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Improving reading instruction through data-driven professional development within the response to intervention model: a case study

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IMPROVING READING INSTRUCTION
THROUGH DATA-DRIVEN PROFESSIONAL DEVELOPMENT
WITHIN THE RESPONSE TO INTERVENTION MODEL:
A CASE STUDY

BY

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Abstract

Reading instruction at the elementary level lacks the implementation of research-based strategies. The purpose of this case study was to explore the process of data-driven professional development in two grade 1 classrooms in order to strengthen classroom reading instruction. The participants include the two classroom teachers and the researcher acting as a coach and member of the collaborative grade-level team. The setting is an elementary school that has been successfully implementing the Response to Intervention model for three years. This case study focused on the use of student achievement data within the RTI model and coaching to strengthen Tier 1 classroom reading instruction by infusing the instruction with research-based practices. A logic model was used to compare observed events with theoretically-predicted events. Data collection included field notes, observations, interviews, and student achievement data (AIMSweb). Qualitative data analysis, including coding, helped to provide a thick description of the process, while student achievement data provided descriptive data regarding the ultimate outcomes observed within the two classrooms.

Keywords: professional development, reading, coaching, RTI

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Chapter I: Introduction

Statement of the problem.

Elementary school classroom teachers are asked to master and deliver curricula in reading, language arts, mathematics, science, and social studies. Researchers such as Hoffman and Roller (2001) contend that elementary teachers are ill prepared to skillfully teach all of the subject areas upon completion of a teacher preparation program. Since 2002 and the implementation of the No Child Left Behind Act, a more specific focus has been placed on reading instruction.

In a position paper of the International Reading Association (2003) it is stated, “Only if teachers are well prepared to implement research-based practices and have the professional knowledge and skill to alter those practices when they are not appropriate for particular children will every child learn to read” (p.2). Unfortunately, researchers have found that many elementary teachers are not fully trained in the intricacies of reading instruction, especially at the K-2 level (Joshi, et al., 2009). Teacher knowledge is often lacking in the areas of phonemic awareness, phonics, and fluency (Podhajski, et al., 2009).

Many of the teachers who currently hold positions as classroom teachers received their undergraduate or graduate training in the midst of the whole language movement. This movement stressed the use of authentic, rich literature in classrooms and the need for explicit instruction in comprehension, vocabulary, and metacognition in reading. However, phonemic awareness, phonics, and fluency instruction were pushed aside. Whole language advocates, inclusive of college professors, believe that these areas of reading instruction should be embedded within the rich literature, only being taught if the need should arise. Current reading research, outlined by the NRP (National Reading Panel) report, calls for explicit rather than embedded phonics instruction as the most effective method for teaching children to read (2000).

Phonemic awareness and phonics instruction are of utmost importance for students at high risk of reading failure and students with specific learning disabilities. A student's ability to read affects all aspects of his or her education. Research has shown that reading achievement is directly linked to achievement in writing, mathematics, and science (Barton, Heidema, & Jordan, 2002). Affective skills and dropout rates are also linked to reading achievement (Joftus & Maddox-Dolan, 2003). Schools need to be vigilant about the reading success of all students. Effective classroom reading instruction needs to be the students' primary source of instruction.

Significance.

The majority of teachers in elementary classrooms do not have sufficient knowledge or training in effective reading instruction. Furthermore, professional development opportunities in reading have traditionally coincided with the whole language movement. Little time has been spent on the development of sound phonics instruction. Each year, students are entering grade three without a basic understanding of the language due to a lack of instruction. These students are below grade level at a very young age and require support services to "catch up" with their peers. This problem is unnecessary and could be remedied by sound and appropriate classroom instruction.

Although the lack of research-based instruction is typical of schools throughout the country, many are just beginning to realize this. The Response to Intervention model calls for the use of tri-annual benchmarking data to measure individual student progress. Through the process of data analysis, the overall health of the core curriculum or classroom instruction can also be determined. In general, classroom instruction is said to be effective and sound when 75-80% of students are achieving national targets through classroom instruction alone. Many schools are just beginning the RTI process. Through data collection and analysis, they are realizing that their core curricula are not sound in basic reading instruction.

It is this examination that leads teachers and administrators to the realization that current practices are often not aligned with recommendations from the National Reading Panel and guidelines from the No Child Left Behind Act. In order to truly improve the school and education as a whole, teachers must be able to provide balanced research-based instruction in the areas of reading instruction outlined by the National Reading Panel: phonemic awareness, phonics, fluency, vocabulary, and comprehension.

Response to Intervention is the model that is being used throughout the country to determine learning disability eligibility for special education. In September 2010 (elementary) and September 2011 (secondary), learning disability identification at the research site must be a result of lack of progress after two intensive intervention blocks as defined by the RTI model. Teachers must be able to prove that they are providing effective classroom instruction. This investigation and case study illuminate perhaps the most important aspect of the RTI model which is the strengthening of classroom reading instruction and assurance of an adequate core curriculum.

This problem persists at a suburban elementary school where students in grades K-3 have large gaps in their ability to decode. The elementary school located in southeastern New England consists of approximately 320 students and houses grades PreK-5. In its third year in the Response to Intervention model, classroom teachers at this school were being asked to lead instruction in intervention groups. These intervention groups consisted of students who were below national targets in reading. Teachers were then required to implement research-based practices or programs with fidelity in order to improve student achievement. However, the teachers lacked training in these practices. This further illuminated the fact that these research-based practices were not being used effectively in the classroom. The intent of this research was

to determine the extent to which data analysis through the RTI model was used to guide job-embedded professional development in this school and in similar schools.

Practical and intellectual goals.

This qualitative case study explored the process of job-embedded professional development within the context of Response to Intervention. The practical goal driving this study was to strengthen classroom reading instruction within this site and increase student achievement in order to prevent the achievement gap that so often begins to develop in grade 1.

This study provides a professional development model for schools successfully utilizing a three-tiered system. Initial implementation of the RTI model often focuses on providing supplemental research-based instruction (interventions) to students who are failing or are at-risk of failure. This instruction generally occurs outside of the classroom in a small-group setting. However, the main goal of the Response to Intervention model is to provide all students with effective, research-based instruction, thereby preventing the need for instructional interventions for most children. This study explored the use of data and coaching within the RTI model to strengthen classroom instruction, therefore, preventing the formation of the achievement gap for many children.

The intellectual goal of this study was to further the researcher's understanding of change within schools. Real change occurs at the classroom level. This study enriched the researcher's thinking regarding collaboration with and the professional development of teachers.

Research questions.

This case study describes the experiences of two teachers engaged in data-driven professional development within the Response to Intervention model.

The doctoral study attempted to answer the following research questions:

- How can teachers use data to determine areas for improvement in core reading instruction and effectively implement these changes using research based practices?
- How can professional development opportunities provide teachers with the necessary skills to support growth in student achievement?

Theoretical Framework

This problem was investigated utilizing Vygotsky's (1978) sociocultural theory. Vygotsky believed that learning occurs and is maximized through social interaction within natural contexts. For this reason, the literature was queried for job-embedded professional development that provided substantial opportunities for interaction amongst colleagues. Professional development must be purposeful, meaningful, and fulfill a genuine need.

Bernhardt's (2004) process for data analysis provided a process for inquiry within Vygotsky's theory. Bernhardt believes that school data can be used to improve student learning. However, Vygotsky contends that learning and growth are maximized when they occur in a social setting. Data analysis within the Response to Intervention model combines both Vygotsky's theory and Bernhardt's process in order to achieve growth and change within schools. Through frequent analysis of student data, teachers have the opportunity to collaboratively identify areas of student need, respond to those needs, and monitor improvement. For this reason, data analysis within RTI was investigated and provided a starting point for the study.

Vygotsky.

Vygotsky believed that social interaction is fundamental to learning. Vygotsky (1978) states:

Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first, between people

(interpsychological) and then inside the child (intrapsychological). This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals. (p. 57)

Vygotsky believed that humans develop and construct knowledge as a result of the interaction between individual and social processes.

Increased attention has been paid to Vygotsky's sociocultural theory in education today. As society continues to globalize, there is an increased demand for social interaction in the workplace. Many agree that the purpose of education in the 21st century is "to prepare future citizens and workers who can cope with complexity, use new technologies, and work cooperatively to frame and solve novel problems" (Darling-Hammond, 2009, p.45). This has led to a shift in the classroom. Teachers are realizing the importance of developing these skills by providing students with learning opportunities that require social interaction.

Vygotsky's sociocultural theory can also be applied to adult learning and development, specifically regarding professional development opportunities provided to teachers. Bruner (1962) states:

For it is the internalization of overt action that makes thought, and particularly the internalization of external dialogue that brings the powerful tool of language to bear on the stream of thought. Man, if you will, is shaped by the tools and instruments that he comes to use, and neither the mind nor the hand alone can amount to much. (p. vii)

Traditional professional development opportunities such as workshops depend solely on the use of language to transfer knowledge. Cooperative learning in the form of peer coaching

and learning teams, provides teachers with the opportunity to utilize knowledge in a social context which ultimately leads to true growth and development.

Vygotsky (1978) developed the concept of the zone of proximal development (ZPD) to help explain social development theory. He defined the zone of proximal development as "...the distance between the actual development level as determined through independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86). Although the ZPD has contributed to many educational programs for children, the concept can also be applied to adult learning through collaboration and coaching. Adults must have the opportunity to collaborate with peers in order to grow and develop as professionals.

Teachers are often isolated within their classrooms and have "limited opportunities for receiving assistance through modeling and feedback, two means of assistance crucial to acquisition of complex social repertoires...necessary to meet the criterion of teaching-as-assisted-performance in the zone of proximal development" (Gallimore & Tharp, 1990, p. 201). Coaching provides the opportunity for frequent collaboration, modeling, observation, and feedback in order to construct knowledge and apply it in the classroom.

Job-embedded professional development opportunities including coaching often begin with traditional forms of learning in which concepts are dispensed in a workshop format. Vygotsky refers to these concepts provided through explicit instruction as scientific concepts. He differentiates scientific and spontaneous concepts which are concepts acquired in the everyday world. Vygotsky recognizes the need for both concepts.

We believe that the two processes – the development of spontaneous and of nonspontaneous concepts – are related and constantly influence each other. They are parts of a single process: the development of concept formation which is

affected by varying external and internal conditions but is essentially a unitary process, not a conflict of antagonistic, mutually exclusive forms of thinking.

(Vygotsky, 1986, p. 157)

According to Vygotsky, learning and development are dependent on the context in which they occur. For this reason, he believed in the “need to concentrate not on the *product* of development but on the very *process* by which higher forms are established....To study something historically means to study it in the process of change; that is the dialectical method’s basic demand” (Vygotsky, 1978, p. 64).

Many educational researchers studying the effects of peer coaching rely on qualitative methods such as the case study to concentrate on the process that Vygotsky describes. Case studies provide the researchers with the opportunity to explore the context in which the change is occurring and to thoroughly describe the process involved. Vygotsky’s methodological approach is consistent with case study methodology since “the method is simultaneously prerequisite and product, the tool and the result of the study...” (Vygotsky, 1978, p. 65). Vygotsky’s theories not only helped shape the content of the study but the design of the study itself.

Chapter II: Literature Review

This literature review focuses on the improvement of Tier 1 reading instruction within the RTI model. Tier 1 instruction is core curricular instruction provided in the classroom and is deemed effective if 80% of students are reaching national targets through this instruction.

Vygotsky provided the context in querying the literature while Bernhardt provided a lens for data analysis. The first strand describes the Response to Intervention model and the data analysis that is inherent to the model. The second strand discusses current teacher preparation in research-based reading approaches. The third strand describes successful job-embedded professional development opportunities that are consistent with Vygotsky's sociocultural theory and have led to changes in classroom instruction and growth in student achievement. The fourth strand describes a specific coaching model, Student-Focused Coaching (SFC) developed by Hasbrouck and Denton. The literature review concludes with research designs and methods chosen to conduct research on collaboration that fosters effective implementation of research-based practices within the classroom.

Response to Intervention.

The No Child Left Behind Act of 2001 (NCLB) emphasizes the use of research-based programs and practices to ensure that all students achieve academic proficiency. Under NCLB, schools are held accountable for these results. Reading achievement and instruction have been at the forefront of NCLB.

In an attempt to achieve academic proficiency, Congress reauthorized IDEA in 2004 with a major change in the way children with specific learning disabilities are identified. Traditionally, students have been identified with specific learning disabilities (LD) based on the IQ-achievement discrepancy model. The reauthorization allows educators to use the RTI model

to identify students with specific learning disabilities. In some states, such as the state in which the research was conducted, the use of the RTI model to identify LD has become mandatory.

Fuchs and Fuchs (2001) define RTI as a four-step process inclusive of screening of all students to identify students at risk of failure, sound classroom instruction (Tier 1) that is monitored to ensure adequacy, implementation of supplementary instruction (Tier 2) which is also monitored, and an evaluation system to address non responders and determine the existence of a learning disability.

Response to Intervention (RTI) is a learning model which requires data collection and analysis. The model, created by Deno and Mirkin (1977), was initially called Data Based Program Modification (DBPM). DBPM was a problem-solving approach linked to student achievement in which instructional modifications were made and tested to determine the students' responses. The government then utilized this framework to address current legislation that requires schools to identify children who are at-risk for reading failure.

RTI and its predecessor, DBPM, are based on the scientific method. Teachers are asked to identify difficulties, develop an intervention, implement the intervention, collect data, and then interpret the data for the purpose of determining its effectiveness. This problem-solving model utilizes data analysis to determine areas of need, propose and attempt an instructional change, and then collect data to determine the success of that change.

In order to identify students at risk of failure, a school must be able to efficiently assess all students. Curriculum-based measurement (Deno & Mirkin, 1977) has provided schools with the opportunity to identify these students and track their progress or "response" to the specialized instruction.

Curriculum-based measurement and data analysis that occur within the RTI model often illuminate areas of need in instruction. In order to apply and generalize evidence-based

strategies in the classroom, teachers must be provided with appropriate professional development. Researchers (Herner-Patnode, 2009; Armstrong, et al., 2008; Chappuis et al., 2009; Elish-Piper & L'Allier, 2007; Elish-Piper & L'Allier, 2010; Guskey, 2002; Hasbrouk & Denton, 2005) contend that effective professional development must be on-going and inclusive of interactions amongst teachers.

Increasing attention is being paid to the adequacy and overall health of classroom instruction (Tier 1). Classroom instruction is deemed effective if approximately 75-80% of students are making progress that is consistent with national norms (Johnson, et al., 2006; Shinn, 2005).

Teacher preparation.

In 1999, Louisa Moats prepared a paper for the American Federation of Teachers entitled, "Teaching Reading Is Rocket Science: What Expert Teachers of Reading Should Know and Be Able To Do". As the title implies, reading is a complex process that requires best instructional practice. However, Moats (1999) points out that "a chasm exists between classroom instructional practices and the research knowledge-base on literacy development" (p. 7).

Current research supports the claim that teachers at the elementary level are not prepared to teach reading using research-based practices (Bell, et al., 2004; Joshi, 2009; Moats, 1999; Moats, 2009). Effective reading instruction must include phonology and alphabetic orthography (Moats, 2009). Many studies have assessed the level of knowledge that teachers have regarding these aspects of reading instruction. Surveys reveal that even experienced teachers are confused about letter sounds, spelling patterns, and word structures (Moats, 1995; Moats & Lyon, 1996; Scarborough et al., 1998 as quoted in Moats, 1999). Even kindergarten and 1st grade teachers' knowledge of the structure of language, concepts in early reading, and phonology was found to

be limited (McCutchen, et al., 2002). Kratochwill, Volpiansky, Clements, and Ball (2007) discuss the need for professional development within the RTI model to address the lack of knowledge and skills in evidence-based practices.

The Report of the National Reading Panel (National Institutes of Child Health and Human Development, 2000) defined the five major areas of reading instruction that must be present in order to maintain success in the acquisition of reading skills. The National Reading Panel's recommendations are utilized to analyze and improve reading instruction in the classroom. The report, released in April 2000, summarizes research in reading instruction and defines methods and approaches that are proven to be most effective in each area.

The National Reading Panel's findings stress that phonemic awareness instruction must occur to help children learn to read and spell. In addition, the panel found that systematic and explicit phonics instruction significantly improves word recognition, spelling, and reading comprehension. When oral reading is repeated and monitored, overall reading achievement improves.

Teachers must understand that systematic phonics instruction is only one component—albeit a necessary component—of a total reading program; systematic phonics instruction should be integrated with other reading instruction in phonemic awareness, fluency, and comprehension strategies to create a complete reading program. (National Institute of Child Health and Human Development, 2000, p. 11)

Effective professional development.

According to Hasbrouck & Denton (2010):

Effective coaching incorporates many, if not all, of the components of effective PD identified by Darling-Hammond & McLaughlin (1996): experiential,

collaborative, interactive, sustained, intensive, and connected to the teacher's day-to-day work with students as well as to a larger plan for school improvement. (p. 2-3)

According to the literature, schools have chosen to adopt various structures for organizing collaborative teams or coaching models for the purposes of data analysis and professional development. The findings in the following studies are consistent with Vygotsky's beliefs and support the use of collaboration and coaching within the context of Response to Intervention to produce lasting change in schools today. They were included due to their focus on peer collaboration, coaching models, teacher development, literacy initiatives, research-based practices, and data analysis.

Effective coaching has been used to facilitate the use of data to inform literacy instruction (Roehrig et al., 2008). The coaches assisted teachers with the interpretation of data and their implications for classroom instruction. The researchers identified lack of teacher training and knowledge about reading instruction as a challenge to the process. Teachers in the study pointed to a misalignment between the core reading program and the assessments that are focused on areas identified by the National Reading Panel. Through the data analysis, areas for development were identified. School personnel, inclusive of teachers and coaches, then determined how to attack the problem.

Facilitators may come from outside sources (i.e. professors from a university or researchers) or from within a school. However, most of the studies exclusively utilized personnel from within the school. These studies were of particular interest since most school districts are struggling financially. Many states have limited or eliminated professional development funds. Educational leaders are searching for effective approaches to teacher development that will produce results in the classroom.

According to the literature, schools have chosen to adopt various structures for organizing collaborative teams or coaching models for the purposes of teacher development and increased student achievement. The most common organization is grouping according to grade level, at the elementary level, and department, at the secondary level, since “teachers with similar interests and concerns should be grouped together” (Herner-Patnode, 2009, p. 26). Researchers use various terms for these grade-level teams including educator study groups (Herner-Patnode, 2009), learning-teams (Chappuis et al., 2009), work-group communities (Borko, 2004), and Teacher Learning Cohorts (Brownell et al., 2006).

