

An Assessment of the Levels of Implementation of Four Response to Intervention Components
and Impact on Special Education Referrals in 35 Elementary Schools in the Southeastern Portion
of Virginia

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Abstract

The purpose of this study was to determine the impact of the levels of implementation of four Response to Intervention (RTI) components on the overall special education referral rates of elementary school students at 35 schools. The four RTI components are (a) using intervention teams to problem-solve for struggling students, (b) selecting the appropriate intervention, (c) monitoring student progress, and (d) graphing data for visual analysis. The four levels of implementation are (a) lacks skills or basic knowledge of this component, (b) beginning to learn this component (beginning level), (c) developing skill with this component (intermediate level), and (d) fully competent in this component (advanced level).

Data were analyzed on 483 responders from 35 elementary schools. The quantitative research designs were the descriptive-survey and causal comparative designs. Findings for research question one showed the highest percentages of responders from the schools perceived the four components were at the advanced level or intermediate level of implementation. Results for research question two showed the male subgroup had the highest mean referral rate, while the African American subgroup had the second highest mean referral rate.

For research question three, findings showed there was a significant difference in the referral rate for special education services based on the implementation levels of RTI ($F(2, 32) = 7.25, p = 0.003$). Results for research question four showed the level of implementation had an impact on the rate of referral for special education services based on demographic factors of gender and ethnicity.

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Chapter 1: Introduction to the Study

Introduction

In this chapter, the purpose of the study is explained relative to an investigation of the levels of implementation of the Response to Intervention (RTI) components. . Information on the background of the problem is described in terms of the discrepancy model and the RTI model. In the chapter, four quantitative research questions are presented, and these questions will be guided with the descriptive-survey and causal comparative research designs. Terms are defined to enable readers to gain a greater understanding of the study. The significance of the study is discussed in the chapter, and it is supported with the current literature.

Purpose of the Study

The problem this study investigated was that some elementary schools have high special education referral rates (Polirstok & Gottlieb, 2006). The purpose of this study was to determine the impact of the levels of implementation of four Response to Intervention (RTI) components on the overall special education referral rates of elementary school students at 35 schools. These schools were located in the southeastern portion of Virginia. The four RTI components were (a) using intervention teams to problem-solve for struggling students, (b) selecting the appropriate intervention, (c) monitoring student progress, and (d) graphing data for visual analysis. Wright (2007) indicated that the components are the basis of most schools RTI programs and suggested that additional research is conducted on the effectiveness of the components. Based on the premise and research of (Wright, 2007), the researcher of the dissertation study decision was to conduct research on the four components. The four components were represented by the 22 items in the four sections of the Response-to-Intervention School Readiness Survey (RTI SRS). An informal interview with the senior coordinator of Research & Evaluation Department of Strategic Evaluation, Assessment & Support in the selected school division revealed the four components existed in the 35 elementary schools at varying levels of implementation. The senior coordinator indicated that schools might not be formally implementing the RTI model but will implement many of the components of the model to some degree because these are research-based interventions.

Background

Many urban elementary students experience reading failure and referral for special education services (Lee, Grigg, & Donahue, 2007). Most vulnerable to academic failure and referral for special education services are students in at-risk populations, particularly children with identified disabilities and those of lower socioeconomic status and from single-parent homes at the poverty level. Successful academic outcomes are not possible without systematically and routinely implementing high quality instructional frameworks (National Reading Panel, 2007). One such framework is the Response to Intervention (RTI) model. The RTI model was introduced in the final regulations of the reauthorized Individuals with Disabilities Education Act (IDEA) which was published in the Federal Register on August 14, 2006, and became effective on October 13, 2006 (Hilton, 2007). The RTI model is applicable to core subjects such as reading and mathematics (Fuchs & Fuchs, 2001).

The final regulations of the IDEA incorporated new requirements regarding identifying children with specific learning disabilities (SLD) and early intervening services (EIS) (IDEA, 2004). With regard to identifying children with SLD, the regulations: (a) allowed a local educational agency (LEA) to consider a child's response to scientific, research-based intervention as part of the SLD determination process; (b) allowed states to use other alternative research-based procedures for determining whether a child has a SLD; (c) provided that states may not require the use of a severe discrepancy between intellectual ability and achievement to determine whether a child has a SLD; (d) required a public agency to use the state criteria in determining whether a child has a SLD and, (e) discussed the role that response to scientific research-based interventions plays in a comprehensive evaluation process (Smith, 2006). One major goal of the RTI model was to enhance the core subject skills (i.e., reading and mathematics) of both general and special education elementary school students (Fuchs & Fuchs, 2006).

The discrepancy model had been and still can be used to determine whether the student qualifies for special education services, that is, whether an Individualized Educational Plan (IEP) is required (Fuchs & Fuchs, 2006). Also, in the discrepancy model, first the school division assessed the child's IQ, or some measure of his innate intelligence and determines where the reading or mathematics skills should be, given the IQ. Then, depending upon the particular school division's policy, the child must fall behind by a year, a year and a half, or even two

years, to qualify for special education help, that is, to qualify for an IEP. According to Fuchs and Fuchs (2006), the discrepancy method specified that the discrepancy between the child's IQ-adjusted age and where this child is performing academically must be a lag of one to two years. In other words, before the child can receive special education services from the school, the child must be a year or two years behind in the child's reading or mathematics level. The practice in the discrepancy method of allowing students to get a year or more behind before identification was deemed to be an ineffective practice by some policymakers and educators (Fuchs & Fuchs, 2006).

The Response to Intervention (RTI) is an alternative to the discrepancy model that can be used to identify a student with a specific learning disability, making the students eligible for an IEP. McCook and Witt (2006) indicated that a simple RTI example could be changing the child's seat assignment. However, once the intervention is implemented the *R* of RTI kicks in and the *response* is assessed. In other words, did changing his seat assignment do any good? It was reasonable to assume that if all that appears to be wrong is that the child is being distracted by the antics of the child next to him in the back row, then getting the child to the front row next to the teacher might cure the problem quickly (Benders & Shores, 2007). If, after the next assessment, the child is still not catching on to reading, then RTI mandated it is time to try a more serious intervention.

Since the RTI model is a relatively new initiative, little research had been conducted on the components of the model (Benders & Shores, 2007). The No Child Left Behind Act (NCLB) legislation emphasized school accountability for the academic success of all students to include students with disabilities. Thus, there appeared to be a national need for additional research studies, such as this research study, to (a) assess the levels of implementation of the RTI components and (b) assess the levels' relationship to special education referral rates (U. S. Department of Education, 2007).

Statement of the Problem

Nationally, about 10 million children, 17.5%, experience academic problems in their first years of school (National Reading Panel, 2007). According to the National Reading Panel (2007), more than 80% of the students who experience academic problems such as deficiencies in reading skills are from low socio-economic and minority homes. Many students who

experience reading problems tend to eventually be referred for special education services. Studies in the literature (Barton, 2003; Walser, 2007; White, 2009) showed the need for more effective research-based interventions to enhance the achievement of urban elementary school students.

Since there are a myriad of diverse causes of achievement and referral to special education programs, then many different research-based interventions are needed to reduce the ill effects of these causes (Samuels, 2002). Therefore, major goals of research-based interventions such as the RTI model were to early identify the causes of hindrances to academic achievement, reduce the effects of these hindrances and thereby help these young urban children become successful students, particularly in the core subjects of reading and mathematics. The RTI model reduced these ill effects through immediate, systematic, consistent interventions (McCook & Witt, 2006). The RTI model can also reduce the referral rate for special education services by meeting student needs as they arise.

There are several issues that affect student academic success and referral rates. For instance, a major cause of urban elementary school students' poor academic success and referral to special education relates to school connectedness. The relationship between teachers and their students had an impact not only on achievement in core subjects such as reading and mathematics, but also on their overall school success. Stipek (2006) explained that students who drop out of school often say that it was due to the belief that no one cared about them. School connectedness was especially important during the students' early elementary school years (Blum, 2005). While some students experienced constant praise, others felt that they do not belong (Helm, 2007).

A paramount reason for poor school achievement and referral for special education services was the students themselves (Barton, 2003). Barton (2003) and Jones and Leahy (2006) indicated that a lack of motivation, language, or socioeconomic barriers, and various repercussions as a result of poor academic achievement prevented these students from achieving more. Sometimes children came to school motivated; most of the time, however, that was not the case (Bartholomew, 2007). According to Stover (2007), 28.7% of urban teachers do not believe students are motivated to learn and to want to achieve, and 23.6% of them say most students at their schools will not be successful.

A final cause of poor academic achievement, particularly reading achievement, is the fact that some books are written above the current reading level of students, particularly if the students are not reading at their current grade level (Blum, 2005). Therefore, text readability should correlate with the current reading level of students. Text readability is determined by the numbers of sentences and syllables in selected passages. Readability formulas do not take into account that the content of the passage could be above the students' background knowledge, or schema.

When the aforementioned causes are not properly targeted early in the school year and remedied by interventions found within the model, many students who experience school failure are inappropriately identified for special education services (Hilton, 2007). The four RTI components are (a) using intervention teams to problem-solve for struggling students, (b) selecting the right intervention, (c) monitoring student progress, and (d) graphing data for visual analysis. This study investigated the impact of the levels of implementation of the four Response to Intervention (RTI) components on the special education overall referral rates.

Theoretical Model

This study's theoretical framework was based on the cognitive theory. Cognitive theory is a subset of the learning theory. Cognitive theory is a learning theory of psychology that attempts to explain human behavior by understanding the thought processes. The assumption is that humans are logical beings that make the choices that make the most sense to them. The cognitive theory contributed to the theoretical model for this research study in that its tenets provided insight into student learning and behavior patterns. The tenets of this theory strongly emphasize that all students can exhibit good academic and learning skills (Smith & Bereiter, 2002). The cognitive theory reveals that if a lesson has more meaning to the student, then understanding of the lesson is enhanced. Organized ideas have more meaning for these students. As a result, the student processed information by developing a pattern for thinking logically (Miltiadou & Savenye, 2003). The cognitive theory has its roots in constructivism. Constructivism attempts to explain how knowledge is constructed in the human being when information comes into contact with existing knowledge that had been developed by experiences. Constructivism lays emphasis on the ways knowledge is created in order to adapt to the world.

The premise that all students can learn and demonstrate good reading skills was supported by the cognitive theory (Smith & Bereiter, 2002). No two children's learning patterns are identical; however, if given the means, motivation, and reinforcements to learn all children will learn, but usually at a different pace. This ideology was the foundation of the RTI model.

The cognitive theory supported learning modalities to stimulate the learning patterns which should bring positive results (Smith & Bereiter, 2002). According to the theory, as a result of the students' questions, they will be able to recall learned information and analyze and apply it. The RTI model was further aligned to the cognitive theory tenet in that both, the RTI model and the tenet, emphasized that all students can exhibit good behaviors and can acquire good academic skills (Smith & Bereiter, 2002).

Research Questions

Four research questions evolved from the problem and purpose statements. These research questions were developed as a compass to direct this study. The questions were used to assess the levels of implementation of the four RTI components in the 35 elementary schools by surveying 355 regular education teachers (grades 3, 4, and 5), 194 special education teachers, 35 communication skills specialists, and 35 principals with the RTI SRS. These participants composed the entire population in grades 3, 4, and 5. Of the 619 surveys distributed to the population, 483 surveys were returned to the researcher. Further, the questions were designed to assess the levels' of implementation relationship to the students' special education referral rates. The following are the research questions and the relevant null hypothesis.

Research question 1. What are the levels of implementation of the four RTI components in the 35 elementary schools in the selected division?

Research question 2. What are the special education referral rates in the 35 elementary schools?

Research question 3. What is the difference in referral rates based on the implementation levels of RTI?

Research question 4. What impact does the level of implementation have on the rate of referral for special education services based on demographic factors of gender and ethnicity?

Null hypothesis 1 (research question3). There is no significant difference in the students' special education referral rates as a result of the implementation levels of the four levels of RTI components.

Null hypothesis 2 (research question 4). There is no significant difference in the students' special education referral rates based on gender and ethnicity as a result of the implementation of the four levels of RTI components.

Definitions

There are terms in this study that are defined to enable readers to better understand the study. For the purpose of this proposed research study, the following terms are defined.

At-risk students. For the purpose of this study at-risk students are defined as students eligible for the federally funded free or reduced-price lunch program (Christenson & Thurlow, 2004). The term at risk is frequently used to identify students whose academic progress and reading skills are inadequate enough to lead to dropping out (Walker, Ramsey, & Gresham, 2004).

Discrepancy model. The discrepancy model is one method of specific learning disability identification and delays intervention until a student's achievement is sufficiently below grade level. For most students, identification of having a specific learning disability occurs at an age when the academic problems are difficult to remediate with the most intensive remediation efforts (Friend & Bursuck, 2009).

No Child Left Behind (NCLB). NCLB refers to the reauthorization of the Elementary and Secondary Education Act passed by Congress in 2001 and signed by President George W. Bush in January 2002 (U.S. Department of Education, 2007), which monitors or sets standards for school improvement and Adequate Yearly Progress (AYP) in academic subjects for schools nationwide. Under this Act, the aim is to make all students proficient in reading and math within 12 years and to close the achievement gap among groups of students identified by specific demographic factors (NCLB, 2001).

Response to intervention (RTI) model. The RTI model is a sequence of interventions. The four primary components of the model are (a) using intervention teams to problem-solve for struggling students, (b) selecting the right intervention, (c) monitoring student progress, and (d)

graphing data for visual analysis (Wright, 2008). The RTI components are identified on the RTI SRS and exist in most of the targeted elementary schools to some level of implementation.

Special education referral rate. The district's definition of special education referral rate is the number of initial referrals for special education evaluation/total number of student enrolled enrollment (excluding special education students) (Virginia Department of Education, 2011).

Significance of the Study

Components of the RTI model were formally implemented in some of the targeted urban school division elementary schools participating in the study beginning with the 2008-2009 school years. The RTI model was implemented to serve general education students and special education students with disabilities and to improve those students' achievement. Fuchs and Fuchs (2006) indicate that one concern of policymakers and educators with the discrepancy model is that the child has to be determined by the school to have a serious reading deficit (i.e., reading at a grade level one to two years behind peers) before special education resources can be diverted to help the child. Because of this difficulty of getting needed extra resources to help students in the area of reading, some policymakers and educators became frustrated with the discrepancy method (Bender & Shores, 2007) which is based on the difference between expected achievement and the student's actual achievement.

Under the discrepancy model, there are few options, other than waiting until enough time has passed until the school could identify a child and develop an IEP (Bender & Shores, 2007). There are problems with waiting for the school to issue an IEP. First, under the discrepancy approach, a child must be behind or failing before services and resources can be offered that might help the child succeed. And second, schools really do not offer much in the way of help in addressing some disabilities. The evidence indicates that very few children ever exit from special education once they are found to be eligible for services (Fuchs & Fuchs, 2006). In fact, they usually fall even farther behind their peers. The RTI model is designed to permit the school to take charge of matters by providing the child the help needed before the child enters into special education; consequently, the RTI model prevents wasting valuable time as is done under the discrepancy approach, and may allow the child to avoid special education identification.

States continued to be allowed use of the discrepancy model if the states desired to do so for identifying students with learning disabilities (Hilton, 2007). However, school divisions are no longer required by federal legislation to use the discrepancy model. In the 2008-2009 school years, elementary schools in the targeted urban school division began to implement the RTI model to address the needs those students who were unsuccessful in core subject areas such as readings. No known efforts have been implemented in the targeted division to assess the level of implementation of the RTI components in the 35 elementary schools or to identify any changes in the referral rates of students in special education. This research study was an attempt to fill this void.

Summary

The purpose of the study was explained in Chapter 1. The problem being investigated was stated, and the existence of the problem was justified using the current literature. Information on the background of the problem was described, and the study's research questions were presented. In the study, there are four quantitative research questions. All questions evolved from the problem and purpose statements. Terms were defined to enable readers to better understand the study. The importance of the study was emphasized relative to its contribution to the literature.

The variables in the research questions and the purpose statement served as a guide for the literature review in Chapter 2. Chapter 2 is a review of the literature on the independent variable, three dependent variables, and minor variables (e.g., at-risk students). Chapter 2's literature is synthesized from mostly current and peer-reviewed journal articles. Chapter 3 describes the types of methodologies that evolved from the research questions. The researcher describes the study's participants, data collection instruments, and research designs. A plan for data collection and data analysis were delineated and related to the research questions.

