records, school documents, and embedded case studies to support its findings and triangulate data.

Question 1: How Did the Subject Elementary School Implement RTI?

As mentioned in Chapters Two and Three, broadly speaking there are two commonly accepted RTI models, the standard protocol and problem-solving model. In Chapter Three I provided background information regarding PES's RTI history. In 2004, PES began operating under a problem-solving model. As Penny and Amy learned more about RTI, the school gradually adopted elements of the standard protocol model. As a result, PES operated under a hybrid model during this research that utilized both standard protocol and problem-solving components. Figure 4.1 provides a visual representation of PES's hybrid RTI model.

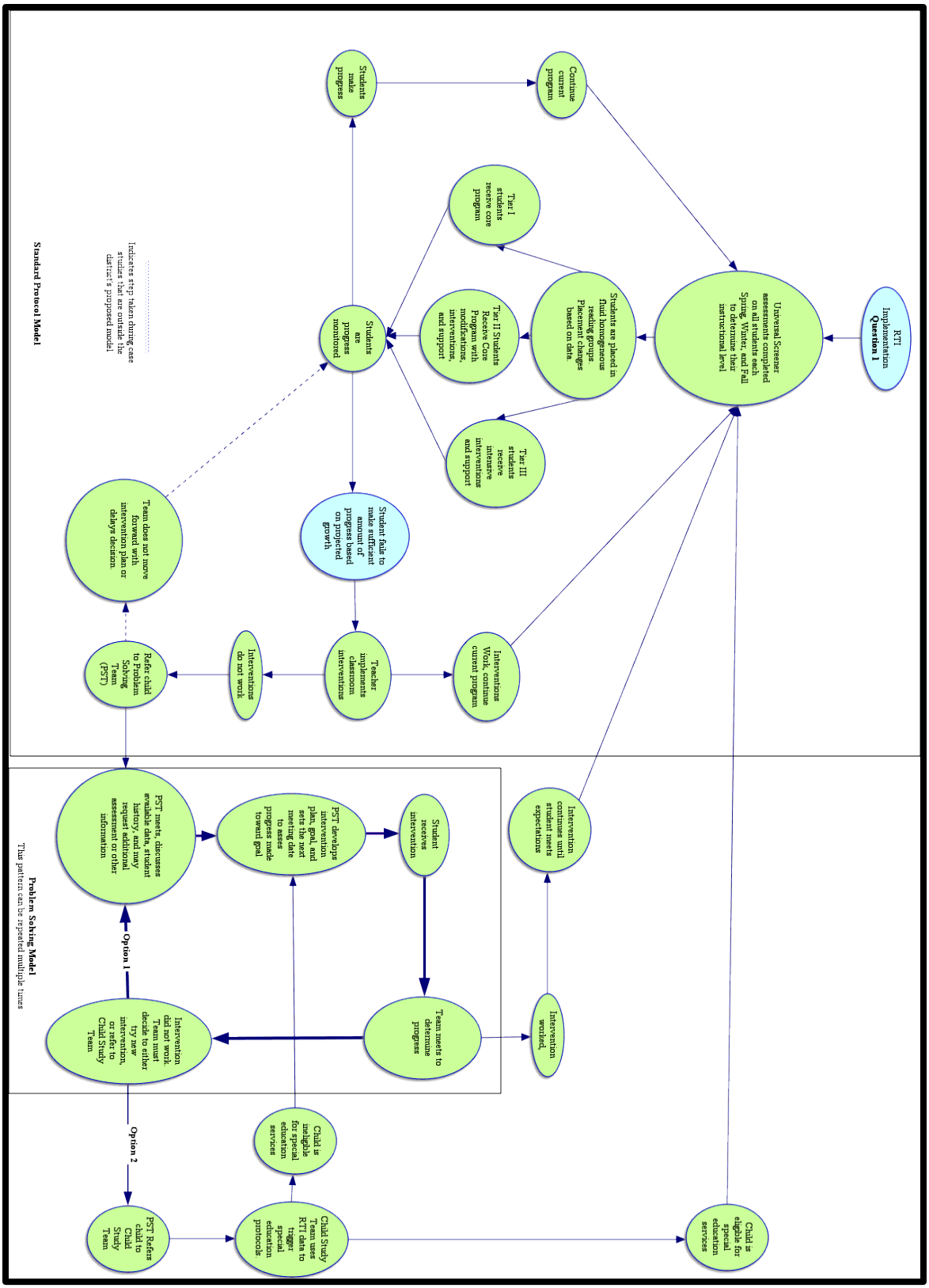


Figure 4.1 PES RTI Model

Standard Protocol

All students participated in the standard protocol portion of the RTI model and took a universal screener three times a year: fall, winter, and spring. Using the universal screener assessment data, students were separated into tiered levels of instruction. Homeroom classes were grouped heterogeneously; however, students transitioned to a homogeneously grouped learning environment during reading instruction. This model is often referred to as "walk-to-read". These homogeneous groups may be as large as a class or as small as two to three students. Table 4.1 shows the suggested tier cut-points.

Table 4.1

Aimsweb Tier Cut-Points

	Grade 1[a]		Grade 2		Grade 3		Grade 4	
	Tier 2	Tier 1	Tier 2	Tier 1	Tier 2	Tier 1	Tier 2	Tier 1
Fall	--	--	21	55	42	77	67	105
Winter	14	30	47	80	64	105	86	120
Spring	24	53	61	92	83	119	102	136

[a]The Aimsweb assessment is not administered until the winter of first grade.

According to the school's RTI manual known as Multi-Tiered Systems of Support (MTSS), Tier I was defined as students who were performing at, or above, the 40th percentile of the universal screener used. Tier II was defined as students who were between the 10th and 40th percentile. Tier III was defined as students below the 10th percentile. In addition to the data gained from the school's universal screener, the MTSS allowed other data to supplement tier placement decisions. As you will see in the embedded case studies later, this supplemental data allowed school officials to place students outside the universal screener's suggested tier level on a regular basis.

The MTSS established minimum instructional time requirements for kindergarten through third grade and fourth through fifth grade. In kindergarten through third grade Tier I students received 2.5 hours of the school's basic literacy program, known as core instruction, with differentiation. Tier II students received a 30 minute strategic intervention within the 2.5 hour block. Tier III students received a 45 minute intense intervention within the 2.5 hour block. The MTSS recommended that intervention group sizes remain around five students at Tier II and three students at Tier III. Students in fourth and fifth grade received the same services, but within a two hour block.

Penny and Amy indicated that PES selected the universal screener, AIMSweb, because of its ability to generate statistical information, and be stored on a computer. This streamlined their efforts and decreased the amount of time, a scarcity in the school, invested in the process. AIMSweb utilized short probes known as Curriculum Based Measures (CBM's) to measure various skills within a short period. In addition, Amy noted that Mark Shinn, a leader in Reading-Curriculum Based Measures (R-CBM), developed the probes for AIMSweb. When the universal screener identified a student as at-risk, a diagnostic assessment had to occur. However, when reviewing the data provided by the district, it is not clear if this diagnostic assessment occurred every time the universal screener identified a child as at-risk, which will be discussed more in Chapter Five.

The MTSS defined diagnostic assessments as formal, standardized tests that provide an in-depth analysis of skill proficiency. Examples of this type of assessment used in PES included the Phonological Awareness Literacy screening (PALs) and the Developmental Reading Assessment (DRA). Use of these assessments occurred when

instructional personnel required additional information to determine the instructional focus need for the child. These diagnostic assessments initiated the diagnostic process, which used informal surveys and tests to probe a student's knowledge and skills. After identifying a student, completing appropriate diagnostics, and determining suitable interventions the school began to monitor student progress. CBM's served as progress monitoring tools. CBM assessments are sensitive to small, incremental change, which is necessary when assessments occur frequently within a short period as required by the progress monitoring guidelines.

To ensure the model operated as intended the school implemented several systems of checks and balances that developed over time through two key channels; an outside consultant and the school's quarterly report provided to the Superintendent/Director of Instruction. The outside consultant provided professional development, strict program protocols, coaching sessions, trainings, and explicit program feedback to all teachers providing Tier II and Tier III instruction. The consultant worked with these teachers on a monthly basis, at a minimum. After working with the teachers, the consultant created a report and provided it to the school's administration immediately after each visit to the school. This report assisted the principal in making personnel, professional development, and program decisions.

The quarterly superintendent report also ensured program implementation. The report included how many teachers received coaching from the consultant agency and the type of coaching they received. It also required documentation of the number of completed teacher observations, walkthroughs, professional development agendas,

explanation of student growth, or lack thereof according to collected data, the number of teachers trained, and those who still needed training in various programs.

In addition to the measures mentioned above, the consultant and the district hosted monthly data meetings to review student progress and program implementation. The principal, assistant principal, reading coach, reading specialist, other instructional staff supporting Tier II/III instruction, school psychologist, and others at the principal's discretion attended the meeting on behalf of the school. On behalf of the district, the superintendent, director of instruction, federal services coordinator, director of special education, and special education specialists attended the meeting. The meeting had five goals. First, review the overall effectiveness of reading instruction based on the data collected. Second, ensure data supported student placement. Third, ensure the data indicated proper placement and adequate progress. Fourth, discuss any professional development needs of the staff. Fifth, discuss individual interventions in place for students at Tier II and Tier III.

During the meeting the school's literacy coach presented data sheets for each reading program, for each teacher, for each student, in each grade. These data sheets monitored individual student performance, instructional advancement, and class performance. If many students failed to make expected growth within a class, the team considered the possibility that the teacher might have needed instructional coaching, mentoring, or other forms of professional development.

Two options existed for students who were not making progress under the standard protocol approach to RTI. First, when considering tier placements, school officials could move the students to a more appropriate instructional tier. Second, the

homeroom teacher could refer the students to the school's problem solving team, P.E.A.C.E. No clear guidelines existed regarding when a teacher should refer a child to the P.E.A.C.E. team, making the referral subjective to the homeroom teacher.

Problem Solving Model

The problem-solving model at PES was common to problem-solving models found in current literature. The model consisted of four steps. In the first two steps the teacher worked with the parents and other specialists, within and outside of the school, to improve student learning. If the student continued to remain unresponsive to the instruction, the teacher formally referred the student to the problem-solving team with documentation of the area of concern and history of interventions. When students received a referral to, and participated in, the problem-solving model, interventions typically occurred outside of the tiered instruction. This is a result of the student entering the problem-solving model due to their unique needs, and lack of response from the tiered instruction at their grade-level. For the purposes of this research, I documented the process at level three, the referral and action steps of the problem-solving team.

In the problem-solving team's first meeting the team completed two steps. In Step 1, the team defined the problem. In this step the team gathered known information about the child's environment, instruction, curriculum, and the child as a learner. The environment consists of medical factors, counseling, transience, attendance, counseling, and any other environmental factors. Instruction included the rate of instruction, level of instruction, presentation/delivery of instruction, teacher/student ratio, instructional transitions, routines/behavior management, and other relevant instructional factors. Curriculum is the course content, instructional materials used, progress

monitoring/assessments, basic skills in place for the objectives taught. The child as a learner involved social/behavior skills, understanding of instruction, internal vs. external motivation, task engagement, organizational skills, ability to remain on task, and other relevant factors.

The team gathered assessment data on the relevant domains through Reviews, Interviews, Observations, and Tests (RIOT). The MTSS manual stated that data must not come from a single source, as that is not sufficient in making significant educational decisions. The team identified individual roles and responsibilities for implementing the assessment plan and established a timeline for gathering baseline data and for reviewing the assessment plan.

In the second meeting the team reviewed the assessment data. The data optimally shed light on the origin of the problem. Some problems were the result of student *skill* deficits, that is the students had not learned the basic skill(s) underlying the issue. Other times problems were the result of student *performance* deficits, that is the student had mastered the skill in question but is unable or unwilling to show it with consistency. An example of a performance deficit could be a child rushing through his or her work without accurately completing the assignment; however, when encouraged to slow down and work carefully the child can demonstrate mastery. In this example the child has mastered the skill, but is unwilling to show it with consistency. The team then measured the discrepancy between the baseline data and the acceptable level of performance to develop a problem analysis/hypothesis, and a goal/prediction statement.

Using this information the team developed an intervention plan for the student that matched the defined problem. When developing the plan the team was encouraged

to consider alterable variables such as: feasibility, teacher skills, likelihood of success, resources to conduct the interventions, and the ability to conduct the interventions in the general education environment. Once interventions were identified, the team developed the logistics to cover the plan.

The logistics of the plan covered the progress monitoring, development of the decision making plan, identifying individual roles, and establishing a timeline for the analysis of the intervention plan. Progress monitoring occurred by replicating the method of data collection procedures for obtaining baseline data. However, during progress monitoring the frequency increased at a rate of two or more times per week. The decision making plan provided guidance as to when the intervention plan needed to be changed, which was often after three consecutive data points below the aim line. The final step was for the team to identify a timeline for the intervention plan, including establishing the next meeting date to analyze the data.

The third meeting began with a review of the progress monitoring data. The team determined the student's present level of performance by calculating the median of the last three data points. The data points were often from CBM assessments, but could differ based on the plan developed by the team. The team then calculated the discrepancy between the student's median and the acceptable level of performance, indicating the standard used to calculate the acceptable level of performance. A summary of effectiveness allowed the team to make a decision regarding next steps, such as continuing intervention, modifying intervention, or to develop a new intervention plan.

After an analysis of an intervention plan meeting there were multiple options for a student's continued participation in P.E.A.C.E. The child could be exited from

P.E.A.C.E., referred to the school's child study team for special education services or Section 504 team, continue the current intervention plan, or receive a revised intervention plan. The decision for the next step belonged to the team, using the student's data.

To ensure the problem-solving model, P.E.A.C.E., worked as intended PES created a P.E.A.C.E. manual. The P.E.A.C.E. manual provides the following basic principles to ensure operational and instructional fidelity:

- Basic Principle 1: A systematic problem-solving procedure should be used to address student performance problems.
- Basic Principle 2: Collaborative consultation should provide the means by which problem-solving will be conducted.
- Basic Principle 3: Hypotheses about factors related to the identified problem should be developed.
- Basic Principle 4: Functional assessment procedures should be used to collect student performance data.
- Basic Principle 5: Multi-dimensional assessment procedures should be used to collect data relevant to the problem.
- Basic Principle 6: Goals should be written describing the desired change in student performance that should occur as a result of the intervention.
- Basic Principle 7: Interventions should be developed that are specifically designed to improve student performance.
- Basic Principle 8: Progress monitoring should be an essential aspect of the intervention phase of problem-solving.
- Basic Principle 9: Decision-making about the outcome of an intervention should be based on a review of progress monitoring data in relation to the defined goal(s) of the intervention.