Studies involving grade-level teams used primarily case study methodology to determine changes in teacher practices (Gallimore et al., 2009; Brownell et al., 2006). The six-year case study conducted by Gallimore et al. (2009) focused on the sustainability of inquiry-based teams and the ability to scale-up the model to nine Title 1 schools across a district. There was great variability in the success of the model. In the first two years, statistical differences were not found between the case study and comparison schools. After some changes, such as increased time for meetings and increased support from the instructional leadership team, changes were seen. Through the results of the study, the authors decided on four features that led to the success of the school-based inquiry teams: job-alike teams, trained peer-facilitators, inquiry-focused protocols, and a stable setting (Gallimore et al., 2009). Researchers also found that participation in school-based inquiry teams shifted the locus of control to the teachers in their attempt to solve learning problems.

Brownell et al. (2006) also used a case study methodology to study eight elementary school teachers involved in Teacher Learning Cohorts. However, this study focused on the variability in teacher success within these collaborative teams and the teacher qualities that led to increased success. The researchers identified five characteristics of teachers who were willing to

adopt these practices: knowledge of curriculum and pedagogy, knowledge and beliefs about managing student behavior, views of teaching and student learning, ability to reflect on students' learning, and their ability to adapt instruction (Brownell et al., 2006). Although all teachers developed new strategies during the case study period, some were more successful than others. The researchers suggest that teachers may need differentiation and varying levels of support in order to benefit from collaboration.

Schools have used organizing structures beyond grade-level teams to achieve similar results. Growing numbers of schools around the country are utilizing a process called coaching as a form of professional development. Bruce Joyce and Beverly Showers began the development of coaching models. Joyce, Showers, and Rolheiser-Bennett (1987) determined that teachers are more likely to apply new instructional strategies into the classroom if they are coached by peers or experts. Like the collaborative models presented earlier, Joyce and Showers (1981) described coaching as a problem-solving approach inclusive of observation and feedback. Coaching activities in schools today include observation, feedback, modeling, co-teaching, co-planning, analyzing assessment data, problem solving with teachers, leading study groups, and developing school improvement plans (Deussen et al., 2007; Dole, 2004; Hasbrouk & Denton, 2005; IRA, 2004).

Denton & Hasbrouck (2009) argue that there is a need for defined models of instructional coaching. In a review of literature conducted by the American Institutes for Research (2004), four types of coaching were defined: technical, problem solving, reflective practice, and collegial/team building. Technical coaching involves improving a teacher's ability to implement curricula or programs with fidelity. Coaches often support teachers in implementing knowledge or skills obtained from traditional professional development workshops.

Reflective practice coaching as described in the AIR (2004) report places the coach in the role of facilitator. In a 1:1 setting, the coach encourages the teacher to think reflectively about current instructional practices and may guide professional study groups with the goal of implementing the practices in the classroom. Team-building coaching differs from reflective practice in that it involves groups of teachers. Ideally, whole schools would be involved in the observation/feedback cycle.

Collaborative problem-solving is yet another type of coaching that is aimed at teacher development for the purpose of increased student achievement. In this model, coaches work with 1 or more teachers to address concerns based on student data or observations.

Despite the differences in organization and structure, the collaborative teams share basic components. The participants are comprised of teachers and facilitators. The research suggests the importance of the facilitator role since “the skill of the facilitator is central to the success of the learning team” (Chappuis et al., 2009, p. 58). Facilitators of the groups themselves are often teachers, teacher leaders, or researchers. Gallimore et al. (2009) found that peer leaders, rather than experts or administrators, increase the efficacy of learning teams. Possible reasons for this include the ability to help the group stick to the protocol since teacher facilitators are often participants in the innovation or change. When content area specialists are utilized as facilitators, the setting “is converted from inquiry-focused to a more conventional professional development (PD) ‘presentation’ structure that puts teachers in a passive rather than active role” (Gallimore et al., 2009, p. 548).

Many researchers pointed out that although administrative support is imperative to the success of collaborative teams, administrators should not hold the role of facilitator within the groups. However, Gallimore et al. (2009) studied the use of an instructional leadership team (ILT) to oversee the collaborative teams which consisted of the principal, classroom teachers, a

reading coach, and a researcher. Since this team facilitated the process and did not have direct contact with the teachers, it did not interfere with the success of the program.

Practitioners and researchers suggest that participation in collaborative teams should be on a voluntary basis to achieve maximum change in instructional practices (Herner-Patnode, 2009; Chappuis et al., 2009). Instructional leaders and administrators can pique interests in teachers by providing information and frameworks during faculty meetings or other similar forums. Participation by other colleagues often persuades other teachers to participate in collaborative groups.

Once the groups are established, there must be a common vision amongst the teachers in the group. This is best achieved by first creating a trusting culture of inquiry and growth (Fullan, 2007; Gallimore et al., 2009). This often requires a shift in attitudes and assumptions and a breakdown of some of the logistical barriers that occur in schools. Some of these barriers include unions, contract requirements, and time for the collaboration to occur. Along with common vision, group norms are established to facilitate meetings (Chappuis et al., 2009). The principal is again imperative in the creation of an assessment and growth culture and group norms.

In all of the studies, one of the first steps of the collaborative teams was to establish instructional goals. Herner-Patnode (2009) suggests conducting a needs assessment to establish goals by administering a teacher questionnaire. The designers of Teacher Learning Cohorts focused “on what teachers felt they needed to change in their teaching practice”, but supplemented this needs assessment with classroom observations and interviews conducted by the researchers (Brownell et al., 2006, p. 171).

Perhaps one of the most important criteria for the development of instructional goals is the use of data analysis. “When teachers collaborate to pose and answer questions informed by

data from their own students, their knowledge grows and their practice changes” (David, 2008, p.87). Baseline data should be collected and analyzed. Examples of data include student work on common tasks, district assessments, portfolios, or curriculum-based measures. Analysis of student work illuminates areas for further growth and development. This precipitates an inquiry cycle by the collaborative teams. Teachers are then able to identify research-based instructional practices which support the areas of improvement in order to apply these practices to their classrooms.

Once instructional goals are established by the teams, the teachers must be given the opportunity to meet on a regular basis (Chappuis et al., 2009; Herner-Patnode, 2009; Darling-Hammond et al., 2009; Gerla et al., 2006). The studies agree that regular meetings are imperative to the success of collaborative teams. This reinforces the importance of administrative support. Collaboration can often occur during previously established meeting times such as monthly faculty meetings or common planning times. Coaching often occurs within the classroom.

Although the research focused on the effect of collaborative teams on teacher instruction and student achievement, a secondary result was found. Researchers concluded that differentiation amongst teachers is necessary and the “endeavors were highly individualistic in nature as to the ways and amounts of time it took each participant to experiment, to adapt and to adopt balanced literacy methodology” (Gerla et al., 2009, p. 285). Another study agreed with this assertion and determined “that differential levels of assistance may need to be provided to individual teachers” (Brownell et al., 2006, p. 183). Walpole (2005) also believes that professional development must match the needs and level of skill of each adult learner. Examples of differentiation include more information, training, and reinforcement, additional

time and support from the facilitator or consultant, and individual assistance in order to adapt an innovation or instructional practice to fit the needs of the classroom (Brownell et al., 2006).

Student-Focused Coaching.

Hasbrouck & Denton (2005) developed a specific model of collaborative problem-solving, Student-Focused Coaching (SFC), designed to impact student achievement. The purpose of the model is to “provide sustained, individualized, and personalized professional development that bridges the gap between research and successful implementation of best practice in the classroom” (Hasbrouck & Denton, 2010, p. 8). SFC is consistent with Vygotsky’s sociocultural theory since it requires “a cooperative, ideally collaborative relationship with parties mutually engaged in efforts to provide better services for students” (Hasbrouck & Denton, 2005, p.2).

SFC is student focused because (a) its primary goal is to improve students’ reading skills and competence, (b) it incorporates data-based decision making with primary attention directed to student outcomes, (c) interventions are designed and implemented based on student assessment data and are highly individualized, and (d) the focus is on student strengths and needs and the results of interactions between teachers and students rather than directly on the need for teacher change. (Hasbrouck & Denton, 2007, p.690)

SFC coaches assist and support teachers, provide professional development, and address school-based concerns regarding students, curricula, and/or scheduling. The American Institute for Research (2004) suggested that this collaborative problem solving increases teachers’ understanding of how to address their current and future students’ needs by providing teachers with skills and strategies that may prevent problems in the future.

According to Hasbrouck & Denton (2010), SFC Coaches act as facilitators, collaborative problem solvers, and teacher-learners. As facilitators, Coaches build professional relationships and facilitate teachers' success within the classroom. As problem solvers, SFC Coaches utilize Bernhardt's framework for student improvement by collaboratively identifying the reading concern, using data to define the problem, and developing goals with corresponding action plans. Finally, Coaches are placed in the teacher-learner role in providing traditional professional development in the area of concern.

SFC Coaches follow a specific problem-solving process when working with teachers (Denton & Hasbrouck, 2009). First, data from various sources are analyzed in order to accurately target the area of concern. Once the problem is defined, the coach and teacher develop goals, an action plan, and an evaluation plan to determine progress towards the goals. Typically, curriculum-based measurement is used to determine progress. The coach provides the necessary support and guidance throughout the process.

Denton, Swanson, & Mathes (2007) studied the implementation of Student-Focused Coaching through on-site coaching visits, technology ("Virtual Coach"), or coaching on demand which consisted of telephone calls, emails and on-site visits initiated by the teacher. The coaches focused on coaching based on student outcomes, observing interactions between students and teachers, and utilizing sustained data-based problem solving. When examining the interactions in all three approaches, the researchers found that: 1. The coaches' feedback was positive and based on student growth. 2. The coaches used progress monitoring data to help the teachers identify students at risk. 3. Teachers frequently used data to guide instruction. 4. Teachers set goals for student performance. The researchers call for future qualitative research on Student-Focused Coaching to further describe the nature of the coaching relationship.

Research designs and methodologies.

The majority of research surrounding coaching and job-embedded professional development is qualitative. Case studies are particularly popular and effective in illustrating the process that teachers use when participating in coaching.

Greenwood, Tapia, Abbott, and Walton (2003) and Vaughn and Coleman (2004) used case studies to describe the processes that were used to infuse research-based practices into the classroom. Both studies followed the basic sequence of professional development in various research-based practices, modeling of new practices by a mentor or expert, in-class observation to ensure fidelity of implementation, and constructive feedback to improve instruction. Greenwood et al. (2003) utilized a “longitudinal, sequential cohort design” (p. 96) to study both the process of implementation and the impact on student achievement. In contrast, the study conducted by Vaughn and Coleman focused only on the teachers and spanned 2 years.

These studies concluded that teachers did in fact implement the new reading practices effectively. Greenwood et al. (2003) also found that the practices positively impacted student achievement. Specifically, students in grade 2 substantially increased achievement in reading fluency. Through teacher interviews, Vaughn and Coleman (2004) also concluded that teachers found this type of professional development to be far more effective than traditional professional development opportunities (i.e. workshops alone).

Kohler and Crilley (1997) used a multiple-baseline single-case design to study four teachers during three different experimental conditions. The researchers established a baseline by having the teachers begin an instructional innovation independently. They then introduced the use of a coach to establish the second experimental condition. One of the researchers acted as the single coach for the four teachers and attempted to mimic the effects of peer coaching. Finally, a maintenance condition was studied to determine the sustained change of the

innovation. Overall, “results indicated that more procedural changes occurred during peer coaching than in the initial independent phase” (Kohler & Crilley, p. 248).

Finally, Gerla et al. (2006) utilized case studies to examine a cognitive coaching model between university faculty and elementary teachers. The goal of the study was to introduce and maintain a balanced literacy approach within the elementary schools. Unlike the other approaches, the study began with intensive training. Once the teachers began to use the techniques within their classrooms, a consultant from the university continued to work with the teachers by modeling lessons and observing. Staff development continued bi-monthly for the participants in the study. Overall, the researchers concluded that this model had a direct impact on the students’ reading performance and that much of its success could be attributed to the frequency and continuity of staff development. Further results indicated that the elementary school teachers involved in the study required varied amounts of time and support in order to fully incorporate balanced literacy into their teaching practice.

A study by Roehrig, Duggar, Moats, Glover, and Mincey (2008) was conducted within the context of Reading First. The authors used a grounded theory model to explore the use of “progress monitoring data to inform literacy instruction in... schools during their 2nd year of Reading First implementation” (p. 364). The Reading First initiative calls for the use of assessment tools that provide progress monitoring data and for reading coaches to assist with data analysis. The teachers in this study were given professional development in data-driven decision making and in research-based teaching strategies in phonological awareness and phonics. Reading coaches were used to “help teachers access and interpret data and make informed links to reading curricula” (p. 364). The researchers concluded that collaboration with the reading coaches was necessary for teachers to understand the data and make changes in their

instruction. Although reading coaches were viewed as facilitators to the process, lack of time and classroom management were perceived as barriers to success.

Some studies utilized quantitative methods to investigate teacher preparation and professional development in research-based reading approaches. Podhajski, Mather, Nathan, and Sammons (2009) used a model similar to Greenwood et al. (2003) and Vaughn and Coleman (2004). However, Podhajski et al. maintained experimental and control groups to measure the impact of professional development and mentoring on teacher knowledge and reading achievement. Pretests and posttests measured changes in teacher knowledge while curriculum-based measures were used to measure student achievement. Interestingly, the control group was of a higher socioeconomic status than the experimental group and initially performed better on curriculum-based measures. By the end of the study, the experimental group had closed the achievement gap. The researchers concluded that initial professional development that is supported by monthly mentoring is effective in increasing teacher knowledge and reading achievement.

Joshi, Binks, Hougen, Dahlgren, Ocker-Dean, and Smith (2009) used a survey design to explore one possible reason for the lack of teacher knowledge of research-based reading instruction. They chose to examine teacher educators' knowledge of reading through surveys and interviews. The teacher educators included 118 college and university instructors who taught reading education classes. The researchers concluded that the participants "performed better on phonology-based items (highest) than morphology-based items (lowest), while items relating to phonics and comprehension were answered correctly about half of the time on average" (Joshi et al., p. 397). Although phonics instruction was mentioned by 80% of the interviewed participants as an effective method of instruction, their knowledge of phonics instruction was weak. The authors concluded that inadequate instruction in higher education is

one of the causes of poor reading instruction in schools. Collaboration and professional development are necessary to bridge this gap.

Most of the research surrounding evidence-based reading practices and reading coaches have small samples. The sample sizes for teachers ranged from 2-12 while student samples ranged from 33-36. All of the researchers acknowledged the small sample size as a limitation of their study.

Student achievement data were the most common form of data. Most were provided by curriculum-based measures such as DIBELS. Curriculum-based measurement (CBM) is used to provide information on how students are progressing in a certain subject area. In the Response to Intervention model, all students are assessed tri-annually using CBM. Students who are struggling are then provided with instructional interventions in an attempt to bridge the gap in skills. Curriculum-based measures are used on a weekly or bi-weekly basis for these students to determine if the instruction is making an impact on skills. CBM data are increasingly more common in schools. These data are attractive to teachers and researchers because they are easy to administer, provide a plethora of information, and can be administered often. Oftentimes CBM data are already being collected in schools and districts that are engaged in the Response to Intervention model.

Interviews, surveys and observations were also used as sources of data. Surveys were used to select the participants of the study, while interviews were conducted before, during, and after the study to gather information about teacher knowledge and perceptions (Vaughn & Coleman, 2004; Roehrig et al., 2008). Observations also provided significant data for the researchers. Greenwood et al. (2003) observed students for the purposes of collecting data about reading behaviors. Vaughn and Coleman (2004) coupled observations and validity checklists to ensure that teachers were utilizing the research-based strategies in their classrooms.

The major findings of the aforementioned studies are extremely positive. Teachers are able to learn how to use data to drive instruction when they are supported by administrators, teachers, coaches, and/or mentors. Despite their lack of knowledge in research-based phonics and phonemic awareness instruction, teachers are able to learn and implement research-based practices when they are provided with adequate professional development followed by continued support and collaboration with mentors or coaches. The teachers involved in these studies perceived collaboration and in-class support as effective forms of professional development. Data-driven instruction, professional development in and implementation of research-based practices had a positive impact on student achievement.

The researchers were able to identify many areas for further study. First, more information is needed about if and how elementary classroom teachers are using curriculum-based measures to inform their practice and improve student reading outcomes. If teachers are implementing interventions according to student data, more research is necessary to determine the correlation between this instruction and student outcomes (Roehrig et al., 2008).

Researchers also expressed the need for information on how to deliver professional development most effectively. Future research could focus on the models presented in these studies (i.e. training, modeling, observation, feedback) or on similar models in which schools collect and analyze their own data to inform instruction (Greenwood et al., 2003). Current research shows that mentoring and collaboration are effective when they supplement professional development. However, the question still remains about the optimal amount of mentoring and collaboration that is necessary to facilitate change (Vaughn & Coleman, 2004).

The No Child Left Behind Act calls for high-quality teacher development and extremely high standards for students. If teachers are to help their students meet these standards, they need to rid themselves of the culture of isolation that has pervaded the profession thus far. Teachers

need to seek collegiality and utilize research and research based practices to inform instruction. Collaboration, as outlined in the research, could be the answer to success in our schools today.

These findings support the use of coaching within the context of Response to Intervention to produce lasting change in schools today. Studies suggest that voluntary participation in collaborative teams is crucial to their success. Participants should be grouped according to grade levels or interests. Administrative support is another essential component since the teams require frequent meetings within the context of the school setting. Careful selection of a facilitator is imperative. Facilitators should be skilled in working with people and knowledgeable about the subject area. However, administrators should not be used as facilitators.

This study continued the research that has already begun on coaching as an effective form of professional development. It focused on the use of collaborative teams and the process utilized in Student-Focused Coaching to produce changes in reading instruction implemented by classroom teachers. Specifically, the research concentrated on the use of a systematic approach to phonics in grade 1 which is an identified area of need established through analysis of data compiled over the past two years.

Chapter III: Research Design

Research questions.

This is a case study which examined the experiences of two teachers engaged in data-driven professional development within the Response to Intervention model.

The doctoral study attempted to answer the following research questions:

- How can teachers use data to determine areas for improvement in core reading instruction and effectively implement these changes using research based practices?
- How can professional development opportunities provide teachers with the necessary skills to support growth in student achievement?

There are obvious similarities between these questions and the questions proposed by Podhajski et al. (2009), Greenwood et al. (2003), Vaughn and Coleman (2004), and Roehrig et al. (2008). These authors investigated the use of data to drive instruction. Once areas for improvement were revealed, the impact of collaborative professional development opportunities was studied. The aforementioned process research questions seek to describe “the process by which these events and activities and their outcomes occurred” (Maxwell, 2005, p. 75). More specifically, the study describes the processes that two teachers utilize to determine areas for improvement in reading instruction and how they address these needs within their classrooms. The present-day applications of Bernhardt’s process for data analysis and Vygotsky’s sociocultural theory are illustrated within these processes.