Chapter 4 was organized by research question. In this chapter, findings were objectively presented for the four research questions. Chapter 5 discusses the findings from the results shared in Chapter 4. Chapter 5 indicates whether the Chapter 4 findings support or do not support the current literature on the topic of the study. Further, in Chapter 5, the researcher indicates the implications of the findings and provides recommendations for future researchers wishing to extend research in this area.

Chapter 2: Review of the Literature

Introduction

This literature review was organized into 15 major areas. These areas are: (a) RTI leadership, (b) treatment integrity and implementation of RTI, (c) need for more research studies on RTI, (d) No Child Left Behind (NCLB) and achievement, (e) IDEA versus NCLB, (f) benefits of the RTI model, (g) universal screening and the RTI model, (h) Tiers One, Two, and Three, and the RTI model, (i) progress monitoring and the RTI model, (j) Standard Protocol or RTI-SP approach, (k) Problem-Solving or RTI-PS approach, (l) effective teaching strategies, (m) positive behavior interventions shape effective classroom environments, (n) small group instruction, and (o) student support teams.

The literature reviewed came from major educational databases (i.e., ERIC, First Search, Pro Quest, Dissertation Abstracts, etc.) and reflected mostly current resources, primary resources or authors' original works, peer-reviewed journal articles, Dissertations, and research papers presented at major refereed educational conferences. Key search terms used included academic achievement response-to-intervention, at-risk student, elementary school, academic achievement strategies, small groups, teaching practices, and instruction. This extensive review of the literature provides a foundation for the proposed study. Chapter 2 ends with a summary of the literature review.

RTI Leadership

In a study of RTI and leadership, Hilton (2007) agreed that in order for RTI to be successfully implemented and sustained in a school community, strong leadership is critical. The implications of Hilton's (2007) study recognized that schools that had strong leadership, or principals who devoted time to facilitating and nurturing change, were successful in implementing RTI and sustaining the change. In order to facilitate successful and sustaining implementation of RTI and multi-tiered systems, it is essential that school leaders understand the processes and types of systematic change.

In most cases, change within school systems can be categorized into two levels of change: first order and second order change (Wong & Nicotera, 2007). After careful study into the levels of school change, Marzano (2009) characterized first and second order change by the

degree of reform or disruption to the school. First order change is often distinguished by causing little or minimal disruption to the culture, beliefs, and/or common practices of teachers. Second order changes however, are those system-wide events/programs that alter or contradict the consensus and well established school functions (Wong & Nicotera, 2007). School leaders must recognize that the implementation of RTI is categorically a second order change for teachers and the established systems of identifying at-risk students, and support the process of change accordingly.

Wong and Nicotera (2007) emphasized that understanding the magnitude of change required by educational accountability is fundamental to determining suitable strategies. By having knowledge and understanding of the two types of systematic change RTI requires, school leaders can best determine the strategies for successful implementation.

In addition to facilitating the process of change, DuFour and Marzano (2009), experts in the field of leadership and school improvement, summarized that school leadership must also move from instructional leaders to “learning leaders” (p. 63). The role of the school principal must shift from teacher evaluation and day-to-day operations, to a role which supports RTI by building capacity within the teaching staff to become data-reflective practitioners, interventionists, and teacher leaders. Some schools are successful in sustaining school improvement and maintaining positive impacts on student learning. These schools build capacity for leadership within the organization (Williams, 2009). Fullan (2007) indicated that change in practice is necessary for educational change. Fullan (2007) indicated that administrators’ should prepare and provide the support and training teachers need to feel comfortable with the change resulting from the implementation of the RTI components.

Much of the literature on RTI leadership also focused on a school administrator’s ability to strategically seek out key personnel with the voice, professionalism, and training to assist in leading RTI implementation and overall school change (Wong & Nicotera, 2007). By building the leadership capacity of the teachers implementing second order RTI changes, principals can more effectively support the school-wide systems through scheduling for collaboration and data reflection, providing quality professional development, and creating goals and an overall school vision for change.

In order to support each of the fundamental components of RTI, a school leader must promote quality professional development and collaboration focused on achievement data

aligned with high academic standards. Researchers, DuFour and Marzano (2009), agreed that district and school leadership must provide assessment data and achievement information along with the time and opportunity for teacher collaboration and necessary professional development (DuFour & Marzano, 2009). Furthermore, schools that have effectively implemented a second order change such as RTI, possessed school leaders that planned quality professional development opportunities focused on: (a) aligning professional development with improving instructional practices and changing ineffective instructional practices, (b) teaching practices which promoted higher-order thinking skills aligned state standards and assessment systems, and (c) concise, consistent, and intensive training which was supported throughout the entire education system (Wong & Nicotera, 2007). However, a superior professional development program and a well-trained staff do not always ensure faithful and diligent implementation of RTI (Wong & Nicotera, 2007).

An educational leader can further support the process of change and acceptance of a new initiative by allowing teachers to observe exemplar classrooms, providing feedback and praise, requesting lesson plans linked to elements of the new initiative, and providing time and collaboration around issues of using data to guide instruction and interventions (Wong & Nicotera, 2007). In addition to providing the data and structures to support RTI there is a need for the school leader to be focused on setting goals and developing a positive culture for implementing and sustaining change. Hilton (2007), a leader in school improvement, indicated that one of the primary roles of school leaders should be the collection, dissemination, analysis, and discussion of success stories from within and outside the district. The district and building leaders are also responsible for shaping a culture within the school and among the teachers that have common goals focused on increased student achievement, in order to gain the kind of significant, sustained improvement that we need in schools (Hilton, 2007). In a book describing effective leadership, Bolman and Deal (2008) concurred, "Leadership helps groups develop a shared sense of direction and commitment" (p. 186). Therefore, it is critical to the RTI process and effective teacher and student outcomes that school leaders aid in facilitating the change process by (a) providing time and structures for collaboration, (b) coordinating going professional development, (c) coordinating data collection efforts, and (d) fostering classroom cultures that focus on student achievement (Fullan, 2007).

Treatment Integrity and Implementation of RTI

Data collection and data-driven decision making are integral pieces to the RTI process, and there is a significant body of research involving the tools with which we assess students and how practitioners monitor the progress of student achievement growth throughout interventions (Fuchs, 2003). To the educators implementing and the administrators monitoring program implementation, it is critically important to understand if and why the interventions are working or not, and then pinpoint exactly what (strategy, intensity, content) needs changing.

Danielson, Doolittle, and Bradley (2007) stressed that effective implementation strategies must be in place if real school improvement and change is to be achieved with success, but researchers and educators must first have a way to measure effective implementation of interventions in order to provide this critical feedback. McIntyre, Gresham, DiGennaro, and Reed (2007) conducted a review of all school-based experimental studies from 1991 to 2005 published in the *Journal of Applied Behavior Analysis*. Of the 152 studies, only 30% provided treatment integrity data, and nearly half (45%) of these same studies were judged to be at high risk for treatment inaccuracies. Consequently, the results of the review suggested that there was only a modest improvement of reported integrity data in program implementation over the past 30 years. This lack of attention to treatment integrity may lead to the introduction or continuation of an intervention that was “wrong” or no longer effective in schools and classrooms (Sheridan, Swanger-Gagne, Welch, Kwon, & Garbacz, 2009). If the integrity of a program or intervention is not empirically assessed, then the results are essentially unreliable and may mask the reality of nonsystematic implementation and hinder future replication.

Research studying the relationship between treatment integrity and treatment outcomes found that higher levels of fidelity to the treatment resulted in better outcomes, specifically when intensity and fidelity have been assessed (Elliot, 2008; Sheridan et al., 2009). Research also suggested that teachers are often found not to implement interventions with accuracy, despite having high levels of initial training. This is a significant cost in time, money, and energy of all involved if, after receiving training, teachers are not providing interventions as intended (McIntyre, Jones, Powers, Newsome, Petrosko, Powell, & Bright, 2005).

In a study of 227 schools that implemented intervention-based treatment initiatives, Fuchs, Mock, Morgan, and Young (2003) asked the sample schools to provide documentation of the implementation process and used a 5-point Likert scale to evaluate the fidelity to the

interventions and levels of student change. The study found most schools had frequently inconsistent and below desired levels of fidelity, which surprised the researchers because the schools were encouraged to present “best-case documentation” (p. 162). Additionally, during a review of 19 behavior intervention studies, Lane, Kalberg, Bruhn, Mahoney, and Driscoll (2008) realized only five of the studies monitored and reported treatment integrity results.

Some districts have essentially blindly depended on every teacher and administrator to implement every aspect of RTI with acute accurateness every day, in every way (Fuchs, 2003). By virtually ignoring how practitioners implement RTI, school leaders are doing a disservice to the fundamentals of RTI, and to the students, by disregarding one of its most important features: collecting and using data measurements in order to make the best decisions for students.

Need for more Research Studies on RTI

The central feature of RTI is intervention directed at students not achieving at a rate commensurate with peers. It is important to note that RTI remains an experimental process and more research is necessary (Hilton, 2007). Hilton (2007) indicated that the new course of action should include serious attempts to collect information on the outcomes of the proposed actions resulting from the implementation of RTI components.

Mastropieri and Scruggs (2005) posed a number of questions related to issues surrounding “the efficacy, reliability, validity, and utility of RTI” (p. 530). Similarly, Batsche, Kavale, and Kovalski (2006) indicated research was needed to answer questions about the basic premise of RTI, the research base for RTI, implications for the construct of SLD, and the impact of RTI on the general and special education systems. Fuchs (2003) advocated for additional research studies to focus on conceptual and technical issues surrounding the assessment component of RTI, while Gerber (2005) indicated the professional development costs of implementing RTI are enormous (over \$2 billion); Gerber (2005) noted a need for more investigations into the professional development costs of RTI. Perhaps the most important question surrounds the ability to implement RTI on a large-scale basis (Denton, Vaughn, & Fletcher, 2003).

Additional concerns center on the fact that the effects and outcomes of RTI differ across grade levels and among individuals. O’Connor, Harty, and Fulmer (2005) demonstrated that although RTI approaches may effectively reduce the number of referrals for special education in

early primary grades, the increasing complexity of words and the expanding range of text in intermediate grades may cause referral rates to rise.

Although insights are emerging from the RTI research base, answers for many questions are uncertain. Hollenbeck (2007) concluded that a review of literature reveals there is currently more unknown than known about the RTI construct. Although RTI has potential benefits (Denton, Vaughn, & Fletcher, 2003), Hollenbeck (2007) warned that the benefits described across RTI literature are advantages that cannot be assumed without implementation and evaluation of the critical components of RTI.

No Child Left Behind and Achievement

Public school education has been altered since the No Child Left Behind (NCLB) Act stipulated that test data from student progress should be specifically categorized in the following manner: race, ethnicity, gender, disability and migrant status, English proficiency, and status as economically disadvantaged (Poe, 2008). With the federal push from NCLB, schools were legally held accountable for students' math and reading achievement (White, Loker, March, & Sockslager, 2009).

Because of NCLB, some educators feel restricted as to the depth and breadth of content topics that could be explored in the classrooms (Poe, 2008). The NCLB barrier presented a challenge to teachers who are bounded by division-mandated curriculum calendars that leave no room for the inclusion of other relevant content-area materials that could be selected with students' interest in mind (White et al., 2009).

Since the initial signing of NCLB in January 2002, trends confirmed that the reading achievement gap for many students is narrowing from primary to secondary school sites; but the urban African American as well as urban Hispanic students are still on the bottom rung of the ladder when it comes to performance on standardized reading tests (White et al., 2009). The goal of the NCLB legislation to obtain 100% reading proficiency of all students by 2014 is still a far reach. Even with the recent gains that many children have made, those strides would only continue if the balance of the population were to retard in growth in order to break even (White et al., 2009).

The RTI model's strategies support the NCLB act which requires states to set annual objectives for increasing students' reading achievement (NCLB, 2001). The NCLB act's ultimate

goal is to ensure that all children have an opportunity to obtain a high quality education (NCLB, 2001). The No Child Left Behind Act, Public Law 107-110 establishes high standards for reading achievement and school accountability for students' reading test scores (U.S. Department of Education, 2007). Consequently, school divisions are allowed to use federal funds to support effective research-based frameworks, such as the RTI model, that increase elementary school students' math and reading achievement and improve school goals in the area of math and reading. The NCLB legislation clearly reveals research-based instructional frameworks such as the RTI model are necessary for high reading achievement scores (Benders & Shores, 2007).

The RTI method for intervening with at-risk learners has been developed over the last several decades (Wright, 2007). A major force in the rise of RTI has been widespread dissatisfaction with existing methods for identifying and providing services to children with learning disabilities. The roots stretch back at least to the middle of the twentieth century when influential figures in the field of behavior analysis identified the importance of using the discipline's methods of experiment and data analysis to solve problems in social settings (Wright, 2007). Over time, researchers developed the single-subject research techniques needed to monitor students' response to school-based interventions accurately. An emerging understanding developed that students' learning problems are not based solely on genetic ability, but rather that their instructional environment plays an important role in students' success or failure (Wright, 2007).

In 1991, Gresham wrote an article to describe a student who failed to show the expected positive response to educational treatments. The term resistance to intervention was introduced. Resistance to intervention was renamed response to intervention, and a new problem-solving paradigm emerged. In the 1997 amendments to the Individuals with Disabilities Education Act (IDEA), the United States Department of Education made a commitment to review research, expert opinions, and practical findings to determine whether a change in Learning Disability (LD) identification should be included in the next reauthorization (Wiener & Soodak, 2008). In 2000, 14 papers on three critical issues in special education were presented at a government sponsored conference and assembled into a compilation of essays in a chapter titled "Rethinking Learning Disabilities (LD)" (Lyon, Fletcher, Shaywitz, Shaywitz, Torgesen, Wood, Schulte, & Olson, 2000). Lyon and colleagues analyzed the over-identification of students with LD and suggested possible alternatives. A groundwork for change in the identification of LD from the

IQ-discrepancy model (based on IQ and achievement) to the RTI model emerged as an alternative approach (Wiener & Soodak, 2008). The foundation for change in the identification for LD was established in IDEA 1997 and codified in the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004.

The National Joint Committee on Learning Disabilities (NJCLD) issued a report in 2005 that encouraged the further study of RTI, including the influences and outcomes of the initiative. The purpose of this report was “to guide its thoughtful implementation, advance the field of special education, and enhance the academic outcomes and life success of all students” (National Joint Committee on Learning Disabilities, 2005, p. 258). This report indicated that RTI demonstrated great promise, but that additional research is needed to assess the many components associated with the initiative. The RTI framework brings together special education and general education teachers to evaluate student data, make data-based decisions, and provide scientifically-based interventions based on individual learning needs (Hoover, Baca, Wesler-Love, & Saenz, 2008). The integrity of the implementation of RTI is important to the successful growth and expansion of RTI.

Elliot (2008) indicated that the journey to closing achievement gaps has to begin with examining core instruction, looking at data, and identifying interventions. Educational institutions must build a system of instruction that allows more time and more intense interventions for struggling students. “RTI provides the vehicle to examine an entire system of student learning at the division, classroom, and individual student performance levels” (Elliot, 2008, p. 11).

RTI promotes collaboration among general and special educators (National Joint Committee on Learning Disabilities, 2005 Wiener and Soodak (2008) indicated that a small but growing body of research has been conducted to support the efficacy of RTI as a method of LD identification. Advocates claim that RTI will not only identify students with LD but also provide relevant data for instructional improvement (Wiener & Soodak, 2008).

IDEA Versus No Child Left Behind

A major goal of NCLB is to improve the education of every student attending school (Cortiella, 2006). A primary goal of IDEA is to focus on the individual child with an emphasis on specialized services for children with disabilities (Cortiella, 2006). Since 1975, the most important federal education law relating to the education of children with disabilities has been

the Individuals with Disabilities Education Act (IDEA), formerly the Education for All Handicapped Children Act, 1975. Since 2001, the education of all school children has been significantly influenced by the No Child Left Behind Act (NCLB, Public Law 107-110). While it seems that special education policy should be guided primarily by IDEA, the provisions outlined for RTI appear more aligned with NCLB (Hardeman, 2006). The alignment of RTI with NCLB seems to have produced some positive results (e.g., increased emphasis on the use of scientifically validated interventions), but also seems to have negative implications for special education policy (Hardeman, 2006). Specifically, by aligning more closely with NCLB rather than IDEA, RTI has (a) shifted focus from the individual to the group, (b) prompted a departure from the original construct of SLD found in IDEA, and (c) reallocated special education funds to provide general education instruction.