In addition to the above principles, there were definitions for commonly used P.E.A.C.E. terminology and visual flow charts documenting the P.E.A.C.E. process. To ensure implementation of these basic principles, the school took two key actions. First,

they selected a school psychologist, trained in the school's problem-solving model, to serve as the chair of the P.E.A.C.E. team. Second, they hired and trained a paraeducator to serve as an interventionist that could provide the interventions decided by the team, as intended, under the guidance of the school's psychologist. In addition, the P.E.A.C.E. team members, literacy coach, and reading specialist also assisted with implementation of the problem-solving model.

Within the context of the problem-solving model, the MTSS had specific information regarding the creation of a progress monitoring schedule to estimate a goal score that the student would obtain by the end of the school year. The manual stated that in order to begin developing a progress monitoring schedule, one must know the student's baseline score, the length the intervention should occur, the rate of improvement (ROI) necessary to achieve a goal, and expected growth because of the intervention. This information is then inserted into the following formula to calculate the goal: Baseline + (ROI X Expected Growth X Length of Intervention) = Goal.

The baseline score is the student's score on the assessment at the start of the cycle. The baseline data must have occurred within the last three weeks and been administered at the student's chronological grade level. The expected growth comes from documented research about the rate of improvement of students in the skill. For example, Hasbrouck and Tindal's research suggests that a child at the fiftieth percentile in the fall of third grade should average an increase of 1.1 words read correctly per week (Hasbrouck & Tindal, 2006). Appendix D displays data from Hasbrouck & Tindal's research that documents expected growth in reading fluency at each grade level. The expected growth estimates the factor by which the intervention is expected to increase the

student's learning. For example, Students in Tier II (25th percentile), who received moderate interventions, were expected to have growth at 1.5 times the ROI. Students in Tier III (below the 10th percentile) should have 2 times the ROI as they received significant interventions. The expected growth rates of 1.5 and 2 come from research by Fuchs, Fuchs, Hamlett, Walz, and Germann (1993) and Hosp and Hosp (2003).

The intervention length was typically 36 weeks, or one school year, with goal assessment after each progress monitoring session. If the student exhibited interim progress, the goal was maintained or increased. If the student was in danger of not achieving the goal, the team evaluated the appropriateness of the intervention.

The manual gave the following example to help illustrate the point. Ben, a fifth grade student, struggles with reading fluency and is receiving instruction in a Tier III reading class. He is being progress monitored with the R-CBM and his fall AIMSweb benchmark was 60. In this example 60 + (0.67 X 2 X 36) creates a goal of 108 words read correctly per minute by the end of the year.

Data determined goal adjustment. A student's progress was considered inadequate when all three of the following conditions were met: the student received at least four weeks of intervention, had at least six to eight data points on a progress monitoring graph, and a trend line flatter than the student's goal line. An alternative for students in Tier II was to use the on-grade-level, fortieth percentile score of the progress monitoring measure for the spring as the actual goal. The MTSS stated that it is inappropriate to use percentile goals for students in Tier III because it resulted in an unachievable ROI in one academic year.

In the problem-solving model, the team monitored progress. The team documented the intervention and when the team would meet again. If the child's data failed to show a positive response to intervention, the team would meet to discuss what needed to change. This could be changing the intervention itself, or adjusting the intensity, duration, or group size. The student's need determined the frequency and length of the intervention. Penny stated that when developing an intervention the team must look at what the intervention takes away from the student. Time was the most valuable resource in school. If the student received an intervention during school, they missed instruction somewhere else.

Meeting a goal, or data documenting inadequate growth, resulted in termination of the intervention and the need for a new intervention plan. After a change in intervention plan, progress monitoring would begin again. Penny stated that this process could continue multiple times. The experts in the field disagreed as to how long this process should continue. Officially, the process stopped when the team determined the student required more intense instruction than their resources provided. This resulted in a referral to the school's child study team or the Section 504 team. Penny stated that in a textbook example, the process typically lasted three cycles then the child study team received the referral.

Question 2: How Did the School Intervene with the Tier III Students Identified in First Grade by the School's Universal Screener?

In this section I present each of the embedded case studies. These embedded case studies support the findings within the larger case study and are essential in answering my second research question. The embedded case studies utilized data from the student cumulative folder. Often, these folders provided an abundance of specific information

regarding interventions and intervention plans. In the case studies below I have provided a few examples to illustrate this point. The goal of this research was not to analyze the interventions and intervention plans, but instead to look at how the school intervened with students identified as at-risk within the RTI model. Providing a few examples, without all the specific information, allowed the research to focus on how students progressed within the RTI model. Unfortunately, each time there was a clear lack of documentation, it was noted in the case study.

As described in Chapter Three, I used the school's universal screener to identify the Tier III students of a first grade cohort of students in 2008. I followed the students until the end of their fourth grade year in 2012. The subject school had a transient population and three of the six students in the study transferred back and forth between elementary schools within the district, ultimately ending back at the subject school. Documentation showed that all schools were operating within the same RTI parameters as the subject school, but may have used different programs. These parameters became the basis for the district's MTSS that became formally documented in 2010, the middle of this study. I eliminated students who left the district during the course of the study, which resulted in a sample of six students. The student ethnicities were the following: one Caucasian, one African American/Caucasian, one African American, and three Hispanic. Of the group, two students received free lunch, one received reduced lunch, and two of the students received ESL support.

Each case below documents specifically how the school intervened with each child, at the child's level. This approach provided an opportunity to go beyond researching implementation policy and provided a look at practices, which is a noted area

of need in the current research (Hollenbeck, 2007; Fuchs & Deshler, 2007, Hollenbeck, 2007). Furthermore, reviewing practices in conjunction with school documents, records, and interviews allowed for further triangulation of data. The information found below came from the students' cumulative files. It should be noted that the reading specialist at PES maintained additional records that may have contained additional data outside of the documented data below; however, that data could not be accessed. After each case study, I use the RTI flow chart found above, to visually track the individual child's RTI process.

Originally, I had intended to begin the research at the start of first grade to document the start of the intervention process. However, after reviewing the documents it was clear that some students had multiple interventions before first grade, affecting decisions made in first grade. As a result, I have included information from preschool and kindergarten when appropriate. It should be noted that some students had difficulties across subject areas. I chose to focus my research solely on reading and discussed the other subject(s), when relevant, in limited detail.

Student A

Student A is an African American male with an English only background who did not attend any documented preschool program. He began school in a different school district within the same state and transferred to Paix School District in December 2007 as a kindergarten student and attended Frieden Elementary School (FES). FES operated the same standard protocol and problem solving hybrid RTI model as the subject school. FES was not his zoned school, but due to Student A's daycare location, the school approved an out-of-zone request.

Student A did not make the kindergarten PALS benchmark and received a referral to P.E.A.C.E. The team followed the P.E.A.C.E. process and created an intervention plan. When the team met again Student A had met his goal and the team created an intervention plan to address other weaknesses. The team met again and documented Student A exceeded his goals. The team decided to reconvene at the start of first grade.

At the start of first grade no documentation existed of the P.E.A.C.E follow-up meeting. Student A received instruction in the SRA reading program (Tier II) for the duration of first grade. At the end of first grade Student A's PALs score of 29 fell below the benchmark of 35. His winter and spring universal screener scores of 3 and 13 placed him in Tier III.

In second grade, records indicate that Student A began to exhibit behavior problems. However, he experienced an improvement in his academics, as measured by screening and diagnostic assessments. His fall and spring PALs scores of 39 and 61 surpassed the benchmark of 35 and 54. His fall, winter, and spring universal screener data of 21, 48, and 68 placed him in Tier II. Student A received SRA instruction (Tier II) for all of his second grade year.

Student A's documentation continued to show problems in third grade. In February Student A's parents received notification of the termination of Student A's out-of-zone request due to tardies and late pick-ups from school. Student A began attending PES, a few days later. There is no documentation of Student A's instructional tier while in third grade at PES. However, PES offered the same SRA reading program offered at FES. Student A's fall and winter universal screener data is empty; however, his spring

score of 88 placed him in Tier II. Student A failed to pass the end-of-year assessments required by the state.

In fourth grade Student A began receiving instruction in the SRA Decoding program (Tier III). Student A's universal screener data proved inconsistent. His fall score of 61 placed him in Tier III, his winter score of 105 placed him in Tier II and his spring score of 99 placed him back in Tier III. Student A failed to pass the end-of-year assessments required by the state. Figure 4.2 documents Student A's progress in the RTI model.

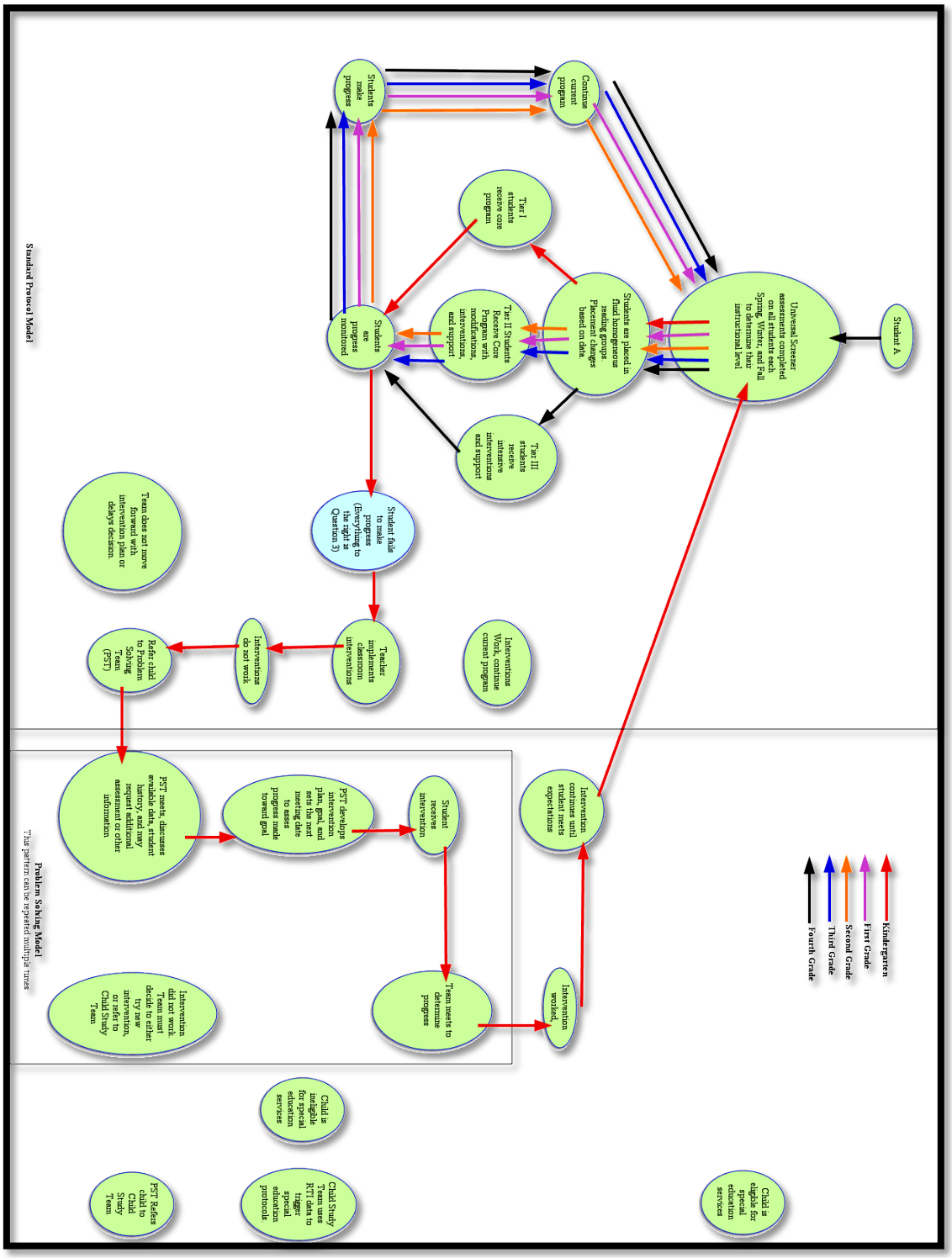


Figure 4.2 Student A and the PES RTI Model

Student B

Student B is a Caucasian male with an English-only language background. His mother indicated that Student B did not attend preschool and that he did not have a 504 plan, IEP, or receive speech services upon entering school. Student B began his schooling career at Pace Elementary School (PES) and continued there through his fourth grade year.

Student B entered first grade at PES without any documented interventions or services. Various reading concerns resulted in a referral to Title I services in August and Student B began receiving Tier II interventions. Winter and spring universal screener scores of 11 and 19 placed him in Tier III. In April of that year, Student B received a referral to P.E.A.C.E. due to a lack of progress in reading. At the time of the referral, Student B already received multiple interventions including one-on-one support and small group reading. The team reviewed Student B's present level of performance, but did not create an intervention plan. The team met again in May, and opted to continue to follow Student B into his second grade year. There is no documentation of a follow-up P.E.A.C.E. meeting for Student B in the fall. Fall PALS data indicated he was on grade level, meanwhile his fall, winter, and spring universal screening scores of 20, 36, and 31 indicated he was below grade level in Tier III. He began second grade receiving instruction at a Tier II level. The spring administration of these assessments supported the need for continuing intense Tier III interventions.

Student B began third grade receiving Tier II interventions. In January Student B received another referral to P.E.A.C.E. for various reading concerns. The team documented multiple interventions in place to support Student B in addition to his

placement in a remedial reading program. The team developed an intervention plan and reconvened again in February. The team noted success and failure and documented a concern over Student B's work habits. The team continued the intervention and requested assessments to determine Student B's time on task.

In March the time on task analysis found that he was on task between 69% and 79% of the time over two observations. The team did not document an expected time on task benchmark; however, the team did not continue to consider off task behavior as a concern. The teacher reported meeting with the parent during parent teacher conferences, had established a daily communication via the student agenda, and reported improvements in Student B's participation and homework completion. In addition, Student B passed his most recent formative assessment within his reading program and made progress on his goals. The team decided to continue the current plan and communication via the agenda and to meet again in April. Unfortunately, there is no documentation of a meeting in April. Student B's fall, winter, and spring universal screener scores of 29, 32, and 40 placed him in Tier III again. Student B passed the state's science and math end-of-year assessments but failed his reading and social studies end-of-year assessments.

In fourth grade, Student B's fall, winter, and spring universal screener scores of 35, 43, and 69 placed him in Tier III. Student B received instruction in the school's SRA corrective reading program (Tier III). Outside of this program, there are no documented interventions. Student B participated in the state's end-of-year assessments and received a passing score in math and social studies, but received a failing score in reading. Figure 4.3 documents Student B's progression in the RTI model.