Data collection and analysis are necessary components of the Response to Intervention model. According to Bernhardt, data collection and analysis are necessary in the quest for improved student learning. Yet they require a great deal of time, understanding and collaboration. The process is extensive and varies according to school resources, personnel, and finances. This study provides just one example of the data collection and analysis that is

required in order to accurately define the problem and identify goals. The link between student data and professional development is established and described.

This study also describes the various professional development opportunities that are required to produce growth in student achievement. Effective professional development is ongoing, job-embedded, and differentiated (Denton & Hasbrouck, 2010). The participants in the study were engaged in an ongoing professional development process versus a short professional development experience such as a workshop. This process is described in detail so that the main characteristics may be included in future professional development experiences.

Finally, the impact of the professional development opportunities on student achievement was explored. The data were analyzed to determine if growth occurred in student achievement. The researcher proposes connections between increased student achievement and the data-driven professional development process.

Methodology.

This research project was qualitative and utilized an embedded case study design. According to Creswell (2009), qualitative research generally shares similar characteristics. In qualitative studies, researchers typically gather multiple forms of data “at the site where participants experience the issue or problem under study” (Creswell, 2009, p. 175). Qualitative researchers are typically a major part of qualitative research and are sometimes participants. The researchers utilize inductive data analysis in order to establish themes from the multiple sources of data and provide a holistic account of the issue being studied (Creswell, 2009; Maxwell, 2005).

Creswell (2009, p. 13) defines a case study as a form of qualitative research “in which the researcher explores in depth a program, event, activity, process, or one or more individuals. Cases are bounded by time and activity, and researchers collect detailed information using a

variety of data collection procedures over a sustained period of time” (Stake, 1995). Yin provides a similar but more complex definition: “A case study is an empirical inquiry that

- investigates a contemporary phenomenon in depth and within its real-life context, especially when
- the boundaries between phenomenon and context are not clearly evident.”

(Yin, 2009, p. 18)

This embedded case study investigated the process of Student-Focused Coaching within the Response to Intervention model. Embedded case studies are used when the same single-case study involves multiple units of analysis (Yin, 2009, p.50). When conducting an embedded case study, the unit of analysis must be defined (Yin, 2009, p.52). The unit of analysis in this study was the process of Student-Focused Coaching implemented in first grade classrooms rather than an examination of the participants. By incorporating subunits of analyses, the research design becomes more complex (Yin, 2009, p.52). “The subunits can often add significant opportunities for extensive analysis, enhancing the insights into the single case” (Yin, 2009, p.52-53).

Although the classroom teachers involved in the study participated in the same process, there was some variability within the participants’ processes.

The researcher participated as the coach in the study. The researcher is a certified reading specialist/consultant (K-12) and special education teacher (K-8) who has a full-time position within the school as a .5 reading specialist/.5 special education teacher. As a function of her job, the researcher acts as a reading consultant and coach who collaborates frequently with teams of teachers. The case study approach provides a rich and thick description of the intensive process involved in Student-Focused Coaching leading to changes in classroom practices and increased student achievement.

Various researchers (Greenwood et al., 2003; Vaughn & Coleman, 2004) have used case studies to analyze and describe the process involved in analyzing student data and providing building-based collaboration and professional development with the goal of increasing research-based reading instruction. By utilizing the case study design, the researchers were able to provide a detailed description of the process that each school went through in its quest to improve reading achievement.

When presenting a descriptive case study, the process and implications hold the most valuable information for practitioners. Yin (2009) stated, “the distinctive need for case studies arises out of the desire to understand complex social phenomena” (p. 4). This is particularly true in the area of data-driven professional development that is inclusive of mentoring or collaboration. Schools will not be able to replicate these studies because each school’s needs and resources are extremely different. However, the process, results, and conclusions can be used to guide a similar process in a school with similar needs. This research expands the current body of literature on this topic and provides yet another model for practitioners with similar goals.

Yin (2009) stressed the importance of protocols in case study research to increase the reliability of the study (p. 79). Case study protocols outline the case study questions, sites, participants, field procedures, data collection procedures, and a guide for the case study report (Yin, 2009, p.81).

Site and participants.

The site for the proposed doctoral project was an elementary school in southern New England that had been involved in the Response to Intervention process for three years. This was a purposeful sample which included two grade 1 classroom teachers and the researcher acting as a coach and member of the collaborative grade-level team.

Background of RTI at this site.

The classroom teachers had been extensively trained in the administration and interpretation of curriculum-based measures (AIMSweb). Data were analyzed tri-annually to coincide with benchmarking periods. At the onset of the research, the data had been used to provide struggling readers with specialized instruction through intervention periods. Interventions were provided by support staff (special educators and reading specialists) and classroom teachers. In 2010-2011, the data were further analyzed to determine areas for improvement in classroom instruction. Weaknesses were found in phonemic awareness and phonics instruction in grades K-2.

The grade 1 teachers had been heavily involved in the process thus far. During the 2009-2010 academic year, the greatest area of student need for grade 1 was found in phonics. Specifically, during January (2010) benchmarking, data revealed that students were weak in reading nonsense words. Further analysis and assessments revealed that many of the students in grade 1 had difficulty producing short vowel sounds when presented with CVC words or with vowels in isolation. According to the reading curriculum, teacher accounts, and the scope and sequence of the reading series, short vowels had been taught and mastery was expected. This required an immediate response. The reading specialist (researcher) began daily phonics lessons in the first grade classrooms. The phonics instruction was direct and explicit. The reading specialist utilized a scientifically-based, systematic, multisensory approach as recommended by the NRP.

The classroom teachers became more involved in the instruction as the year continued (January 2010-June 2010). They were able to co-plan lessons on a weekly basis. Guskey (2002) defined professional development programs as “systematic efforts to bring about change in the classroom practices of teachers, in their attitudes and beliefs, and in the learning outcomes of all

students” (p. 681). Further professional development was necessary to bring about this change and allow for independent use of evidence-based practices.

The purpose of this study was to examine job-embedded professional development with the aforementioned first-grade teachers and the researcher (coach). These participants were purposefully selected based on their active and current participation in the Response to Intervention model. The teachers and researcher had been actively engaged in the problem-solving process inherent to the RTI model since 2008. The researcher regularly analyzed data to inform instruction as a function of her job. As a reading specialist, the researcher was also expected to act as a reading consultant who collaborated with teachers in order to facilitate these changes in instruction. The teachers viewed the reading specialist as a participant and researcher who analyzed the impact of instruction on student achievement. The researcher was in constant pursuit of effective teaching methods that could be implemented to meet the unique needs of each classroom.

One of the strengths of participant observation is that it provides a deep insight into the existent relationships and culture of the school. The researcher had worked with both teachers in the past in her role as a special education teacher and had developed a trusting relationship with them. The reading specialist was seen as a team member who not only made suggestions for instructional improvement but then facilitated the changes in order to make them happen. All participants were invested in the quest for instructional improvement during the case study period. As a result of daily collaboration and the preexisting relationship, the participants were able to provide authentic responses to the researcher regarding the process of data-driven professional development.

Student-focused coaching model.

The teachers and researcher continued their relationship and work following the Student-Focused Coaching (SFC) model (Hasbrouck & Denton, 2010). SFC was the professional development model that was followed in this study. It is a model that is heavily dependent on the use of student data which is a natural occurrence within an RTI school. It is also an intensive form of professional development that is highly focused and requires a great time commitment from all participants. Due to the intensity of the model, an embedded case study design was used to provide a thick description of the process which occurred over an approximate 5 month period.

Data collection within RTI.

During the study, the classroom teachers participated in extensive student data collection as defined by their district. Student performance data included AIMSweb Test of Early Literacy and Reading-CBM results. The AIMSweb Test of Early Literacy consists of 4 timed measures: Letter Naming Fluency, Letter Sound Fluency, Phoneme Segmentation Fluency (the ability to hear the sounds in the spoken word), and Nonsense Word Fluency (the ability to link letters with their most common sounds). AIMSweb Reading-Curriculum Based Measurement is also administered in the winter of grade 1. Students are required to read graded passages in 1 minute. The number of words read correct per minute and the numbers of errors are calculated for each student. Reading-CBM provides a reliable and valid measure of overall reading achievement. National norms have been established for all AIMSweb measures. The norms provide targets (national 50th percentile) for each benchmarking period which occur in the fall, winter, and spring of each academic year. The aggregate norms tables also provide achievement levels for the 10th, 25th, 75th, and 90th national percentiles as well as national rates of improvement (ROI). The ROI for each measure provides an expected weekly increase (i.e. 1.2 words read correct per

minute) at each achievement level. Finally, untimed screenings, such as phonics inventories, were administered by reading specialists and special education teachers when questions arose regarding individual students based on the aforementioned assessments.

Data collection and collaborative data analysis occur in October, January, and May of each academic year as a part of the Response to Intervention model. Reading specialists complete the primary data analysis by calculating rates of improvement for individual students, classes, and grade levels. They also organize students into achievement quadrants (i.e. Quadrant 3 = students who read accurately but slowly; Quadrant 4 = students who read inaccurately and slowly). All of this data is shared with the classroom teachers prior to formal grade-level data analysis meetings. The purpose of these meetings is to further analyze the data to drive instruction. In October, students who are struggling are organized into intervention groups according to need. Groups are reorganized in January according to the most current data. Through data analysis, the collaborative team defines the areas that require attention and sets goals focused on instructional change and student improvement. According to Bernhardt (n.d.):

To get different results, we have to change the processes that create the results. To change the processes, we have to agree on what is being implemented right now. Then, together, we need to figure out what we want to implement and how we are going to get there. (p. 10)

Traditional workshops.

Traditional workshops were provided to the teachers by the researcher and outlined evidence-based practices as defined by the National Reading Panel (2000). For the purposes of this study, the workshops were focused on phonological awareness and phonics. The NRP calls for explicit, sequential instruction in these areas as do the Common Core State Standards which were adopted by the district and state. According to Vygotsky, learning is a process that is

dependent on the interaction between explicit instruction and then application in a social context. The workshops provided the opportunity for explicit instruction and the knowledge base for implementation of new teaching practices.

Once this professional development was complete, the researcher spent a considerable amount of time in each classroom (3-5 days per week, 30 minutes) to facilitate the implementation of instructional practices. The researcher modeled lessons, co-taught, observed, and provided student-focused feedback. The researcher gradually released the responsibility of the evidence-based reading practice to the classroom teachers in the hopes of generalization.

In January, the cycle began again. Student data were collected and analyzed to determine the impact of the instruction and reassess student need.

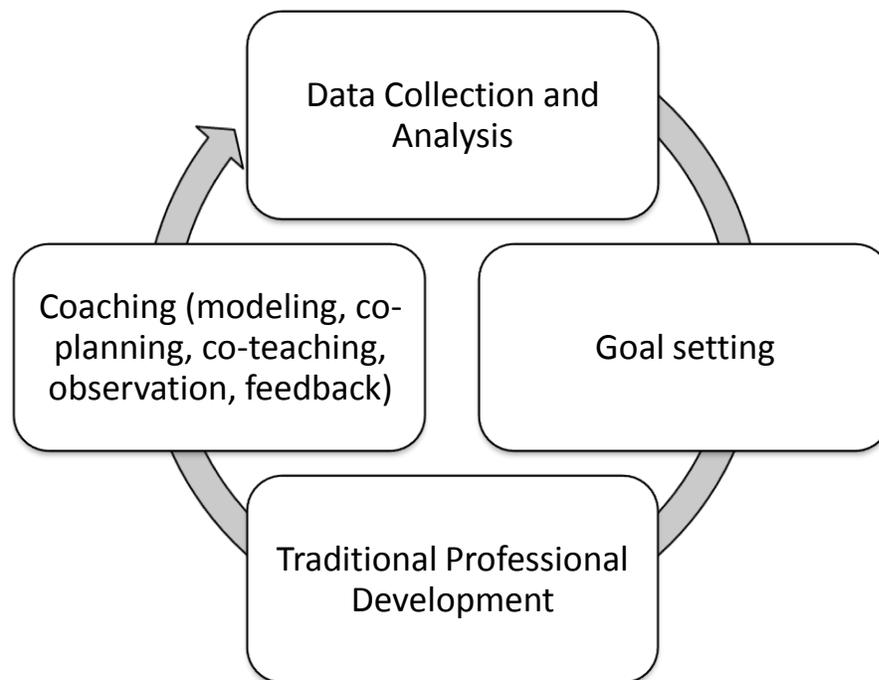


Figure 3.1. The iterative cycle of data analysis within the Response to Intervention model.

Data collection.

Yin (2009) proposes three principles of data collection within case study research. The first principle is that case study inquiry “relies on multiple sources of evidence, with data

needing to converge in a triangulating fashion” (p. 18). Four sources of data were collected to address the research questions: documentation, field notes from observations, student achievement data, and interviews. Historical data were primarily used for the study. However, interviews were also conducted at the end of the case study period.

Documentation.

According to Yin (2009), documentary evidence is relevant to all case studies and is a stable and unobtrusive source of evidence since it is not created for the case study (p. 101-102). For the purposes of this case study, documentation included lesson plans, daily activity logs, meeting minutes/notes, agendas, calendars, professional development materials, and teacher-created materials that were pertinent to the study. This is consistent with Bernhardt’s process of data collection and analysis. According to Bernhardt (2003), school processes data should be collected and includes instructional strategies (p. 26). The daily activity logs were completed by the researcher from September of 2010 through January of 2011. The logs were created as a part of the coaching process and were used to illustrate generalization of the teaching strategies and teacher involvement. They were also used to set goals for the second half of the school year. The documentary evidence helped answer the questions: a.) How can teachers use data to determine areas for improvement in core reading instruction and effectively implement these changes using research based practices? b.) How can professional development opportunities provide teachers with the necessary skills to support growth in student achievement?

Participant-observation.

Participant-observation can be used when the researcher is participating in the process or events that are under examination. Participant-observation is consistent with Vygotsky’s theory since it occurs within the authentic context of the process. These observations also add to school process data as described by Bernhardt (2003), since they provide insight into classroom

practices. According to Yin (2009), participant-observations are contextual and insightful because they provide a deep understanding of the relationships amongst the participants (p. 102). However, the researcher must be aware of the weaknesses of participant-observation which include reflexivity, changes that may occur as a result of the observation, and researcher bias (Yin, 2009, p. 102). In this study, the researcher was a major participant, acting as the reading specialist and coach. Notes taken during various observations conducted throughout the process were collected, transcribed, and coded (see Appendix A for list of initial codes).

Interviews.

According to Yin (2009), interviews are “one of the most important sources of case study information” (p. 106). The researcher and participants interacted daily throughout the course of the case study. However, the interviews or “guided conversations” (Yin, 2009, p. 106) took place at the end of the case study period. The teachers had set professional development goals surrounding this process as a part of their district’s teacher-evaluation process. The district required teachers to meet with an administrator to review the progress of their goals. The interviews coincided with this review period and provided a natural opportunity for the participants to discuss the process that they were engaged in. The interviews provided insight into the teachers’ perceptions of data analysis; their roles in the process, instructional change and changes in student achievement (see Appendix B for interview questions). Bernhardt (2003) stressed the importance of perceptions data: “People act according to what they believe about different topics, so if you want to change a group’s perceptions, you have to know about their beliefs” (p. 26). The interview data were collected, transcribed, and coded.

First Cycle and Second Cycle coding methods were used to organize and interpret the interview data (Saldana, 2009, p. 149). According to Saldana, First Cycle methods are utilized during the initial coding of data (p. 45). In Vivo Coding was utilized in the preliminary coding

of interview data. When using In Vivo Coding, the participants' actual language is used to formulate phrases that illustrate salient points (Saldana, 2009). Since there was a limited amount of interview data, the researcher was able to highlight words and phrases within the teachers' interview responses that carried the most meaning. Responses from each question were highlighted a different color. At times, the teachers' responses were not consistent with the interview question. In these instances, the researcher chose to color-code the responses so that they remained consistent with the foci of the questions. The foci of the questions were as follows: effects of data analysis, perceptions of roles in the process, perceptions of the process (efficacy), perceived changes in instruction, and perceived changes in students' skills. Second Cycle Coding was then used to develop themes that emerged from the teachers' responses. More specifically, Pattern Coding (Miles & Huberman, 1994, p. 69) was used to illustrate thematic similarities and differences within the teachers' interview responses.

Student achievement data.

Beyond the collection of data regarding participants' learning and use of newly acquired skills and knowledge, Guskey (2002) called for the collection of student learning outcomes when evaluating the effectiveness of professional development opportunities. This requires the use of quantitative data for multiple purposes. Quantitative data were necessary initially to determine the areas for improvement in reading instruction. Student data were also necessary when trying to link the professional development model with growth in student achievement which is an area lacking in current educational research.

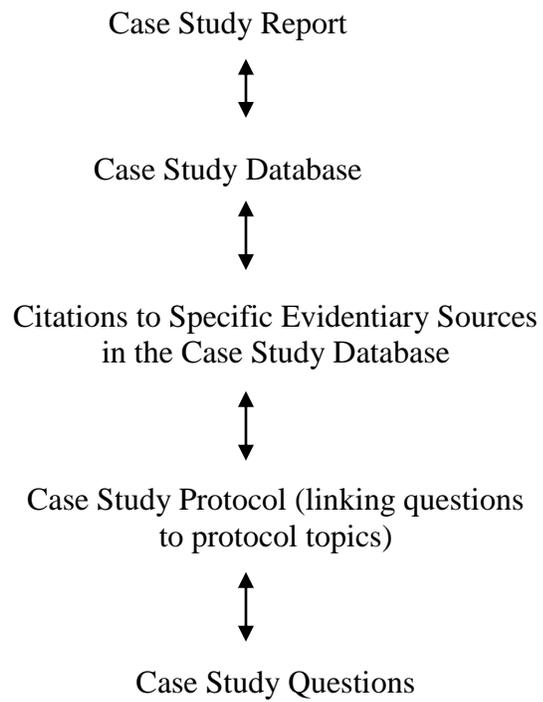
The student data were historical and coincided with the district's student assessment schedule. According to Bernhardt, data must be intersected from various sources and reviewed frequently to improve the efficacy of instruction. The primary form of student data was derived from school reports provided through AIMSweb. AIMSweb measures are curriculum-based and

were primarily used to identify students at risk through tri-annual benchmarking of all students. The data provided through these reports illuminated a collective student need and provided information on the overall health of the core curriculum.

Through careful analysis, AIMSweb measures can also provide information on Rates of Improvement (ROI) for individual students, classes, or grade levels within a school. Local rates of improvement are compared to national averages to determine the rate of progress within a class or grade level. If rates of improvement are found to be discrepant from national norms, further investigation is necessary and may lead to problem solving through professional development aimed at increased student achievement. Rates of Improvement were calculated for individual students, classrooms, and the grade level as a whole. This data analysis took place at each benchmarking period and was reviewed at grade-level data meetings as a part of the Response to Intervention model.