Under NCLB regulations, states are accountable and responsible for ensuring schools make adequate yearly progress (AYP). AYP is an individual state's measure of progress toward meeting the goal of 100% of the children achieving state academic standards in at least reading/language arts and math by 2014. Each state is required to develop and implement measurements to determine AYP and report data for subgroups disaggregated by gender, ethnicity, poverty level, English-language proficiency and disability status, with the assurance of at least 95% student participation in assessment programs by subgroup. Schools failing to make AYP two consecutive years or more are considered in need of improvement and are required to submit a turn-around plan. Given the high stakes attached to school success, predicated on the collective success of all students, it is not surprising to find increased attention being directed at significantly low-achieving (SLA) students (Wiener & Soodak, 2008).

Although SLA students have traditionally been excluded from special education (i.e., there is no SLA classification defined in IDEA), RTI seems to seek their inclusion in special education by promptly classifying them with an SLD label if they fail to respond to instruction. Hence, it is less than coincidental that RTI—with provisions for finding SLA students eligible for special education services and supports—gained prominence in the wake of NCLB with its emphasis on accountability and AYP (Wiener & Soodak, 2008).

RTI emphasis on the group rather than the individual is an important indication of greater alignment with NCLB than IDEA (Hardeman, 2006). Although NCLB is primarily concerned with states ensuring district and school level success, the centerpiece of IDEA is an emphasis on

the success of the individual (Yell, Rogers, & Rogers, 1998). Although IDEA demands individualization and special instruction (i.e., adapted to unique learning needs), NCLB clearly emphasizes a “one-size-fits-all” approach to instruction and assessment in a general education context based on state standards (Hardeman, 2006). Hardeman (2006) explained, “Establishing content standards for students with disabilities at the state level is inconsistent with the concept of individualization” (p. 6).

Perhaps the most ominous policy implication of RTI alignment with NCLB is the reallocation of special education resources to fund general education instruction. In addition to permitting the implementation of RTI despite its “experimental” status, IDEA created the option for LEAs to use up to 15% of IDEA Part B funds for early intervening services for students who have not been identified as needing special education or related services but who need additional academic and behavior support to succeed in a general education classroom (IDEA, 2004). Although RTI appears to be primarily an instructional model aligned with NCLB, its IDEA foundation continues to maintain that response to quality intervention is the most promising method of alternative identification and can promote effective practices in schools and help to close the gap between identification and treatment (Bradley, Danielson, & Hallahan, 2002).

Benefits of the RTI Model

The RTI model is designed to serve both regular and special education students. The model emphasizes implementing high quality, scientifically validated instructional practices based on elementary school students’ learning and reading needs. Components of the model monitor student progress and adjust instruction based on the student’s response to the instruction (Bender & Shores, 2007). RTI is an ongoing process of using student performance and other data to guide instructional and intervention decisions. Since there is a high level of variability in individual response rates to instruction among young children, carefully selecting and implementing scientifically-based instructional interventions increase the likelihood that students will be as successful as possible at their individual grade levels (Virginia Department of Education, 2011).

The RTI model gets its name from the very practice of offering interventions provided by the general education teacher, such as additional instruction or small group instruction, and then regularly evaluating the child’s response (Virginia Department of Education, 2011).

Interventions can also be provided as additional instruction provided by other trained instructional practitioners within the school building. The most compelling benefit of the RTI model is that implementation begins after the earliest signs of a child's failure to make adequate progress with age-appropriate, general classroom practices (Jimerson, Burns, & VanDerHeyden, 2007). Almost immediately, adjustments in instruction are made to meet the child's needs. One essential component of these efforts is close monitoring of the child's progress and each intervention's effectiveness (Virginia Department of Education, 2011).

The RTI model can result in enhanced communication between home and school (McCook, 2006). Parents are informed more frequently of their child's progress, and more frequent home-school collaboration allows parents to become active and meaningful participants in the school faculty's educational efforts. Other benefits include the ability to (a) to provide collaborative assistance to teachers; (b) to provide principals with a global picture of instructional strategies used in the school; (c) determine the effectiveness of core instructional and intervention programs; (d) guide staff development efforts; (e) to coordinate existing intervention efforts, (i.e., child study, early reading initiatives, and Standards of Learning (SOL remediation), and (f) provide better identification of students with disabilities (McCook & Witt, 2006).

Universal Screening and the RTI Model

The services in the RTI model are designed to be implemented for struggling students at the earliest sign of a learning problem. In the model, an important step in identifying these students is the use of a screening process in the students' core academic areas (McCook, 2006). Screening is used to identify each elementary school student's level of proficiency at a single point in time (Johnson, Mellard, Fuchs & McKnight, 2006). Such screening aids in identifying students who may be in need of closer monitoring in the general education curriculum or in need of more intensive interventions than they have previously received (Johnson, Mellard, Fuchs & McKnight, 2006). Universal screening helps to identify all children whose lack of response to instruction in the regular classroom should be of concern.

Universal screening serves many purposes (Johnson, Mellard, Fuchs & McKnight, 2006). (Johnson, Mellard, Fuchs & McKnight, 2006) First division-wide data at each grade level can be compared to national norms to evaluate whether students in the division are making acceptable

rates of gain relative to other divisions with similar demographics (Hosp & Ardoin, 2008). Second, universal screening data can be used to evaluate the relative rates of performance of the various schools within a division. Schools that are not making adequate rates of growth compared to other schools in the division using identical curriculums need to evaluate curricula and instructional variables that differ across settings that might result in differences in rates of student improvement (Hosp & Ardoin, 2008). A final, yet important use of universal screening is to identify students who are not responding to the general instruction and thus are in need of intervention (Hosp & Ardoin, 2008).

Universal screening involves brief assessments of student performance using either standardized or curriculum-based measures that are not too costly, time consuming, or cumbersome to implement (Jenkins, 2003). When a significant number of students are meeting proficiency levels based on the results of universal screening tools, it is an indication that the instruction in the core area is effective (Chidsey & Steege, 2010). As part of implementing the RTI model, universal screening is conducted at least three times during the school year: in the fall, the winter, and the spring. Universal screening is administered to all students in the general education classroom to ensure that children in need of extra assistance do not go too long before they receive additional instruction or intervention. Analysis of student performance on screening measures helps identify the point of entry into one of the three tiers, or levels, of the RTI model. In the urban school division targeted for this research study, a screening assessment named Student Achievement in Reading (STAR) is used as a universal screening tool for fifth-grade students. It is important to remember that performance on universal screenings is used to determine each student's level of proficiency in essential academic areas such as reading. STAR key components are (a) new reading reports that provide information on screening, progress-monitoring, instructional planning, state standards, and state performance; (b) new skills-based testing for greater depth of assessment, to assist teachers in their instructional planning, and to provide the most accurate, valid, and reliable information in the fastest amount of time; (c) new benchmarks for RTI state test performance that show if a student is on track to reach proficiency or in need of intervention; (d) tools for math and reading and student growth percentile measurements.

Tiers One, Two, Three, and Four and the RTI Model

The RTI model is a multi-tiered service delivery model (Fuchs, Mock, Morgan, & Young, 2003). Tier One involves general education with multiple grouping formats; Tier Two involves supplemental instruction, i.e., targeted instruction or intervention in homogenous small groups of three to five students provided by a literacy specialist, communication skills specialist or someone with a proven track record of understanding how to teach struggling readers to read (Fuchs, Mock, Morgan, & Young, 2003). Tier Three provides intensive, supplementary intervention in homogeneous and even smaller groups of one to three students. The nature of the academic intervention changes at each tier, becoming more intensive as a student moves across the tiers (Fuchs & Fuchs, 2006). Students with special education needs generally fall at the highest levels of tier involvement, but not all children at the highest level of tier involvement are necessarily identified as special education students (Virginia Department of Education, 2011).

In Tier One, all students receive high quality, scientifically-verified, research-based instruction (Fuchs & Fuchs, 2006). This instruction is delivered by the general education teacher through the imparting of the core curriculum. Using benchmarks as a gauge of student success, the core curriculum should be manageable for approximately 75% to 85% of students (McCook, 2006). If a significant number of students are not successful in the core curriculum, instructional and curricula variables should be analyzed to determine where the core instruction needs to be strengthened. The learning needs of the students who are the least successful should also be addressed during the examination of any core instructional difficulties. Tier Two consists of supplemental, targeted instruction that ensures additional instruction and intervention in the smaller group setting, while Tier Three is an individualized level of intervention that provides for the closest possible supplemental instruction (McCook, 2006).

If the RTI team finds after trying several individualized intervention plans that a student still has not made sufficient progress, the school may refer the student for Tier Four, special education. Students may need to go through a formal evaluation process, including specialized testing, to determine if they qualify for these special education services.

The important features of this tiered delivery system are that all students receive Tier One instruction, i.e., a core instructional program that uses a scientifically-based curriculum for all students at their own instructional level, and that additional intensified instruction is provided to students in direct proportion to their individual needs in Tiers Two and Three (McCook & Witt,

2006). Distinctive support structures, such as providing structured interventions on a daily basis, are built into each tier, so that teachers are provided with a wealth of activities which help put into action the best, most current practices for instruction (McCook & Witt, 2006).

Progress Monitoring and the RTI Model

Careful monitoring of student progress over time is required in order to determine whether a student is progressing as expected in the core curriculum. Curriculum-based measures, or CBMs are frequently used as a means of progress monitoring, but other systems of progress monitoring might be utilized as well (Jenkins, 2011).

CBMs are brief, easy to administer and score, and produce measures that are accurate indicators of a student's academic performance. Examples of CBMs include an assessment of the number of words read correctly from grade-level text in two minutes, a checklist of the numbers from one to ten that the student can correctly identify, etc. (Jenkins, 2011).

There are three primary reasons for assessing and monitoring skill development. First, screening identifies how a student is performing relative to the group or to a curriculum-based benchmark. Second, diagnostic activities attempt to determine the answers to such questions as, "Why is this happening?" and "What other information do we need?" Third, ongoing progress monitoring is essential in order to accurately keep track of a student's reading growth. The progress of all students should be monitored, but it is of particular importance to closely monitor the progress of students whose performance is resistant to intervention. In all cases, the obtained data are used to adjust instruction and to make instructional or intervention decisions (Jenkins, 2011).

A major goal for using a progress monitoring system is to provide an ongoing, systematic method of collecting data to determine the academic, social, or behavioral performance of a student. One assessment consists of the universal screening assessments administered in the fall, winter, and spring. Frequent progress monitoring is essential in order to determine if a student is responding to an intervention, so that judgments about continuing, adjusting, or replacing the intervention can be made. Without detailed documentation about performance, it is difficult to determine the effectiveness or value of an intervention (Jenkins, 2011).

Students who perform poorly should be discussed by the student progress monitoring team which examines the student's progress monitoring data to determine if the student's needs

are being met (McCook, 2006). The team sets goals based on the diagnostic data, and sets a goal depicting the desired rate of progress a student needs to make in order to reach the goal from the current baseline. If performance falls significantly below the goal for the student over three or four consecutive monitoring periods, the student progress monitoring team should revise the intervention plan, making appropriate modifications or changes (McCook, 2006).

If a student is found to be performing significantly below his or her goal at the end of a pre-determined period of time, a change in instructional strategies is needed. If the student is performing far above his or her goal, that goal is too low, and needs to be raised. Once the student is consistently performing at grade level expectations, interventions can be phased out (Jenkins, 2011).

Curriculum-Based (CB) measures, developed by professors at the University of Minnesota, are an approach to measuring or assessing student growth and proficiency in core educational skills (Jenkins, 2011). Using quick assessments, consisting of one or two minutes in duration, classroom teachers and other staff are able to assess student performance frequently and accurately. CB measures are used to assess the growth of discrete skills critical to learning, e.g., oral reading fluency, reading comprehension, and vocabulary (Jenkins, 2011). Data collected through CB measures are easy to graph and analyze. One caveat, however, is that the measures will not provide student grade level performance or what specific skills must be addressed in order to move that student forward; teachers will need to rely on more diagnostic data such as common formative assessments in order to collect such data. CB measures are reliable, valid and standardized, as well as being aligned with the Virginia Standards of Learning (SOLs), the curriculum on which this study is based (Virginia Department of Education, 2011).

Standard Protocol or RTI-SP Approach

RTI-SP approach is defined as a standardized approach to intervention that assures opportunity for quality control (Fuchs, Mock, Morgan, & Young, 2003). Typically, standard protocols involve the delivery of evidence-based, multi-component programs with strong research bases focused on specific skill areas. The intervention has well-defined steps for implementation when, if followed as prescribed, have a high probability of producing improved outcomes for students. Standard protocols are designed to be structured and explicit in defining the needed steps for implementation and are able to be delivered to small groups of children.

Groups are identified by examining the general nature of student problems and matching them to the particular protocol. For example, in reading one would examine outcomes of student performance on universal screening measures and determine which students needed more focus in fluency and which in comprehension. The group to which the student is assigned would then be matched to that protocol. Because the steps of the intervention are well defined, the evaluation of the integrity of implementation is straightforward and can be determined by establishing a checklist of the critical steps for implementing the intervention. Following each step of the defined protocol is essential so that one is sure that the intervention is delivered as it was designed.

Standard protocols can be developed as packaged commercial programs designed to focus in an area of the student's problem identified through the universal screening process. For example, reading programs such as *Read Naturally* (2004) or *The Six-Minute Solution* (Adams & Browne, 2003), are designed to focus primarily in the area of developing fluency. Other programs, such as *Soar to Success* (Cooper, Boschken, & Pistoichini, 2006), are aimed more at developing vocabulary/comprehension, while programs such as *Ladders to Literacy* (O'Connor, Notari-Syverson, & Vadasy, 2007) are focused more on the development of phonemic awareness and alphabetic principle. Third party evaluation of such packaged, multi-component programs offers support for their empirical base (Case, Speece, & Molloy, 2003). In addition to packaged programs, RTI-SP applications might include structured partnered reading activities, direct instruction of phonological or phonics skills, or reinforcement of skills through computer programs (Case, Speece, & Molloy, 2003).

Advantages and disadvantages of the RTI-SP approach. The primary advantage of RTI-SP is that the use of a standardized approach to intervention assures opportunity for quality control (Fuchs, Mock, Morgan, & Young, 2003). Students are grouped based on a general area of concern, (i.e., area of skill in need of intervention in reading is primarily fluency or vocabulary/comprehension, phonemic awareness/alphabetic principle) and can be delivered to fairly large groups (up to about 10) with high degrees of fidelity. Another advantage of RTI-SP is the opportunity for a school to identify a small set of effective intervention strategies that can be applied broadly across many students who in general have the same skill needs. This offers a highly efficient use of resource allocation and allows larger numbers of students to be accommodated into tiered interventions. A third and related advantage is that schools may

already have these materials available and if not, bulk purchasing of materials can sustain many years of implementation (Fuchs, et al., 2003).

Despite these advantages, RTI-SP does present a challenge to addressing the unique learning needs of children who are experiencing more severe deficits (Fuchs, et al., 2003). Although an RTI-SP approach may match children's needs in general to the identified deficits, children with more complex and/or severe deficits may not fit easily in the general skill deficit areas of the protocol (Gresham, 2002). For example, children may have needs that are more specific than broad concerns about fluency or phonemic awareness, and may need more individualized interventions that are clearly linked directly to diagnostic assessment data. Also, at times the selection standard protocol intervention may not be closely aligned to the core instructional program. In other words, the approach taught to students to address the student's problem area through the intervention protocol may not be the same as the way the skill is taught within the core reading program. As such, students may show some confusion in not being able to transfer learning from the intervention setting back to the core instructional program.

Problem-Solving or RTI-PS Approach

The RTI-PS approach is defined as a systematic problem analysis approach involving collaboration with key school personnel, and the approach relies on principles of behavioral consultation, and focuses on resource allocation (Gresham, 2002). In contrast to RTI-SP, RTI-PS is a process with an emphasis on individualized interventions that derive from the analysis of instructional/environmental conditions and skill deficits. Further, this process is guided by a systematic analysis of instructional variables that is designed to isolate target skill/sub-skill deficits and shape targeted interventions (Barnett, Daly, Jones & Lentz, 2004). RTI-PS ensures that the developed intervention is well matched to the individualized needs of the targeted student. Examples include the functional assessment of academic skills and Curriculum-Based Evaluation (Daly, Witt, Martens, & Dool, 1997).