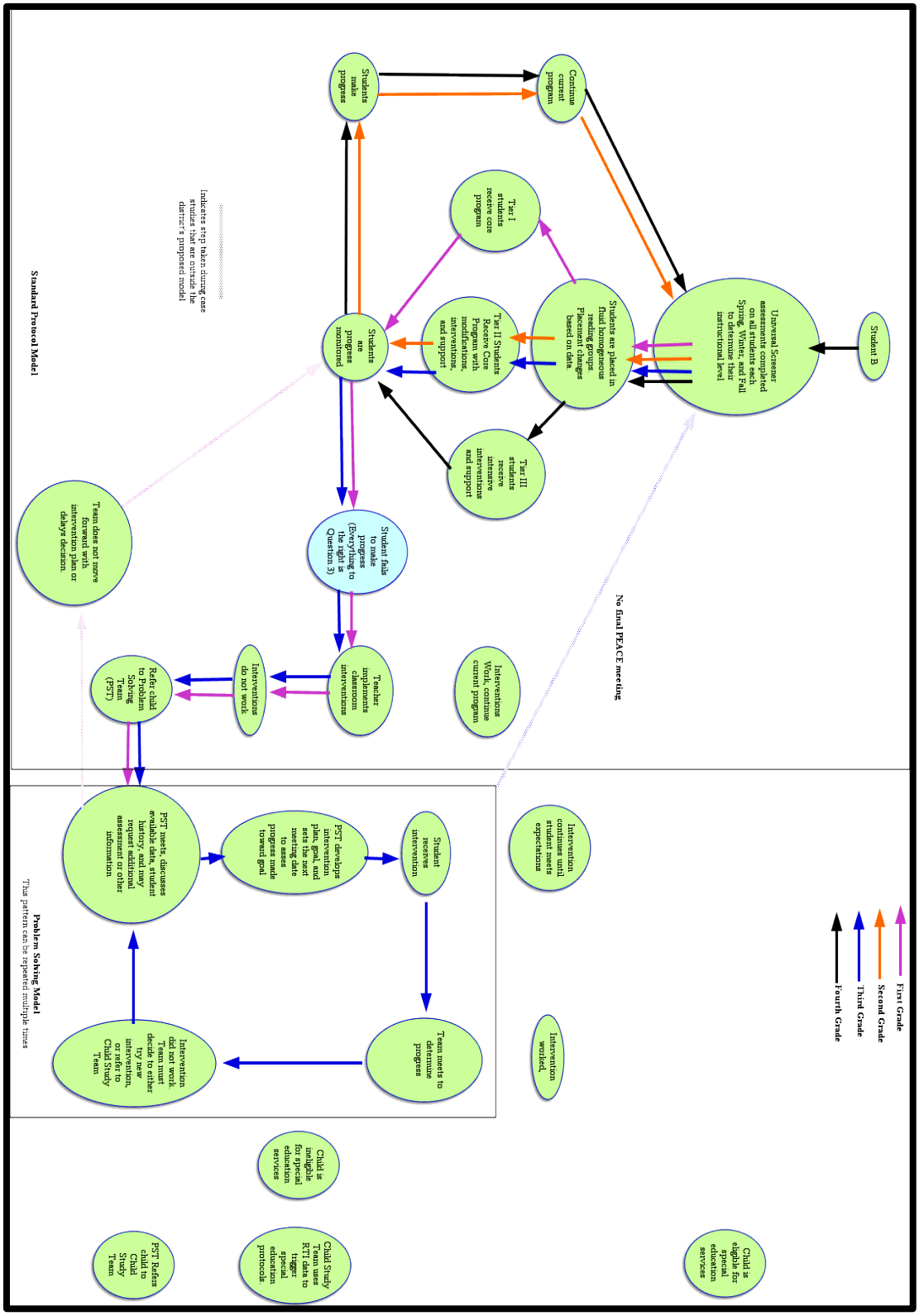


Figure 4.3 Student B and the PES RTI Model

Student C

Student C is a Hispanic male whose primary language is Spanish. Mom reported that Student C attended Head Start for preschool. Student C did not have an IEP, 504, or receive Speech Services upon starting school in the Paix School District. Student C was eligible for ESL services; however, his mother declined the services during Student C's kindergarten year. Student C attended three different schools in his kindergarten year and transferred between two schools in the district four times between first and fourth grade.

Student C began first grade at Heping Elementary School and received 30 minutes of ESL services five times a week. In March of that year, the teacher referred Student C to P.E.A.C.E. for a mixture of reading and math concerns. At the time of his referral, Student C already received multiple interventions and ESL services. The P.E.A.C.E. team indicated these interventions could address reading concerns and decided to focus on Student C's math deficits.

Student C's winter and spring universal screener's scores of 11 and 19 placed him in Tier III. In May an email documented growing concerns with Student C's progress, his school absences, and current ESL services (received 30 minutes of ESL services five times a week). The email documented the Spanish-speaking ESL teacher's concerns regarding Student C's language processing in his native Spanish. During the summer between first and second grade Student C transferred to FES. No documents exist in Student C's cumulative folder during his time at FES. In February of that year, Student C transferred back to PES. Student C's second grade summary noted an overall increase in his language arts skills with all scores being within the 70%-89% range and that he received Tier II SRA instruction. His fall PALs score of 51 fell below the benchmark of

54. His fall and winter universal screener data remained empty. His spring score of 58 placed him in Tier III.

During the summer between second and third grade Student C transferred to back to FES. Student C's fall, winter, and spring universal screener scores of 21, 34, and 46 placed him in Tier III. A letter to Student C's parents indicated that he no longer qualified to receive any accommodations on the state's standardized assessments that are permitted for some students receiving ESL services based on their need. Student C's language proficiency classified him as an ESL monitor student and he no longer received direct services. The end-of-year report card comments indicate that Student C received grade level instruction with additional Tier II interventions. Student C passed his end-of-year state assessments in math and history, but failed in reading and science. Student C's final report card documented grades between B and C in the various areas associated with language arts.

Student C started fourth grade at FES. There is no record of Student C's fall universal screening taking place. His winter and spring scores of 66 and 88 placed him in Tier III. On November 11, Student C transferred back to PES. The end-of-year report card indicated that Student C received Tier II level instruction. Student C passed all the state's end-of-year assessments that year, except reading. Figure 4.4 documents Student C's progress in the RTI model.

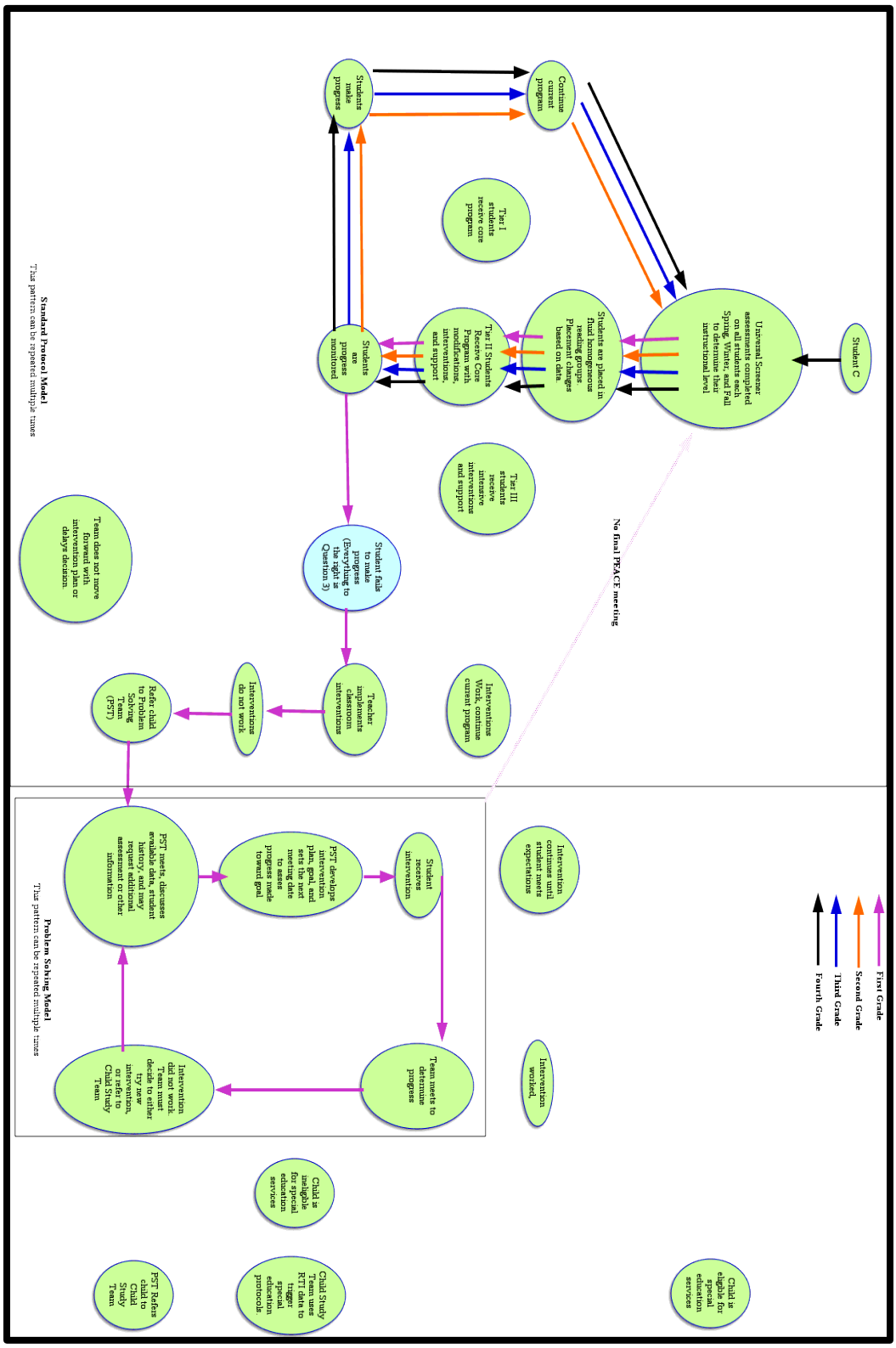


Figure 4.4 Student C and the PES RTI Model

Student D

Student D is a Hispanic male born in the United States and comes from a Spanish-speaking household. An English proficiency assessment classified Student D as an ESL monitor student in kindergarten and he continued as an ESL monitor student during this study, meaning he did not receive any direct ESL services. He ended kindergarten with PALs score of 80, which fell just short of the benchmark of 81.

Student D started first grade at FES. Student D's fall and spring first grade PALs score of 33 and 26 also fell short of the benchmark of 39 and 35 respectively. His winter and spring universal screener scores of 12 and 16 placed him in Tier III. Student D received instruction through the SRA reading program (Tier II in first grade). He also received Extended School Day services, provided outside the MTSS model at each school's discretion. The end of grade summary documented that Student D demonstrated mastery of reading independently less than 69% of the time.

Early in his second grade year, Student D transferred to PES. A referral made to the P.E.A.C.E. team identified the following areas of concern: phonemic awareness, sight word vocabulary, fluency, comprehension, and noted that Student D had difficulty consistently recognizing letter sounds and applying them to words. He often confused short and long vowel words like "hat" and "hate", which impacted his fluency. The team documented that Student D received his instruction in a Tier II classroom, and received within class interventions for spelling, fluency, and sight word recognition. Student D had a DRA of 6, with a benchmark of 24. The team discovered Student D received a 30 minute reading intervention during the class's spelling time, as a result he missed spelling. The team developed an intervention plan to

target spelling deficits. An ESL report documented concerns in spelling and supported the need for this intervention plan. Student D's second grade summary demonstrated growth in language arts. However, his spring PALs score of 27 fell below the benchmark of 54 and his fall, winter, and spring universal screener scores of 12, 20, and 59 placed him in Tier III.

In third grade Student D began receiving Tier III intervention. On September 30 a vision screening resulted in unsatisfactory results and the school notified the parents of the results on October 5. The third grade teacher made another referral to the P.E.A.C.E. team and indicated reading concerns. The P.E.A.C.E. team met on November 4 and noted progress in reading; however, Student D performed poorly in his reading program and continued to struggle in reading. The team developed an intervention plan that targeted both reading and spelling.

In January the team met again and noted that Student D began wearing glasses and that he had improved in his reading program and homework completion. However, his diagnostic and R-CBM data indicated he was performing well below average and he had not shown improvement in spelling despite the spelling intervention. The team decided to continue to monitor the student, designed a new spelling intervention for 15 minutes daily targeting digraphs and pattern sorts, and prescribed continued work on fluency. In February the P.E.A.C.E. team reconvened and noted an improvement in spelling, his reading program, and reading fluency. The team decided to continue to monitor and continue all interventions.

Student D participated in the state's end-of-year assessments passing his math assessment and failing his reading assessment. Student D participated in the math and

reading assessments without accommodations; however, his ESL status provided an exemption from social studies and science. Student D's fall, winter, and spring universal screening scores of 37, 33, and 47 placed him in Tier III.

No documented P.E.A.C.E. meetings occurred in fourth grade. Student D continued to receive instruction in a corrective SRA reading program (Tier III). Student D participated in the state's end-of-year assessments and failed all assessments. He received no accommodations in reading, but did have a read aloud accommodation in math and social studies. Student D's fall, winter, and spring universal screening scores of 36, 68, and 68 placed him in Tier III. Figure 4.5 documents Student D's progress in the RTI model.