Yin's (2009) second principle of data collection stressed the need to create a case study database. The database should contain case study notes, case study documents, tabular materials (survey or other quantitative data), and narratives written by the case study investigator. According to Yin (2009), the purpose of the database is to increase the reliability of the study, "so that in principle, other investigators can review the evidence directly and not be limited to the written case study reports" (p. 119). The researcher maintained the aforementioned database inclusive of field notes, artifacts, student data, memos, and narratives composed once data collection was complete.

Yin's third principle of data collection, maintaining a chain of evidence, also increases the reliability of the study. The following figure illustrates Yin's (2009) ultimate "chain of evidence" (p. 123). The purpose of the chain is to link the data and the ultimate conclusions derived from the data.



*Figure 3.2. Maintaining a Chain of Evidence. From *Case Study Research: Design and Methods*, by R. K. Yin, 2009, p. 123. Copyright 2009 by Sage Publications.*

Data analysis.

Table 3.1

Summary of Data Collection and Analysis

Research Questions	Data Source	Collection/Timeline	Analysis
How can teachers use data to determine areas for improvement in core reading instruction and effectively implement these changes using research based practices?	<ol style="list-style-type: none"> 1. Field notes 2. Student achievement data: <ul style="list-style-type: none"> - AIMSweb Tests of Early Literacy 	<ol style="list-style-type: none"> 1. Researcher (October-January) 2. Classroom teachers, reading specialists, researcher, special educators (September 2010 and January 2011) 	<ol style="list-style-type: none"> 1. Description of events within logic model; coding; data displays 2. Comparison to national norms; <80% at target on AIMSweb
How can professional development opportunities provide teachers with the necessary skills to support growth in student achievement?	<ol style="list-style-type: none"> 1. Lesson Plans 2. Field notes 3. Interviews 4. Student achievement data: <ul style="list-style-type: none"> - AIMSweb Tests of Early Literacy 	<ol style="list-style-type: none"> 1. Researcher (October-January) 2. Researcher (October-January) 3. Researcher 4. Classroom teachers, reading specialists, researcher, special educators (September 2010 and January 2011) 	<ol style="list-style-type: none"> 1. Tabulating frequency and types of collaboration; coding, data displays 2. Description of events and workshops 3. Coding for themes, data displays 4. Comparison of historical data to 2010-2011 data (raw comparison, <i>t</i> test, ANOVA); ROI > than national norms; increase in % of students above target (national 50th percentile)

Within the project design, a framework for data analysis is required. Victoria Bernhardt presents a compelling argument for the use of data to improve student learning. She contends that the efficacy of a school can be determined by “gathering, intersecting, and analyzing four

kinds of data” (Bernhardt, 2004, p. 26). The data include demographic data, student learning data, perceptions data, and school processes data.

Schools that are currently involved in the Response to Intervention (RTI) model utilize student learning data to make instructional decisions. Student learning data include assessments, evaluations, and measurements that demonstrate the students’ progress. Curriculum Based Measures are often used in the Response to Intervention model and are designed to measure student growth, set goals, and make changes in instruction. These results were combined with district assessments, class work, and various criterion-referenced tests in order to provide an accurate picture of the students’ achievements. Teams of teachers analyze the data on a regular basis to measure progress and the effectiveness of the instruction.

School processes data include the programs, instruction, assessment, and common practices utilized within the school. Although student learning data are analyzed frequently within the target school and most schools, other data are not analyzed on a regular basis in combination with these data. Bernhardt suggests that schools get the most accurate view when all four types of data are collected and intersected. This project attempted to complete Bernhardt’s data analysis process within an authentic and social setting, thereby realizing Vygotsky’s sociocultural theory.

“Data analysis consists of examining, categorizing, tabulating, testing, or otherwise recombining evidence, to draw empirically based conclusions” (Yin, 2009, p. 126). In order to draw accurate conclusions from this case study, the Logic Model was followed. “The Logic Model deliberately stipulates a complex chain of events over time” (Yin, 2009, p.XXX). More specifically, an organization-level logic model was used to trace “events taking place in an individual organization” (Yin, 2009, p. 151). This case study links the chain of events occurring throughout the process of Student-Focused Coaching.

According to Yin (2009), “the use of logic models consists of matching empirically observed events to theoretically predicted events” (p. 149). The theoretical framework and literature review that provide the basis for this study suggest that data analysis will illuminate areas of student need, which will lead to job-embedded professional development inclusive of coaching; this will produce lasting changes in instruction which will improve student performance. According to Yin (2009), data collection and analysis in organizational-level logic models should aim to link events over time (p. 154). This case study describes and links the events occurring within this process.

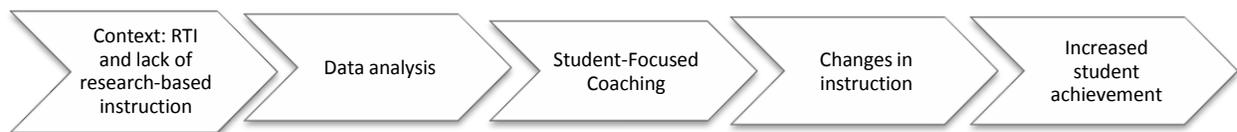


Figure 3.3. Theoretically predicted events for this study.

The iterative process of data analysis described by Miles and Huberman (1994) guided the research. According to Miles and Huberman, data reduction, data display, and conclusion drawing/verification occur throughout the data analysis process until conclusions are drawn and verified.

Data Reduction.

According to Miles and Huberman (1994), data analysis consists of the iterative processes of data reduction, data display, and conclusion drawing/verification (p. 11). Data reduction begins when the case is bound and defined (Miles and Huberman, 1994, p. 27). This study was “defined temporally: events or processes occurring over a defined period” (Miles and Huberman, 1994, p. 27). Historical data from September of 2010 through January of 2011 were collected, displayed and analyzed for the purposes of this study. This allowed the researcher to focus on the process of data-driven professional development.

Coding is another example of data reduction. “First-level coding is a device for summarizing segments of data” (Miles & Huberman, 1994, p. 69). First-level coding was used in this study to categorize the data according to the current research questions. This first stage of the coding process allowed the researcher to describe the data analysis and professional development processes that occurred. Initial codes also focused on the setting/context of the study (Response to Intervention), strategies employed within the professional development, and activities that occurred. The researcher used activity codes to determine the allocation of coaching activities throughout the process. The researcher’s and classroom teachers’ activities were categorized: instruction, modeling, observation. The researcher examined how coaching time was allocated and how it evolved throughout the process.

Reflective and marginal remarks (Miles & Huberman, 1994, p. 66) were also used during the coding process. According to Miles and Huberman (1994), these remarks “usually strengthen coding, in pointing to deeper or underlying issues that deserve analytic attention” (p. 66). This reflective commentary was primarily utilized with the transcribed interviews with the two classroom teachers.

Pattern coding then commenced in order to group these summaries “into a smaller number of sets, themes, or constructs” (Miles & Huberman, 1994, p. 69) According to Miles and Huberman (1994), pattern coding has four functions: data reduction, initial data analysis, elaboration of a cognitive map to aid in understanding, and initial cross-case analysis (p. 69). Codes were created and revised once data collection and analysis began. A coding journal was used to organize all coding strategies.

Table 3.2

Initial Codes and Definitions Categorized by Research Question

Question 1: Data Analysis	Abbreviation	Definition	Data
Data Analysis: Setting/Context	DA-S/C	Physical locations and context within RTI model	Field Notes
Data Analysis: Activities	DA-AC	Description of regularly occurring data analysis; both formal and informal	Field Notes
Data Analysis: Process	DA-P	Sequence and flow of events related to data analysis including any changes over time (frequency, perceptions)	Field Notes Interviews
Question 2: Professional Development	Abbreviation	Definition	Data
Professional Development: Setting/Context	PD-S/C	Physical locations and context within RTI model	Field Notes
Professional Development: Activities - Workshop - Direct Instruction: Reading Specialist - Direct Instruction: Classroom Teacher - Co-Planning - Co-Teaching - Observation/Feedback	PD-AC PD-AC/W PD-AC/RS PD-AC/CL PD-AC/CP PD-AC/CT PD-AC/OF	Description of regularly occurring professional development activities	Field Notes Daily Logs
Professional Development: Process	PD-P	Sequence and flow of events related to professional development including any changes over time (frequency, perceptions)	Field Notes Daily Logs Interviews
Question 2: Outcomes	Abbreviation	Definition	Data
Outcomes: Immediate	O-IM	Logic model cause and effect; outcomes observed after initial data analysis	Field Notes
Outcomes: Intermediate	O-IN	Logic model; outcomes as a result of workshops and professional development activities	Field Notes Daily Logs Interviews
Outcomes: Ultimate	O-UL	Logic model; outcomes as a result of changes in instruction	AIMSweb Data Interviews

Data display.

Data display is an essential step in data analysis that is initially preceded by coding. “Valid analysis requires, and is driven by, displays that are focused enough to permit a viewing of a full data set in the same location, and are arranged systematically to answer the research questions at hand” (Miles & Huberman, 1994, p. 92). Matrices and networks are the two major forms of data display (Miles & Huberman, 1994, p. 93). Within this study, a time-ordered display (Table 3) was used “to describe the flow of events and processes carefully” (Miles & Huberman, 1994, p. 101). An effects matrix was also created to display data related to intended and/or unintended outcomes of the professional development process (Miles & Huberman, 1994, p. 137).

Conclusion drawing/verification.

The patterns and themes that emerged from data reduction and data displays led to conclusions. The researcher used the data to build a logical chain of evidence from the data-driven professional development to an increase in student achievement (Miles & Huberman, 1994).

Student achievement data.

Student achievement data (AIMSweb) have been collected tri-annually from 2008 to the present at the research site. These early data had been analyzed to determine the areas of instructional need within first grade (phonemic awareness and phonics). Coaching activities revolved around evidence-based practices that would lead to increased student achievement in this area of need. Student-Focused Coaching commenced in October 2010 following the first official benchmarking period within the school. The AIMSweb Test of Early Literacy was administered to each first grade student in September 2010 and January 2011. The Test of Early

Literacy consists of four subtests: Letter Naming Fluency, Letter Sound Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency.

Once the AIMSweb Test of Early Literacy was administered in January 2011, rates of improvement were calculated for each first-grade student, class and grade. These results were compared to both the national norms and the historical rates of improvement within the school (2008-2009, 2009-2010) in order to describe the relationship between professional development in the form of Student-Focused Coaching and student reading achievement in grade 1. Rates of Improvement are determined by calculating the difference between each student's fall and winter benchmark scores and dividing this difference by 18 (the number of weeks between each benchmarking period).

Student achievement levels from September 2009 through January 2010 were compared to those from September 2010 through January 2011. The researcher calculated the percentage of students achieving targets (national 50th percentile) on each test. Each student's accuracy on the Nonsense Word Fluency (NWF) subtest was calculated by dividing the number of correct sounds by the total number of sounds presented in the one-minute test. Finally, a *t* test for independent samples was used to compare AIMSweb scores for first-grade students in 2009-2010 who did not experience changes in reading instruction and first-grade students in 2010-2011 who did experience changes in reading instruction. This secondary analysis helped to describe the impact of the professional development process on student achievement and attempted to form a correlation between these activities.

The analysis of student achievement data and daily activity logs intersected with field notes answered the primary research question: How can teachers use data to determine areas for improvement in core reading instruction and effectively implement these changes using research

based practices? This has allowed the researcher to accurately describe the process that all participants were involved in.

Table 3.3
Analysis of Student Achievement Data

	Data	Analysis
AIMSweb: Phoneme Segmentation Fluency (PSF) Nonsense Word Fluency (NWF) Reading-Curriculum-Based Measurement (R-CBM)	PSF: Sounds per minute Fall-Winter 2009-2010, Fall-Winter 2010-2011	- <i>t</i> test; ANOVA -graph raw scores -change in percentage of students above national target (50 th percentile)
	NWF: correct sounds per minute; accuracy Fall-Winter 2009-2010 vs. Fall-Winter 2010-2011	- <i>t</i> test; ANOVA -graph raw scores -change in percentage of students above national target (50 th percentile)
	R-CBM: Correct words per minute; accuracy Fall-Winter 2009-2010 vs. Fall-Winter 2010-2011	- <i>t</i> test; ANOVA -graph raw scores -change in percentage of students above national target (50 th percentile)
	Rates of Improvement for NWF and R-CBM: (Winter score-Fall score)/18 weeks	Comparison to national ROI and 2009-2010 ROI

Validity and credibility.

Guba and Lincoln (1982) asserted that naturalistic inquiry is often the paradigm of choice when conducting case studies in natural settings since “it offers a contextual relevance and richness unmatched by any other paradigm” (p. 235). However, they agreed that naturalistic

inquiry must be able to meet the basic criteria set for traditional rationalistic inquiry (internal validity, external validity, reliability, and objectivity) (Guba & Lincoln, 1982, p. 236). In order to address this need for “trustworthiness”, Guba and Lincoln (1982) proposed basic criteria for naturalistic inquiry that runs parallel to the basic criteria used in rationalistic inquiry: credibility, transferability, dependability, and confirmability (p. 246).

The researcher used several strategies proposed by Guba and Lincoln (1982) to ensure credibility (internal validity). Data was triangulated from multiple sources including student achievement data, observations, and coaching logs (Creswell, 2009; Guba & Lincoln, 1982; Maxwell, 2005). The researcher also utilized member checking (Creswell, 2009; Guba & Lincoln, 1982) or respondent validation (Maxwell, 2005) in which the participants in the study confirmed the data and findings. The classroom teachers acting as participants in the study served as checks for accuracy throughout the research process.

Since the researcher was a member of the faculty at the research site and served as a major participant in the study, participation and bias were clearly articulated. However, researcher as participant also served as a strategy to ensure validity since prolonged time was spent in the field (Creswell, 2009; Guba & Lincoln, 1982; Maxwell, 2005). According to Creswell (2009), “The more experience that a researcher has with participants in their actual setting, the more accurate or valid will be the findings” (p. 192). The “prolonged engagement” with the participants (3-5 days per week), allowed the researcher to conduct “persistent observations” which provided “time to identify salient characteristics of both the context and the problem” (Guba & Lincoln, 1982, p. 247).

Transferability (generalizability or external validity) can also be achieved in naturalistic inquiry. Although this study would be difficult to replicate, purposeful sampling and thick

description allows the reader to experience the process and provides enough information for the reader to transfer the experience to a similar context (Guba & Lincoln, 1982, p. 248).

Reliability or dependability (Guba & Lincoln, 1982) is often defined as the ability to replicate a study and achieve consistent results. Gibbs (2007) believes that “qualitative reliability indicates that the researcher’s approach is consistent across different researchers and different projects” (as quoted in Creswell, 2009, p. 190). This can be achieved through careful description and delineation of the process that is followed by the researcher. Decisions were justified and described in order to give fellow researchers insight into the process (Guba & Lincoln, 1982).

Finally, Guba and Lincoln (1982) looked to confirmability (objectivity) to achieve trustworthiness within qualitative research. Others should be able to confirm the data. By using a database within the proposed study, the researcher provided access to all data in all stages of the research process. This allowed others to verify that findings can be traced back to original data (Guba & Lincoln, 1982, p. 248).

Guba and Lincoln (1982) were careful to point out that the aforementioned criteria “assure the consumer of such research that any and all appropriate steps have been taken to assure that data from human sources and contexts are meaningful, trackable, verifiable, and grounded in the real-life situations from which they were derived” (p. 250).

Protection of Human Subjects

Human subjects were a part of this study. Two teachers and student achievement data were used. The participants were fully informed, verbally and in writing, regarding the research objectives, data collection, and data analysis. Written permission was received from the participants prior to the start of the study. The participants were informed that participation was voluntary and could be discontinued at any point. All field notes, logs, and data were available

to the participants. Throughout the study and in the final report, the participants remain anonymous. This project proposal was submitted to the International Review Board at Northeastern University for approval and was approved in June 2011.

Conclusion

The vast majority of professional development opportunities in education today are in the traditional workshop format. However, research suggests that professional development should be on-going, job-embedded and directly linked to the classroom in order to produce change in instructional practice.

The goal of this study was to describe the professional development process undertaken by 2 first grade teachers within their school. The process began with data analysis to drive the professional development. Since the school was in its third year of Response to Intervention, data had slowly been embedded in the culture of the school and was utilized regularly. Traditional training sessions facilitated by the coach were provided during the process and focused on evidence-based practices as defined by the National Reading Panel Report (2000). Finally, intensive coaching helped to generalize these practices in the classroom. The coach modeled lessons, co-taught, co-planned, observed, and provided student-centered feedback. The study took place from September, 2010 – January, 2011.

The researcher completed daily coaching logs which contained information on the various coaching tasks that took place on a daily basis. Field notes and observations also provided descriptive data. The data were continuously analyzed as themes emerged. Student achievement data were collected and analyzed in order to determine how the entire process affected student achievement.

The study is qualitative and used an embedded case study approach to fully describe the professional development process. The study ultimately answered the research questions:

- How can teachers use data to determine areas for improvement in core reading instruction and effectively implement these changes using research based practices?
- How can professional development opportunities provide teachers with the necessary skills to support growth in student achievement?

Chapter IV: Report of Research Findings

Introduction

This case study, conducted in the spring of 2011, sought to describe the process of job-embedded professional development within the Response to Intervention model. The research questions driving the study were: 1.) How can teachers use data to determine areas for improvement in core reading instruction and effectively implement these changes using research based practices? 2.) How can professional development opportunities provide teachers with the necessary skills to support growth in student achievement? The questions provided foci on the data analysis process, professional development activities and contexts, and the outcomes of the process. Chapter 4 presents the results that emerged during the study which was conducted in the spring of 2011.

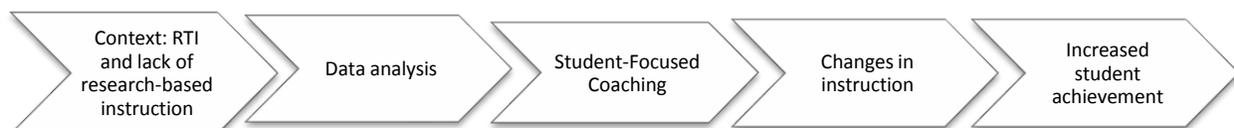
The problem of practice which was the impetus for the study has gained national attention. Classroom reading instruction throughout the nation lacks research-based strategies as outlined by the National Reading Panel. The greatest void is in the area of phonics/decoding instruction. This problem was occurring at the research site and emerged through data analysis within the Response to Intervention model. While all students benefit from explicit phonics instruction, some require it in order to learn to read. Most reading deficits can be avoided with thorough instruction that incorporates instruction in phonemic awareness, phonics, vocabulary, fluency and comprehension.