Advantages and disadvantages of the RTI-PS approach. RTI-PS, when implemented with integrity, can be very effective in improving student learning (Nelson, 2003). Indeed, many large scale models using the problem-solving process have demonstrated strong outcomes, such as the Heartland Area Educational Agency 11 (Gresham, 2002) and the Ohio's statewide Intervention-Based Assessment (McMaster, Fuchs, Fuchs, & Compton, 2005). The essential

attributes of effective RTI-PS models are that they use a systematic problem analysis approach involving collaboration with various school personnel (e.g., special educators, remedial instruction staff, school psychologists, reading specialists), rely on principles of behavioral consultation, and focus on resource allocation questions (Gresham, 2002).

Although this approach provides the potential for individualized instruction to address unique learning needs, the RTI-PS is susceptible to difficulties with implementation integrity, a significant obstacle to large-scale RTI implementation (McMaster, Fuchs, Fuchs, & Compton, 2005). The advantages of RTI-SP are really the disadvantages of RTI-PS, and vice-versa. Essentially, there is a tradeoff between efficiency and effectiveness for individual students.

From a resource use perspective, RTI-PS can offer a very efficient use of personnel. For example, according to McMaster, Fuchs, Fuchs, and Compton (2005),” in one school in their study that used the RTI-PS model, a block of time was placed into the daily schedule for each grade designated as tier time” p. 443. During tier time, all students were placed into an intervention group based on their data from universal screening. This included those students whose data indicated they were already at or above benchmark. “During tier time all teaching staff for a grade, as well as assigned specialists, were devoted to delivering the specified instructional program for each specific group” (McMaster, Fuchs, Fuchs, & Compton, 2005, p. 444).

According to McMaster, Fuchs, Fuchs, and Compton (2005), although RTI-PS models offer the advantage of individualization, the model does present a challenge for personnel resource allocation. Because interventions are more individualized, there are generally more interventions needed with smaller group size. This obviously requires a larger number of personnel to deliver the interventions and seriously challenges schools where the number of students in need of tiered intervention is substantial (McMaster, Fuchs, Fuchs, & Compton, 2005).

Effective Teaching Strategies

Schools need to ensure the appropriate use of teaching strategies because effective and research-based strategies in the classroom can positively impact student behavior, reading achievement, and mathematics achievement. Research-based interventions and teaching strategies that work for fifth-grade students, who struggle with reading and math, should be a

part of the RTI model (McCook, 2006). Furthermore, the teaching strategies must be the result of purposeful and well thought out actions and activities. Successful change that is to take place at the school level for under-achieving urban elementary school students is directly related to the skills and abilities of the teachers (McCook, 2000).

In determining effective teaching strategies, Roy (1998) noted that referrals were symptomatic of a negative learning environment that did not work for either students or teachers. According to Roy, “teachers who used proactive classroom management strategies, cooperative learning groups, individualization of instruction, and prompt feedback create a positive and effective relationship with students, which in turn results in higher on-task behaviors and lower referrals for special education services” (p. 23).

Successful teachers tend to be those who use a variety of teaching strategies, such as cooperative grouping, differentiated instruction, presentations and exhibits, Socratic seminars, and integrated technology. Also, teachers need to be informed that their impressions of students can act as self-fulfilling prophecies in the classroom. If teachers believe that certain students are bright and that others are dull, they may teach in ways that help confirm these beliefs (Brophy, 1998). According to Nelson (2003), teacher expectations influence student performance to a greater degree than student performance influences teacher expectations.

An effective behavior support system is based on a conceptual framework founded on a science of human behavior that emphasizes that most human behaviors are learned, come under the control of environmental factors, and can be changed (Nelson, 2003). Emphasis should be placed upon the adoption and maintenance of research based and practical interventions and assessments. Assessment information includes specifics such as screening procedures and functional behavioral assessment to build students skills and arrange learning environments so that factors that are likely to trigger or maintain problem behaviors or deficit reading and mathematics skills are less likely to be present and adaptive behaviors are more likely to be taught, occasioned, and supported (Nelson, 2003).

Positive Behavior Interventions Shape Effective Classroom Environments

The RTI model guides teachers to be responsible for establishing positive and supportive classroom environments in classrooms for under-achieving students to maximize learning in reading and math. Learning should be optimized in elementary classrooms wherein struggling

students feel safe to take risks, acquire new knowledge, and know they are valued members of a community (Lassen, Steele, & Sailor, 2006). Parson (2003) examined the efforts of a fourth-grade teacher to shape students into positive, productive citizens by using the environment to change the authority relationship that typically exists between teacher and student. Using a community learning center model, shared decision making resulted in a greater sense of inclusion and ownership.

Freeman, Smith, and Tieghi-Benet (2003) indicated that students who do not have the social, learning, or behavioral skills that will help them to thrive in the classroom require coaching and feedback as they develop those skills. The authors found that teachers needed to establish an expectation of success and communicate their confidence in students' ability to succeed and must approach students' behavior proactively. These strategies, according to the authors, contributed to warm and supportive classroom environments, enhanced success in the core subjects, and lower referral rates for special education services.

Strahan, Cope, Hundley, and Faircloth (2005) documented three powerful features that characterized successful teachers. A successful teacher promotes self-discipline, begins with academic learning time, and promotes academic achievement. Positive classrooms allow students to learn more about their subject matter so they perform better on tests, understand themselves, and make better decisions. Research shows that when a leader in society takes a proactive stance and uses various methods rather than maintaining a single focus, the behavioral results are better (Catalano, Arthur, Hawkins, Berglund, & Olson, 1998).

Catalano et al. (1998) stated that positive behavior interventions improve self-esteem, increases overall performance in a society filled with social ills, and responds to the need to promote change for youth to become future leaders. Catalano et al. (1998) found that a wide range of positive youth development approaches can result in positive youth behavior outcomes and the prevention of youth problem behaviors. Nineteen effective programs showed positive changes in youth behavior, including significant improvements in interpersonal skills, quality of peer and adult relationships, self-control, problem solving, cognitive competencies, self-efficacy, commitment to schooling, and academic achievement. Twenty-four effective programs showed significant improvements in problem behaviors, including drug and alcohol use, school misbehavior, aggressive behavior, violence, truancy, high-risk sexual behavior, and smoking (Catalano et al., 1998). This is good news indeed. Catalano et al. (1998) concluded that

promotion and prevention programs that addressed positive youth development constructs were definitely making a difference in well-evaluated studies.

The use of positive behavior interventions is widely accepted and supported in the research on effective elementary schools (Turnbull, Edmondson, Griggs, Wickham, Wayne, & Freeman, 2002). Children must become part of a global learning community if they are to find themselves. Turnbull et al. (2002) stated that positive behavior interventions address many issues confronting students and teachers and are designed to meet the learning community's internal and external need to support the students. Positive behavior interventions are essential management techniques that can be used to instruct students effectively and limit disruptive behavior so that time on task and academic achievement is enhanced (Maag, 2001). During the elementary school years, with these interventions in the curriculum, a youth learns to feel competent, effective, and capable of mastering age-appropriate behavioral and academic tasks (Maag, 2001). The successful outcome of this period is the acquisition of specific skills and patterns linked to the youth's sense of competence (Maag, 2001)

Small Group Instruction

The components and approaches in the RTI model have been explained in this chapter. Small group instruction for students with reading deficits is a primary focus of the RTI model. Researchers have noted the importance of small group instruction to the reading success of young children (Amendum, Li, Hall, Fitzgerald, Creamer, Reeves, & Hollingsworth, 2009). They note that students in small groups have more opportunities to practice skills and receive more feedback from the teacher (Helf, Cooke, & Flowers, 2008). Research agrees that whole group teaching cannot meet the needs of all the students. When groups are arranged homogeneously, teachers can target the skills that those children need to use more effectively (Ankrum & Bean, 2008). Iaquina (2006) agrees that small group instruction is most beneficial because teachers are able to focus specifically on what the students need to ensure progress. Small group instruction has also been shown to be very beneficial to struggling readers and children with learning disabilities and it is a strategy used by many teachers, especially in special education.

Sencibaugh (2007) suggests using a scaffolding technique in small groups because it increases active participation in the learning process and therefore increases reading

achievement. In his model, students learn comprehension strategies with simple materials to ensure success. Then students practice strategies with increasingly difficult text as the teacher fades instructional supports.

Two factors that are related to effective reading instruction are how much time and knowledge general educators have to devote to teaching reading and to what extent other personnel are able to provide daily instruction to students (Helf, Cooke, & Flowers, 2008). To utilize personnel and optimize small group instruction, co-teaching with a special educator is an option that some schools are taking. Co-teaching has had several positive attributes. In cooperative models, the classroom teacher, the special educator and the reading specialist share the teaching of all the students. Having more than one teacher enhances the instruction for both children with learning disabilities and their at risk peers by providing a wider range of instructional practices and reducing the stigma associated with needing help in the classroom. Co-teaching has been one way to intervene and give extra support to children who are not receiving special services, or children who are at risk of failing.

One popular co-teaching method is the station or parallel teaching. Station teaching occurs when both the classroom and the special education teachers are teaching small groups and the children rotate through the groups during the class time. Parallel teaching is similar in that both teachers are teaching the same subject matter to smaller groups of children, but students do not rotate through the groups (Kloo & Zigmond, 2008). These methods are more appealing than other co-teaching models such as the “one teaching/ one assisting” method or the “team approach” method, when both teachers teach the whole group together. Station or parallel methods appear to offer a greater benefit to children with learning disabilities and students with other difficulties that have not yet been identified. Of the co-teaching methods, parallel teaching is cited as the best one to reach struggling students (Kloo & Zigmond, 2008).

One study found that students who received daily supplemental instruction scored significantly higher than those who did not receive extra instruction (McIntyre et al., 2005). Helf, Cooke, and Flowers (2008) found that small group instruction was even more effective than one-on-one instruction. McIntyre et al. (2005) suggest that some children need more time in smaller groups to progress, regardless of the quality of the regular classroom instruction. Another study proposed that small group instruction may be more effective than whole group instruction because it increases active responses and student engagement (Amendum et al, 2009). They also

found in that study that grouping students according to their needs and providing more coaching was even more beneficial to struggling readers. Ankrum and Bean (2008) also point out that the formation of these groups is flexible and changes according to the skill or the strategy that is needed. Dynamic groups accommodate different learning paths and allow students to support one another and feel a part of a community (Iaquinta, 2006). Additionally, Ediger (2002) evaluated several aspects of small group instruction including repeated reading, listening passage review, and listening only strategies. The researcher found that the repeated reading feature yielded higher gains in second grade students' reading achievement. Ediger's (2002) conclusion was that repeated reading is especially beneficial for struggling readers, yet many schools are not implementing repeated reading and other effective research-based practices. Ediger's (2002) findings reinforce the need for this proposed dissertation study.

Student Support Team (SST)

At some elementary schools, when a classroom teacher or parent has a concern about a student's academic achievement, behavior, health or social competence, the teacher may seek the assistance of the school's SST. The SST process is designed around a problem solving model that is used division-wide to help develop effective interventions to address and improve student's learning or behavior at school. The SST also serves as the single portal of entry to determine the need for evaluation to assess eligibility for Section 504 Accommodation Plans and special education services. The SST process helps teachers develop interventions to assist the student. Specific areas of concern are identified; information is gathered through observation, interview, review of school records and informal assessment. The SST develops new strategies to help address the concerns. Classroom teachers implement these strategies for several weeks. The SST then reconvenes to assess the student's progress. A teacher may implement a behavior contract for a child who has difficulty maintaining appropriate classroom behavior and completing classroom assignments. If the interventions are not successful, however, the SST may refer the student to the 504 Committee or the Exceptional Children (EC) team. Parents who have concerns about their child's academic achievement, behavior, health, or social competence should discuss their concerns with the classroom teachers first. Teachers and parents working together often establish informal strategies that address the concerns.

To initiate the student support team process a referral form needs to be filled out and given to the student's counselor. Members of the SST include (a) family specialist, administrator, school psychologist, reading specialist, student assistance program counselor, school nurse, student achievement coach, and the a ESE teacher.

The research on the effectiveness of student support teams is mixed. For example, Lee-Tarver conducted a survey of 123 general education teachers in the South to determine teacher perceptions of student support team effectiveness, "the majority of participants reported that students referred to the team are not referred for special education services and that they did not expect the students to be evaluated for special education services" (Lee-Tarver, 2006, p. 531). Likewise, research by Fuchs and Fuchs (2001) showed that special education referrals in a metropolitan school division dropped "dramatically" after the implementation of Mainstream Assistance Teams (p. 305). Further, at the national level, Truscott, Cohen, Sams, Sanborn, and Frank (2005) contacted State Education Agency representatives to determine the extent to which intervention strategies impact referrals to special education. Respondents in 18 States noted that the intervention process is typically successful; respondents in 23 States felt the intervention process is successful sometimes; and respondents in eight States selected "Other," which could indicate limited access to data to make a determination of success or failure. Bay, Bryan, and O'Connor (1994) also examined the implementation of intervention-prevention models and found that "these models have taken the much needed first step in conceptualizing ways in which general and special educators can work together to design educational programs for students who are at risk for referral" (p. 11).

Fuchs and Fuchs (2001); Truscott, Cohen, Sams, Sanborn, and Frank (2005); Bay, Bryan, and O'Connor findings supported the need for more studies such as this dissertation study on the RTI model. The dissertation study determined if the RTI model had a positive impact on students' referral rates for special education services. The RTI components were effective in positively impacting the referral rates, thus, elementary schools have more evidence of another effective model to enhance student learning.

Summary

In a study of RTI and leadership, Hilton (2007) agreed that in order for RTI to be successfully implemented and sustained in a school community, strong leadership is critical. The

implications of Hilton's (2007) study recognized that schools that had strong leadership, or principals who devoted time to facilitating and nurturing change, were successful in implementing RTI and sustaining the change. In order to facilitate successful and sustaining implementation of RTI and multi-tiered systems, it is essential that school leaders understand the processes and types of systematic change.

Public school education has been altered since the No Child Left Behind (NCLB) Act stipulated that test data from student progress should be specifically categorized in the following manner: race, ethnicity, gender, disability and migrant status, English proficiency, and status as economically disadvantaged (Poe, 2008). With the federal push from NCLB, schools were legally held accountable for students' math and reading achievement (White, Loker, March, & Sockslager, 2009).

There are benefits of the RTI model. The model is designed to serve both regular and special education students. The model emphasizes implementing high quality, scientifically validated instructional practices based on elementary school students' learning and reading needs. Components of the model monitor student progress and adjust instruction based on the student's response to the instruction (Bender & Shores, 2007). RTI is an ongoing process of using student performance and other data to guide instructional and intervention decisions. Since there is a high level of variability in individual response rates to instruction among young children, carefully selecting and implementing scientifically-based instructional interventions increase the likelihood that students will be as successful as possible at their individual grade levels (Virginia Department of Education, 2011).

The services in the RTI model are designed to be implemented for struggling students at the earliest sign of a learning problem. In the model, an important step in identifying these students is the use of a universal screening process in the students' core academic areas (McCook, 2006). Screening is used to identify each elementary school student's level of proficiency at a single point in time (Johnson, Mellard, Fuchs & McKnight, 2006). Such screening aids in identifying students who may be in need of closer monitoring in the general education curriculum or in need of more intensive interventions than they have previously received (Johnson, Mellard, Fuchs & McKnight, 2006). Universal screening helps to identify all children whose lack of response to instruction in the regular classroom should be of concern.

The RTI model is a multi-tiered service delivery model (Fuchs, Mock, Morgan, & Young, 2003). Tier One involves general education with multiple grouping formats; Tier Two involves supplemental instruction, i.e., targeted instruction or intervention in homogenous small groups of three to five students provided by a literacy specialist, communication skills specialist or someone with a proven track record of understanding how to teach struggling readers to read (Fuchs, Mock, Morgan, & Young, 2003). Tier Three provides intensive, supplementary intervention in homogeneous and even smaller groups of one to three students.

RTI-SP approach is defined as a standardized approach to intervention that assures opportunity for quality control (Fuchs, Mock, Morgan, & Young, 2003). Typically, standard protocols involve the delivery of evidence-based, multi-component programs with strong research bases focused on specific skill areas. The intervention has well-defined steps for implementation when, if followed as prescribed, have a high probability of producing improved outcomes for students.