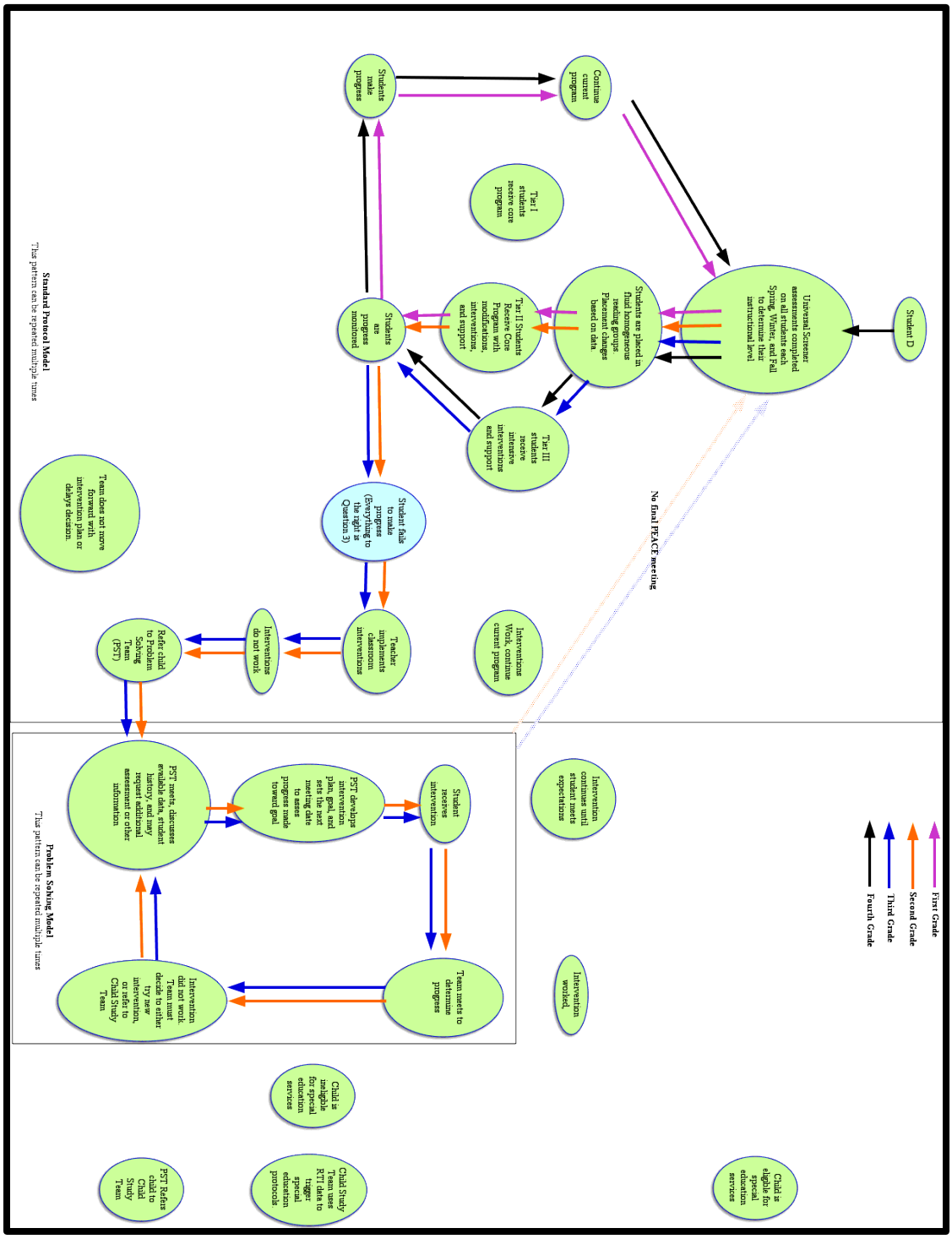


Figure 4.5 Student D and the PES RTI Model

Student E

Student E is a biracial, African American/Caucasian male student who comes from an English only home. He became eligible for speech and language services in May of 2007, during Head Start. Head Start made a referral to PES's P.E.A.C.E. team for behavior and academic concerns. Student E began receiving academic and behavior interventions at the start of kindergarten. In kindergarten Student E received a medical diagnosis of ADHD. The exact date is not clear; however, a December 12, 2007 IEP meeting acknowledged the diagnosis and documented the use of medication.

Records indicate that Student E's school behaviors continued to be subpar during his kindergarten year, but the team noted a decrease in aggressive behavior. He continued to struggle in academically. In April that year the team became concerned about Student E's emotional status and feared that he had begun to internalize his anger. At the end of kindergarten Student E received the following interventions/accommodations: speech services, remedial reading, preferential seating, and IEP goals focusing on expressive and receptive language.

At the start of first grade, Student E continued to receive support through P.E.A.C.E. Records indicate that Student E exhibited a decrease in aggressive behavior, an increase in on-task behaviors, and began accepting constructive criticism. As a result, the team began to target reading skills. In October the team met and noted Student E had exhibited little progress, despite numerous, intensive interventions and referred him to the IEP team to determine if additional special education services were appropriate. In the case of Student E, the Child Study Team suspected an underlying disability and referred

him for a full special education evaluation to explore eligibility for special education under a category other than speech and language impairments.

In January an eligibility meeting occurred. The team reviewed Student E's assessment data, progress made on previous interventions, and teacher narratives. The team found Student E eligible for Special Education services under the category of Specific Learning Disability with a secondary category of Other Health Impairment, with speech services becoming a related service.

In February the IEP team met to compose Student E's IEP. The team prescribed accommodations/modifications and services required by Student E in order to access the curriculum. The team then created six IEP goals that addressed reading, writing, math, transitioning/attention to task, expressive language, and receptive language.

In April the IEP team met again and considered discontinuing Student E's speech services. The team rejected the proposal stating that Student E required specialized instruction offered by a speech-language pathologist in order to address language deficits. Student E continued to receive speech services to address his language delays.

Student E's end of first grade data suggested that he continued to remain below grade level, despite the development of the IEP, P.E.A.C.E. interventions, and receiving Tier III interventions. His PALs score of 31 placed him under the benchmark of 35. His winter and spring universal screening scores of 3 and 13 placed him in Tier III.

In January of Student E's second grade year the IEP team met for Student E's annual IEP meeting. The team compiled Student E's present level of performance data. The team then developed goals around reading, writing, transitioning/attention to task, expressive language, and receptive language. The team again laid out

accommodations/modifications and services required for Student E to access the curriculum. On June 6th the IEP team met to add an addendum to the IEP allowing Student E to take standardized, multiple choice assessments. The team noted that recent evidence, teacher input, and the accommodations/modification of the IEP guided the decision.

Student E's end of second grade data suggested Student E had made gains in approaching grade level expectations. Student E remained in the corrective SRA reading program (Tier III). His PALs score of 36 placed him just above the benchmark of 35. Student E's fall, winter, and spring universal screening scores of 6, 16, and 20 placed him in Tier III.

In third grade Student E continued to receive Tier III interventions in third grade. The IEP team met in January, reviewed his progress, and created goals in the areas of reading, writing, receptive language, and behavior. Student E's fall, winter, and spring R-CBM scores of 18, 46, and 43 placed him in Tier III. Student E did not pass any of the state's end-of-year standardized assessments.

In fourth grade the IEP team met in September to amend Student E's IEP to reflect a change in the school's master schedule. The team met again in November to review Student E's progress. The team noted below grade level academic performance, but progress in his speech/language goals. As a result, the team decided Student E no longer required speech services, but still qualified for special education for Specific Learning Disability. The team developed IEP goals based on reading and writing. Student E's fall, winter, and spring R-CBM scores of 30, 63, and 65 placed him in Tier

III. Student E did not pass any of the state's end-of-year standardized assessments.

Figure 4.6 documents Student E's progress in the RTI model

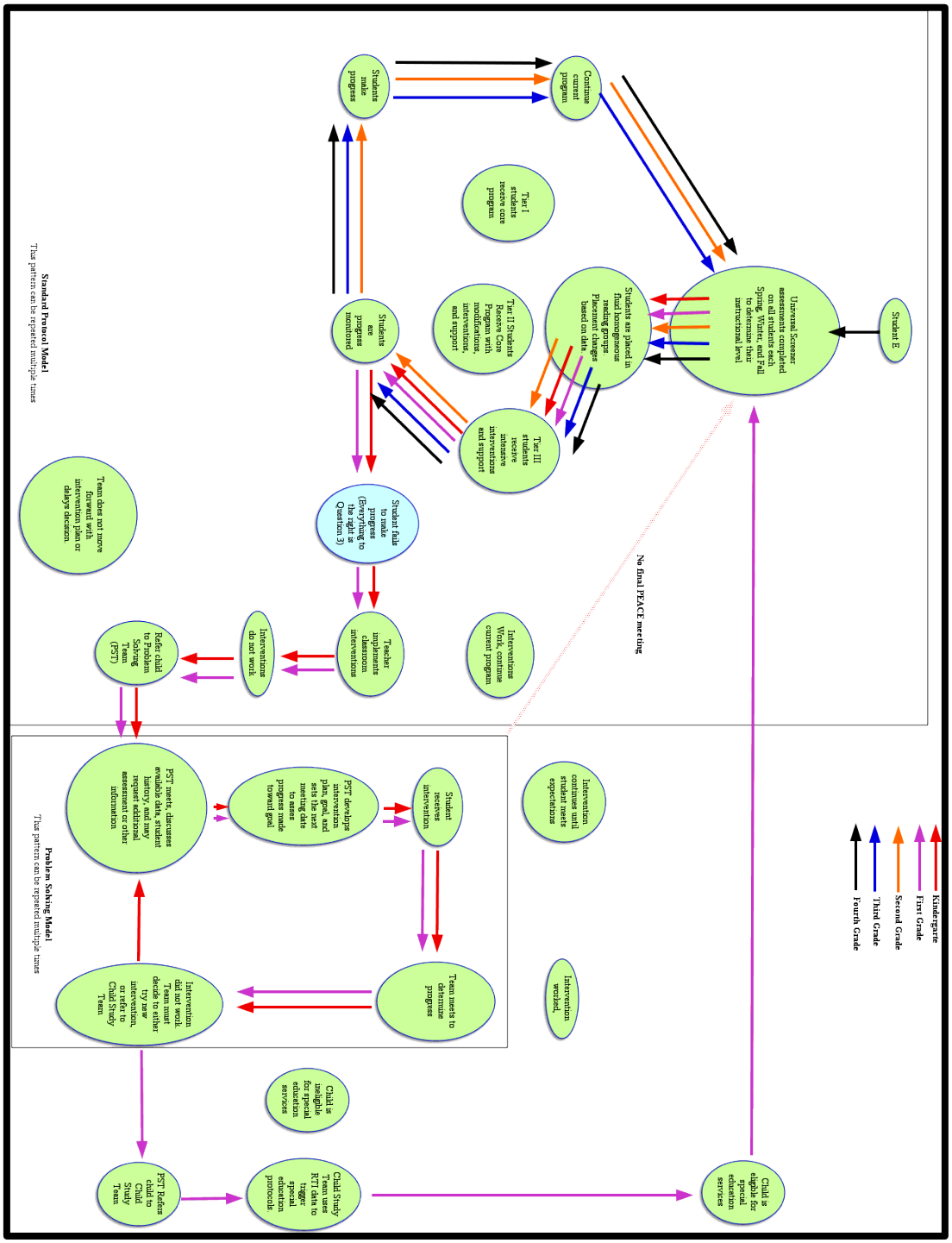


Figure 4.6 Student E and the PES RTI Model

Student F

Student F is a Hispanic female whose first language is Spanish. Born in the United States, Student F's kindergarten assessments indicated that she was fluent in English at the kindergarten level at the start of kindergarten. Student F has two siblings and supportive parents. Student F attended Head Start and entered kindergarten at Sith Elementary School in Paix School District without any 504, Speech, or Special Education services.

The homeroom teacher referred Student F for Title I services in September due to various reading concerns. In March of her kindergarten year Student F received a referral to P.E.A.C.E. for reading and math concerns. The team developed a plan to target beginning and ending phonemes. The team met periodically to monitor Student F's progress throughout kindergarten. Student F's DRA score of 2 met the grade level expectations.

At the start of first grade ESL assessment data made Student F eligible to receive ESL services. The ESL services supplemented the Title I, P.E.A.C.E., and classroom interventions already in place. The documentation did not provide a time or frequency for ESL service delivery.

In October the P.E.A.C.E. team met and switched the intervention focus from reading to math, consistent with the Problem-solving Model's method of attacking one target at a time. Reading interventions were already in place as part of the school's standard protocol model, so the P.E.A.C.E. team used their time and resources on addressing math concerns. The team met periodically to monitor progress and adopted the plan as necessary. Student F demonstrated limited growth in reading despite direct

interventions such as Title I services, small group and one-on-one instruction with a teacher, an assistant, or a reading specialist. The interventions had a focus on beginning and ending phonemes by using sounds about activities, picture cards to sound out and write words on a dry erase board. At a February meeting the team decided to switch the focus back to reading. The team met periodically to monitor student progress. In a May meeting the team noted Student F had made progress, so they would re-screen Student F at the start of second grade and determine an intervention plan if necessary. Despite progress made on her P.E.A.C.E. goals, Student F's data placed her below grade level. Her PALs score of 19 fell below the benchmark of 35 and her DRA score of 6 did not meet the benchmark of 14. Her winter and spring progress monitoring scores of 11 and 14 placed her in Tier III. It is unclear which instructional tier Student F received instruction, as there is no documentation of the level of instruction.

At the start of second grade a letter informed Student F's parents that she would receive 30 minutes of direct ESL services daily. A P.E.A.C.E. meeting followed up this letter. On September 9, the P.E.A.C.E. team met to review the fall assessment data and discovered Student F had demonstrated little to no growth. The team referred Student F to the school's child study team for a suspected disability. The child study met on September 23rd to review the data and determine what additional data needed collected.

After requesting a full evaluation, the special education eligibility team met again in November. The data documented Student F failed to make progress despite numerous interventions and the assessment indicated processing disorders in working memory and auditory memory. As a result, the team found her eligible for special education services under the category of Specific Learning Disability.

The team met in November to develop the IEP. In this meeting the team determined appropriate accommodations and services necessary for Student F to access the curriculum. Student F's learning needs would now be meant through the IEP and the ESL services were removed. In the meeting, the team developed goals that focused on reading, comprehension, decoding, math, and fluency. Student F's goal progress fluctuated between sufficient and emerging progress. Sufficient progress was defined as progress made to achieve the goal within the duration of the IEP. Emerging progress was defined as the skill being demonstrated, but the goal may not be achieved within the duration of the IEP. However, at the end of second grade she made sufficient progress on all goals. Student F's Spring PALS score of 42 fell below the benchmark of 54 and her fall, winter, and spring universal screening scores of 10, 22, and 42 placed her in Tier III

Over the summer Student F transferred schools and began third grade in PES. Documentation shows that she began receiving instruction in the corrective SRA reading program (Tier III). IEP progress reports indicated she had made satisfactory progress on reading, comprehension, and fluency goals and that she had mastered her decoding goal.

In November, the IEP team met to create a new annual IEP. The team developed goals focusing on math, comprehension, fluency, and writing. The team reviewed data to determine appropriate accommodations and services. Student F's progress fluctuated between making sufficient progress to emerging progress on the IEP goals throughout the year.

Student F participated in the state's end of year standardized assessments. Her ESL status exempted her from taking social studies and science. She failed her math and

reading assessments. Her winter and spring universal screening data of 24 and 33 placed in her in Tier III.