Vygotsky's sociocultural theory provided a lens through which to examine the problem of practice and conduct the study. Vygotsky's theory contends that social interaction is fundamental to learning. Explicit instruction should be combined with interaction and practice in order for true learning and growth to occur. The research questions were also guided by

Vygotsky's sociocultural theory. Using data analysis as the basis for change, teachers worked together within the natural setting of the school to bridge theory and practice.

The researcher, as a participant, historically studied the intense and iterative processes of data analysis and coaching that occurred within the RTI model. The goal of the process was to strengthen Tier 1 classroom instruction and improve student reading achievement. The methodology was qualitative and utilized an embedded case study to describe the processes that two teachers and a reading specialist used to determine areas for improvement in reading instruction and how they addressed these needs within their classrooms. The unit of analysis within the case study was the coaching process implemented in first grade classrooms as a part of the RTI model rather than a study of the participants themselves. The research questions were focused on a description of "the process by which these events and activities and their outcomes occurred" (Maxwell, 2005, p. 75). More specifically, the study describes the *processes* that two teachers and a reading specialist utilized to determine areas for improvement in reading instruction and how they addressed these needs within their classrooms.

A logic model is used to describe the events within the process of coaching, establish a relationship between the events, and match observed events to predicted events (Yin, 2009). The theoretical framework and literature review that provided the basis for this study suggest that data analysis will illuminate areas of student need, which will lead to job-embedded professional development inclusive of coaching; this will produce lasting changes in instruction which will improve student performance. Chapter 4 is organized chronologically according to the logic model presented below. Following Vygotsky's theory, the process of change is thoroughly described and studied versus simply the product.



Semi-structured interviews were conducted with the 2 first-grade teachers who participated in the study. The researcher conducted the interviews in June of 2011 at the research site. The research questions included in Appendix B sought the teachers' perceptions of data analysis, their roles in the process, and the job-embedded professional development. The questions also focused on their perceptions of the intermediate and ultimate outcomes of the professional development process. More specifically, In Vivo (Saldana, 2009, p. 149) and Pattern Coding (Miles & Huberman, 1994, p. 69) were used to illustrate thematic similarities and differences within the teachers' interview responses. These similarities and differences are included in the chronological presentation of the case study.

School Profile

The site of the study was a suburban elementary school located in Southeastern New England. It is one of four elementary schools in the district and houses grades Pre-K through 5. At the time of the study, pupil enrollment was at 328. Approximately 13% of the students received special education services and 0% received ELL services. Ten percent qualified for either free or reduced lunch. Although there are no ELL students in the school, the results of the study should not be affected since research-based reading instruction has been proven effective for all populations, particularly at-risk students. According to the National Reading Panel Report (2000), "systematic phonics instruction is significantly more effective than non-phonics instruction in helping to prevent reading difficulties among at risk students" (Reports of the Subgroups, p. 94).

Two classroom teachers and a reading specialist (researcher) participated in the study. The teachers taught grade 1 classrooms of 19 and 20 students. In order to maintain anonymity, the teachers will be referred to as Teacher A and Teacher B. Teacher A had been teaching

elementary education for 42 years while Teacher B had 15 years of experience as a classroom teacher.

During the year in which the study was conducted, the researcher was in her second year as a .5 reading specialist and .5 special educator at the site. For the purposes of the study, the researcher will be referred to as the reading specialist since that was her role in grade 1. Prior to that, the reading specialist was a special education teacher in grades K-5 for 10 years. She holds a bachelor's degree in elementary and special education and a master's degree in literacy.

History of RTI

When the study was conducted, the school was in its fourth year of implementing the RTI model. In the first two years (2007-2009), the school began benchmarking all students triannually using curriculum-based measures (AIMSweb). Teachers implemented instructional interventions in the area of reading for students at risk and progress monitoring of the students participating in intervention groups. The reading specialist (researcher) was a part of the state and district RTI teams that spent 2008-2009 developing an elementary RTI protocol for the district. The protocol outlined assessment schedules, data analysis procedures, data meeting expectations, and various RTI resources.

In 2009, with the arrival of a new principal, the school and district implemented the RTI protocol including the addition of intervention blocks into all elementary schedules. The intervention blocks were daily 30 minute periods assigned to each grade level. During this time, students in the entire grade level were split into homogeneous groups and were provided with targeted instruction that fit their needs. All service providers and classroom teachers at that grade level acted as interventionists during this daily block. The intervention block allowed teachers to provide specialized instruction to at-risk students, additional grade-level instruction to

students who needed reinforcement of skills, and enrichment opportunities to those students performing above grade-level.

Intervention groups were formed during grade-level data meetings which were held following each benchmarking period (October, January, May). The data meetings allowed grade-level teams to analyze and interpret multiple sources of student data to inform the creation of intervention groups. In January of 2010, teachers looked further into the data that AIMSweb provided and began to use the data to drive classroom instruction.

During the data analysis period in January of 2010, the reading specialist assigned to grade 1 (researcher) realized that the students in that grade level exhibited weaknesses in phonics. Specifically, data revealed that students were weak in reading nonsense words. Further analysis and assessments revealed that many of the students in grade 1 had difficulty producing short vowel sounds when presented with consonant-vowel-consonant (CVC) words or with vowels in isolation. According to the reading curriculum, teacher accounts, and the scope and sequence of the reading series, short vowels had been taught and mastery was expected. This required an immediate response. The reading specialist (researcher) began daily phonics lessons in the first grade classrooms. The phonics instruction was direct and explicit. The reading specialist utilized a scientifically-based, systematic, multisensory approach as recommended by the NRP.

Teachers A and B and the reading specialist had been actively engaged in the problem-solving process inherent to the RTI model since 2008. The researcher regularly analyzed data to inform instruction as a function of her job. As a reading specialist, the researcher was also expected to act as a reading consultant who collaborated with teachers in order to facilitate these changes in instruction. The teachers viewed the reading specialist as a participant and researcher who analyzed the impact of instruction on student achievement. The researcher was in constant

pursuit of effective teaching methods that could be implemented to meet the unique needs of each classroom.

At the time of the study, the reading curriculum was being rewritten. Prior to the study, the teachers in grade 1 were using the former reading curriculum, written in 1999, and state standards to guide their instruction. The reading program consisted of a basal reading program purchased in 1999 and guided reading books. The classroom teachers had been following the phonics scope and sequence provided in the basal series and utilized the accompanying materials for their phonics instruction.

Data Collection

Historical data were collected after IRB approval and included documentation, participant observation, and student achievement data. Documentation (Yin, 2009) included lesson plans, meeting minutes/notes, agendas, calendars, professional development materials, and teacher-created materials that pertain to the study. Participant-observation is used when the researcher is participating in the process or events that are under examination (Yin, 2009). In this study, the researcher participated as the reading specialist and coach. Notes taken as a part of the project were collected.

Historical student achievement data were also collected. AIMSweb benchmarking data is collected on all students in the elementary school in September, January, and May of each academic year as an integral part of the Response to Intervention model. Primary data analysis had also occurred as a part of the model. The student achievement data and primary analyses were collected by the researcher for further analysis.

In June of 2011, interviews were conducted. The two first grade teachers were interviewed by the researcher in order to corroborate information and accurately illustrate their perceptions.

The interview questions are listed below. Following each interview question is the coding category that was utilized to analyze the responses.

1. How does the information provided through data analysis change your instructional practice? (Effects of data analysis)
2. How would you describe your role as a member of the grade-level team involved in this professional development model? (Perception of role in the process)
3. How has this process been different than previous professional development opportunities? (Perception of process; efficacy)
4. Based on your experience, what changes have occurred in your instruction? (Intermediate outcomes)
5. What kinds of changes have you seen in your students' skills since research-based reading strategies were implemented in your classroom? (Ultimate outcomes)

First Cycle and Second Cycle coding methods were used to organize and interpret the interview data (Saldana, 2009, p. 149). In Vivo Coding was utilized in the preliminary coding of interview data. The participants' actual language was used to illustrate salient points within the responses. Since there was a limited amount of interview data, the researcher was able to highlight words and phrases within the teachers' interview responses that carried the most meaning. Responses from each question were highlighted a different color. At times, the teachers' responses were not consistent with the interview question. In these instances, the researcher chose to color-code the responses so that they remained consistent with the foci of the questions. The foci of the questions were as follows: effects of data analysis, perceptions of roles in the process, perceptions of the process (efficacy), perceived changes in instruction, and perceived changes in students' skills (Appendix C). Second Cycle Coding was then used to develop themes that emerged from the teachers' responses. More specifically, Pattern Coding (Miles & Huberman, 1994, p. 69) was used to illustrate thematic similarities and differences

within the teachers' interview responses. The interview data are presented chronologically within the descriptive case study.

Logic Model

Data Analysis within RTI.

Finding #1: The data analysis process illuminated areas of need in classroom instruction.

Setting/Context.

Data analysis took place in late September and coincided with the district's RTI protocol. All students in grade 1 were assessed using various measures including AIMSweb. In reading, the students were given the AIMSweb Test of Early Literacy measures which include Letter Naming Fluency, Letter Sound Fluency, Phoneme Segmentation Fluency, and Nonsense Word Fluency. Each of these measures is timed and nationally normed. The first grade team relies heavily on data collected at the beginning of the year since the students come to their classrooms from various educational settings. Although approximately 70% begin in the half-day kindergarten program at the site, the other 30% come from day cares, preschools, and home-school settings. The table below provides the results of the fall benchmarking.

Table 4.1

Percentage of Students Meeting Benchmark in September 2010

AIMSweb Test of Early Literacy Measure	Percentage of Students meeting Benchmark (National 50th Percentile)
Letter Naming Fluency	75%
Letter Sound Fluency	67%
Phoneme Segmentation Fluency	64%
Nonsense Word Fluency	72%

According to the RTI protocol, the health of the core curriculum can be determined by the percentage of students meeting the national target. If 75 to 80 percent of students are at or above the national fiftieth percentile, core instruction is considered effective and healthy. In the fall of grade 1, benchmarking cannot be used for this purpose since the students are coming into first grade from various locations. However, the data are used to determine collective instructional needs and to inform instruction.

The results of AIMSweb were triangulated with other forms of data including untimed screenings in letter naming, letter sounds, and sight words. These screenings were performed by the reading specialist. Classroom teachers also administered the Developmental Reading Assessment (DRA) to each student to determine independent reading levels. These reading levels would then be used to form guided reading groups.

Data meetings were then conducted for each grade level. The data meetings lasted approximately one and a half hours. In attendance at the September grade 1 data meeting were the two reading specialists at the site, the principal, the special educator, and the two classroom teachers who were provided with substitutes for the meeting. The objectives of the data meeting were to: a.) share the results of the data analysis with classroom teachers b.) make instructional decisions at the classroom level according to the data, and c.) set up intervention groups for the students who were identified as “at risk”.

Data Meeting.

At the September data meeting, the fall benchmarking data identified in Table 4.1 were shared with the classroom teachers and were compared with data from the fall of the previous year (2009). The results from the two years were extremely similar. However, as illustrated in Figure 4.1, the students from 2009 did not experience sufficient growth in many areas including Nonsense Word Fluency. The percentage of students meeting the target (national 50th percentile)

went from 71% in the fall to 53% in the winter. Changes in classroom reading instruction were necessary to prevent the insufficient growth from occurring once again.

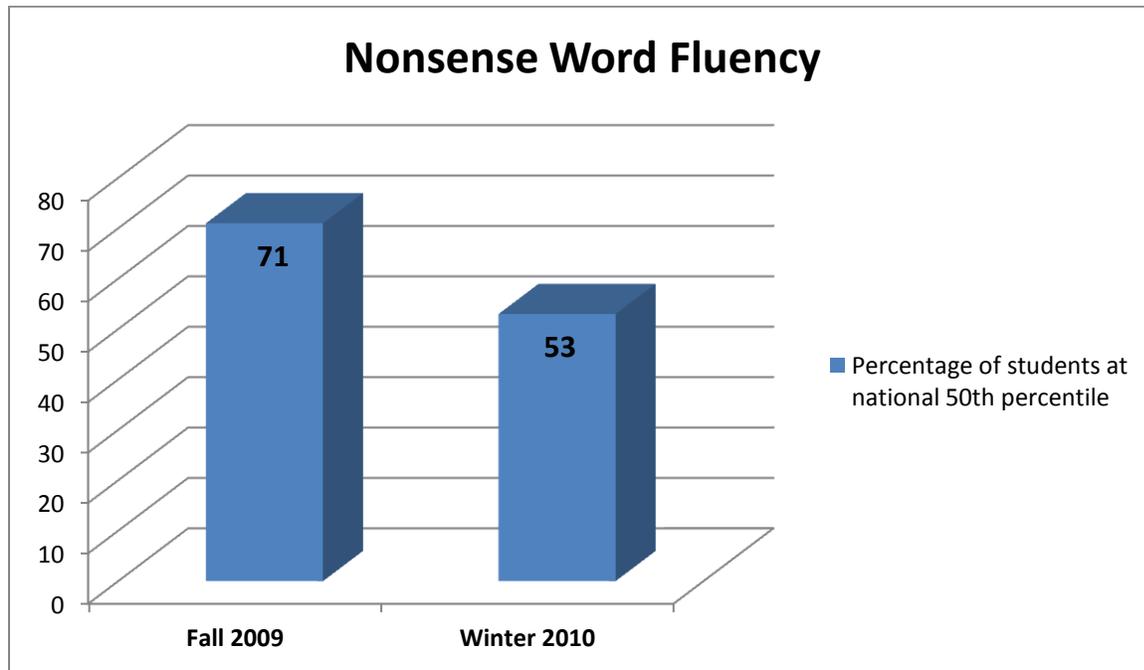


Figure 4.1. Percentage of students at the national fiftieth percentile on Nonsense Word Fluency.

Collaborative Planning Process.

Student-Focused Coaches use the Collaborative Planning Process as one of their key strategies for establishing and maintaining a sense of trust and shared purpose with their colleagues as well as to develop plans to help students be more successful in school. (Hasbrouck & Denton, 2010, p. 39)

The Collaborative Planning Process (Hasbrouck & Denton, 2010, p. 39) includes five steps. Step one is to collect background information in the form of various assessments.

Bernhardt (2004) maintains that school data must come from various sources such as student and program data. According to the data collected from 2009 to September of 2010, the students in grade 1 were struggling with both phonemic awareness and phonics. Program data revealed that

the basal was being used to teach phonics. However, phonics instruction in the basal series was embedded rather than explicitly taught. Current research in reading indicates that embedded phonics instruction is less effective than explicit phonics instruction (Ehri, Nunes, Stahl, & Willows, 2001). The scope and sequence was not consistent with the recommendations of the National Reading Panel or the Common Core State Standards.

With step one complete, the team was able to move on to the second step of identifying the problem and setting goals. As suggested by Hasbrouck and Denton (2010), the focus should remain on student needs when deciding on instructional change. The team decided that the students were having difficulty with basic reading skills and would benefit from explicit instruction in phonemic awareness and phonics as recommended by the NRP and as written in the Common Core Standards which were recently adopted by the state. Since this instruction was very different than the instruction presented in the basal series, the classroom teachers expressed concern about implementing the changes in instruction independently. The reading specialist offered to collaborate with the teachers in order to facilitate the change. As a result, the team of teachers decided to work collaboratively towards this goal. The data meeting then continued in order to formulate intervention groups for the students identified as at risk.

Since the time allocated for the data meeting was limited, the collaborative team (two classroom teachers and reading specialist) decided to meet at common planning time to write a professional development goal in the area of reading, specifically phonemic awareness and phonics. The teachers in this district were required to write professional development goals for themselves every 3 years. The classroom teachers and reading specialist were all in Year 1 of the professional development cycle during the 2010-2011 academic year. The classroom teachers and reading specialist decided to write a goal to address the instructional need in the area of phonics. More specifically, the group wanted to work collaboratively to create a scope

and sequence for phonics that aligned with the Common Core State Standards and implement the instruction in the classroom in the hopes of increasing student achievement. The professional development goal for Teachers A and B revolved around co-planning and co-teaching, whereas, the goal for the reading specialist was to provide the professional development necessary to implement these changes in the classrooms.

Common planning time was offered once per week for 30 minutes to each elementary grade level in the district and gave grade level teams the opportunity to collaborate during the school day. At a common planning time in October, the classroom teachers wrote individual professional development goals aimed at acquiring knowledge and skills in phonics instruction and then implementing this instruction in the classroom. The reading specialist focused her goal on coaching and collaboration with this team.

In steps three and four of the Collaborative Planning process, the team brainstorms proactive strategies and creates a plan (Hasbrouck & Denton, 2010, p. 39). The team decided that some preliminary professional development was necessary in explicit phonics instruction. Teacher A, who had been teaching for 42 years, had been exposed to the syllable types and explicit phonics when she was initially trained. In preliminary discussions, Teacher A recognized this type of instruction as similar to the instruction provided by the former reading specialist. According to Teacher B, she had not been given any training in explicit phonics instruction. This is consistent with current research that finds that most teachers have not been adequately prepared to provide research-based reading instruction (Washburn, Joshi, & Cantrell, 2011).

In formulating a plan for the year, the reading specialist suggested quarterly “workshops” that would provide the prerequisite skills and knowledge necessary for proper implementation. In addition, the team would collaboratively create a scope and sequence of phonics instruction

for the quarter. The school principal provided full support for the plan and offered coverage for the classroom teachers so that they could meet during the school day.

The final step of the Collaborative Planning Process requires evaluation and support (Hasbrouck & Denton, 2010, p. 39). The team agreed to use both informal and formal observations and assessments to evaluate the process and endeavor. The formal assessments would take place at the second benchmarking period in January of 2011. At this time, all students in the grade level would be assessed using AIMSweb as outlined in the district assessment schedule. Students performing below grade level would also be given the DRA. Informal assessments would include observations and student work samples.

The process of data-analysis inherent to the Response to Intervention model at the research site was successful in illuminating areas of need in classroom instruction. Teachers A and B articulated this view during their interviews when they were asked, “How does the information provided through data analysis change your instructional practice?” Their responses were specifically coded to reveal their perceptions of the effects of data analysis. The theme of “instructional focus” emerged from the teachers’ responses. Both teachers described data analysis as an important step in focusing their instruction on the needs of the students in their class. Teacher A went further and described data analysis as diagnostic and useful in driving instruction. Both teachers referred to the individual needs of their students more than the collective need of the group (i.e. “what I need to teach for each individual student”). With this diagnostic information in hand, the team was able to move forward to professional development focused on these needs.

Professional Development.

Finding #2: The professional development process inclusive of coaching was extensive, continuous, job-embedded, and directly linked to the current needs of the teachers and students.

Workshop.