The RTI-PS approach is defined as a systematic problem analysis approach involving collaboration with key school personnel, and the approach relies on principles of behavioral consultation, and focuses on resource allocation (Gresham, 2002). In contrast to RTI-SP, RTI-PS is a process with an emphasis on individualized interventions that derive from the analysis of instructional/environmental conditions and skill deficits.

Schools need to ensure the appropriate use of effective teaching strategies because effective and research-based strategies in the classroom can positively impact student behavior, reading achievement, and mathematics achievement. Research-based interventions and teaching strategies that work for fifth-grade students, who struggle with reading and math, should be a part of the RTI model (McCook, 2006).

The RTI model guides teachers to be responsible for establishing positive and supportive classroom environments in classrooms for under-achieving students to maximize learning in reading and math. Learning should be optimized in elementary classrooms wherein struggling students feel safe to take risks, acquire new knowledge, and know they are valued members of a community (Lassen, Steele, & Sailor, 2006). Parson (2003) examined the efforts of a fourth-grade teacher to shape students into positive, productive citizens by using the environment to change the authority relationship that typically exists between teacher and student. Using a community learning center model, shared decision making resulted in a greater sense of

inclusion and ownership.

At some elementary schools, when a classroom teacher or parent has a concern about a student's academic achievement, behavior, health or social competence, the teacher may seek the assistance of the school's SST. The SST process is designed around a problem solving model that is used division-wide to help develop effective interventions to address and improve student's learning or behavior at school. The SST also serves as the single portal of entry to determine the need for evaluation to assess eligibility for Section 504 Accommodation Plans and special education services.

Chapter 3: Methodology

Introduction

This chapter describes the data collection instrument, the RTI SRS. Validity and reliability are reported for the instrument. Data collection procedures are described in the study. Chapter 3 provides information on the two research designs. A descriptive-survey and a causal comparative research design serves as the guide for data collection and data analysis for the four research questions. Both descriptive statistics (frequencies, percentages, means, standard deviations, and effect sizes) and an inferential statistical model (one-way analysis of variance) are revealed as the statistics used to analyze the data for the research questions.

Setting

This study involved elementary schools located in the southeastern portion of Virginia. This large urban division had 35 elementary schools, eight middle schools, five high schools, three early childhood centers, and three alternative schools. The total student population was approximately 34, 000 students. The ethnic breakdown of the students consisted of 62% African-American, 22% Caucasian, 6% unspecified, 6% Hispanic, 2% Asian, and 2% American Indian. Over half of the students attending school in this division received free and reduced lunch (69.8%), and 12.9% were Limited English Proficient.

Population

Active participants in the population were 35 principals, 35 communication skills specialists, 355 regular education teachers, and 194 special education teachers in 35 elementary schools. These 619 educators were asked to complete a survey (RTI-SRS) emailed through SurveyMonkey. Of the distributed 619 surveys, 483 surveys were returned to the researcher. Furthermore, in each of the 35 schools overall rates, rates based on gender, and rates based on ethnicity were gathered by the researcher. The students were inactive participants in that only their special education referrals rates were used in the study. The Director, Department of Strategic Evaluation and Assessments presented the computer printout of special education referral rates to this researcher.

There were several attempts to obtain the length of time the 35 schools implemented each of the four RTI components. For instance, the Director, Department of Strategic Evaluation and Assessments indicated this data were not in the district's computer database. An email survey requesting this information from the principals of the 35 targeted schools was not responded to by some principals. Other principals indicated on the email survey that they did not have any knowledge of the implementation date of each of the four RTI components at the schools. Consequently, this information was not obtainable. The lack of information on the length of time periods for the implementation of the four RTI components is listed a possible limitation to this study in Chapter 5.

Research Design

The research design for the first two research questions was the descriptive-survey research design. The research design for the last two research questions was the causal comparative research design. Creswell (2008) defined descriptive-survey research as a type of quantitative research wherein the main goal is to describe the survey data and characteristics about what is being studied. The idea behind this type of research is to study frequencies, averages, and other statistical calculations. Although this research is highly accurate, it does not gather the causes behind a situation. Descriptive research is mainly done when a researcher wants to gain a better understanding of a topic (Creswell, 2008).

The causal comparative design was the primary design to guide the data collection and data analysis in the study. In this design, the independent variable (levels of implementation of the four RTI components) could not be manipulated because it has already occurred at the 35 elementary schools; therefore, findings from the data did not infer a cause-effect situation but only implied a relationship between the independent variable (level of implementation of RTI) and dependent variable (special education referral rate) (Gay & Airasian, 2003). In this study, quantitative data analysis was used to discern causal-comparative relationships between the independent variable and the dependent variable (Gay & Airasian, 2003).

All questions were developed as a compass to direct this study. Research questions and null hypotheses were tested for statistical significance at an alpha level of .05. The following are the four research questions and the two relevant null hypotheses:

Research question 1. What are the levels of implementation of the four RTI components in the 35 elementary schools in the selected division?

Research question 2. What are the special education referral rates in the 35 elementary schools?

Research question 3. What is the difference in referral rates based on the implementation levels of RTI?

Research question 4. What impact does the level of implementation have on the rate of referral for special education services based on demographic factors of gender and ethnicity?

According to Gall, Gall, and Borg (2007), a null hypothesis is the belief that the independent variable in an experiment will have no effect on the dependent variable. Gall, Gall, and Borg (2007) indicated that the null hypothesis is a statement that you want to test. Following Gall, Gall, and Borg's (2007) explanation for null hypotheses, for research questions 1 and 2, this researcher observed nothing was being tested and there were no theoretical expectations for these two questions. As a result, null hypotheses were only written for research questions 3, and 4. These two research questions had theoretical expectations of differences in the level of implementation of the four RTI components. At the end of this section are listed the two null hypotheses. To the right of each null hypothesis is the name of the research question associated with the null hypothesis.

Null hypothesis 1 (research question 3). There will be no significant difference in the students' special education referral rates as a result of the implementation of the four levels of RTI components.

Null hypothesis 2 (research question 4). There will be no significant difference in the students' special education referral rates based on gender and ethnicity as a result of the levels implementation of RTI components.

Data Collection Instrument

The study had one data collection instrument. It was the Response-to-Intervention School Readiness Survey (RTI SRS). This section describes the instrument and reports on validity and reliability. Wright (2012) indicated that to implement RTI components effectively, schools must become familiar with a specialized set of tools and competencies, including knowledge of a

range of scientifically based interventions that address common reasons for school failure and the ability to use various methods of assessment to monitor student progress in academic and behavioral areas. Wright (2007) developed the RTI SRS to help schools to identify those RTI components that they were already skilled in and those elements that need additional attention (see Appendix A).

On the RTI SRS, there are four levels of implementation. The four levels are (a) lacks skills or basic knowledge of this component, (b) just starting to learn this component (beginning level), (c) developing skill with this component (intermediate level), and (d) fully competent in this component (advanced level). Further, the RTI SRS is organized into six sections. Section I identifies the elementary schools; Section II collects demographics. The remaining sections represent components of the RTI (Wright, 2008). The components are (a) using intervention teams to problem-solve, (b) selecting the right intervention, (c) monitoring student progress, and (d) graphing data for visual analysis. The first component is represented by two statements, and the second section is represented by 13 statements. The third section is represented by five statements; the last section is represented by two statements. Therefore, there are a total of 22 items on the RTI SRS.

Each of the 22 items was scored using the same scale. The scale is 0 = lack skills or basic knowledge of this practice; 1 = just starting to learn this practice (beginning level); 2 = developing skill with this practice (intermediate level); 3 = fully competent in this practice (advanced level). The levels of implementation of RTI assessed by the scale were beginning level, intermediate level, and advanced level (Wright, 2007).

According to Gall, Gall, and Borg (2007), one of the most popular reliability statistics in use today is Cronbach's alpha. Cronbach's alpha is used to determine the internal consistency or average correlation of items in a survey instrument to gauge its reliability. Gall, Gall, and Borg (2007) further indicates that the alpha coefficient ranges in value from 0 to 1 and may be used to describe the reliability of factors extracted from survey scales. The higher the score, the more reliable the scale. These researchers indicated 0.70 to be an acceptable reliability.

Wright (2007) evaluated each RTI SRS statement for reliability using Cronbach's alpha. Wright indicated that in the RTI SRS, the Cronbach's Alpha procedure correlated the score for an item with the total score and compared that to the variability present for individual item scores. The reliability of the RTI SRS was computed to be 0.81. This Cronbach's alpha value

deemed the survey reliable because researchers tend to follow the guideline that alpha should be at least 0.70 (Wright, 2007). Teachers, school administrators, district-level personnel, and a content review committee of university professors extensively field-tested and critiqued the RTI SRS over several years to establish content validity (Wright, 2007).

Data Collection Procedures

After approval of the prospectus by the dissertation committee and the university's Institutional Review Board (IRB), this writer visited the director, Department of Strategic Evaluation and Assessments, located in the central office of the target school division. The goal of the visit was to collect 2011 special education referral rates. Overall referral rates, email addresses, and demographic data such as ethnicity and gender were requested for each of the 35 elementary schools in the school division. The director of this department is the custodian of the computer database that housed these data.

After approval of the study by the university's institutional review board (irb), the director provided a computer listing of the 35 elementary schools' data (see Appendix B). The electronic list was stored on a universal serial bus (usb) flash drive. The electronic list also contained the names of the school. The researcher personally retrieved the USB flash drive from the director and locked it in a file cabinet in her office until time for data analysis. To further protect confidentiality of data, only this researcher had the key to the cabinet.

Regarding the RTI SRS data collection procedures, the RTI SRS was placed on SurveyMonkey so that it could be electronically delivered to the educator participants' school email addresses. SurveyMonkey was used to analyze data from the surveys needed for this researcher to respond to the research questions and hypotheses (Goldberg, 2009). In an email note to the educators, they were requested to complete the RTI SRS and return it in seven days to this writer. After the seven-day period, the writer queried SurveyMonkey for a list of all educators who had not completed and returned the survey. The nonresponding participants were phoned and emailed to explain the importance of completing the survey; these nonresponders were asked to complete the survey and email it to the writer. A second follow-up email was sent to nonresponders. This follow-up process ensured a high rate of return of the 619 surveys.

Gall, Gall, and Borg (2007) reported that the percentage of people who respond to a survey is called the response rate; the response rate is important, and should not be left to

chance. High survey response rates help to ensure that survey results are representative of the target sample (Gall, Gall, & Borg, 2007). A survey must have a good response rate in order to produce accurate and useful results. Creswell (2008) indicates that a researcher could obtain the response rate by dividing the number of people who submitted a completed survey (80% or more of questions answered) by the number of people that were contacted. For instance, if 185 were asked to complete the survey and 107 responded, the response rate is $107/185$ or 58% (Creswell, 2008)

Gall, Gall, and Borg (2007) revealed that acceptable response rates varied by how the survey was administered. These researchers' guide to acceptable response rates were (a) 50% for surveys administered through the mail, (b) 80% for phone surveys, (c) 50% for emailed surveys, (d) 50% for classroom paper surveys, and (e) 80% for face-to-face surveys. Using the guidance of Creswell (2008) and Gall, Gall, and Borg (2007), in this research study, the target response rate was 433 of 619 surveys or 70%. Since surveys were emailed to respondents, the target 70% rate was higher than the 50% rate suggested by Gall, Gall, and Borg (2007) for an acceptable rate of return of surveys.

Data Analysis Procedures

Data analysis for each of the research questions followed the descriptive statistics (frequencies, percentages, effect sizes, means, and standard deviations) and inferential statistics (analysis of variance) (typically used in descriptive-survey and causal comparative research designs (Gall, Gall, & Borg, 2007). Quantitative methodology was used in the study. The survey was emailed through SurveyMonkey. Next, responses gathered from SurveyMonkey were typed into a Statistical Package for the Social Sciences (SPSS) version 19.0 data file. The writer used the SPSS program to compute descriptive and inferential statistics. Descriptive statistics for the first two research questions were the descriptive statistics typically used in the descriptive-survey research design (Gall, Gall, & Borg, 2007). These descriptive statistics included frequencies, percentages, means, and standard deviations (Gall, Gall, & Borg, 2007).

Descriptive statistics for the last two research questions were the descriptive statistics used in the causal comparative research design to include posttest means, standard deviations, and effect sizes (Creswell, 2008). The effect size was calculated using the Cohen's *d* effect size indicator (Johnson & Christensen, 2011). The effect size statistics were used to determine the

strength of the differences between special education referral rates of the four levels of implementation of the RTI components. Gay and Airasian (2003) indicates that the effect size indexes of about .20 are typically regarded as small effects; of about .50 as medium or moderate effects; of about .80 or above as large effects. The inferential statistical model for the last two research questions were analysis of variance (ANOVA) (Creswell, 2008). From the ANOVA, the writer reported the F-value, degrees of freedom, and probability or *p* value (Creswell, 2008).

Limitations

It is important to note that there were several limitations or delimitations to the study that could have affected the findings. The study was limited to only one data collection instrument which was the RTI SRS. The number of schools involved in the data collection was 35 urban elementary schools. These 35 schools were from one urban school division. Since there were only 35 elementary schools in the division, the small sample size may have altered the results of the study and the conclusions, and, as stated by Lenth (2001), a small sample size tends to raise the bar of statistical significance. Thus, the results might not be generalizable.

Another limitation was the use the descriptive-survey research design for research questions 1 and 2 and the causal comparative research design as a guide for data collection and data analysis for the last two research questions. According to Creswell (2008), the designs do not have strong controls for extraneous variables that might affect internal validity. Furthermore, since the independent variable (i.e., levels of implementation of the four RTI components) had already occurred and therefore could not be manipulated, a cause and effect situation should not be inferred from the data. The descriptive-survey and causal comparative research designs did not confirm but only suggested a relationship between the independent variable (levels of implementation of the RTI components and the dependent variable (overall special education referral rates at the schools). As a result, readers should be careful when generalizing the results beyond the current research setting (Gay & Airasian, 2003).

A limitation relates to the distribution of the 619 surveys but only a return of 483 surveys. Additionally, not all items on the 483 surveys were completed by respondents. There were missing items. As a result, the dissertation's findings might not exactly reflect the findings from the 619 participants in the population. However, because of the high rate of return of surveys, it is anticipated that the dissertation's findings closely approximated the views of the population on

the levels of implementation of the four RTI components and the impact of these components on the referral rates of students for special education services.

A final limitation pertains to not having the length of time periods for the implementation of each of the four RTI components at the 35 schools. As stated, several attempts were made to obtain the length of time for the implementation of the four RTI components. For instance, a phone call to the Director, Department of Strategic Evaluation and Assessments revealed this data were not in the district's computer database. An email survey requesting the information from the principals of the 35 targeted schools was unsuccessful in obtaining the information. The inability to obtain the time periods related to the implementation of RTI components precluded the use of a more powerful statistical model such as analysis of covariance (ANCOVA). In the ANCOVA model, the time periods could have been used as covariates.

Summary

Chapter 3 presents the methodology that evolved from the research questions. The study's sample participants are described relative to location and other demographics. The data collection instrument for the four research questions is described and validity and reliability are presented to confirm the credibility of the instrument. The writer describes the data collection and data analysis procedures associated with the research questions. Limitations are identified that might affect internal and external validities.

Chapter 3's methodologies serve as a framework for reporting the quantitative findings for each research question in Chapter 4. Reporting the findings using Chapter 3's methodologies as a framework means this researcher will closely follow the descriptive-survey and causal comparative research designs to objectively answer all research questions and null hypotheses. The researcher presents a discussion of the findings and whether or not the findings support the current literature in Chapter 5. Further, in Chapter 5, there is a presentation on implications of the findings and recommendations for future researchers wishing to extend this study.

Chapter 4: Results

Introduction

Chapter 4 reports the findings of the four research questions and two hypotheses. All research questions are quantitative research questions. Data were collected for all research questions and hypotheses with the Response-to-Intervention School Readiness Survey (RTI SRS).

Six procedures were followed to organize and report findings in this chapter. First, the researcher restated the research question. Second, for the first two questions, descriptive statistics typically used in the descriptive-survey research design are presented. These descriptive statistics are frequencies, percentages, means, and standard deviations (Gall, Gall, & Borg, 2007). Third, for the last two research questions, descriptive statistics typically used in the causal comparative research design are reported. These statistics are means, standard deviations, and effect sizes (Creswell, 2008). Additionally, for the last two research questions, the inferential statistics from the one-way analysis of variance (ANOVA) model are reported. The inferential statistics include the F value, degrees of freedom (df), and probability (p) value (Creswell, 2008).