An IEP progress report from the start of fourth grade indicated Student F had mastered her comprehension and fluency goals, while she maintained satisfactory progress in her writing goal. The team met in November to develop Student F's annual IEP. The team reviewed the data to determine the appropriate accommodations and services required for Student F to access the curriculum. The team then developed goals focusing on comprehension, fluency, and writing. Student F's progress fluctuated between emerging and sufficient the remainder of the year.

Despite the interventions provided by the IEP and RTI, Student F's data continued to document below grade level performance. Student F participated in the state's standardized end-of-year assessments. She passed the reading assessment, but failed the math and social studies assessments. Her fall, winter, and spring universal screening scores of 44, 57, and 87 placed her in Tier III. Figure 4.7 documents Student F's progress in the RTI model.

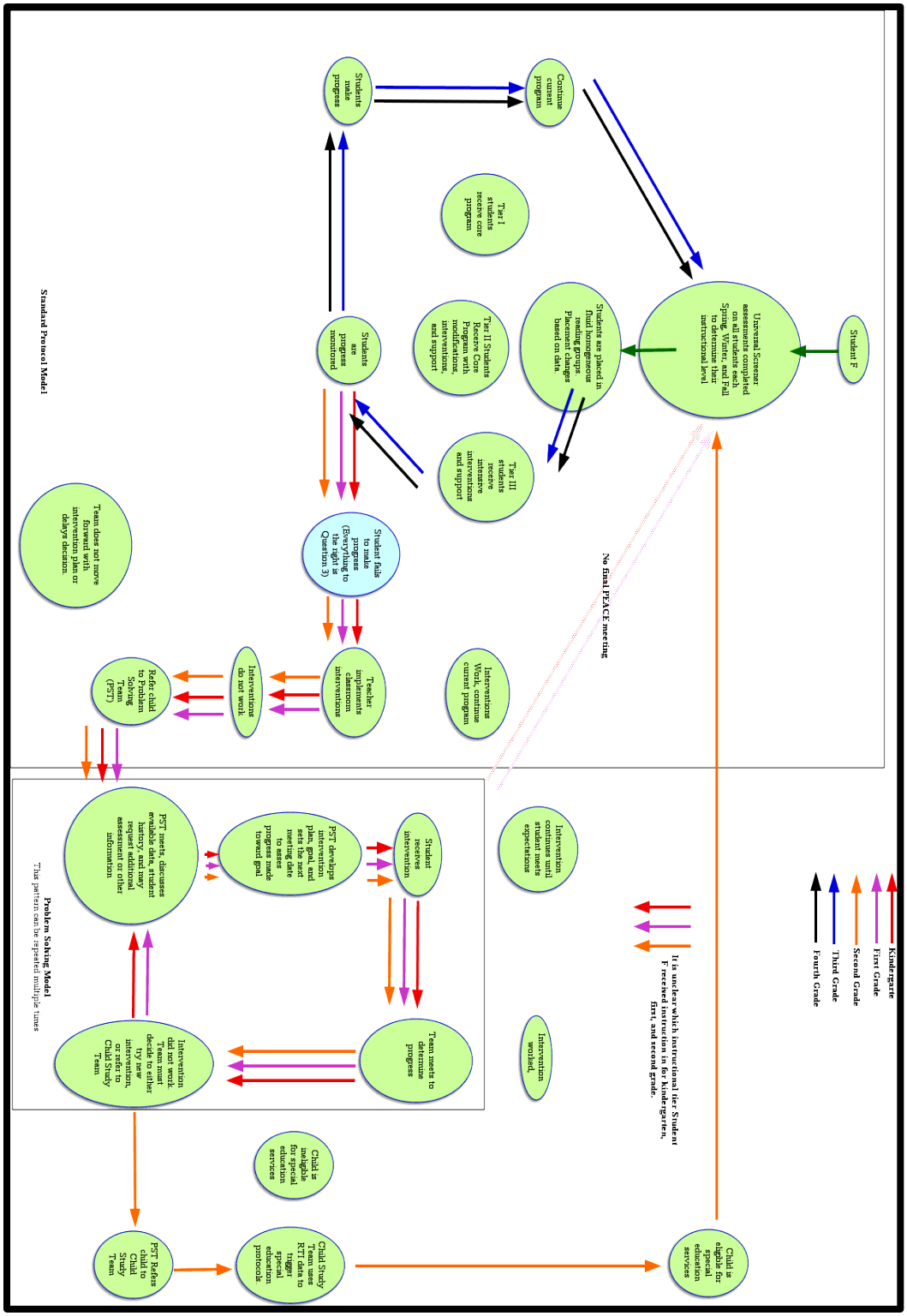


Figure 4.7 Student F and the PES RTI Model

Question 3: What is the Relationship Between First Grade Scores and Fourth Grade Scores?

In question three I studied the relationship between the cohort's end of first grade universal screener scores and their end of fourth grade universal screener scores. As stated in Chapter One, Juel (1988) found that students performing poorly in first grade had an 88% chance of performing poorly in fourth grade. This finding suggests that there is a relationship between first grade and fourth grade reading scores. To determine if this relationship exists within an RTI model, I completed both a correlation and regression analysis.

A correlation analysis allowed me to determine the strength of the relationship between two scores. In this research, I looked at the relationship between reading fluency scores in first grade and reading fluency scores at the end of fourth grade for 63 students. A Pearson correlation between first grade reading fluency scores and fourth grade reading fluency scores produced a correlation of $r = 0.79$. This high correlation was significant at $\alpha = 0.05$ ($r [61] = 0.79$, $p (< 0.0001)$. This finding suggests that first grade reading fluency scores varied with fourth grade reading fluency scores. Students having higher first grade reading fluency scores tended to have higher fourth grade reading fluency scores. The simple regression analyses of these data, which looks at the strength of the relationship, produced an r^2 value of 0.62, which is significant at $\alpha = 0.05$ ($F(1, 61) = 98.1$, $p < .0001$). The regression equation had a slope = 0.77 ($t(61) = 9.90$, $p < .0001$). This finding suggests that higher levels of first grade reading fluency scores are associated with higher levels of fourth grade reading fluency scores, with first grade

reading scores accounting for approximately 62% of the variation in fourth grade reading scores.

Summary

To implement RTI Paix School District developed a district manual. This manual provided building principals with a definition and non-negotiables. The manual provided clear parameters around classifying students by tier and provided time guidelines for instruction at each tier. The manual defined and prescribed screening, assessments, progress monitoring frequency, and progress monitoring frequency structures.

The manual described fidelity as teaching as designed. To ensure program and instructional fidelity, the manual stipulated that the current data, school implementation plan, coaching report, teacher observations, classroom walk through, reports, professional development, and more are included in the school's quarterly data analysis reports. The manual then provided examples of how to monitor fidelity at each tier.

The manual required that schools label the need, not the child. As a result, the instruction is labeled, not the instructor. This allowed general education teachers, special education teachers, literacy coaches, specialists, instructional coaches, and speech pathologists to work together and deliver instruction that is needed, not dictated by their title.

The district's problem-solving model, P.E.A.C.E., is the oldest component of the district's RTI manual and operated on a separate manual in alignment with the MTSS manual. The P.E.A.C.E. manual provided a definition, the philosophy and beliefs, and basic principles. The P.E.A.C.E. process consisted of four basic levels, with a description

provided as to what occurs at each level. The P.E.A.C.E. document described a series of meetings, assessments, and interventions to be used during the problem-solving process.

The interviews conducted with the special education administrator and building administrator responsible for bringing RTI into PSD provided data consistent with the data found in the two documents mentioned above. The interviews provided the background information regarding the early beginnings of RTI, which clarified how and why the district's RTI model evolved from a problem-solving model, to a standard protocol model and ultimately a hybrid model named Multi-Tiered Systems of Support.

The case studies provided invaluable data as to how RTI interacted with students, at the individual student level. Each student in the case studies followed a different path in RTI, demonstrating RTI's ability to remain flexible and adapt to the needs of each student. Although the at-risk, Tier III students in this study did not become Tier I students, the case studies document the school's responses to the students' needs and its implementation of RTI. Finally, the case studies provide further insight into the multiple systems and variables in place in schools in which RTI must coexist.

The data from the correlation analysis suggests that a student who reads better in first grade will read better in fourth grade. The regression analysis suggests that first grade reading scores account for approximately 62% of the variation in fourth grade reading scores. This data is consistent with historical data presented in previous research.

Chapter 5

The purpose of this study was to provide additional information to the field of Response to Intervention (RTI). There is a documented need in the research for additional information regarding the implementation of RTI (Hollenbeck, 2007; Fuchs & Deshler, 2007). Hollenbeck (2007) states there is more that we do not know about RTI than we do know. To better understand RTI, I focused my research on the following areas: how a school implemented RTI, how RTI affected six very low performing students, and the relationship between first grade reading scores and fourth grade reading scores in a school operating RTI.

In this chapter I discuss the findings from the archived records, school documents, interviews, and embedded units of analysis found in Chapter Four. My discussion highlights findings from the three research questions below:

1. How did the subject elementary school implement RTI?
2. How did the school intervene with the Tier III students identified in first grade by the school's universal screener?
3. What is the relationship between first grade scores and fourth grade scores on the school's universal screener's oral reading fluency assessment?

Discussion of Findings

In order to provide an in-depth analysis, I merged the findings from the three research questions into one comprehensive discussion. This allowed me to compare and contrast differences between implementation policy and practice while connecting the findings to current research. Similar to Chapter Four, I present my findings within the

context of the hybrid RTI model in place at PES. I included the RTI model again below for reference purposes.

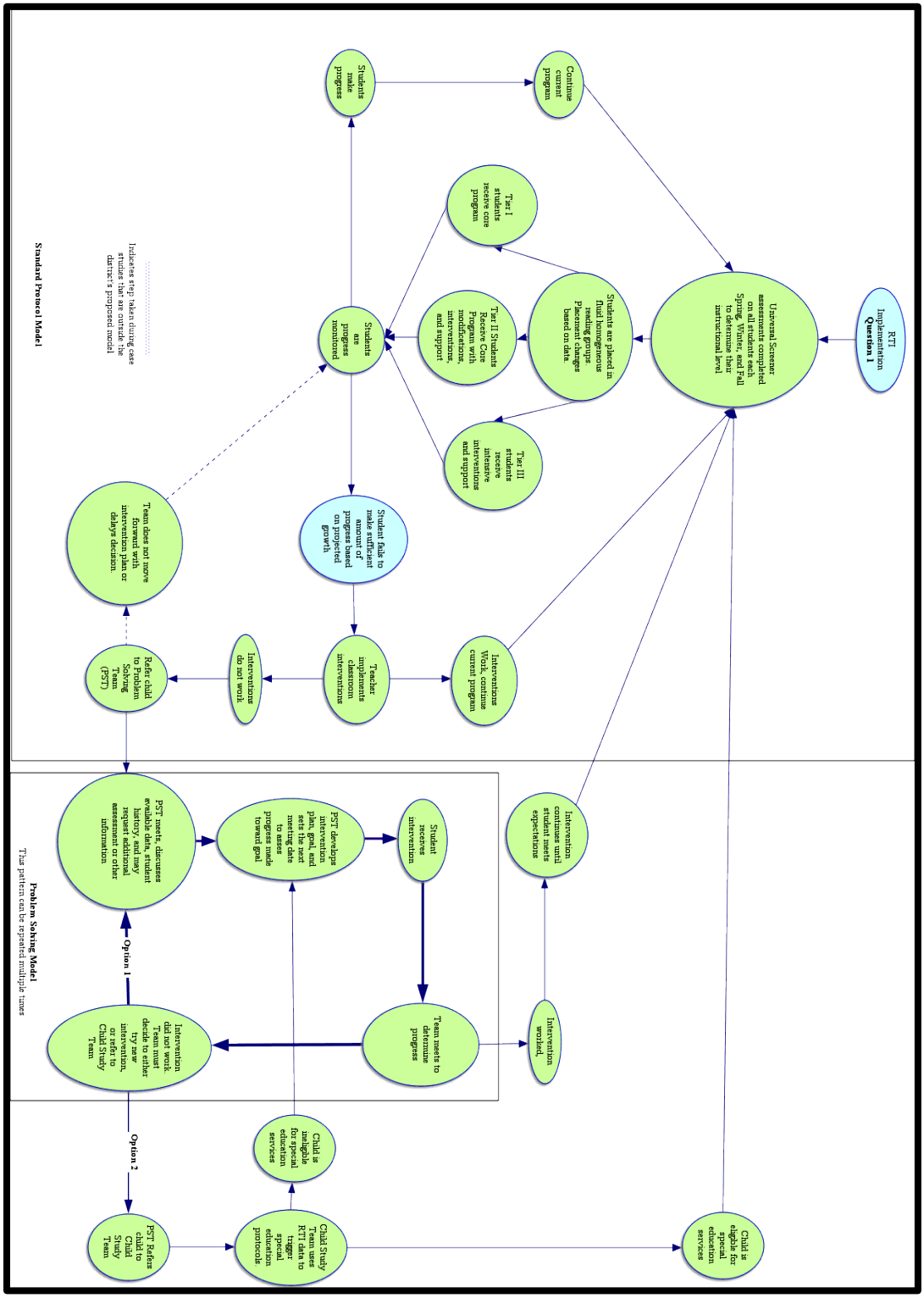


Figure 5.1: PES RTI Model

Standard Protocol

The adoption of the standard protocol approach to RTI allowed PES to sort students into homogeneously grouped instructional Tiers. Homogenously grouping students into instructional tiers provided an opportunity for various teachers to offer unique instructional programs outside the school's core instructional program. As a result, the school could implement multiple reading programs based on the various needs of the students.

As discussed in Chapter Two, the research in reading grouping is complex in nature. At PES students were heterogeneously grouped by homeroom, but often transitioned to a homogeneously grouped learning environment during reading instruction, this model is often referred to as "walk-to-read". This allowed the students to receive instruction in homogeneously grouped reading classrooms during the language arts block, regardless of chronological age. This approach combines two grouping strategies; regrouping for reading and/or math and the Joplin Plan. The Joplin Plan groups students by instructional level, not their grade level (Slavin, 1987). As a result students were only homogeneously grouped for a portion of the day, group assignments remained fluid, and instruction could be adapted to the specific instructional needs of the students. Slavin's (1987) research on grouping listed these actions as advantages to grouping.

Other researchers identified disadvantages of this type of grouping. These disadvantages include a possible focus on memorization, a failure to teach meaningful content to students, use of less stimulating materials, increase in behavioral issues decreasing instructional time, pacing problems, lowering teacher expectations of students,

and wider learning gaps (Grant & Rothenberg, 1986; Oakes, 1995, Oakes, Gamoran & Page, 1992; Rowan & Miracle, 1983; Trimble & Sinclair, 1987). However, the standard protocol component of the PES RTI model and the PSD MTSS manual addressed each of these concerns as I will outline below.