The first professional development workshop took place in October. Two hours of coverage were provided for the classroom teachers so that they would be able to meet during the school day. For this initial workshop, the reading specialist compiled a binder of materials for each of the teachers. The binder provided resources in phonemic awareness, the alphabetic principle, syllable types, syllable division, spelling rules, sound sequence, and the Common Core Standards. These resources provided the teachers with research, examples, and the proper sequence and developmental continua of phonemic awareness and phonics instruction. In addition, the teachers were trained in the six syllable types and spelling rules. The reading specialist purposely concentrated on the skills and knowledge that were necessary for initial implementation.

The reading specialist then reviewed the Common Core Standards for grades K, 1, and 2 with the most concentration being placed on the grade 1 English Language Arts Foundational Skills standards. These standards clearly outlined the end of the year expectations for print concepts, phonological awareness, phonics and word recognition, and fluency. In addition, the reading specialist provided two examples of research-based sound sequences to use when creating a scope and sequence.

At the end of the workshop, the team was ready to formulate a scope and sequence. The classroom teachers brought the current basal series. The team then began to plan instruction for the first and second quarters. Each week, new skills were introduced and reinforced. The instruction would be cumulative and would coincide with the spelling instruction. Research recommends that reading and spelling instruction coincide (Moats, 2009). Although the team attempted to coordinate the phonics instruction with the basal series, it was not always possible. The team deviated from the scope and sequence of the basal and tried to stay ahead of it when

possible so that the basal stories would serve as a reinforcement of the phonics skills. Finally, the team decided on a rough outline of activities for the week. Initially, the reading specialist would model lessons Monday through Thursday for 30 minutes per classroom. However, gradual release would allow the classroom teachers to take over the instruction.

Coaching.

The reading specialist had been providing classroom instruction to these students in phonemic awareness and phonics since late September. This instruction began as a result of student data from the previous year. Each year, the reading specialist focused on one instructional area per grade level. When the official coaching began, the reading specialist had reviewed all concepts from the kindergarten English Language Arts Standards in Foundational Skills (Appendix D). The students had been taught to blend and segment syllables, onsets and rimes, and sounds in CVC words. All consonants, some short vowels (a, i, and o), blends, and some digraphs (th, ch, sh) had been taught.

When modeling classroom reading instruction, the reading specialist followed the same format each week in order to maintain fidelity of instruction. On Mondays, the reading specialist introduced the new sound(s) or skill. When introducing sounds, the reading specialist relied on the use of sound cards. Sound cards denote a phonogram, a written letter or letters that represent a single sound. The students were explicitly taught how to physically produce the sound. They were then given a key word in order to help them remember the sound. For example, the key word for d is dog. The students were then instructed to look at the card, say the name of the letter(s) while tracing them with their fingers in the sky, say the key word, and then produce the sound (i.e. d, dog, /d/). This multisensory approach provides auditory, visual, and kinesthetic stimuli. Each day, the lessons began with sound drills which reviewed all phonograms that had

been taught. This short drill at the beginning of each lesson was used to ensure automaticity with sounds, a necessary component of reading (National Reading Panel, 2000).

Once the sound was introduced, the students were then given a “controlled” spelling list created by the reading specialist. For reading or spelling materials to be considered “controlled”, the material must consist of previously taught sounds and/or skills. The use of controlled text to support phonics instruction is also supported by research (Beverly, Giles, & Buck, 2009; Denton & Al Osaiba, 2011). The controlled spelling list gave the students the opportunity to synthesize and analyze previously learned and new sounds. According to Denton and Al Osaiba (2011), “It is important to note that even when letter-sounds are taught in isolation, it is essential to quickly offer opportunities for students to practice reading words using those letter sounds” (p. 9).

On Tuesdays, the new skill was practiced through various activities that reinforced phonemic awareness skills and sound manipulation. Most of the activities were teacher-made or were based on activities from the Florida Center for Reading Research website (www.fcrr.org). All materials that were used already existed in the building. Other resources included materials from Project Read, Wilson, Orton-Gillingham, Explode the Code, Beyond the Code, and the phonics practice book that went along with the basal series, as well as chart paper, magnetic letters, letter tiles, markers, dry-erase boards and Elkonin boxes.

Wednesdays became dictation days. Dictations are extremely important in the acquisition of sound skills and reinforce the synthesis and analysis of sounds for encoding purposes. Research has shown that the use of dictations to reinforce sound-letter correspondences has positive effects on nonsense word reading, timed word reading, and timed oral passage reading (Uhry & Shepherd, 1993). The format of the dictations was based on the Orton-Gillingham Method of Simultaneous Oral Spelling. Dictations began with the teacher dictating sounds. The students, individually, were asked to repeat the sound and then write the

letter or letters that make the sound. The reading specialist then dictated “controlled” words that only consisted of sounds that had been explicitly taught. The focus remained on the new skill but formerly taught skills were included and reinforced. According to Denton and Al Otaiba, “guided and independent practice should include not only newly taught items but also previously taught items in the form of *cumulative practice* over time” (p. 8). The students were expected to repeat the word, segment the word into sounds, and then match the sounds with their letters while they wrote the word on their paper. Finally, a sentence was dictated to the students. This helped the students generalize their spelling skills.

Prior to the introduction of the weekly dictations, the students in the two classes were explicitly taught to isolate and segment the sounds in words and then to match the sounds to letters. The weekly dictations provided teachers with valuable information regarding mastery and generalization of skills. Each week, the dictation served as an informal assessment that helped to drive instruction.

Teacher B had expressed an interest in the book, *Making Words* by Patricia Cunningham, Dorothy Hall, and Tom Heggie (2001). The book contains hands-on phonics and spelling activities and had been used by Teacher B. After consulting with Teacher A, the team decided to facilitate an activity from *Making Words* each Thursday. The activities were carefully chosen so that they would coincide with and reinforce the skill of the week. The team decided that the classroom teachers would give the spelling test each Friday and provide a reinforcement of the skill.

Process.

Vygotsky’s sociocultural theory contends that social interaction is fundamental to learning. Explicit instruction should be combined with interaction and practice in order for true learning and growth to occur. Although the workshop provided the teachers with explicit

instruction in reading skills and knowledge, true growth and change would only occur through frequent interaction and practice in the authentic context of the classroom. For this reason, the reading specialist provided thirty minutes of explicit, research-based phonics instruction to the students in these classrooms Monday through Thursday of each week. Although the instruction was student-focused and data driven, the instruction served a dual purpose. This instruction provided the interaction, support, and practice that are so often missing in traditional professional development. Interview question 3 focused on the teachers' perceptions of this process. The teachers were asked, "How has this process been different than previous professional development opportunities?" The themes of "impact" and "involvement" emerged through the coding process. Teacher A described a positive impact on student learning while Teacher B focused on the direct and immediate impact on her teaching. Teacher B went on to state, "Reading something from a book is not the same as experiencing it in the classroom with someone else."

Changes in Instruction: Intermediate Outcomes.

Finding #3: Continuous teacher involvement and coaching facilitated changes in classroom reading instruction.

When the coaching officially began in October, the classroom teachers primarily observed the lessons. Teacher B took notes during the lessons and asked many clarifying questions throughout. Both Teachers A and B assisted with classroom management.

In examining historical data including lesson plans, it is clear that the teaching responsibility and direct instruction slowly shifted from the reading specialist to the classroom teachers. The weekly lesson plans from October were coded: Direct Instruction – Reading Specialist, Direct Instruction – Teacher A, Direct Instruction – Teacher B, Co-Taught. The results were then tabulated in order to assign percentages for the amount of time allocated to

each type of instruction. This procedure was repeated utilizing the weekly lesson plans from the month of January. In addition to lesson plans, observation data were collected. The protocol for the observations was consistent with Student Focused Coaching (Hasbrouck & Denton). Student behaviors and teacher behaviors were the foci of the observations (Hasbrouck & Denton, 2010, p.89). The participant observations were informal. When the observations revealed pertinent data, they were shared with the teachers in a timely manner. At times, the reading specialist (researcher) shared the observations as they were occurring in the classrooms in order to provide immediate feedback and reinforcement. Greater trends were documented and shared at common planning times. Figures 4.2 (Teacher A) and 4.3 (Teacher B) illustrate the shift in teaching from October to January.

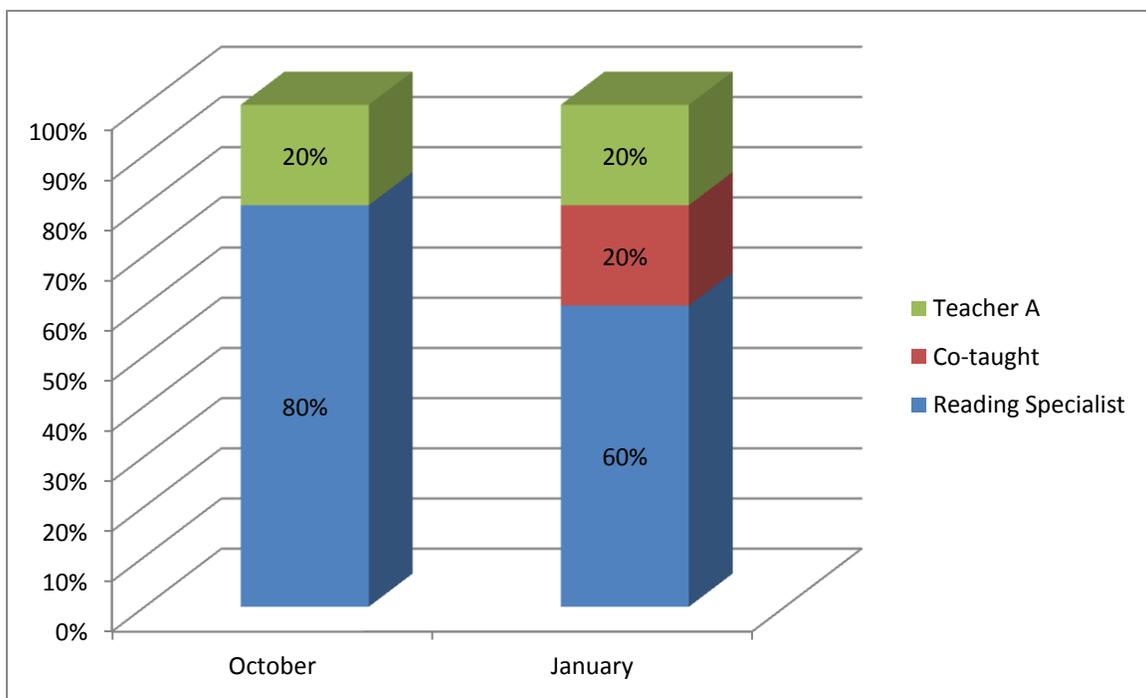


Figure 4.2. Teacher A: Allocation of teaching activities. The bars represent the changes in teaching activities during the daily 30 minute phonics block from October 2010 to January 2011.

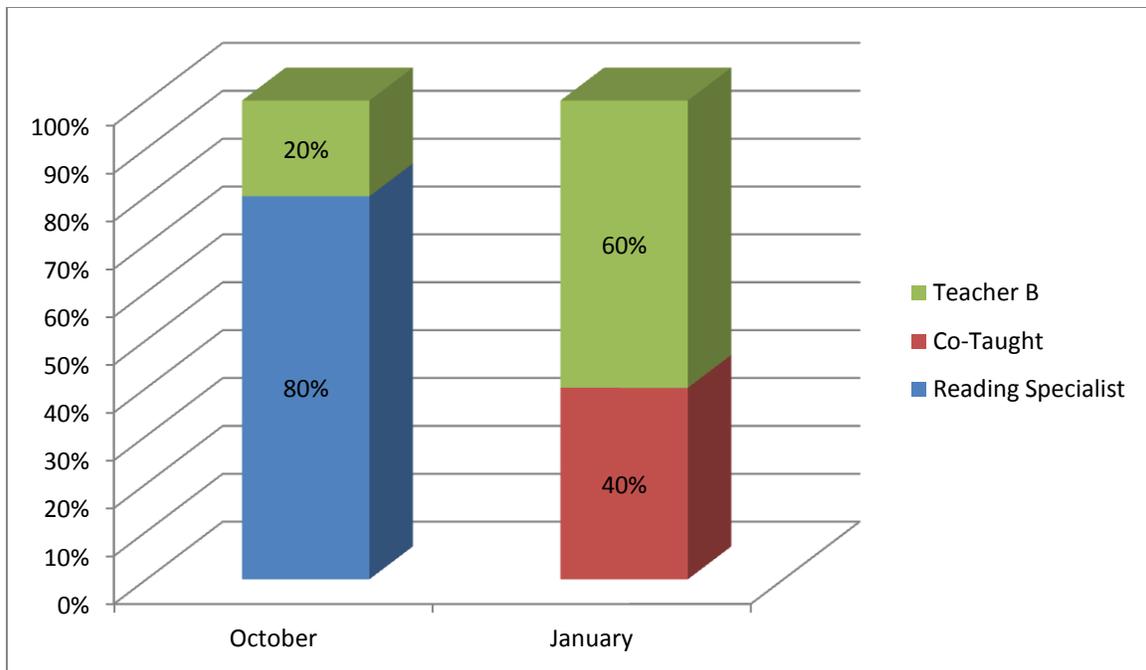


Figure 4.3. Teacher B: Allocation of teaching activities. The bars represent the changes in teaching activities during the daily 30 minute phonics block from October 2010 to January 2011.

As explored in the review of literature, coaching must often be individualized and differentiated. Although the teachers demonstrated the willingness to extend the instruction beyond the time spent with the reading specialist, the teachers were different in their co-teaching roles. Teacher A progressed from active observer in October to co-teacher one day per week. Teacher B quickly progressed from active observer in October to co-teacher of all lessons. By the end of the study period, the reading specialist had taken on the role of a remedial teacher providing small group instruction and reinforcement to students while Teacher B led the lessons.

This difference was also illustrated in the interviews. Teachers A and B were asked, “How would you describe your role as a member of the grade-level team involved in this professional development model?” The goal of this question was to explore the teachers’ perceptions of their roles. Very different patterns emerged in the teachers’ responses. The theme “teacher” emerged from teacher B, while the theme “follower” emerged from Teacher A. While

Teacher B described herself as a “teacher and instructor and co-teacher”, Teacher A described herself as a “follower” and referred to the reading specialist as “the authority”. Teacher A went on to explain her perceived role to “follow the path set out”. Although the process was similar for both teachers, their perceptions differed.

Planning responsibilities also began to shift to the classroom teachers during this period. By the beginning of October, Teacher A expressed an interest in creating the controlled spelling lists each week. From that point on, Teacher A assumed responsibility for the lists but asked the reading specialist to approve them each week. The reading specialist made sure that each list was controlled. Each of the spelling lists was added to the resource binder for use with future classes.

In the beginning of November, Teacher B assumed responsibility for the weekly dictations. Teacher B had used dictations in the past and felt comfortable with them. She also shared the dictations with the reading specialist before administering them to the students. The reading specialist again worked with the teacher to ensure that the dictation spiraled back to instruction that had already been provided. Teacher B also took control of planning the *Making Words* lessons.

It is important to note that the classroom teachers had the opportunity to co-plan each week. All materials including spelling lists, dictations, and *Making Words* lessons were shared. Teachers A and B took a shared responsibility in the initiative.

Both teachers demonstrated reinforcement of the instruction beyond the allotted “phonics” time. Teachers A and B were observed providing needs-based phonics instruction to the class, locating supplemental materials for morning work and homework, helping the students generalize their skills when writing, and using word families to reinforce the skill of the week.

Both teachers began to use a common vocabulary and terms such as digraph, closed syllable, and blend with their students. This was a change from previous years.

The teachers' perceptions of this professional development process were favorable. Teacher A described the process as "organized" and "wonderful", while Teacher B enjoyed the direct involvement. Both teachers described the benefits of *experiencing* the changes in the classroom and expressed an increased sense of efficacy as a positive result of the process. In the interviews, Teachers A and B were asked, "Based on your experience, what changes have occurred in your instruction?" The theme of "sequence" emerged from their responses. Both teachers reported instructional changes including a different sequence and approach. Teacher A explained that she was less reliant on the basal series for all aspects of reading instruction. Both teachers referred to the addition of phonics skill instruction.

Student Achievement: Ultimate Outcomes.

Finding #4: The students' reading achievement improved significantly, and the teachers attributed this to the changes implemented in reading instruction.

Student Achievement data were historical. All assessments that were administered to the first grade students were required as a part of the district's Response to Intervention protocol. The data were analyzed in January after winter benchmarking took place. The following results were shared with the classroom teachers during their winter grade-level data meeting.

Phoneme Segmentation Fluency.

Phoneme Segmentation Fluency (PSF) is an early literacy measure that assesses the student's ability to hear the sounds in a spoken word. Students are orally presented with one-syllable words and are expected to break the words into sounds (i.e. sat = /s/-/a/-/t/). The students are given credit for each segmented sound that is presented within one-minute.

According to Ball and Blachman (1991), phoneme awareness instruction significantly improves early reading and spelling skills. The Common Core Standards and Report of the National Reading Panel include phonological awareness, inclusive of phonemic awareness, as a critical area of reading instruction. For this reason, PSF is used to identify students in grades K and 1 that are having difficulty in this area.

The reading specialist (researcher) explicitly taught phonemic awareness in both grade 1 classrooms. It was later reinforced and integrated into future lessons by the classroom teachers. The percentage of students meeting the national target rose from 64% in the fall to 75% in the winter.

Nonsense Word Fluency.

Nonsense Word Fluency (NWF) is also a measure in the AIMSweb Test of Early Literacy. In this measure, students have one minute to read pseudowords that follow a consonant-vowel-consonant pattern (i.e. jib). Students receive credit for each correct sound produced. According to Fien, Baker, Smolkowski, Mercier Smith, Kame'enui, and Thomas Beck (2008), "NWF is designed to measure how well a student has learned the underlying letter-sound correspondences and phonological recoding skills of the alphabetic principle" (p. 392). This measure takes away the student's ability to rely on context or visual clues and focuses on the application of phonics skills. A study conducted by Fien, et al. (2008) built on the literature supporting the use of NWF in grades K through 2 to "screen students, monitor progress, and adjust instruction to meet students' needs" (p. 400). The researchers also stressed the importance of using the information from NWF to help identify students who are at-risk of reading failure and the importance of teaching the alphabetic principle in the early elementary years (Fien, et al., 2008, p. 402).

Nonsense word fluency was one of the measures used in this study. Grade 1 results from 2008-2009 and 2009-2010 were compared to the results from 2010-2011. It is important to note that the students in grade 1 during the 2008-2010 academic years received phonics instruction that was embedded in the basal series. In 2009-2010, seventy-one percent of first graders met the target (national 50th percentile) in the fall. That percentage slipped to fifty-three percent in January. Although most of the students achieved higher scores (more sounds correct) in January than in September, many did not achieve the expected growth as determined by the national rate of improvement. The gap between these students and their peers grew during this timeframe.