Fourth, for all research questions, findings are displayed in tables and main findings in each table are objectively reported. Fifth, findings from the analyzed data for each research question are summarized and used to answer the research question. Last, findings from the final two research questions are used to determine whether to accept or reject the two null hypotheses.

Gall, Gall, and Borg (2007) indicated that a 50% rate of return is an acceptable rate of return for online surveys. In the dissertation study, the rate of return for the RTI SRS was established at no fewer than 70% of the 619 distributed surveys. Of the 619 participants in the population, 483 of 619 (78.02%) completed and returned the RTI SRS. Therefore, the 78.02% rate of return exceeded the minimum desired rate of return by 8.02 percentage points. However, all educators did not complete each item on the surveys. Consequently, there were missing items.

In Table 1 is a presentation of the demographics of the 483 respondents. These are the educators who completed and returned the surveys. Also in this table, the data in the second column represent the number of responders in the four categories (principals, general educators, special educators, and communication specialists). Consequently, the numbers in the four categories in the second column add to 483. The data in the last column represents the equivalent

percent for the number of responders in the four categories. Consequently, the percents in the third column add to 100%.

Table 1

Demographic of Survey Respondents from the 35 Elementary Schools (n=483)

Group	Number responding	% respondents
Principals	22 of 35	4.55
General educators	326 of 355	67.49
Special educators	101 of 194	20.91
Communication specialists	34 of 35	7.05
Total	483 of 619	100

Findings for Research Question 1

In research question 1, the question was asked, What are the levels of implementation of the four RTI components in the 35 elementary schools in the selected division? Two different analyses were conducted on the data for RQ1. The first analysis focused on the computation of the mean or average level of implementation of the four RTI components for each of the 35 elementary schools. Results from the first analysis are presented in Table 2. The computations were based on the following scale (response options): 0 = lack skills or basic knowledge of this component; 1 = just starting to learn this component (beginning level); 2 = developing skill with this component (intermediate level); 3 = fully competent in this component (advanced level) (Wright, 2012). The second analysis involved responders from all 35 schools and their perceptions on each of the 22 RTI SRS items. The number and percentage of responders were reported for each of the four response options. The second analysis was organized using five procedures. Findings for the second analysis are displayed in Tables 3, 4, 5, and 6.

First analysis on the mean level of implementation of the four RTI components for each of the 35 schools. In the first column of Table 2 is a unique number that represents each of the 35 elementary schools in the study. The subsequent four columns indicate the numerical

value of the level of implementation of the four RTI components (using teams to problem solve, selecting the right intervention, monitoring student progress, and graphing data for visual analysis). The numbers representing the numerical values of the levels of implementation were rounded off to the nearest whole number.

In the sixth column of Table 2 is a number that indicates the average or mean level of implementation of the four RTI components for each of the 35 schools. The numbers in the sixth column were rounded to the nearest whole numbers and converted to advanced level (AL), intermediate level (IL), and beginning level (BL). The letters are appropriately displayed in the seventh column in Table 2 and represent the levels of implementation of the RTI components (Wright, 2012). In this table the rating criteria are 0 to .49 = LK (no basic knowledge of the RTI component); .50 to 1.40 = BL; 1.50 to 2.40 = IL, and 2.50 to 3.00 = AL. Surprisingly, none of the schools had a mean rating of LK. Consequently, Table 2 only reflects mean ratings of AL, IL, and BL. In this table, the mean RTIC is rounded to two decimal places.

Table 2

Level of Implementation of the Four RTI Components at each School (n=35)

Level of Implementation of the Four RTI Components						
School	RTIC1	RTIC2	RTIC3	RTIC4	Mean RTIC	RTIC rating
1	3	3	2	3	2.75	AL
2	3	2	3	3	2.75	AL
3	3	3	3	3	3.00	AL
4	2	2	2	2	2.00	IL
5	3	3	2	3	3.00	AL
6	2	3	2	2	2.25	IL
7	3	2	3	3	2.75	AL
8	3	3	3	3	3.00	AL
9	1	0	0	1	0.50	BL
10	3	3	3	3	3.00	AL

(table continued)

Table 2 (continued)

Level of Implementation of the Four RTI Components						
School	RTIC1	RTIC2	RTIC3	RTIC4	Mean RTIC	RTIC rating
11	3	2	2	3	2.50	AL
12	3	3	3	2	2.75	AL
13	2	3	3	2	2.50	AL
14	3	3	3	2	2.75	AL
15	2	2	3	2	2.25	IL
16	3	3	3	3	3.00	AL
17	2	2	3	2	2.00	IL
18	2	3	2	2	2.25	IL
19	0	1	1	0	0.50	BL
20	3	3	3	3	3.00	AL
21	1	1	2	2	1.50	IL
22	0	1	0	1	0.50	BL
23	3	2	3	3	2.75	AL
24	3	3	3	3	3.00	AL
25	2	3	2	2	2.25	IL
26	1	1	0	1	0.75	BL
27	2	3	3	2	2.50	AL
28	0	0	1	1	0.50	BL
29	3	3	3	3	3.00	AL
30	0	0	1	1	0.50	BL
31	3	3	3	2	2.75	AL
32	1	2	2	1	1.50	IL
33	2	2	2	3	2.25	IL

(table continued)

Table 2 (continued)

Level of Implementation of the Four RTI Components						
School	RTIC1	RTIC2	RTIC3	RTIC4	Mean RTIC	RTIC rating
34	3	2	3	2	2.50	AL
35	2	2	3	2	2.25	IL

Note. RTC1 = numerical value of level of implementation for the component, using teams to problem solve; RTC2 = numerical value of level of implementation for the component, selecting the right intervention; RTC3 = numerical value level of the implementation for the component, monitoring student progress; RTC4 = numerical value of the level of implementation for the component, graphing data for visual analysis; mean RTC = average of the four levels of implementation; AL = letter designation for advanced level of implementation of the component; IL = letter designation for intermediate level of implementation of the component; BL = letter designation for beginning level of implementation of the component; RTIC rating = rating assigned by responders relative to the level of implementation.

An inspection of the findings in Table 2 shows responders at 19 of the 35 schools perceived their schools had an average rating of AL for the four RTI components. Responders were located at the following schools: 1, 2, 3, 5, 7, 8, 10, 11, 12, 13, 14, 16, 20, 23, 24, 27, 29, 31, and 34. These principals, regular education teachers, special education teachers, and communication specialists perceived the schools encouraged teachers to refer struggling students to their multidisciplinary intervention team; the team was fully competent as a multi-disciplinary team and followed a structured problem-solving model. The educators at the 19 AL schools perceived teachers to be fully competent to select scientifically-based interventions that matched the students' deficits. Additionally, teachers at the schools were fully competent and had the capacity to collect baseline data and use these data to conduct frequent progress monitoring of students in academic and behavioral areas. The responders perceived the teachers at their schools were fully competent to routinely transform progress-monitoring data into visual displays to share with teachers, parents, and others. An example of a visual display is a time-series graph. The displays demonstrate whether the student is benefiting from the intervention.

Interesting, of the 19 AL schools, 8 of 19 (42.11%) schools reported the highest possible AL rating for each of the four RTI components. The highest possible rating was 3. The schools were numbers 3, 5, 8, 10, 16, 20, 24, and 29. Of the 19 schools, 7 of 19 (36.84%) schools reported the rating of 3 for 3 of the 4 RTI components. The remaining rating reported by the schools was 2. These schools were numbers 1, 2, 7, 12, 14, 23, and 31. Consequently, 15 of 19 (78.95%) schools reported a rating of 3.

A further examination of Table 2 shows responders at 10 of the 35 schools perceived the schools had a mean rating of IL for the four RTI components. These responders were associated with the following schools: 4, 6, 15, 17, 18, 21, 25, 32, 33, and 35. They reported that the multidisciplinary intervention team was not fully competent but was adequately developing the skill associated with a structured problem-solving team model. The educators at the 10 IL schools reported that teachers were adequately developing the skill to select scientifically-based interventions that matched students' deficits. Teachers were developing the skill to conduct frequent progress monitoring of students in academic and behavioral areas and to transform progress-monitoring data into visual displays.

Findings in Table 2 reveal that responders at 6 of the 35 schools reported that the schools had an average rating of BL. The responders were affiliated with the following schools: 9, 19, 22, 26, 28, and 30. They reported that the multidisciplinary intervention team was just beginning to learn how to follow a structured problem-solving team model. The educators at the six BL schools perceived teachers were just learning how to develop the skill to select scientifically-based interventions. The teachers were just beginning to develop the skill to conduct frequent progress monitoring of students in academic and behavioral areas and to transform progress-monitoring data into visual displays. Interesting, 5 of 6 (83.33%) BL schools had an average BL rating of .50 for the four RTI components. The remaining of the six BL schools had an average rating of .75. In each of the BL schools with the .50 rating, two RTI components were rated with a zero. A rating of zero means responders lacked the skills or basic knowledge of the component.

Second analysis on the number and percentage of responders' in the 35 schools responses for each RTI SRS item. Five procedures were used to organize the findings in the second analysis. Initially, participants' responses from the two survey items that served as the data collection source for the first RTI component (using teams to problem solve) were analyzed, and next, the 13 survey items that were the data collection source for the second component (selecting the right intervention) were analyzed. Third, the five survey items related to the component, monitoring student progress, were analyzed. The last two items on the RTI SRS are associated with the component, graphing data for visual analysis. An analysis was conducted for these two items in the fourth procedure. Fifth, main findings evolving from the previous four procedures were summarized and used to support the answer for research question 1.

Regarding the first procedure related to the first RTI component, Table 3 is a display of the results for this RTI component (using teams to problem solve). For the first component, data were collected using two survey items. The items are my school's intervention team (a) is multi-disciplinary and has members who carry a high degree of credibility with other staff in the building and (b) follows a formal problem-solving model during meetings. Of the 483 participants responding to the first survey item, the highest percentage of responders (62.1%) indicated their elementary schools had fully competent multi-disciplinary intervention teams with a high degree of credibility, while the second highest percentage of responders (27.5%) reported the teams were developing their skills as multi-disciplinary intervention teams. Therefore, the first and second highest percentage of responders perceived the school intervention teams were at the advanced level and intermediate level of implementation, respectively. Less than 9% of the responders reported that the teams were just starting as multi-disciplinary teams (i.e., beginning level of implementation).

For the second survey item in the using teams to problem solve component, there were 456 responders. Of these responders, 47.4% perceived their intervention teams were fully competent in following a formal problem solving model in meetings, while 36.4% reported the teams were developing skills in following the formal model. Consequently, for the second survey item, the first and second highest percentage of responders reported the teams were at the advanced level and intermediate level of implementation, respectively. Slightly less than 12% of responders reported that the teams were just starting to use a formal problem solving model at meetings (i.e., beginning level of implementation). For both survey items, the highest percentage of responders perceived their elementary schools to be fully competent or at an advanced level of implementation of the first RTI component, using school intervention teams to problem solve (see Table 3). All of the 483 participants responded to the first survey items, while 27 of the 483 participants did not respond to the second item.

Table 3

Levels of Implementation for Component, Using Teams to Problem Solve

Component items	LK		BL		IL		AL		T
	N	%	N	%	N	%	N	%	
Multi-disciplinary									
team	8	1.7	42	8.7	133	27.5	300	62.1	483
Follows formal problem									
solving model	21	4.6	53	11.6	166	36.4	216	47.4	456

Note. LK = lack skills or basic knowledge of the components; BL = just starting to learn this component (beginning level); IL = developing skill with this component (intermediate level); AL = fully competent in this component (advanced level); T = total number of responders; N = number of responders at each level; % = percentage of responders at each level.

For the second procedure related to the second RTI component, Table 4 is a presentation of the results for this RTI component (selecting the right intervention). For this component, data were collected with 13 survey items. The 13 items are my school (a) puts together a library of effective, research-based intervention ideas for common student referral concerns, such as poor reading fluency and defiant behavior; (b) considers the likely root causes of the student's reading or behavioral difficulties; (c) tailors intervention ideas as needed to be usable in real-world classrooms while being careful to preserve the treatment qualities that make each intervention effective; (d) formats intervention strategies as step-by-step teacher-friendly scripts containing enough detail so that educators can easily understand how to put them into practice; (e) follows up with teachers soon after a classroom intervention has been put into place to ensure that the instructor has been able to start the intervention and is implementing it correctly; (f) creates an atmosphere in which the referring teacher feels welcomed and supported; (g) collects background information and baseline data on the student to be used at the initial intervention team's meeting; (h) inventories school-wide resources that can be used in team interventions; (i) selects reading and behavioral interventions that are scientifically based; (j) sets clear, objective, and measurable goals for student progress; (k) selects methods of assessment; (l) documents the quality of the referring teacher's efforts in implementing the intervention; (m) holds follow-up

meetings with the referring teacher to review student progress and to judge whether the intervention was effective.

An inspection of Table 4 shows that for the second RTI component (selecting the right intervention), the highest percentage of responders reported the advanced level of implementation for 10 of 13 (76.92%) of the survey items. These are survey items (b), (c), (f), (g), (i), (j), (k), (l), (m), and (n). Further, the second highest percentage of responders reported the intermediate level of implementation for the remaining three items. The items are (a) puts together a library of effective, research-based intervention ideas for common student referral concerns, such as poor reading fluency and defiant behavior; (d) formats intervention strategies as step-by-step teacher-friendly scripts containing enough detail so that educators can easily understand how to put them into practice; (h) inventories school-wide resources that can be used in the team's interventions. Therefore, the highest percentage and the second highest percentage of responders reported either the advanced level or the intermediate level of implementation for the 13 survey items representing the RTI component, selecting the right intervention.

Interesting, for 12 of 13 (92.31%) of the items, less than 20% of the responders reported that the 12 items were at the beginning level of implementation, meaning the respondents were just beginning to learn this component. In the remaining item, 22.5% of responders perceived the beginning level. This remaining item, item (e), follows up with teachers soon after a classroom intervention has been put into place to ensure that the instructor has been able to start the intervention and is implementing it correctly. In other words, for this remaining item, 22.5% of participants perceived the beginning level of implementation (see Table 4).

Table 4

Levels of Implementation for Component, Selecting the Right Intervention

Component items	LK		BL		IL		AL		T
	N	%	N	%	N	%	N	%	
Has effective research-based ideas	24	5.0	78	16.4	206	43.3	168	35.3	476
Considers root causes of difficulties	14	2.9	59	12.4	177	37.3	225	47.4	475
Tailors interventions to real world	22	4.7	57	12.2	182	38.8	208	44.3	469
Formats strategies step by step	51	10.9	91	19.4	169	36.0	158	33.7	469
Follows up with Teachers	50	10.7	105	22.5	154	33.0	157	33.7	466
Creates a welcoming atmosphere	25	5.4	49	10.5	152	32.5	241	51.6	467
Collects student base line data	17	3.7	40	8.6	130	28.0	277	59.7	464
Inventories school wide resources	30	6.5	73	15.7	184	39.6	178	38.3	465
Selects scientifically based interventions	15	3.2	55	11.9	179	38.6	215	46.3	464
Sets clear and measurable goals	17	3.7	45	9.7	144	31.0	259	55.7	465
Selects methods of assessment	26	5.7	68	14.8	152	33.2	212	46.3	458
Documents quality of teacher's effort	33	7.1	83	17.8	173	37.2	176	37.8	465
Holds follow up meetings teacher	31	6.7	86	18.6	152	32.8	194	41.9	463

Note. LK = lack skills or basic knowledge of the components; BL = just starting to learn this component (beginning level); IL = developing skill with this component (intermediate level); AL = fully competent in this component (advanced level); T = total number of responders; N = number of responders at each level; % = percentage of responders at each level.

Regarding the third procedure related to the third RTI component, Table 5 is a display of the results for this RTI component, monitoring student progress. For this component, data were collected utilizing five survey items. The five items are my school (a) conducts structured classroom observations of students to determine rates of on-task behavior, academic engagement, work completion, and rates of positive or negative interactions with adults; (b) collects and assesses student work products to assess the completeness and accuracy of the work and to estimate the student time required to produce the work; (c) administers and scores curriculum-based measurement probes in basic skill areas; (d) uses local or research norms or criterion-based benchmarks; (e) creates daily behavior report cards or other customized rating forms to allow the instructor to evaluate key student academic and general behaviors on a daily basis.