Fuchs, Moch, Morgan, and Young (2003) state that the standard protocol "requires use of the same empirically validated treatment for all children with similar problems in a given domain" (p. 166). PES used R-CBM measures to monitor student progress and determine reading achievement. R-CBMs are measures outside of the taught curriculum that measure various components of reading. This study focused primarily on PES's use of reading fluency R-CBMs. A review of the embedded case studies of those students identified as most at-risk, revealed relatively few behavior concerns with no student receiving a suspension from school. Because of targeted interventions, the MTSS manual expected more growth from at-risk students than it did from its Tier I students. Rather than widening achievement gaps, the district's MTSS manual prescribed that interventions need to be monitored to ensure that achievement gaps narrow at a rate consistent with the level of need. In regards to teacher expectations, a survey report to the school board documented that 100% of teachers responding felt they were meeting the needs of the students.

In addition to the research promoting or critiquing the use of grouping, grouping research also looks at the impact on students in high, medium, and low groupings. A synthesis of the literature from Chapter Two suggests that when grouping students by ability there are a few common findings that should be considered when grouping students:

- groups of 3-4 are the most effective (Lou et al., 1996)
- students homogeneously grouped for extended times demonstrate largest growth (Hong & Hong, 2009)
- grouping has no effect on academic self-concept, sense of responsibility, or behavior (Pallas et al., 1994)
- teachers using instructional groups once a week have increased scores (McCoach et al., 2006)

PES addressed all of these considerations. The MTSS document lists the target group size as five students in Tier II with three students in Tier III. The master schedule and MTSS manual indicated students in K-3 received 2.5 hours of homogeneous grouping whereas students in 4-5 received 2 hours of homogeneous instruction, daily. However, the key to grouping is ensuring the students remain in the appropriate tiers. To do this, the school had to monitor student progress.

There are two approaches to monitoring student progress; direct route and progress monitoring (Jenkins, Hudson, & Johnson, 2007). As with the RTI model, PES implemented a hybrid model to monitor student progress without explicitly adopting either approach. In regards to the standard protocol portion of the RTI model, the school relied heavily on the direct route approach. The direct route calls for administration of a screening assessment to all children at the start of the school year to identify students performing below a pre-determined cut point, in this case the school used the universal screener Aimsweb. A strength of this approach is identifying potentially at-risk students quickly and allowing Tier II services to begin immediately (Jenkins, Hudson, & Johnson, 2007; Vellutino, et al., 1996; Vellutino, Scanlon, Zhong, & Schatschneider, 2007). Research shows that a drawback to the direct route approach is that placement is based on a single piece of data, which may misidentify students.

The standard protocol's use of a universal screener ensured all students received a reading curriculum based measurement (R-CBM). Decades of research attest to the reliability of CBM's to predict reading achievement outcomes of students (Fuchs, n.d.; NRCLD, 2007). To support the universal screener and the placement of students into instructional tiers, the school identified cut-points for instructional tiers based on the data received from the universal screener. However, the school also allowed tier placement decisions to be supplemented with additional assessment data such as PALs and DRA. As a result, students had the potential to be placed in tiers inconsistent with the data from the universal screener. Although this practice may negate the original concern around the direct route's use of a single piece of data, at PES this supplementation created a new concern.

A review of the embedded units of analysis revealed that each student had scores below the 10th percentile at the end of first grade, which the MTSS manual describes as Tier III. However, only Student E received Tier III instruction at the start of second grade. This is likely the result of the MTSS allowing subjectivity into the decision-making process using data from outside the universal screener. It appears that the outside data in these instances carried more weight than the agreed upon universal screener. Ideally, the data sources should produce similar results and PES may wish to further review this process. This finding brings question to the implementation of the standard protocol portion of the RTI model.

Fuchs and Fuchs (2001) state that implementing RTI with fidelity is a key issue in RTI. Davis-Bianco (2010) state that one of the most challenging goals in implementing an RTI model is maintaining the fidelity of implementation of the prescribed

interventions. Noell and Gansle (2006) found that research suggests that ensuring program fidelity of implementation is essential to avoid creating a system with false results. The school developed three key steps to ensure the implementation of RTI as intended: the use of an outside consultant, monthly data meetings, and the quarterly superintendent's report. These three actions together helped promote RTI implementation at the student, classroom, and school level. However, it did not prevent questionable tier placement for the students of this study. Placing students in tiers, without the consistent application of data-based decisions, could resemble tracking.

In concept, the standard protocol model implemented at PES is different from tracking in two key ways. First, the model described in the MTSS expected students in Tier III to make two times the expected growth and students in Tier II to make one and half times the expected growth in a given period of time. However, based on the findings from the embedded case studies, there is no evidence suggesting that this occurred. Based on the Aimsweb data, all six students entered the study as Tier III students and ended as Tier III students. However, this data did not correspond to the school's tier placement of students. In addition, the results of the Pearson Correlation and regression analysis suggested a student's performance on their first grade reading fluency assessment likely predicted their performance on their fourth grade reading fluency assessment. These findings align with Juel's (1988) research cited throughout this study that suggested a child's first grade reading score served as an accurate predictor of their fourth grade reading score.

One would hope that RTI's early intervention, data-based decisions, and use of scientifically-validated interventions would contradict previous research and provide

guidance as to how to break the achievement gap between low performing students and high performing students, but this was not evident in this research. RTI may be able to break the achievement gap associated with poor reading skills in first grade, but further research is needed that takes a comprehensive look at a larger sample size of students. Although the students in this study did make growth, they did not make the accelerated growth suggested in the MTSS document.

The second way RTI can differ from tracking is its fluidity amongst tiers. Fluidity amongst the tiers is an essential component of RTI (Lembke et al., 2010). A review of the embedded units of analysis's RTI flow charts demonstrated that the instructional groups are fluid. Based on the school's placement of students, Students A, B, and D changed instructional tiers between first and fourth grade. The instructional tier remained unclear for Student F in kindergarten, first, and second grade, but Student F became eligible for special education in second grade and then remained in the same tier for fourth grade. Student E started and remained in Tier III, and became eligible for special education in first grade. Student C started and ended in a Tier II instructional setting.

In addition to looking at placement fidelity, the school may want to look at the instructional attention given to Tier I. The data suggested the consultant's work and the monthly data meetings focused primarily on students in Tiers II and III. The quarterly superintendent's report incorporated elements from all three tiers, but not at the degree given to Tiers II and III in the data meetings and with the consultant. This may be the result of the school's belief of providing the most resources to the students with the highest needs. However, providing a solid core program that statistically meets the needs

of at least 80% of the student population may lead to fewer students requiring services in other tiers.

Transiency is an area of fidelity not addressed in the MTSS manual, but became an evident concern in this study. The embedded case studies revealed that several students transitioned between schools on a regular basis. Students A, C, D, F moved between schools throughout the four years of the study. Although the students remained within the district and within the similar RTI models, documentation after a transfer lagged within each embedded case study. This finding suggests that the district may want to put a transfer protocol in place to ensure schools utilize appropriate data to place students accordingly as they move between schools. This finding also suggests that additional research is needed regarding students transferring between, or into, RTI models.

Problem-Solving Model

There were two options for students not performing well in their instructional tier; change tier placement or receive interventions through the problem solving team. The decision to change the tier placement relied heavily on school officials whereas the decision to refer a child to the problem-solving model relied heavily upon the individual teacher. Fuchs et al. (2003) described the problem-solving model as a process where "solutions to instructional and behavioral problems are induced by evaluating students' response to a four-stage process comprising problem identification, problem analysis, plan implementation, and problem evaluation" (Fuchs et al., 2003, p. 160). At PES when a student failed to make adequate growth, the teacher could initiate the problem-solving process. The P.E.A.C.E. process entails four levels and is similar to the problem-solving

process found in the research of Ikeda and Gustafson (2002). The problem-solving model allowed the school to dedicate considerable time, expertise, and resources to the students demonstrating the highest need based on teacher referral. This process, although well developed and carefully implemented, created three areas for further consideration.

First, it is hard to know how many students were involved in the P.E.A.C.E. process at any given time. It may be that teachers initiated the first two levels of RTI with success on a regular basis and never referred the student to the problem-solving team. These successful interventions did not receive documentation. This made evaluating the effectiveness of the program difficult. When a teacher did initiate the problem-solving process with the team beginning in level three, the team asked for documentation of previous interventions. The embedded case studies revealed inconsistent documentation of these interventions. When an occurrence of the intervention was documented, the duration, intensity, frequency, and data were not provided. For example, the student may have received Title I services, extra support from the reading specialist, or other interventions before a referral to P.E.A.C.E. However, the P.E.A.C.E. team did not know for how long, how often, or the result of the intervention.

Second, the referral of students to the problem-solving team is another area of interest. As mentioned above, the teacher determined when a child received a referral to the problem-solving team. After reviewing all six embedded units of analysis, no theme emerged regarding a referral to P.E.A.C.E. Based on the available data, including the P.E.A.C.E manual, a teacher determined when to refer a student to P.E.A.C.E. A teacher's reluctance to refer a student to P.E.A.C.E., for any number of reasons, may result in some students not accessing the expertise of the problem-solving team.

Third, an inconsistency in the P.E.A.C.E. protocol emerged during my research. The protocol in P.E.A.C.E. is to determine the next meeting date at the end of the current meeting. When done, a follow-up meeting took place. However, at end-of-year meetings the P.E.A.C.E. team often suggested a follow-up meeting the following year, after the administration of the universal screener, without setting a date. In every instance, this meeting never occurred, or was not documented. It may be that the team made recommendations to the team placing students in instructional tiers after the universal screener took place. However, the lack of documentation may bring fidelity into question.

These three observations suggest that the school should consider developing a data management plan that promotes better documented interventions, provides guidelines for referral, and mandates follow-up meetings. Current research does not include data management plans as an essential component of RTI. However, data-based decision making is an essential component. Documentation found in the embedded units of analysis suggest that PES did make data-based decisions, but this research found inconsistencies in managing and applying the data.

All of the students in the embedded case studies entered into level three of the problem-solving model. This finding is not a surprise because the six students were the lowest students based on the universal screener data. The problem-solving model had a tendency to focus on the lower grade levels. Of the six students, all but one entered the problem-solving model before third grade. Of these five students, four stopped receiving P.E.A.C.E interventions before third grade. There are a few possible explanations for this. First, the school continued to develop its standard protocol model of RTI, and as the

standard protocol model evolved it became less and less essential to place students in the problem-solving model because their needs could be met and monitored through new instructional programs in place. However, as I discussed above, a lack of data documenting students within the P.E.A.C.E. process makes this difficult to determine. Second, the school may focus on early intervention; however, there was no mention of this emphasis in any of the data. Third, the teachers in the older grades are less likely to refer students. Regardless of the reason, it is interesting that the students left the problem-solving model, despite the universal screener data placing them in Tier III. This may have been the result of the child making appropriate progress within the Tier III classroom.

As mentioned before the standard protocol approach to RTI utilized the direct route to monitor student progress whereas the problem-solving model used the second approach known as progress monitoring. Progress monitoring, involved administering short, frequent probes to screen students who had previously been identified as at-risk within a given period (Compton et al., 2006). Compton et al. (2006) found the multiple screenings helped increase identification accuracy by reducing the need to rely on one data set to identify students. One potential drawback of progress monitoring model is that it relies on a period of student monitoring. As a result, there could be a delayed access to the intervention, potentially allowing students who are eventually confirmed to be in need of additional support to fall further behind. However, the data collected during progress monitoring could be useful when determining an intervention.

Some opponents of RTI argue that RTI may delay a referral to special education. However, the 2004 reauthorization of the Individuals with Disabilities Education

Improvement Act (IDEIA) allowed districts to identify students with Specific Learning Disabilities (SLD) based on their responsiveness to research-based interventions as an alternative to the traditional ability-achievement discrepancy model (IDEA, 2004). At PES the RTI process provided individualized instruction like never before. Student need, not a label, determined the individualized instruction required. RTI replaced the ability-achievement discrepancy model, which forced the school to wait until lengthy standardized tests revealed the presence of this ability-achievement gap before determining special education eligibility. In this study, the data gained during the RTI process informed the eligibility process, which resulted in two students receiving special education services.

The MTSS document suggested that data played a key role in determining when an intervention continued. Documentation in the embedded case studies showed that the PES problem-solving team would discontinue the intervention when data indicated that a student was no longer responsive to the intervention and no other explanation existed. This finding supports the finding of Wanzek and Vaughn (2008) that a school should not continue to provide more of the same intervention when that intervention is not working. In addition to the support and interventions found within the problem-solving model, each child received interventions both inside and outside of the problem-solving model. Some of these interventions were more than those traditionally offered in a classroom and included services such as Title I, time with a reading specialist, one-on-one instruction, and accommodations.

P.E.A.C.E. typically focused on one or two interventions at time, as the problem-solving model suggests doing. As a result, intervention plans changed based on need at

PES. For example, Student A exhibited behavior concerns, but the team never addressed the concerns because the team felt the behavior concerns were secondary to the academics. Whereas, Student E's behavior concerns became the focus of the team, as they felt the behavior concerns interfered with Student E's ability to learn.

The problem-solving team also utilized other resources. Student C exhibited deficits in both math and reading. When the team met, they noted that Student C received numerous interventions targeting reading and decided the team would focus on mathematics. However, having multiple groups within a school providing interventions could prove counterproductive. Student D served as an excellent example of how this could become a concern. Student D received an ESL intervention during his spelling time that was not associated with the problem-solving team. The problem-solving team identified this concern and implemented corrective measures to prevent Student D's decline in spelling achievement. The following quarter Student D's report card and ESL progress sheet noted improvement in spelling. This finding suggest it might be worth exploring the role of the problem-solving team a bit further and the possibility that it could oversee all interventions in place for a child. This would ensure that interventions had a minimal impact on other instruction.

Finally, despite a dedicated effort, the RTI model at PES lacked parent involvement. A potential strength of RTI is its ability to involve parents in the decision making process, although their attendance in team meetings is not required. PES invited parents to every P.E.A.C.E. and IEP meeting. However, there is no documentation that any parent attended any meeting outside of the school's regularly scheduled meetings (i.e. parent teacher conferences, back to school night). This is likely a result of the

community PES served and not the RTI model itself. However, this last finding deserves further research as parent involvement may be related to student achievement.

Conclusions

When implementing RTI, PES combined multiple RTI elements to create a hybrid RTI model. PES utilized a universal screener to identify student needs. Once needs were identified, students were homogeneously grouped to receive literacy instruction at their level. In addition to this standard protocol model approach, the school utilized components of the problem-solving model.