In comparison, the first grade students in 2010-2011 who received explicit instruction from the reading specialist and classroom teachers exhibited a great deal of growth according to NWF. The students in this cohort came into first grade performing lower than the students in the previous academic year. Only sixty-four percent of students met the target in the fall. This percentage increased to seventy-four percent in the winter benchmarking period. Rather than falling behind their peers, this group of students made progress in excess of their peers on this measure.

In addition to determining the percentage of students meeting the national target, the sound accuracy was also calculated. The accuracy of the each student's responses was determined and then averaged. The first graders in 2009-2010 increased their sound accuracy from seventy-nine to eighty-seven percent given embedded phonics instruction. The students entering first grade in 2010 had lower accuracy percentages in the fall than the students in 2009. However, they exhibited more gains in accuracy rising to an average of ninety-five percent. Figure 4.4 depicts the differences in student achievement on Nonsense Word Fluency.

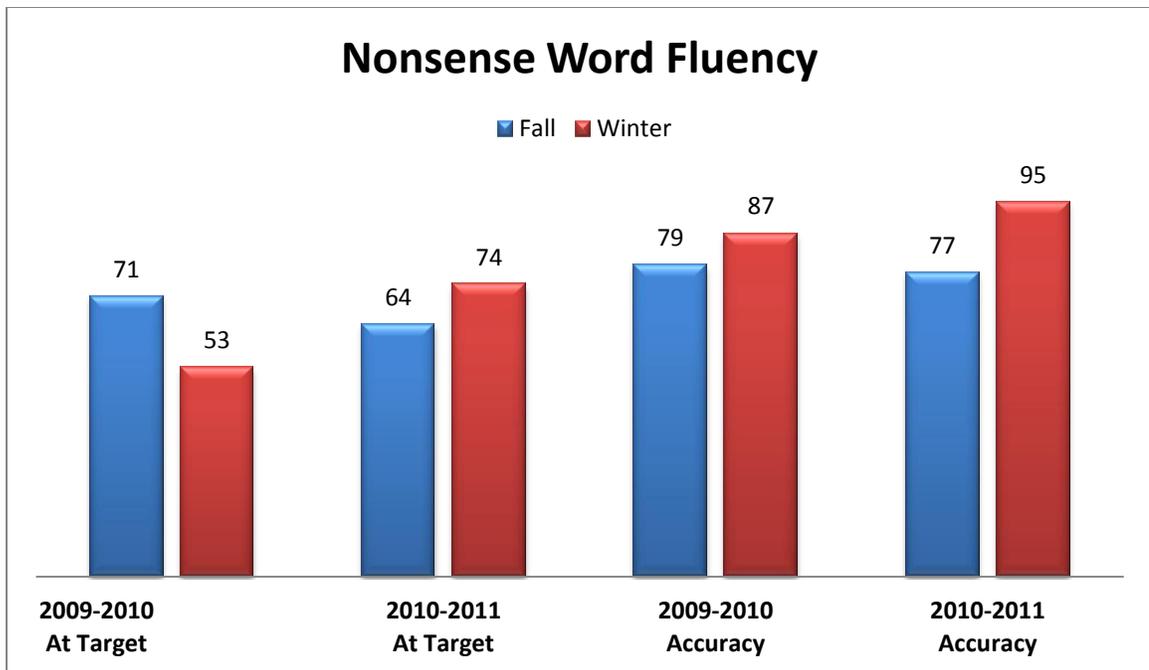


Figure 4.4. Comparison of first-grade students in 2009-2010 to students in 2010-2011.

Table 4.2 demonstrates the increase in the mean sounds correct per minute on the NWF measure. The mean was 18 sounds higher in 2011 than it was in 2009 and over 21 sounds higher than the national aggregate. The standard deviation or variability of scores from the mean was similar to the national aggregate in 2010 and 2011. The standard deviations from Winter 2010 and Winter 2011 were significantly larger than the standard deviation from Winter 2009 and were more consistent with the national aggregate data.

Table 4.2

Mean sounds correct per minute (with standard deviations) by year

Group	Mean	Standard Deviation
Winter 2009	59.44	14.72
Winter 2010	62.76	36.85
Winter 2011	77.54	34.13
National Aggregate (Winter)	56	30

An analysis of variance (ANOVA) was conducted to determine the significance of the difference between the means of the Nonsense Word Fluency (NWF) results over the past three years. The ANOVA revealed that the first grade students who received research-based phonics instruction as a result of coaching had significantly higher sounds correct per minute on AIMSweb NWF than the students in the previous years, $F(2,133) = 4.56, p = .012$. Since the F value is greater than 1, the difference in the students' scores was significant at the .012 level meaning that there is a .12% chance that the variation between groups was caused by chance.

Rates of Improvement.

AIMSweb provides rates of improvement (ROIs) for all of its curriculum-based measures. Rates of improvement are found by dividing the gains from the fall to winter targets by 18 weeks $[(F-W)/18]$. This provides an expected weekly rate of improvement for each measure. Rates of improvement can also be calculated from the winter to spring benchmarking periods or for the entire year. Rates of improvement provide a guideline for anticipated improvement for students based on national normative data and are compared both nationally and locally. In general, individual students or classes performing below level are expected to have the greatest rates of improvement.

Table 4.3 shows the differences in rates of improvement experienced by grade one students at the research site over the past three years. The students who received phonics instruction based on the basal reader experienced rates of improvement similar to the national aggregate. However, the percentage of students meeting the national target fell from 71% to 53%. This is significant due to the fact that all of the grade 1 students were not improving at a uniform rate. Eighteen percent of the students who had previously met the benchmark in the fall did not make enough progress to meet the benchmark in the winter.

Table 4.3

Mean rates of improvement (sounds per week) by year

	Nonsense Word Fluency Rates of Improvement
Fall-Winter 2008-2009	1.54
Fall-Winter 2009-2010	1.16
Fall-Winter 2010-2011	2.0
Fall-Winter National Aggregate	1.11

Reading-Curriculum Based Measures.

AIMSweb Reading-Curriculum Based Measures (R-CBM) probes were administered to all first grade students in January. The students are given 1 minute to read 3 specific selections of first grade text. The words read correctly and the errors are tabulated for each probe. The median number of words read correctly and median number of errors formulate each student's final score. Table 4.3 shows that the mean number of words read by the students who experienced research-based instruction was 16-18 words higher than the students in previous years. The standard deviations for each data set were calculated to demonstrate the average variability from the mean. The students receiving specialized phonics instruction read approximately 26 more words correct per minute than the national aggregate. The standard deviation (SD) was 36.1 words compared to the national SD of 35 words. The variability of scores was similar to the national average. However, the words read correct per minute were significantly greater than the national average.

An analysis of variance (ANOVA) was used to determine the significance of the difference between the means of the three groups. The ANOVA revealed that the first grade students who received research-based phonics instruction had significantly higher words read

correct per minute (WRCPM) on AIMSweb R-CBM than the students in the previous years, $F(2,133) = 3.57, p = .031$. Once again the F value is greater than 1, meaning that the difference in the students' scores on R-CBM was not due to a natural variation amongst groups. The difference is significant at the .031 level.

Table 4.4

Mean words read correct per minute (with standard deviations) by year

Group	Mean	Standard Deviation
Winter 2009	50.67	32.43
Winter 2010	52.62	36.17
Winter 2011	69.10	36.14
National Aggregate	43	35

The winter benchmarking scores from 2010 were compared to the scores of the first grade students whose teachers were involved in Student-Focused Coaching. As illustrated in Figure 4.5, 90% of students reached the national target in 2011 compared to 73% in 2010. The means of the students' reading accuracy were also compared. In 2010 the mean reading accuracy was 79% compared to 89% in 2011.

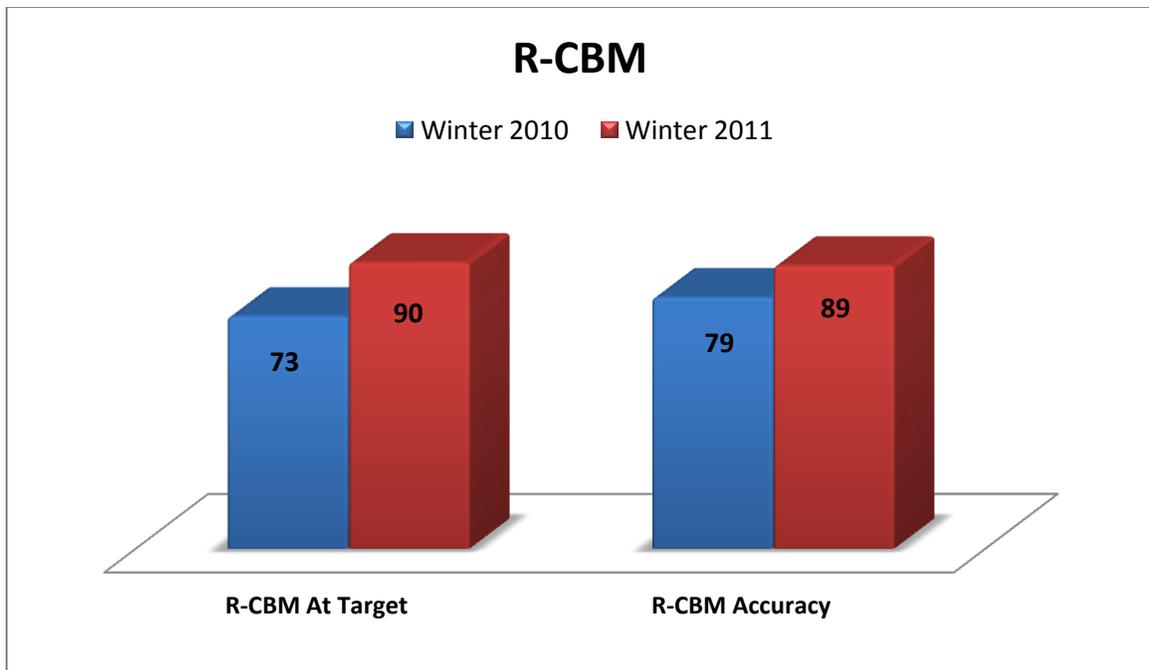


Figure 4.5. Comparison of first-grade R-CBM scores in Winter 2010 to Winter 2011.

Although the data are clear in demonstrating increased student achievement, the teachers also perceived changes through informal classroom observation. In the interviews, the teachers were asked to describe changes in their students' skills since the introduction of research-based skills instruction. The theme of "student achievement" emerged in the areas of reading and writing. Teacher B described the students as "better prepared to read independently because they have already learned the reading skills." Beyond the mastery of reading skills, both teachers reported a marked and unexpected improvement in writing and spelling skills.

Summary of Findings

The purpose of this case study was to investigate the process of job-embedded professional development within the Response to Intervention model. The participants were 2 first-grade teachers and a reading specialist (researcher). The research questions driving the study were: 1.) How can teachers use data to determine areas for improvement in core reading

instruction and effectively implement these changes using research based practices? 2.) How can professional development opportunities provide teachers with the necessary skills to support growth in student achievement?

A logic model was used to describe the events within the process of coaching, establish a relationship between the events, and match observed events to predicted events (Yin, 2009). Overall, the case study findings revealed an extensive professional development process that ultimately led to increased student reading achievement. The findings suggest that data analysis, occurring as a part of the RTI model illuminated areas of student need (immediate outcome). This led to job-embedded professional development inclusive of coaching (intermediate outcome). The coaching contributed to observable and perceived changes in classroom instruction (intermediate outcome) which improved student performance according to various data sources (ultimate outcome).



More specifically, data gathered through interviews with the classroom teachers, student achievement data occurring as a part of the RTI process, participant observations, and documents collected from the school led to the four findings:

1. The data analysis process illuminated areas of need in classroom instruction.
2. The professional development process inclusive of coaching was extensive, continuous, job-embedded, and directly related to the current needs of the students.
3. Continuous teacher involvement and coaching facilitated immediate changes in classroom instruction.

4. The students' reading achievement improved significantly, and the teachers attributed this to the changes implemented in reading instruction.

The findings were consistent with the theoretically predicted events. Most surprising, however, were the investment and time that went into the professional development process. The breadth and depth of the process were extensive. For the purposes of the study, the process occurred over the first half of the school year and required daily attention from all participants.

Chapter V: Summary, Discussion, and Implications

Chapter 5 provides a summary and discussion of findings that arose from the study. An organization-level logic model was used to trace the events occurring throughout the process of student-focused coaching. This chapter compares the theoretically predicted events to observed events (Yin, 2009, p. 149). The significance and implications to practitioners, higher education, and future research are described.

The purpose of this case study was to investigate the process of job-embedded professional development within the Response to Intervention model. The participants were 2 first-grade teachers and a reading specialist (researcher). The research questions driving the study were: 1.) How can teachers use data to determine areas for improvement in core reading instruction and effectively implement these changes using research based practices? 2.) How can professional development opportunities provide teachers with the necessary skills to support growth in student achievement? A logic model was used to describe the events within the process of coaching and to establish relationships between data analysis, professional development, and changes in teaching and learning.

Overall, the case study findings revealed extensive data analysis and professional development processes that teachers perceived to have influenced increased student reading achievement. More specifically, data gathered through interviews with the classroom teachers, student achievement data occurring as a part of the RTI process, participant observations, and documents collected from the school led to four findings:

1. The data analysis process illuminated areas of need in classroom instruction.
2. The professional development process inclusive of coaching was extensive, continuous, job-embedded, and directly related to the current needs of the teachers and students.

3. Continuous teacher involvement and coaching facilitated changes in classroom reading instruction.
4. The students' reading achievement improved significantly, and the teachers attributed this to the changes implemented in reading instruction.

Logic Model: Comparison to the Literature

Outcomes of data analysis.

The review of literature revealed that data analysis as a part of the Response to Intervention model accurately targets areas of individual and collective student need. As Bernhardt (2004) advocates, data should come from a variety of sources in order to get an accurate view of what is occurring in a school or classroom. Teachers benefit from this data analysis since it gives them a profile of student strengths and needs. Students also feel the immediate effects of the data analysis since those who are identified as at-risk are placed into targeted intervention groups in order to receive supplemental instruction in areas of need.

As anticipated, the theoretically predicted results were similar to the actual results of the study. Field notes and artifacts revealed that the participants in the study received a profile of student strengths and needs following fall data analysis. Fall literacy data included Developmental Reading Assessments, AIMSweb Test of Early Literacy, and untimed screenings. The Developmental Reading Assessments provided the first-grade teachers with information regarding their students' instructional reading level for the formation of guided reading groups. However, the AIMSweb Test of Early Literacy and untimed screenings provided diagnostic information about the students.

In the fall, fifty-three percent of the grade 1 students met the national target in Letter Sound Fluency. The untimed screening provided the team with precise sounds that needed to be

explicitly taught. At that point, the students as a whole did not demonstrate mastery of any short vowel sounds and had difficulty producing approximately a third of consonant sounds. Sixty-four percent of the students in first grade met the national targets for Phoneme Segmentation Fluency and Nonsense Word Fluency. In the Response to Intervention model, 75-80% of students should be meeting or exceeding the national targets.

Since the site had been engaged in RTI for three years, the team was also able to use historical data to inform instruction. Since the onset of benchmarking in 2008, the students in grade 1 performed poorly on Nonsense Word Fluency, Phoneme Segmentation, and Reading-Curriculum Based Measures. In January of 2010, the reading specialist and special education teachers administered the CORE Phonics Survey to a random sample of 23 of the 36 students in grade 1 to collect diagnostic information. The results of the survey confirmed the results of AIMSweb benchmarking. Only five of the twenty-three students sampled demonstrated mastery of short vowels and the ability to blend sounds in order to read CVC words.

This convergence of data directly led to the provision of professional development in systematic phonics instruction. With administrative support, the two classroom teachers were asked to participate in Student-Focused Coaching to commence in September of 2010 with the reading specialist (researcher) acting as coach.

For students, the intended outcome of data analysis was the identification of at-risk students for the formulation of intervention groups. During the September 2010 data meeting, the team formulated targeted instructional intervention groups. The intended and actual outcomes were the same.

Outcomes of coaching and professional development.

According to the review of literature on coaching, one of the initial outcomes is to develop goals with corresponding action plans based on the defined problem. The participants in

the study were able to develop professional development goals and action plans as a part of the district's teacher evaluation protocol. Consistent with Vygotsky's theory and the literature on Student-Focused coaching, the action plan involved a blend of workshop-type sessions followed by coaching activities. According to Vygotsky, learning is a process that is dependent on the interaction between explicit instruction and then application in a social context. This process led to an increase in teacher knowledge in reading standards, reading theory, and research-based phonics instruction.

Current research on coaching contends that teachers are more likely to apply new instructional strategies into the classroom if they are coached by peers or experts (Joyce, Showers, and Rolheiser-Bennett, 1987). The coaching activities such as modeling, co-teaching, co-planning and observing led to immediate implementation within the classroom. Through continued involvement, the reading specialist was able to monitor the fidelity of the instruction. Most importantly, the research-based reading instruction continued for the length of the study period. During this time, the classroom teachers became more comfortable with the approach and reinforced the instruction throughout the day. By the end of the study period, the students were receiving prompts and informal reinforcement of the reading instruction throughout the day.

The review of literature also showed that coaching activities should be differentiated according to each teacher's needs. The outcome of this study also supports the need for differentiation. As illustrated in Figures 4.2 and 4.3, Teacher A required more support through January than Teacher B. Soon after the coaching began, Teacher B was ready and willing to apply the instruction independently. This may be due to Teacher B's perception of her role in the process. In the interview, Teacher B revealed that she perceived her role as an instructor and co-teacher throughout the professional development process. In contrast, Teacher A described

herself as a “follower” and required more time co-teaching to build confidence with the approach. At the onset of the study, Teacher A was more familiar with research-based phonics instruction and associated it with instruction that a prior reading specialist had provided to struggling readers. Her view of this instruction as “specialized” seemed to hold her back from applying it on her own.

Vygotsky recognized that social interaction is necessary to produce growth in individuals. When translating Vygotsky’s sociocultural theory into practice, it is important to note the variability within the participants in this study. The participants came in to the professional development opportunity with preconceptions and feelings that have been developed through their own life experiences and social interactions. When coaching and/or facilitating job-embedded professional development, it is important to recognize this variability amongst participants and differentiate accordingly.

Despite their lack of knowledge in research-based phonics and phonemic awareness instruction, the participants were able to learn and implement research-based practices when they were provided with adequate professional development followed by continued support and collaboration with a coach. This finding is consistent with the review of literature.

Outcomes of changes in instruction.