An examination of Table 5 reveals that for the third RTI component (monitoring student progress), the highest percentage of responders reported the advanced level of implementation for each of the five survey items. Also, 4 of 5 (80%) of the highest percentages reflected greater than 50% of the responding participants. The single highest percentage less than 50% was related to the last survey item in Table 4, item e. Item (e) is creates daily behavior report cards or other customized rating forms to allow the instructor to evaluate key student academic and general behaviors on a daily basis. The percentage is 38.4%. Interesting, the second highest percentage of responders perceived the intermediate level of implementation for each of the survey five items.

Equally as interesting, 11% or less than 11% of responders perceived the beginning level of implementation for all survey items except item (e). For item (e), 18.7% of responders reported they were just beginning to learn this item (see Table 5).

Table 5

Levels of Implementation for Component, Monitoring Student Progress

Component items	LK		BL		IL		AL		T
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
<hr/>									
Conducts structural class--									
observations	20	4.5	49	10.9	144	32.1	236	52.6	449
Collects and assesses									
work products	13	2.9	49	11.0	144	32.3	240	53.8	446
Administers and scores									
CBM probes	15	3.4	40	9.0	129	29.1	259	58.5	443
Uses criterion-based									
benchmarks	15	3.4	40	9.1	143	32.4	243	55.1	441
Creates daily behavior									
report cards	40	9.0	83	18.7	150	33.9	170	38.4	443

Note. LK = lack skills or basic knowledge of the components; BL = just starting to learn this component (beginning level); IL = developing skill with this component (intermediate level); AL = fully competent in this component (advanced level); T = total number of responders; N = number of responders at each level; % = percentage of responders at each level.

Regarding the fourth procedure related to the last RTI component, Table 6 is a display of the results for this RTI component (graphing data for visual analysis). For this component, data were collected with two survey items. The two items are my school (a) converts progress-monitoring data into visual displays such as time-series graphs to aid in instructional and behavioral decision-making and (b) shares charted or graphed information with students, teachers, parents, and administrators as feedback about the effectiveness of the intervention.

The analysis in Table 6 reveals that for the fourth RTI component (graphing data for visual analysis), the highest percentage of responders reported the advanced level of implementation for each of the two survey items. The two highest percentages (45.8% and 44.8%) differed by only one percentage point favoring the survey item, shares charted or graphed information with students, teachers, parents, and administrators as feedback about the effectiveness of the

intervention. Further, the second highest percentage of responders perceived the intermediate level for each of the two items. More than three-fourths of the respondents perceived the two survey items were either at the intermediate or the advanced levels (see Table 6).

Table 6

Levels of Implementation for Component, Graphing Data for Visual Analysis

Component items	LK		BL		IL		AL		T
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Converts progress monitoring									
to visual displays	24	5.4	68	15.2	154	34.5	200	44.8	446
Shares graphed data									
with others	29	6.5	66	14.9	145	32.7	203	45.8	443

Note. LK = lack skills or basic knowledge of the components; BL = just starting to learn this component (beginning level); IL = developing skill with this component (intermediate level); AL = fully competent in this component (advanced level); T = total number of responders; N = number of responders at each level; % = percentage of responders at each level.

To answer Research question 1 with the analyzed data, findings from the first analysis showed 19 of the 35 schools were rated AL, while 10 schools were rated IL. Six of 35 schools were rated BL or at the beginning level of implementation of the four RTI components. Findings from the second analysis supported the findings in the first analysis. In the second analysis, results revealed that for the four RTI components, the highest percentage of responders from the 35 schools generally perceived the four components were at the advanced level or intermediate level of implementation. Participants perceived their schools were either developing or fully competent in the skills and activities associated with the four components. The skills and activities are represented by the 22 items on the RTI SRS. Only a small percentage of responders reported the schools lacked the basic skills or knowledge associated with the components, while only a few responders reported the schools were just beginning to develop the skills associated with the components.

Findings for Research Question 2

In research question 2, the question was asked, What are the special education referral rates in the 35 elementary schools? Two different analyses were conducted on the data for RQ2. Referrals rates were provided by the targeted school district based on the district's definition of referral rates. The district's definition is the number of initial referrals for special education evaluation/total number of student enrolled enrollment (excluding special education students) (Virginia Department of Education, 2011). The first analysis focused on the computation of the mean or average rates of referral of students for special education services in each of the 35 elementary schools. Results of the first analysis are displayed in Table 7. The second analysis focused on the (a) rate of referral for special education services for all students in each of the 35 schools, (b) rate of referral for the seven subgroups (male, female, African American, White American, Hispanic American, and Asian American, and Other American), (c) comparison of differences in rate of referral for each of the seven subgroups, and (d) comparison of the differences in the main group's and the seven subgroups' rate of referral based on the schools' ratings of AL, IL, and BL. Findings from the second analysis are displayed in Tables 8, 9, and 10.

First analysis on the mean rate of referrals for each of the 35 schools. In the first column of Table 7 is unique number for each of the elementary schools in the study. The second column has the letters AL, IL, and BL. These letters represent the advanced level, intermediate level, and beginning level of implementation of the four RTI components. In the last column is a display of the mean rate of referral of students to special education services for each of the 35 elementary schools. The range of the mean rates is from 1.82 to 15.30.

An examination of Table 7 indicates that the five lowest rates of referral of students for special education services are 1.82, 2.02, 2.32, 2.45, and 2.50. The rates of referrals are for schools 20, 3, 24, 29, and 10, respectively. The five schools are all AL schools. Additionally, the other 12 AL schools have the lowest rates of referrals (1.82, 2.02, 2.32, 2.45, 2.50, 2.68, 2.68, 2.87, 3.00, 3.06, 3.08, and 3.14). These 12 AL schools are 20, 3, 24, 29, 10, 5, 13, 2, 23, 16, 27, and 11. Further inspection of Table 7 shows the five highest rates of referral of students for special education services are 15.30, 6.22, 6.15, 5.85, and 4.99. The five rates of referrals are for schools 21, 19, 22, 30, and 28, respectively. The school (21) with the highest rate of referral

(15.30) is an IL school, while the remaining four schools (19, 22, 30, and 28) are BL schools (see Table 7).

Table 7

Referral Rate for Special Education Services for each School (n=35)

School	RTIC rating	Referral rate for special education services
1	AL	3.56
2	AL	2.87
3	AL	2.02
4	IL	4.75
5	AL	2.68
6	IL	4.67
7	AL	3.93
8	AL	2.65
9	BL	4.77
10	AL	2.50
11	AL	3.14
12	AL	3.70
13	AL	2.68
14	AL	3.95
15	IL	4.60
16	AL	3.06
17	IL	4.64
18	IL	4.51
19	BL	6.22

(table continued)

Table 7(continued)

School	RTIC rating	Referral rate for special education services
20	AL	1.82
21	IL	15.30
22	BL	6.15
23	AL	3.00
24	AL	2.32
25	IL	4.50
26	BL	4.79
27	AL	3.08
28	BL	4.99
29	AL	2.45
30	BL	5.85
31	AL	3.61
32	IL	4.57
33	IL	4.11
34	AL	3.96
35	IL	3.28

Note. The high referral rate (15.30) for IL school 21 exists because the school serves special populations.

Second analysis on the cumulative rate of referrals for all students and subgroups of students in the 35 schools. In the 35 elementary schools, there were a total of 16,245 students. Of this total number of students 7,878 of 16,245 (48.50%) students were male students; 8,367 of 16,245 (51.50%) students were female students; 9,998 of 16,245 (61.55%) students were African American students. Further, 3,589 of 16,245 (22.10%) students were White American students; 1,101 of 16,245 (6.78%) students were Hispanic American students, and 341 of 16,245 (2.10%) students were Asian American students. Last, 1,216 of 16,245 (7.48%) students indicated a

classification in the *other* category. The Other American category meant the students did not consider themselves members of the African American, White American, Hispanic American, or the Asian American ethnic subgroups (see Table 8).

Table 8

Distribution of Students in the Elementary Schools (n=35)

Subgroup demographics	# of students
Male	7,878
Female	8,367
Total	16,245
African American	9,998
White American	3,589
Hispanic American	1,101
Asian American	341
Other American	1,216
Total	16,245

When all students in the 35 schools were considered, the lowest referral rate for special education services for a school was 1.82; the highest was 15.27 (see Table 9). The range was 13.45. The mean was 4.13. When all males in the 35 schools were considered, findings showed the mean male referral rate (5.42) was higher than the mean female referral rate (2.91). Also, for the males, the lowest referral rate for a school was 2.15; the highest was 16.66. The range was 14.51. The mean was 5.42. Regarding the female referral rate, the lowest referral rate was 0.73; the highest was 13.33. The range was 12.60. The mean was 2.91. Comparing the male and the female students' mean referral rates showed the difference between the two subgroups' rates was

2.51. This difference indicates the male rate of referral for special education services is 2.51 percentage points greater than the female mean referral rate (see Table 9).

Cohen's *d* effect size indicator was calculated for the male and female mean rate of referral for special education services (Johnson & Christensen, 2011). The effect size statistic was used to determine the strength of the differences between the two means. The computed effect size statistic was 1.04, indicating the difference (2.51) between the male and female means as having a large effect (Johnson & Christensen, 2011). Gay and Airasian (2003) indicated that the effect size indexes of about .20 are typically regarded as small effects; of about .50 as medium or moderate effects; of about .80 or above as large effects.

When all African Americans in the 35 schools were considered, the African American student mean referral rate (4.26) for special education services was higher than the White American student mean referral rate (3.89) (see Table 7). Further, for the African American student, the lowest referral rate was 1.38; the highest was 16.21. The range was 14.83. The mean was 4.26. For the White American student referral rate, the lowest referral rate was zero; the highest was 18.18. The range was 18.18. The mean was 3.89. When the African American and the White American students' mean referral rates were compared, the difference is 0.37. The 0.37 difference indicates the African American students' mean referral rate is 0.37 percentage point greater than the White American student referral rate (see Table 9).

Cohen's *d* effect size indicator was calculated for the African American and White American students' mean rate of referral for special education services. The computed effect size statistic was 0.11 indicating the difference (0.37) between the African American and White American students' means as having a small effect (Johnson & Christensen, 2011).

Table 9

Referral Rate for the Elementary Schools (n=35)

Subgroup demographics	Low referral rate	High referral rate	Range	Mean	SD
Male	2.15	16.66	14.51	5.42	2.64
Female	0.73	13.33	12.60	2.91	2.18
African American	1.38	16.21	14.83	4.26	2.69
White American	0.00	18.18	18.18	3.89	4.17
Hispanic American	0.00	14.28	14.28	2.96	4.07
Asian American	0.00	11.10	11.10	1.22	2.88
Other American	0.00	25.00	25.00	3.54	5.00
All students	1.82	15.27	13.45	4.13	2.24

Note. Low referral rate = lowest or minimum referral rate; High referral rate = highest or maximum referral rate; sd = standard deviation.

In Table 10 is a presentation of the mean referral rate for special education services for each of the seven demographic subgroups in rank order. A rank of one indicates the highest mean referral rate, and the rank of 7 indicates the lowest mean referral rate for a subgroup. The male student subgroup received the rank of 1, and the African American student subgroup received the rank of 2. Therefore, these two groups have the two highest mean special education referral ranks. The two lowest mean ranks are 7 and 6 for the Asian American student subgroup and the female student subgroup, respectively (see Table 10).

Table 10

Ranks of Mean Referral Rate for the Elementary Schools (n=35)

Category	Mean referral rate	Rank
Male	5.42	1
African American	4.26	2
White American	3.89	3
Other American	3.54	4
Hispanic American	2.96	5
Female	2.91	6
Asian American	1.22	7

To answer Research question 2 about the rates of referral for special education services in the 35 schools, findings from the first analysis showed that the AL schools have the 12 lowest rates of referrals (1.82, 2.02, 2.32, 2.45, 2.50, 2.68, 2.68, 2.87, 3.00, 3.06, 3.08, and 3.14). The five highest rates of referral of students for special education services are 15.30, 6.22, 6.15, 5.85, and 4.99. The school with the higher (15.30) rate of referral is an IL school, while the remaining four schools are BL schools. The findings from the second analysis support the findings from the first analysis. The results from the second analysis showed the mean referral rate for all students was 4.13 with a standard deviation of 2.24. The male subgroup had the highest mean referral rate (5.42), while the African American subgroup had the second highest mean referral rate (4.26). Findings showed the Asian American subgroup had the lowest referral rate (1.22). The Asian American sub group's referral rate was approximately one-third of the rates of the African American and the White American sub groups. There was a slight difference (0.037) between the African American and the White American mean referral rates. However, this difference had no significant statistical significance.

Findings for Research Question 3

In research question 3, the question was asked, What is the difference in referral rates based on the implementation levels of RTI? A one-way ANOVA was the statistical procedure used to analyze data for research question 3. The ANOVA model generated the descriptive statistics in Table 11 for each of the three groups of schools. One group of schools represents the

beginning level of implementation of the four RTI components. Another group represents the intermediate level. The last group of schools represents the advanced level. Six schools compose the beginning level and have a mean referral rate for special education services of 5.46. Also, 10 schools compose the intermediate level and have a mean special education referral rate of 5.49. The majority (19) of the schools were at the advanced level with a low mean referral rate of 3.00. Results show these 19 schools had a small standard deviation (0.65) meaning their 19 special education referral rates approximated the mean rate of 3.00 (see Table 11).

Table 11

All Students' Referral Rate Descriptive Statistics for Beginning, Intermediate, and Advanced Levels

Group	n	Mean	SD	SE	Min	Max
Beginning	6	5.46	0.69	0.28	4.77	6.22
Intermediate	10	5.49	3.46	1.10	3.28	15.30
Advanced	19	3.00	0.65	0.15	1.82	3.96

Note. N = number of elementary schools; sd = standard deviation; se = standard error; min = minimum score; max = maximum score.

As part of the ANOVA model, the Levene's Test of Homogeneity of Variances was executed in SPSS. One of the assumptions of the one-way ANOVA is the variances of the three groups being compared are similar. The results of the Levene's Test of Homogeneity of Variances tested for similar variances. If the significance value is greater than 0.05, homogeneity of variances exist (Johnson & Christen, 2011). Results from the Levene's test showed the following: Levene statistic = 3.15; $df1 = 2$; $df2 = 32$; $p = 0.056$. The assumption of Homogeneity of Variances was met since 0.056 is greater than 0.05. Meeting the assumption meant the ANOVA table could be used instead of the Robust Tests of Equality of Means table. Both tables were part of the SPSS output file.

Table 12 is a presentation of the output of the ANOVA analysis with the p value ($p = 0.003$) which is below the alpha value of 0.05, meaning there is a statistically significant difference in the referral rate for special education services for the beginning, intermediate, and advanced groups of elementary schools ($F(2, 32) = 7.25$, $p = 0.003$). The findings in Table 12 simply reveal that a statistically significant difference exists in the three means. Only the post-

hoc tests in the Multiple Comparisons table can show which mean is statistically different from the other means (see Table 12).

Table 12

ANOVA Table Representing All Referral Rates

Groups	SS	df	MS	F	p
Between groups	53.44	2	26.72	7.25	0.003
Within groups	117.92	32	3.69		
Total	171.36	34			

Note. SS = sum of squares; df = degrees of freedom; ms = mean square; f = ANOVA generated statistic; p = significance or probability value.

$p < .05$.

Table 13, multiple comparisons from the Tukey's post-hoc tests, reveal which of the three groups' mean referral rates for special education services differ from each other. Table 2 additionally displays the effect sizes. There is significant difference (2.46) between the beginning group's mean special education referral rate (5.46) and the advanced group's mean referral rate (3.00). The p value associated with these results is presented in Table 13 ($p = 0.026$). Cohen's d effect size indicator was calculated for the beginning and advanced level mean rate of referral for special education services. The computed effect size statistic was 3.67, indicating the difference (2.46) between the beginning level and advanced level mean rates as having a large effect (Johnson & Christensen, 2011).

Additional analysis showed a statistically significant difference (2.49) between the intermediate group's mean referral rate for special education services (5.49) and the advanced group's mean referral rate (3.00). The p value is displayed in Table 13 ($p = 0.006$). Cohen's d effect size indicator was calculated for the intermediate and advanced level mean rate of referral for special education services. The computed effect size statistic was 1.21, indicating the difference (2.49) between the intermediate level and advanced level means as having a large effect (Johnson & Christensen, 2011). Surprising, there was no statistically significant difference between the beginning group's mean referral rate (5.46) and the intermediate group's mean referral rate (5.49) as indicated by the p value ($p = 1.00$).