The problem-solving model, operationalized as the P.E.A.C.E. team, and consisted of four levels that increased with intensity with each level. In the first two levels the teacher worked with parents and other school resources to determine, implement, and monitor student progress. If the child did not make adequate progress, the teacher had the option to refer the child to the problem-solving team. The team assessed for deficits, developed and implemented an intervention plan, and then monitored progress of the plan. If the child failed to make progress after multiple attempts, the team referred the child to the school's child study team or Section 504 team. Utilizing both models allowed the school to account for shortcoming brought forward by the opponents of RTI.

When monitoring student progress, the school again operated on a hybrid model. When operating under the standard protocol model, the school utilized components of the direct route approach to progress monitoring and used a universal screener that assessed every student. When monitoring student progress within Tiers II, III, and the problem-solving model, the school relied heavily on providing frequent, short assessments to

students, which aligned with the progress monitoring approach to monitoring student progress.

Despite these efforts, the Pearson Correlation and regression analysis revealed that the students in the study did not make the accelerated growth expected in the RTI model put in place at the school. The analysis found that first grade scores had a strong correlation to fourth grade reading scores, consistent with previous research. Further research is needed with a larger sample size that includes students from all levels of RTI to investigate these findings further.

The school implemented three key strategies to ensure implementation as intended: an outside consultant, superintendent's reports, and monthly data meetings. However, some areas deserve further consideration from the school, specifically the management and application of data. The findings show inconsistencies between data and tier placement, lack of intervention documentation, meetings that never occurred, and no data-based guidelines for when a child should be referred to the problem solving team.

Implications

Although this study looked specifically at one school, the processes and policies in place in this school can assist other schools wishing to implement or improve their RTI frameworks. Based on the findings from this research and the literature review in Chapter Two, schools should consider the following:

1. RTI Model: As discussed in this research, there are two commonly accepted RTI models. Each model has strengths and weakness. When selecting a model, the school should consider potential limitations and implement policies to address these limitations, ultimately creating some form of hybrid RTI model.

2. Manuals: Developing a clear manual sets policies and expectations for implementation of RTI. Documentation in the manuals ensures all stakeholders have a clear and consistent understanding of the model. These manuals also provide areas to document approved interventions, instruction, assessments, and professional development. This will assist with fidelity.
3. Data Management: Although having a data management plan is not a documented essential component of RTI, this research suggests that it is essential for the successful implementation of RTI.
4. Documentation: Accurately documenting the RTI process can be a daunting task. Documentation should be standardized, up-to-date, and easily accessible to multiple stakeholders. This documentation should encompass all areas of the child's education, not just the RTI process, to allow teams to make informed decisions regarding interventions.
5. Review and Reflection: Schools should consider providing a time to review the RTI process. During this review process, schools can determine strengths and areas of growth.
6. Staffing: Implementing RTI may result in a "menu" of instructional programs. In order to deliver these programs, a school may consider how it uses its instructional staff and how it could be used more effectively. This may result in subtle or dramatic shifts in who delivers instruction to targeted populations of students.

Recommendations for Further Study

This study has identified a few key areas that merit further study: the importance of data management, the effect of RTI on student achievement on a broad scale, and the role of parents in an RTI model. Understanding how RTI affects students is a difficult area to study, as RTI is a philosophical approach containing many variables that are difficult to control. Furthermore, this study looked specifically at the students identified as most at-risk by the school's universal screener. It may be worthwhile to complete a study that analyzes overall student progress in an RTI school compared to a non-RTI school. More research is needed to determine if RTI schools are closing the achievement gap when compared to non-RTI schools.

References

AIMSweb (2011). *AIMSweb Default Cut Scores Explained*. Retrieved from http://images.pcmac.org/Uploads/ApplingCounty/ApplingCounty/Divisions/Forms/AIMSweb%20Cut%20Score%20Guide.pdf

AIMSweb (2012) *AIMSweb Introductory Guide*. Retrieved from http://matsuk12.us/cms/lib/AK01000953/Centricity/Domain/3898/AIMSweb_introguide.pdf

Bernard, ,H. R., & Ryan, G. W. (2010). *Analyzing qualitative data: Systematic approaches.* Los Angeles, CA: Sage.

Brown-Chidsey, R., & Steege, M.W. (2005). *Response to intervention; Principles and strategies for effective practice*. New York, NY: The Guilford Press.

Ciolfi, A.A., & Ryan, J.E. (2011). Race and response –to-intervention in special education. *Howard Law Journal,* 54(2), 303-340.

Compton, D. L., Fuchs, D., Fuchs, L. S., & Bryant, J. D. (2006). Selecting at-risk readers in first grade for early intervention: A two-year longitudinal study of decision rules and procedures. *Journal of Educational Psychology, 98,* 394–409.

Cousin, G. (2005). Case study research. *Journal of Geography in Higher Education, 29* (3), 421-427.

Davis Bianco, S. (2010). Improving Student Outcomes: Data-driven instruction and fidelity of implementation in a response to intervention (RTI) model. *TEACHING Exceptional Children Plus, 6(5)* Article 1. Retrieved December 20, 2011 from http://escholoarship.bc.edu/education/tecplus/vol6/iss5/art1

Daniel, M. (2010). Reliability of AIMSweb reading curriculum-based measurement (R-CBM) (Oral Reading Fluency). http://aimsweb.com/index.php?page =articles

Deno, S.L. (2003). Developments in curriculum-based measurement. *The Journal of Special Education, 37,* 184-192.

Denzin, N. K. (1970). *The Research Act in Socialogy.* Chicago: Aldine.

Denzin, N. K., & Lincoln Y. S. (1994). *Handbook of Qualitative Research,* London: Sage.

Eisenhard, K. M. (1989). Building theories from case study research. *Academy of*

Management. The Academy of Management Review 14(4) 532-550.

Eder, D. (1981). Ability grouping as a self-fulfilling prophecy: A micro-analysis of teacher-student interaction. *Sociology of Education. 54,* 151-162

Elbaum, B., Vaughn, S., Hughes, M.T., & Moody, S. W. (2000). How effective are one-to-one tutoring programs in reading for elementary students at-risk for reading failure? A meta-analysis of the intervention research. *Journal of Educational Psychology, 92,* 605-619.

Felmlee, D., & Eder, D. (1983). Contextual effects in the classroom: The impact of ability groups on student attention. *Sociology of Education, 56,* 77-87.

Fuchs, L.S., (n.d.). Validated Forms of Progress Monitoring in Reading and Mathematics [Web log post]. Retrieved: fromhttp://www.rtinetwork.org/ essential/assessment/progress/validated-forms-progressmonitoring

Fuchs, D., Compton, D.L., Fuchs, L. S., Bryant, J., & Davis, G. N. (2007). Making "secondary intervention" work in a three-tier responsiveness-to-intervention model: findings from the first-grade longitudinal reading study of the National Research Center on Learning Disabilities. Online publication. Doi: 10.1007/s11145-007-9083-9

Fuchs, D., & Deshler, D.D. (2007). What we need to know about responsiveness to intervention (and shouldn't be afraid to ask). *Learning Disabilities, 38,* 545-552

Fuchs, D., Deshler, D. D., & Reschly, D. J. (2004). National Research Center on Learning Disabilities; Multi-method studies of identification and classification issues. *Learning Disability Quarterly, 27,* 189-195.

Fuchs, D., & Fuchs, L.S. (2001). Responsiveness-to-intervention: A blueprint for practitioners, policymakers, and parents. *Teaching Exceptional children, 38(1)* 57-61.

Fuchs, D., & Fuchs, L.S. (2006). Introduction to response to intervention: What, why, and how valid is it? *Reading Research Quarterly (41) 1,* 9-99.

Fuchs, D., Moch, D., Morgan, P.L., & Young, C. L. (2003). Responsiveness-to-intervention: Definitions, evidence, and implications for the learning disabilities construct. *Learning disabilities Research & Practice, 18,* 157-171.

Fuchs, L.S., & Fuchs, D. (1991). Paradigmatic distinctions between instructionally relevant measurement models. *Exceptional Children, 57,* 488-501.

Fuchs, L.S., & Fuchs, D. (1998). Treatment validity: A unifying concept for reconceptualizing the identification of learning disabilities. *Learning Disabilities Research and Practice, 13,* 204-219.

Fuchs, L.S., & Fuchs, D., Hamlett, C.L., Walz, L., &Germann, G. (1993). Formative evaluation of academic progress: How much growth can we expect? *School Psychology Review, 22,* 27-48.

Gamoran, A. (1986). Instructional and institutional effects of ability grouping. *Sociology of Education, 59,* 185-198.

Gersten, R., & Domino, J. (2006). RTI (response to intervention): Rethinking special education for students with reading difficulties (yet again). *Reading Research Quarterly, 41,* 445-449.

Gibbert, M. & Ruigrok, W. (2010). The what and how of case study rigor: three strategies based on published work. *Organizational Research Methods, 13,* 710-737.

Good, T., & Brophy, J. (2008). *Looking in classrooms* (10th ed.). Boston: Pearson Education.

Grant, L., & Rothenberg, J. (1986). The social enhancement of ability differences: Teacher-student interactions in first- and second-grade reading groups. *Elementary School Journal, 87*(1), 29-50.

Hasbrouck, J., & Tindal, G. (2006). *Oral Reading Fluency: 90 Years of Measurement*. Oregon: University of Oregon. Retrieved: http://www.brtprojects.org/ publications/technical-reports

Hollenbeck, A.F. (2007). From IDEA to implementation: A discussion of foundational and future responsiveness-to-intervention research. *Learning Disabilities Research & Practice, 22,* 137-146.

Hong, G., Corter, C., Hong, Y., & Pelletier, J. (2012). Differential effects of literacy instruction time and homogeneous ability grouping in kindergarten classrooms: Who will benefit? Who will suffer? *Educational Evaluation and Policy Analysis, 34*(1), 69-88. doi: 10.3102/0162373711424206

Hong, G., & Hong, Y. (2009). Reading instruction time and homogeneous grouping in kindergarten: An application of marginal mean weighting through stratification. *Educational Evaluation and Policy Analysis, 31*(1), 54-81. doi:10.3102/0162373708328259

Hooper, S., Ward, T.J., Hannafin, M. J., & Clark, H.T. (1989). The effects of aptitude composition on achievement during small group learning. *Journal of Computer-Based Instruction* 16: 102-109.

Hosp, M.K., & Hosp, J.L. (2003). Curriculum-based measurement for reading, spelling,

and math: How to do it and why. *Preventing School Failure, 48,* 10-17.

Howell, D. (2011). *Fundamental statistics for the behavioral sciences 7e*. California: Wadsworth

Ikeda, M., & Gustafson, J.K. (2002). *Heartland AEA 11's Problem-solving process: Impact on issues related to special education* (Research Rep. No. 2002-01). Johnson, IA: Heartland Area Education Agency 11.

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

Institute of Education Sciences. (2011). What Works Clearing House. United States Department of Education's Institute of Education Sciences. Retrieved December 22, 2011 from http://ies.ed.gov/ncee/wwc/

Intervention Central. (n.d.). *Introduction to RTI problem-solving teams.* Retrieved from: http://www.interventioncentral.org/workshops/introduction-rti-problem-solving-teams

Jenkins, J. R., Hudson, R. F., & Johnson, E. S. (2007). Screening for service delivery in an RTI framework: Candidate measures. *School Psychology Review, 36,* 560–582.

Johnson, E. S., Jenkins, J. R., Petscher, Y., & Catts, H. W. (2009). How can we improve the accuracy of screening instruments? *Learning Disabilities Research & Practice.*

Johnson, E., Mellard, D. F., Fuchs, D., & McKnight, M. A. (2006). *Responsiveness to intervention: How to do it* (RTI manual). Lawrence, KS: National Research Center on Learning Disabilities

Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology, 80,* 437-447.

Lee, A. As. (2003). Generalizing generalizability in information systems research. *Information Systems Research, 14*(3).

Lembke, E. S., McMastger, K. L., & Stecker, P. M. (2010). The prevention science of reading research within a response-to-intervention model. *Psychology in the schools 47*(1), 22-35 doi: 10.1002/pits.20449

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* Beverly Hills, CA: Sage Publications, Inc.

Lou, Y., Abrami, P., Spence, J., Poulsen, C., Chambers, B., & Apollonia, S. (1996). Within-class grouping: A meta-analysis. *Review of Educational Research, 66*(4), 423-458.

McCoach, D., O'Connell, A., & Levitt, H. (2006). Ability grouping across kindergarten using an early childhood longitudinal study. *The Journal of Educational Research, 99*(6), 339-346.

McMaster, K. L., Fuchs, D., Fuchs, L. S., & Compton, D. L. (2005). Responding to nonresponders: An experimental field trial of identification and intervention methods. *Exceptional Children, 71,* 445-463.

Meijnen, G.W., & Guldemond, H. (2002). Grouping in primary schools and reference process. *Educational Research and Evaluation, 8(3),* 229-248.

Mellard, D.F. (2004). Understanding responsiveness to intervention in learning disabilities determination. Retrieved December 20, 2011 from http:www.nrcld.org/ about/publications/papers/mallard.pdf

Mellard, D.F., Byrd, S. E., Johnson, E., Tollefson, J. M., & Boesche, L. (2004). Foundations and research on identifying model responsiveness-to-intervention sites. *LearningDisabilities Quarterly, 27,* 243-256.

Merriam, S. B. (1988). *Qualitative research and case study applications in education; Revisded and expanded from case study research in education.* San Francisco: Jossey-Bass

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Mohammad Saleh, A. W., Lazonder & Ton De Jong (2005). Effects of within-class ability grouping on social interaction, achievement, and motivation. *Instructional Science 33,* 105-119. doi: 10.1007/s11251-004-6405-z

National Association of State Directors of Special Education. (2005). Response to Intervention: Policy considerations and implementation.

National Center on Student Progress Monitoring (n.d.). Retrieved from http://www.studentprogress.org

National Research Center on Learning Disabilities. (2003). *Information sheet for regional resource centers: Responsiveness-to-intervention models identify, evaluate, & scale.* Retrieved January 7, 2012 from http://www.margaretkay.com/PDF%20files/Response %20to%20Intervention/RTI% 20Models.pdf

National Research Center on Learning Disabilities (2007). *What is progress morning? [Brochure]. Law*rence, KS.

Noell, G.H., & Gansle, K.A. (2006). Assuring the form has substance: Treatment plan implementation as the foundation of assessing response to intervention. *Assessment for Effective Intervention, 32 (1),* 32-39.