As anticipated, the students at the site responded positively to the changes in instruction. Data from AIMSweb curriculum-based measures and observations demonstrated a significant increase in student achievement. According to the literature, teachers taking part in intensive coaching often change their beliefs after they have deemed them as effective and valuable. This held true with the participants in this study. Through the interviews, the participants expressed their value of the professional development process and of the reading instruction. Teacher A described the process as organized and focused on the ultimate outcomes of the process such as

increased student achievement. Teacher B appreciated the direct involvement and pointed to the daily use in the classroom as a reason for the major impact on her instruction. This is also consistent with the review of literature. The teachers involved in these studies perceived collaboration and in-class support as effective forms of professional development.

Outcomes of increased student achievement.

Both teachers reported increased self-efficacy as a result of their students' reading and spelling gains. Success breeds success. As the students began to achieve mastery of early reading skills, this transferred into mastery of reading. The teachers had the ability to witness the transformation in 90% of their students who were meeting national reading targets by January. On many occasions, the teachers commented about the students' ability to acquire the reading skills so quickly. During the study period, the team-made scope and sequence went well beyond what was typically taught during the first half of first grade. The participants may have been a bit weary of the pace of instruction at the onset of the study but soon realized that the students responded well to the instruction as proven by informal formative assessments such as weekly dictations and classroom observations.

Table 5.1 summarizes the intended versus actual outcomes. All of the intended outcomes were realized in this study. However, there were additional actual outcomes that were unexpected. The additional outcomes are listed in Table 5.1.

Table 5.1

Logic Model: Intended versus Actual Outcomes

	Effects on...	Intended Outcomes	Actual Outcomes (Additional)	Data
Data Analysis	Teachers	Identify needs of students	Identify needs of teachers to meet students' needs	Documents Observations
	Students	At-risk students placed in intervention groups		Documents Observations
Coaching/PD	Teachers	Develop goal Develop action plan Implement action plan Growth in skills and knowledge Changes in instruction	Coincided with district professional development plan	Documents Observations Teacher Interviews
	Students	Exposure to research based reading instruction	Reading instruction coincided with spelling instruction	Documents Observations Teacher Interviews
Changes in Instruction	Teachers	Application of newly acquired skills/knowledge in reading standards and reading theory		Documents Observations Teacher Interviews
	Students	Increased reading achievement	Transfer of skills to spelling	Teacher Interviews Student Achievement Data
Student Achievement	Teachers	Increased efficacy		Teacher Interviews
	Students	Increased spelling achievement		Observations Teacher Interviews

Note. All intended outcomes were realized in the study. For this reason, only additional actual outcomes were listed in the table.

Meaning of Findings in Relation to Questions Posed: Significance for Educational Practice

It is the researcher's hope that the process described and outlined in this study will be transferred to elementary schools engaged in the Response to Intervention model. The establishment of RTI in a building or district is intensive. Often, at the school-level, the initial

focus is on administration of curriculum-based measures, using computer-based data collection programs, understanding the data, and establishing a model of tiered instruction. In the beginning phase of RTI implementation, the focus often lies with the remediation of students identified as at-risk.

The professional development process described in this study is meant for schools that have a well-established RTI model and protocol. Once teachers have mastered data collection and basic data analysis practices, they can then begin to further explore the implications of the data. As advocated by Bernhardt (2004), data should come from various sources and be inclusive of school performance data, demographic data, and school program data. It is in the triangulation of this data that schools will be able to examine current practices for the purpose of school improvement.

The research site was a suburban elementary school in the northeast. The demographics of the students are certainly not representative of every school in America. However, the process outlined in this study should be able to transfer to any school that is engaged in the Response to Intervention model. In order to engage in the process described in this study, a school must have benchmarking data, a faculty member adept at analyzing the data, a collective student need, teachers willing and able to engage in the process, administrative support, and a facilitator or coach who serves as the expert.

Despite the demographics of the students involved in this study, a great collective need was found in early reading instruction in grade 1. The findings demonstrated that the students' reading skills were significantly greater than previous years and were greater than the national aggregate. One could argue that the increase in reading achievement would be even greater in schools with greater needs.

Tier 1, classroom instruction, is at the heart of this professional development model. As its name implies, Student-Focused Coaching focuses on the ever-changing needs of students versus an emphasis on erroneous or incomplete instruction. As documented in the literature review, teachers have completed state-approved teacher preparation programs and are not adequately prepared to provide research-based reading instruction. This is a problem of practice that must be addressed in schools with current teachers of reading and in higher education with future teachers of reading.

The job-embedded professional development model presented in this study is the realization and combination of theories and research. More specifically, Bernhardt's process of data analysis was conducted within the context of Vygotsky's sociocultural theory to provide effective professional development aimed at changing classroom practices.

Implications for Practitioners

Rethinking professional development.

Despite the abundance of research on professional development in education that shows that traditional workshops alone do not lead to changes in instruction, school districts continue to rely on workshops as the primary source of professional development for their teachers. If instruction at the classroom level is not changing, then education in America as a whole is not changing or responding to the varying needs of its students.

Unlike data that are provided through yearly standards-based tests required through NCLB, data collected as a part of Response to Intervention are "real time". Once the data are collected on students three times per year, educators are able to analyze the data for the purposes of shifting instruction. This can be accomplished immediately. Student needs are identified. Teams of educators brainstorm the most effective ways to meet these needs and then apply them

in the classroom. As in this study, if the educators require professional development in a new instructional practice, it is provided through dissemination of knowledge followed by peer collaboration and coaching.

In job-embedded professional development, teachers are working toward an identified and immediate need. Typically, professional development within schools is “one-size-fits-all”. A speaker is brought in for all of the teachers in a district, and there is a strong disconnect between the content of the workshop and the needs of the teachers. The need for differentiation amongst participants is also inherently lost in this format. The participants in this study The human capital within the field of education is immense. It simply needs to be utilized in order to produce change and growth in education.

The role of the reading specialist.

Reading specialists are often utilized to provide remedial reading instruction to at-risk students. These students have not adequately responded to classroom instruction. However, as seen in the literature review, these students have not been provided with research-based reading instruction in their classrooms. At the heart of a sound Response to Intervention model, core instruction must be effective with 75-80% of students achieving national targets on curriculum-based measures. When this is not the case, the role of the reading specialist should be explored and expanded to include coaching and consultation. Reading specialists should be utilized as peer consultants providing data-driven, job-embedded professional development to peers. With administrative support, the reading specialist is proactively ensuring that all students in their school are receiving adequate classroom reading instruction thus decreasing the number of students identified as at-risk.

Research-based reading instruction.

The research site for this study is deemed high performing by NCLB guidelines. Last year, 87% of students were proficient in reading on state tests. Yet, clear needs were identified in early reading in grade 1. Before the study began, the participants were not providing research-based instruction in phonemic awareness or phonics as outlined by the Report of the National Reading Panel (2000). The instruction was not effective for the majority of their students as proven by curriculum-based measures.

The lack of research-based reading instruction is a problem of practice that has been identified over and over again in the literature. It is a problem occurring in schools throughout the country. As demonstrated in this study, high performing schools in suburban America are not immune to this problem. With the onset of Response to Intervention, educators, specialists, and administrators now have data to support or refute this claim. As Bernhardt advocates, school data need to be brought together in order to get a clear picture of what is happening in a school. If indeed, student data show that students are lacking in early reading skills and program data show that the reading instruction is not following the NRP guidelines, there is a clear impetus for change. However, educators need to be actively involved in the data analysis and the problem-solving process. The participants in this study were involved in data analysis, problem solving, goal setting, and in the formulation of an action plan. The process was *facilitated* by the reading specialist (researcher) who served as a collaborative team member.

Implications for Higher Education

Teacher preparation.

Findings from this study and many others indicate that teachers of reading have not been trained in the research-based methods outlined by the National Reading Panel Report (2000). Response to Intervention is providing a vehicle to bring this problem to light, and job-embedded professional development is just one solution to this problem. However, the professional

development process illustrated through this study was extremely intensive and time-consuming. The time and effort spent in this endeavor could have been used in other areas if the teachers had been given adequate preparation in early reading instruction. As Louisa Moats once wrote, “Teaching Reading **IS** Rocket Science” (1999). The English language is complex, and adequate instruction reflects this complexity through explicit, systematic instruction.

The research surrounding teacher preparation in reading is grim. Surveys reveal that experienced teachers are confused about letter sounds, spelling patterns, and word structures (Moats, 1995; Moats & Lyon, 1996; Scarborough et al., 1998 as quoted in Moats, 1999). Even kindergarten and 1st grade teachers’ knowledge of the structure of language, concepts in early reading, and phonology was found to be limited (McCutchen, et al., 2002).

Teacher preparation programs should reflect the growing body of current research on reading and the complexity of the instruction. Undergraduate programs need to include thorough instruction on the 5 areas of reading outlined by the NRP Report (2000) including research-based phonemic awareness and phonics instruction. All elementary teachers are teachers of reading. Explicit reading instruction is no longer reserved for at-risk and special education populations. Classroom teachers must be able to provide this instruction to all students and differentiate accordingly.

Implications for Research

Frequency and duration of coaching activities.

Although the current literature on coaching offers characteristics of collaborative professional development models, definitive guidelines have yet to be established. Current literature shows that effective coaching is “experiential, collaborative, interactive, sustained, intensive, and connected to the teacher’s day-to-day work with students as well as to a larger plan for school improvement” (Hasbrouck & Denton, 2010, p. 2-3). The coaching that occurred

as a part of this study was sustained (September to January) and intensive (four days per week, 30 minutes per classroom). The reading specialist was able to work collaboratively with the classroom teachers by allotting the majority of classroom support time to the younger grades. Rather than focusing the inclusive time on small group reinforcement of skills, the instructional time was spent strengthening classroom instruction. The effects on student achievement were significant. However, an ideal frequency and duration of coaching that will still yield significant improvements in student achievement is yet to be established.

Expansion.

This research study focused on the process utilized by 1 grade level team inclusive of 2 classroom teachers and a reading specialist. The process was successful with these participants at this site. However, it is unknown if the process would work with a larger number of participants. Since this study offers a solution to a national problem, future research could focus on the expansion of this model to a school or district level (K-2). For drastic changes in early reading instruction to occur in schools across the country, the model would have to be expanded and studied to see if the results are consistent and significant at the organizational level.

Sustaining practices.

Educational change theorists such as Michael Fullan describe the need to sustain change. If changes are not nourished, they are likely to perish. The findings of this study focus on one change process that occurred over a 5 month period. At the conclusion of the study period, the teachers' instructional practices had changed. The reading specialist continued to work in the classrooms 3-4 times per week. In this collaborative environment, the teachers were successful in changing reading instruction to meet the needs of their students. However, further research is necessary to determine if the changes in reading instruction will continue once the support decreases. Current research is not longitudinal and does not address the issue of sustainability.

Furthermore, it would be ideal for teachers to continue to engage in the process of data-driven, job-embedded professional development in the quest for continuous improvement. The changes that occurred in instruction were a result of data analysis that illuminated a collective student need. Data analysis occurs triannually in the Response to Intervention model. At these benchmarking periods, teachers have the opportunity to hone their practices accordingly. In this study, the changes in reading instruction were extensive. Formerly held beliefs on effective reading instruction were questioned and replaced with research-based practices that proved far more effective. Future studies could determine if teachers continue to use data to drive instruction. “If teachers are going to help students to develop the skills and competencies of knowledge-creation, teachers need experience themselves in building professional knowledge” (Fullan, 2006, p. 4).

Connection to student achievement.

Most of the research on professional development in education fails to make a connection to student achievement. The research focuses on the transfer of knowledge and perceptions of teachers. Rarely do professional development models and research actually get to the level of classroom teaching and learning. Fullan cites this as one of the biggest reasons for the failure of reform in education (2006). Future studies should be inclusive of student achievement data when possible since this is the very reason for professional development.

Extension to other domains.

Reading is often the main focus of professional development opportunities because of its fundamental need in our society. However, research-based practices and strategies have been established in written language, mathematics, and behavior. Curriculum based measures and data collection are now being utilized in these areas. Future studies could determine the efficacy of the model in other instructional domains.

Conclusion

With the emergence of the Response to Intervention model and the adoption of the Common Core State Standards, schools across America are primed for the opportunity to make significant instructional changes in reading that are consistent with the findings of the Report of the National Reading Panel (2000). If the changes in instruction are sustained, there could be a drastic improvement in students' reading skills. Change is possible. However, as described in this study, it requires the capacity to utilize data and a strong commitment on the part of educators. Large-scale reform efforts often fail because they never reach the classroom. This effort begins in the classroom and is specific to the needs of the students. The results are palpable and provide motivation for the continuation of successful teaching practices.

The purpose of this study was to provide a professional development model for schools successfully implementing a three-tiered system. Results indicated that data analysis through the RTI model pinpointed an area of need in reading instruction. The first-grade teachers and reading specialist then engaged in a problem solving process to address this need. The team developed goals, action plans, and an evaluation plan. The action plan included the combination of traditional workshops, where knowledge was disseminated, and intensive coaching which allowed for the immediate implementation of newly acquired instructional practices. Although both teachers gradually took on more responsibility for the classroom instruction, there was variability in this. The teachers readily observed the improvements in reading and spelling skills, and benchmarking data collected in January showed a significant improvement in reading skills compared to historical data.

Once Response to Intervention is established, data derived from the model can be used as a catalyst for change in schools. The findings from this study provide just one example of this. If this reading instruction is sustained, hundreds of students will benefit from the professional

development experience outlined in this study. It is hopeful that this study will contribute to the current body of literature and provide a transferable professional development model that will produce immediate changes and improvements in teaching and learning in schools today.

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Appendix A

Initial Coding Categories and Definitions Categorized by Research Question

Question 1: Data Analysis	Abbreviation	Definition	Data
Data Analysis: Setting/Context	DA-S/C	Physical locations and context within RTI model	Documentation
Data Analysis: Activities	DA-AC	Description of regularly occurring data analysis; both formal and informal	Documentation
Data Analysis: Process	DA-P	Sequence and flow of events related to data analysis including any changes over time (frequency, perceptions)	Documentation Observations Interviews
Question 2: Professional Development	Abbreviation	Definition	Data
Professional Development: Setting/Context	PD-S/C	Physical locations and context within RTI model	Documentation
Professional Development: Activities - Workshop - Direct Instruction: Reading Specialist - Direct Instruction: Classroom Teacher - Co-Planning - Co-Teaching - Observation/Feedback	PD-AC PD-AC/W PD-AC/RS PD-AC/CL PD-AC/CP PD-AC/CT PD-AC/OF	Description of regularly occurring professional development activities	Documentation (specifically lesson plans) Observations
Professional Development: Process	PD-P	Sequence and flow of events related to professional development including any changes over time (frequency, perceptions)	Documentation Observations Interviews
Question 2: Outcomes	Abbreviation	Definition	Data
Outcomes: Immediate	O-IM	Logic model cause and effect; outcomes observed after initial data analysis	Documentation
Outcomes: Intermediate	O-IN	Logic model; outcomes as a result of workshops and professional development activities	Documentation Observation Interviews
Outcomes: Ultimate	O-UL	Logic model; outcomes as a result of changes in instruction	Student Achievement Data Interviews

Appendix B

Interview Questions

The following interview questions provided the researcher with an opportunity to understand the teachers' perceptions of the professional development process and the changes that have occurred as a result. Emergent themes are presented parenthetically.

1. How does the information provided through data analysis change your instructional practice? (Effects of data analysis)
2. How would you describe your role as a member of the grade-level team involved in this professional development model? (Perception of role in the process)
3. How has this process been different than previous professional development opportunities? (Perception of process; efficacy)
4. Based on your experience, what changes have occurred in your instruction? (Intermediate outcomes)
5. What kinds of changes have you seen in your students' skills since research-based reading strategies were implemented in your classroom? (Ultimate outcomes)

Appendix C

First Cycle Coding

	In Vivo Coding	In Vivo Coding	Second Cycle Coding
Question: Focus	Teacher A	Teacher B	Patterns
Question 1: Perceived effects of data analysis	<ul style="list-style-type: none"> - focus on the needs - pin points the needs - focus on that need - tool for diagnosing 	<ul style="list-style-type: none"> - focus on what I need to teach - individual student - tailor-made for each student 	Instructional focus
Question 2: Perceived role in the process	<ul style="list-style-type: none"> - role of the follower - follow the path set out - institute along the path that the authority is showing you 	<ul style="list-style-type: none"> - teacher - instructor - co-teacher - 2 teachers 	Teacher A: Follower Teacher B: Teacher
Question 3: Perceived differences from other professional development opportunities	<ul style="list-style-type: none"> - organized - great results - program that benefits children 	<ul style="list-style-type: none"> - win-win situation - directly involved - major impact on my teacher instruction - using it daily - experiencing it in the classroom 	Involvement Impact
Question 4: Perceived changes in instruction	<ul style="list-style-type: none"> - not used the basal reader as end- all and be-all - used the sequence to be more effective 	<ul style="list-style-type: none"> - sequence is completely different 	Sequence of instruction
Question 5: Perceived changes in students' skills	<ul style="list-style-type: none"> - mastery of skills earlier - applying their skills in their writing 	<ul style="list-style-type: none"> - kids are better prepared to read independently - writing and reading have improved - got all of the spelling words right - more prepared for second grade 	Increased student achievement (reading and writing)

Appendix D

Common Core State Standards

English/Language Arts: Foundational Skills

Print Concepts

- RF.K.1. Demonstrate understanding of the organization and basic features of print.
 - Follow words from left to right, top to bottom, and page by page.
 - Recognize that spoken words are represented in written language by specific sequences of letters.
 - Understand that words are separated by spaces in print.
 - Recognize and name all upper- and lowercase letters of the alphabet.

Phonological Awareness

- RF.K.2. Demonstrate understanding of spoken words, syllables, and sounds (phonemes).
 - Recognize and produce rhyming words.
 - Count, pronounce, blend, and segment syllables in spoken words.
 - Blend and segment onsets and rimes of single-syllable spoken words.
 - Isolate and pronounce the initial, medial vowel, and final sounds (phonemes) in three-phoneme (consonant-vowel-consonant, or CVC) words.¹ (This does not include CVCs ending with /l/, /r/, or /x/.)
 - Add or substitute individual sounds (phonemes) in simple, one-syllable words to make new words.

Phonics and Word Recognition

- RF.K.3. Know and apply grade-level phonics and word analysis skills in decoding words.
 - Demonstrate basic knowledge of letter-sound correspondences by producing the primary or most frequent sound for each consonant.
 - Associate the long and short sounds with the common spellings (graphemes) for the five major vowels.
 - Read common high-frequency words by sight (e.g., *the, of, to, you, she, my, is, are, do, does*).
 - Distinguish between similarly spelled words by identifying the sounds of the letters that differ.

Fluency

- RF.K.4. Read emergent-reader texts with purpose and understanding.