Oakes, J. (1985). *Keep track: How schools structure inequality.* New Haven, CT: Yale University Press.

Oakes, J. (1995). Two cities' tracking and within-school segregation. *Teachers College Record, 96*(4), 681-690.

Oakes, J. Gamoran, A. & Page, R. (1992). Curriculum differentiation: Opportunities, outcomes, and meanings. In P.W. Jackson (ed.), *Handbook of research on Curriculum.* New York: Macmillan, 570-608.

Pallas, A., Entwisle, D., Alexander, K., & Stluka, M. (1994). Ability-group effects: Instructional, social, or institutional? *Sociology of Education, 67*(1), 27-46.

Patton, M. Q. (2002) *Qualitative Research & Evaluation Methods (2nd ed.).* Thousand Oaks, London, New Delhi: Sage.

Patton, M.Q. (1990). *Qualitative Research & Evaluation Methods.* Newbury Park, California: Sage

Phillips, L. M., Norris, S. P., Osmond, W. C., & Maynard, A. M. (2002). Relative reading achievement: A longitudinal study of 187 children from first through sixth grades. *Journal of Educational Psychology, 94,* 3-13.

Reuman, D. A. (1989). How social comparison mediates the relation between ability-grouping practices and students'' achievement expectancies in mathematics. *Journal of Educational Psychology, 81*(2), 178-189.

Rosenbaum, J. E. (1980). Social implications of educational grouping. *Review of Research in Education, 8,* 361-401.

Rowan, B. & Miracle, A. (1983). Systems of ability grouping and the stratification of achievement in elementary schools. *Sociology of Education, 56*(7), 133-144.

Scruggs, T.E., & Mastropieri, M. A. (2006). Response to "Competing views": A dialogue on response to intervention. *Assessment for Effective Intervention, 32,* 62-64

Shinn, M.R., & Shinn, M.M. (2002), *AIMSweb Training Workbook: Administration and Scoring of Reading Curriculum-Based Measurement (R-CBM) for Use in General Outcome Measurement*. Edformation, Eden Prairie, MN

Silverman, D. (2005). *Doing qualitative research: A practical handbook.* Los Angeles:

Sage.

Slavin, R. (1987). Grouping for instruction in the elementary school. *Educational Psychologist, 22*(2), 109-127.

Telzrow, C., McNamara, K., & Hollinger, C. (2000). Fidelity of problem-solving implementation and relationship to student performance. *School Psychology Review, 29*(3), 443.

Tiered instruction/intervention. (2013). Retrieved March 27, 2013, from www.rtinetwork.org/essential/tieredinstruction

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

Trimble, K.D., & Sinclair, R.L. (1987). On the wrong track: Ability grouping and the threat to equity. *Equity and Excellence, 23,* 15-21.

United States Department of Education (2002). *Making the most of Title I schoolwide programs.* Office of Elementary and Secondary Education. Retrieved October 29, 2013 from www.ed.gov

United States Department of Education's Institute of Education Sciences What Works Clearinghouse. Retrieved on December 20, 2011 from http://ies.ed.gov/ncee/wwc/

Universal screening within a response-to-intervention model. (2013). Retrieved March 27, 2013, from www.rtinetwork.org/learn/research/universal-screening-within-a-rti-model

Vaughn, S., Linan-Thompson, S., Kouzekanani, K., Bryan, D. P., Dickson, S., & Blozis, S. A. (2003). Reading instruction grouping for student with reading difficulties. *Remedial and Special Education, 24,* 301-315.

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

Vellutino, F. R., Scanlon, D. M., Zhang, H., & Schatschneider, C. (2007, October 30). Using response to kindergarten and first grade intervention to identify children at-risk for long-term reading difficulties. *Reading and Writing*. doi:10.1007/s11145-

007-9098-2

Wanzek, J., & Vaughn, S. (2008). Response to varying amounts of time in reading intervention for students with low response to intervention. *Journal of Learning Disabilities 41(2),* 126-142.

Webb, N.M. (1982). Group composition, group interaction, and achievement in cooperative small groups. *Journal of Educational Psychology* 74: 475-484.

Webb, N.M. (1991). Task-related verbal interaction and mathematics learning in small groups. *Journal for Research in Mathematics Education* 22: 366-389.

Welner, K. G., & Oakes, J. (1996). (Li)Ability grouping: The new susceptibility of school tracking systems to legal challenges. *Harvard Educational Review, 66(3),* 451-470.

Wiersma, W. (2000). *Research methods in education: An introduction*. Boston, MA. Allyn and Bacon.

Yin, R. K. (1984/1994). *Case Study Research: Design and Methods.* Thousand Oaks, London, New Delhi: Sage.

Yin, R. K. (1989). *Case study research: Design and methods (Rev. ed.).* Newbury Park, CA: Sage Publishing.

Yin, R. K. (1993). *Applications of case study research*. Newbury Park, CA: Sage Publishing.

Yin, R. K. (1999). Enhancing the quality of case studies in health services research. *Health Services Research, 34*(5) 1209-1224.

Yin, R. K. (2003). *Case Study Research: Design and Methods (3rd ed.).* Thousand Oaks, CA: Saige.

Zirkel, P. A. (2011). RTI and the law. *Education Law Into Practice.* West's Education Law Reporter, August.

Zirkel, P. A., &Gluckman, I. B. (1995). It's the law: Ability grouping. *Principal,* September.

Appendix A: Interview Protocol

Date:_____

Interviewee's Pseudonym:_____

Hello, my name is Keith Collins and I have asked you to interview with me so that I can learn more about the development and implementation of RTI at Pace Elementary. During the interview, I would like to discuss how you got involved in RTI, fundamentals of RTI, interventions used at Pace Elementary, and your general observations regarding RTI after having helped implement it in a school.

RTI's Early Beginnings

Main Question	Possible Prompts	Clarifying Questions
• What is your background with RTI?	• Have you done any work on RTI outside of the school division?	• Can you expand a little on this? • Can you tell me anything else? • What are some examples?
• Why RTI?	• Where do you look (specifically) for best practices in RTI?	

RTI Fundamentals/Implementation

Background: A review of my research suggests that there are three common components to RTI programs; implementing high-quality scientifically validated, research based interventions with fidelity, monitoring student performance and progress, and making data driven instructional decisions. I would like for you to describe how Pace Elementary School implemented each component:

Main Question	Possible Prompts	Clarifying Questions
• How did Pace Elementary implement high-quality scientifically validated, research-based interventions with fidelity?	• Can you explain to me what fidelity in the RTI process means? • How do you know that all stakeholders have this understanding? • How did you know an intervention was research-based?	• Can you expand a little on this? • Can you tell me anything else? • Can you give me some examples?
• How did Pace Elementary monitor student performance	• How was progress measured?	

and progress?		
• How were data driven instructional decisions made?	• What data was used?	

RTI Interventions

Main Question	Possible Prompts	Clarifying Questions
• How did the school implement interventions with the students identified as at-risk by the school's universal screener, AIMSweb?	• How was an intervention selected? • What determined the frequency of the team meeting to discuss the intervention? • What dictated the frequency of the intervention? • How was the length of the intervention period decided? • What guided the selection of start/stop dates for interventions?	• Can you expand a little on this? • Can you tell me anything else? • Can you give me some examples?

RTI Conclusions

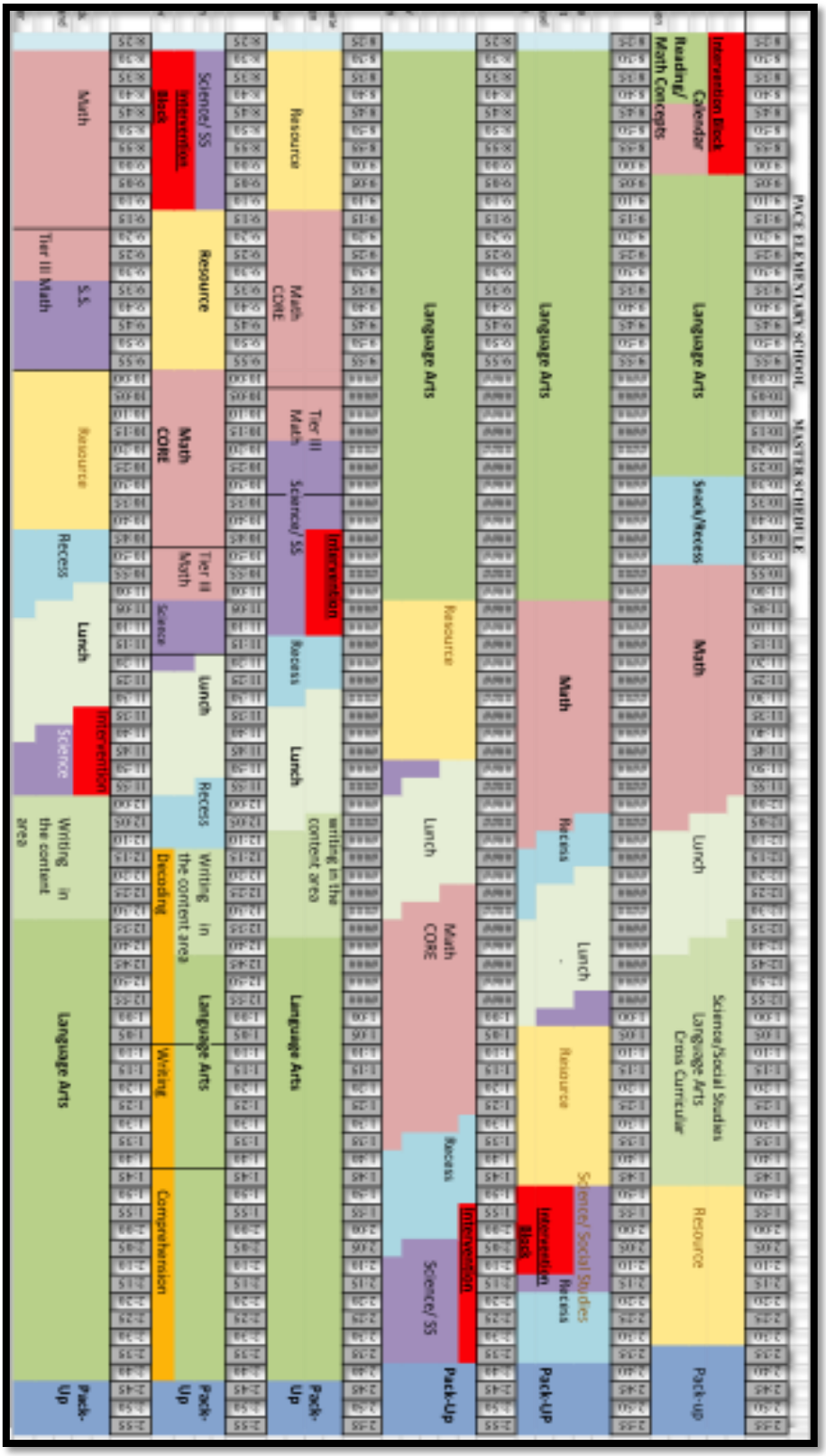
Main Question	Possible Prompts	Clarifying Questions
• What is the best thing about RTI?		• Can you expand a little on this? • Can you tell me anything else? • Can you give me some examples?
• What area, or areas, do you feel needs more attention in RTI and why?		
• What other areas in RTI would you like to discuss that I have not mentioned today?		

Thank you for your time today. The information you provided is very helpful and will allow me to better understand how RTI was implemented in a school and how the implementation impacted the school's most at-risk students.

Appendix B: Analytic Matrix

Student A							
	Type of Int.	Frequency of team meeting	Frequency of Intervention	Length of Intervention	Duration of Intervention (start/stop date)	Reading Program	Other
Int. 1							
Int. 2							
Int. 3							

Appendix C: Master Schedule



Appendix D: Expected Reading Growth

2006 Hasbrouck & Tindal Oral Reading Fluency Data

Jan Hasbrouck and Gerald Tindal have completed an extensive study of oral reading fluency. The results of their study were published in a technical report entitled, "Oral Reading Fluency: 90 Years of Measurement," which is available on the University of Oregon's website, **brt.uoregon.edu/tech_reports.htm**, and in *The Reading Teacher* in 2006 (Hasbrouck, J. & Tindal, G. A. (2006). Oral reading fluency norms: A valuable assessment tool for reading teachers. *The Reading Teacher*. 59(7), 636-644.).

The table below shows the mean oral reading fluency of students in grades 1 through 8 as determined by Hasbrouck and Tindal's data.

You can use the information in this table to draw conclusions and make decisions about the oral reading fluency of your students. **Students scoring 10 or more words below the 50th percentile using the average score of two unpracticed readings from grade-level materials need a fluency-building program.** In addition, teachers can use the table to set the long-term fluency goals for their struggling readers.

Average weekly improvement is the average words per week growth you can expect from a student. It was calculated by subtracting the fall score from the spring score and dividing the difference by 32, the typical number of weeks between the fall and spring assessments. For grade 1, since there is no fall assessment, the average weekly improvement was calculated by subtracting the winter score from the spring score and dividing the difference by 16, the typical number of weeks between the winter and spring assessments.

Grade	Percentile	Fall WCPM*	Winter WCPM*	Spring WCPM*	Avg. Weekly Improvement**
1	90		81	111	1.9
	75		47	82	2.2
	50		23	53	1.9
	25		12	28	1.0
	10		6	15	0.6
2	90	106	125	142	1.1
	75	79	100	117	1.2
	50	51	72	89	1.2
	25	25	42	61	1.1
	10	11	18	31	0.6

*WCPM = Words Correct Per Minute

Grade	Percentile	Fall WCPM*	Winter WCPM*	Spring WCPM*	Avg. Weekly Improvement**
3	90	128	146	162	1.1
	75	99	120	137	1.2
	50	71	92	107	1.1
	25	44	62	78	1.1
	10	21	36	48	0.8
4	90	145	166	180	1.1
	75	119	139	152	1.0
	50	94	112	123	0.9
	25	68	87	98	0.9
	10	45	61	72	0.8
5	90	166	182	194	0.9
	75	139	156	168	0.9
	50	110	127	139	0.9
	25	85	99	109	0.8
	10	61	74	83	0.7
6	90	177	195	204	0.8
	75	153	167	177	0.8
	50	127	140	150	0.7
	25	98	111	122	0.8
	10	68	82	93	0.8
7	90	180	192	202	0.7
	75	156	165	177	0.7
	50	128	136	150	0.7
	25	102	109	123	0.7
	10	79	88	98	0.6
8	90	185	199	199	0.4
	75	161	173	177	0.5
	50	133	146	151	0.6
	25	106	115	124	0.6
	10	77	84	97	0.6

**Average words per week growth

www.readnaturally.com