Table 13

Multiple Comparisons Table from Tukey's Test for All Students

Groups		MD.	<i>P</i>	<i>Cohen's d</i>
Beginning	Intermediate	-0.028	1.00	-
	Advanced	2.46	0.026*	3.67
Intermediate	Beginning	0.028	1.00	-
	Advanced	2.49	0.006*	1.21
Advanced	Beginning	2.46	0.026*	3.67
	Intermediate	-2.49	0.006*	1.21

Note. Md = mean difference; p = probability value; Cohen's d = effect size indicator.

p < .05.

To answer research question 3 with the analyzed data, findings showed there was a statistically significant difference in referral rates for special education services based on the implementation levels of RTI as determined by one-way ANOVA ($F(2, 32) = 7.25, p = 0.003$). This difference is between the beginning level group of schools and the advanced level group of schools, as well as between the intermediate level group and the advanced level group. For both differences, the magnitude of the effect size showed a large effect.

Findings for Research Question 4

In research question 4, the question was asked, What impact does the level of implementation have on the rate of referral for special education services based on demographic factors of gender and ethnicity? Similar to the analysis in research question 3, a one-way ANOVA was the inferential statistical model used to analyze data for research question 4. Findings were organized around the demographics of gender (male and female) and ethnicity (African American, White American, Hispanic American, Asian American, and Other category of American).

For gender, the ANOVA model generated the descriptive statistics for the male students in Table 14 for each of the three groups of schools. One group of schools represents the beginning level of implementation of the four RTI components. Another group represents the intermediate level. The remaining group of schools represents the advanced level. Six schools

compose the beginning level and have a male mean referral rate for special education services of 7.31. Ten schools compose the intermediate level and have a male mean special education referral rate of 6.85. The majority of the schools was rated at the advanced level and had the lowest mean referral rate of 4.07 (see Table 14).

Table 14

Male Students' Referral Rate Descriptive Statistics for Beginning, Intermediate, and Advanced Levels

Male group	<i>n</i>	Mean	SD	SE	Min	Max
Beginning	6	7.31	1.42	0.58	5.47	8.78
Intermediate	10	6.85	3.71	1.17	2.56	16.70
Advanced	19	4.07	1.22	0.28	2.15	6.21

Note. *N* = number of elementary schools; *sd* = standard deviation; *se* = standard error; *min* = minimum score; *max* = maximum score.

In Table 15 is a presentation of the output of the one-way ANOVA analysis for the male students. In the table is a display of the *p* value ($p = 0.002$). An inspection of the *p* value reveals it is below the alpha value ($\alpha = 0.05$). Consequently, according to Gall, Gall, and Borg (2007), there is a statistically significant difference in the male mean special education referral rate for services for the beginning, intermediate, and advanced groups of elementary schools ($F(2, 32) = 7.62, p = 0.002$).

Table 15

ANOVA Table Representing Male Students' Referral Rates

Male group	SS	<i>df</i>	MS	<i>F</i>	<i>p</i>
Between groups	76.50	2	38.25	7.62	0.002*
Within groups	160.68	32	5.02		
Total	237.18	34			

Note. *SS* = sum of squares; *df* = degrees of freedom; *ms* = mean square; *f* = ANOVA generated statistic; *p* = significance or probability value.
 $p < .05$.

Table 16, multiple comparisons from the Tukey's post-hoc tests, reveal which of the three groups of male referral rates for special education services differ from each other. Table 16 also displays the effect sizes.

There is a difference (3.24) between the beginning group's mean special education referral rate (7.31) and the advanced group's mean referral rate (4.07). The p value is presented in Table 16 ($p = 0.011$). Cohen's d effect size indicator was calculated for the beginning and advanced level male mean rates of referral for special education services. The computed effect size statistic was 2.46, indicating the difference (3.24) between the beginning level and advanced level male means as having a large effect (Johnson & Christensen, 2011).

Further, the analysis indicated a difference (2.78) between the intermediate group's mean special education referral rate (6.85) and the advanced group's mean referral rate (4.07) based on the p value ($p = 0.009$). Cohen's d effect size indicator was calculated for the intermediate and advanced level male mean rate of referral for special education services. The computed effect size statistic was 1.13, indicating the difference (2.78) between the intermediate level and advanced level means as having a large effect size (Johnson & Christensen, 2011). There was no significant difference (0.46) between the beginning group's mean referral rate (7.31) and the intermediate group's mean referral rate (6.85) as indicated by the p value ($p = 0.92$).

Table 16

Multiple Comparisons Table from Tukey's Test for Male Students

Male group		MD	p	Cohen's d
Beginning	Intermediate	0.46	0.92	-
	Advanced	3.24	0.011*	2.46
Intermediate	Beginning	-0.46	0.92	-
	Advanced	2.78	0.009*	1.13
Advanced	Beginning	-3.24	0.011*	2.46
	Intermediate	-2.78	0.009*	1.13

Note. Md = mean difference; p = probability value; Cohen's d = effect size indicator. $p < .05$.

Further, regarding gender, the ANOVA model generated the descriptive statistics for the female students in Table 17 for each of the three groups of schools. Six schools compose the

beginning level and have a female mean referral rate for special education services of 3.71. Ten schools compose the intermediate level and have a female mean special education referral rate of 4.41. The majority of the schools were at the advanced level with the lowest mean referral rate of 2.00 (see Table 17).

Table 17

Female Students' Referral Rate Descriptive Statistics for Beginning, Intermediate, and Advanced Levels

Female group	<i>n</i>	Mean	SD	SE	Min	Max
Beginning	6	3.71	1.86	0.76	0.93	6.47
Intermediate	10	4.14	3.31	1.05	2.11	13.30
Advanced	19	2.00	0.78	0.18	0.73	3.38

Note. *N* = number of elementary schools; *sd* = standard deviation; *se* = standard error; *min* = minimum score; *max* = maximum score.

In Table 18 is a presentation of the output of the ANOVA analysis for the female students. The *p* value ($p = 0.020$) is below 0.05 showing a statistically significant difference in the female mean special education referral rate for services for the beginning, intermediate, and advanced groups of elementary schools ($F(2, 32) = 4.42, p = 0.020$).

Table 18

ANOVA Table Representing Female Students' Referral Rates

Female group	SS	<i>df</i>	MS	<i>F</i>	<i>p</i>
Between groups	35.06	2	17.53	4.42	0.020*
Within groups	127.01	32	3.97		
Total	162.06	34			

Note. *SS* = sum of squares; *df* = degrees of freedom; *ms* = mean square; *f* = ANOVA generated statistic; *p* = significance or probability value.

$p < .05$.

Table 19, multiple comparisons from the Tukey's post-hoc tests, reveals which of the three groups of female referral rates for special education services differ from each other. Table 19 displays the effect size.

There is a difference (2.14) between the intermediate group's mean special education referral rate (4.14) and the advanced group's mean referral rate (2.00) as indicated by the p value ($p = 0.025$). Cohen's d effect size indicator was calculated for the intermediate and advanced level female mean rates of referral for special education services. The computed effect size statistic was 1.05, indicating the difference (2.14) between the intermediate level and advanced level means as having a large effect size (Johnson & Christensen, 2011) (see Table 19).

Table 19

Multiple Comparisons Table from Tukey's Test for Female Students

Female group		MD	p	Cohen's d
Beginning	Intermediate	-0.43	0.91	-
	Advanced	1.72	0.172	-
Intermediate	Beginning	0.43	0.91	-
	Advanced	2.14	0.025*	1.05
Advanced	Beginning	-1.72	0.172	-
	Intermediate	-2.14	0.025*	1.05

Note. md = mean difference; p = probability value; Cohen's d = effect size indicator. $p < .05$.

Five procedures were used to organize the ethnicity findings for research question 4. The five procedures involved a presentation of the ethnicity findings for African American students, White students, Hispanic students, Asian students, and students in the other category. The Other category represents students who do not view themselves classified as African American, White, Hispanic, or Asian. For each category of ethnicity, only the tables of findings from the descriptive statistics and the multiple comparison post-hoc tests are presented. The results from the one-way ANOVA analysis are summarized and reported.

In the first procedure regarding the African American student, beginning level schools have an African American student mean referral rate for special education services of 5.38.

Intermediate level schools have an African American mean special education referral rate of 6.04. The advanced level schools' mean referral rate is 2.97 (see Table 20).

Table 20

African American Students' Referral Rate Descriptive Statistics for Beginning, Intermediate, and Advanced Levels

AA group	<i>n</i>	Mean	SD	SE	Min	Max
Beginning	6	5.38	2.87	1.17	1.33	9.35
Intermediate	10	6.04	3.66	1.16	3.38	16.20
Advanced	19	2.97	0.90	0.21	1.59	4.28
Total	35	4.26	2.69	0.46	1.38	16.20

Note. Aa group = African American group; *n* = number of elementary schools; *sd* = standard deviation; *se* = standard error; *min* = minimum score; *max* = maximum score.

There was a statistically significant difference between the three groups as determined by one-way ANOVA ($F(2, 32) = 6.42, p = 0.005$). Table 21 displays which of the three groups of African American students' referral rates for special education services differ from each other. Table 21 also displays the effect size.

There is a difference (3.07) between the intermediate group's mean special education referral rate (6.04) and the advanced group's mean referral rate (2.97) as indicated by the *p* value ($p = 0.006$). Cohen's *d* effect size indicator was calculated for the intermediate and advanced level mean rates of referral for special education services. The computed effect size statistic was 1.15, indicating the difference (3.07) between the intermediate level and advanced level means as having a large effect size (Johnson & Christensen, 2011). There was no significant difference in the other groups' mean rate of referral for special education services for African American students (see Table 21).

Table 21

Multiple Comparisons Table from Tukey's Test for African American Students

AA group		MD	<i>p</i>	<i>Cohen's d</i>
Beginning	Intermediate	-0.66	0.85	-
	Advanced	2.41	0.08	-
Intermediate	Beginning	0.66	0.85	-
	Advanced	3.07	0.006*	1.15
Advanced	Beginning	-2.40	0.08	-
	Intermediate	-3.07	0.006*	1.15

Note. Aa group = African American group; md = mean difference; p = probability value; Cohen's d = effect size indicator. P < .05.

In the second procedure regarding the White students, beginning level schools have White students' mean referral rate for special education services of 5.36, while the intermediate level schools have White students' mean special education referral rate of 5.77. The advanced level schools' mean referral rate is 2.44 (see Table 22).

Table 22

White Students' Referral Rate Descriptive Statistics for Beginning, Intermediate, and Advanced

WA group	<i>n</i>	Mean	SD	SE	Min	Max
Beginning	6	5.36	4.78	1.95	0.00	14.00
Intermediate	10	5.77	4.75	1.50	2.33	18.20
Advanced	19	2.44	3.21	0.73	0.00	12.50

Note. Wa group = White group; n = number of elementary schools; sd = standard deviation; se = standard error; min = minimum score; max = maximum score.

Table 23 reveals that none of the three groups of White students' referral rates for special education services differ from each other. There was no statistically significant difference in any

of the groups' mean rates of referral for special education services for White students ($F(2, 32) = 2.80, p = 0.075$).

Table 23

Multiple Comparisons Table from Tukey's Test for White Students

WA group		MD	<i>p</i>
Beginning	Intermediate	-0.41	0.98
	Advanced	2.91	0.27
Intermediate	Beginning	0.41	0.98
	Advanced	3.33	0.096
Advanced	Beginning	-2.91	0.27
	Intermediate	-3.33	0.096

Note. Wa group = White group; md = mean difference; p = probability value. P < .05.

In the third procedure related to Hispanic students, beginning level schools have Hispanic students' mean referral rate for special education services of 4.36, while the intermediate level schools have Hispanic students' special education referral rate of 4.00. The advanced level schools' mean referral rate is 1.97 (see Table 24).

Table 24

Hispanic Students' Referral Rate Descriptive Statistics for Beginning, Intermediate, and Advanced Levels

HA group	<i>n</i>	Mean	SD	SE	Min	Max
Beginning	6	4.36	3.90	1.59	0.00	10.00
Intermediate	10	4.00	4.61	1.46	0.00	14.30
Advanced	19	1.97	3.76	0.86	0.00	12.50
Total	35	2.96	4.07	0.69	0.00	14.30

Note. *Ha group* = Hispanic group; *n* = number of elementary schools; *sd* = standard deviation; *se* = standard error; *min* = minimum score; *max* = maximum score.

Table 25 shows none of the three groups of Hispanic students' referral rate for special education services differ from each other. There was no statistically significant difference in any of the groups' mean rates of referral for special education services for Hispanic students ($F(2, 32) = 1.27, p = 0.295$).

Table 25

Multiple Comparisons Table from Tukey's Test for Hispanic Students

HA group		MD	<i>p</i>
Beginning	Intermediate	0.36	0.98
	Advanced	2.40	0.43
Intermediate	Beginning	-0.36	0.98
	Advanced	2.04	0.41
Advanced	Beginning	-2.40	0.43
	Intermediate	-2.04	0.41

Note. *Ha group* = Hispanic group; *md* = mean difference; *p* = probability value. $P < .05$.

In the fourth procedure related to the Asian students, beginning level schools have Asian students' mean referral rate for special education services of 1.11, while the intermediate level schools have Asian students' mean special education referral rate of 2.57. The advanced level schools' mean referral rate is 0.55 (see Table 26).

Table 26

Asian Students' Referral Rate Descriptive Statistics for Beginning, Intermediate, and Advanced Levels

AA group	<i>n</i>	Mean	SD	SE	Min	Max
Beginning	6	1.11	2.70	1.11	0.00	6.66
Intermediate	10	2.57	4.29	1.36	0.00	11.10
Advanced	19	0.55	1.72	0.40	0.00	6.66
Total	35	1.22	2.88	0.48	0.00	11.10

Note. AA group = Asian group; *n* = number of elementary schools; *sd* = standard deviation; *se* = standard error; *min* = minimum score; *max* = maximum score.

Table 27 shows none of the three groups of Asian students' referral rate for special education services differ from each other. There was no statistically significant difference in any of the groups' mean rate of referral for special education services for Asian students ($F(2, 32) = 1.67, p = 0.204$).

Table 27

Multiple Comparisons Table from Tukey's Test for Asian Students

AA group		MD	<i>p</i>
Beginning	Intermediate	-1.46	0.58
	Advanced	0.56	0.91
Intermediate	Beginning	1.45	0.58
	Advanced	2.02	0.18
Advanced	Beginning	-0.55	0.91
	Intermediate	-2.02	0.18

Note. Aa group = Asian group; *md* = mean difference; *p* = probability value. $P < .05$.

In the fifth and final procedure regarding the Other students, beginning level schools have Other students' mean referral rate for special education services of 5.60, while the intermediate level schools have Other students' mean special education referral rate of 6.06. The advanced level schools' mean referral rate is 1.57 (see Table 28).

Table 28

Other Students' Referral Rate Descriptive Statistics for Beginning, Intermediate, and Advanced Levels

OA group	n	Mean	SD	SE	Min	Max
Beginning	6	5.60	5.42	2.21	0.00	12.50
Intermediate	10	6.06	6.81	2.15	1.88	25.00
Advanced	19	1.57	2.60	0.59	0.00	8.47

Note. Oa group = Other group; n = number of elementary schools; sd = standard deviation; se = standard error; min = minimum score; max = maximum score.

There was a statistically significant difference between the three groups as determined by one-way ANOVA ($F(2, 32) = 3.81, p = 0.033$). Table 29 displays which of the three groups of Other students' referral rates for special education services differ from each other. Table 29 displays the effect size.

There is difference (4.50) between the intermediate group's mean special education referral rates (6.06) and the advanced group's mean referral rates (1.57) as indicated by the p value ($p = 0.047$). Cohen's d effect size indicator was calculated for the intermediate and advanced level mean rates of referral for special education services. The computed effect size statistic was 0.954, indicating the difference (4.50) between the intermediate level and advanced level means as having a large effect size (Johnson & Christensen, 2011). There was no significant difference in the remaining groups' mean rates of referral for special education services for the Other students.

Table 29

Multiple Comparisons Table from Tukey's Test for Other Students

OA group		MD.	<i>P</i>	<i>Cohen's d</i>
Beginning	Intermediate	-0.46	0.98	-
	Advanced	4.03	0.17	-
Intermediate	Beginning	0.46	0.98	-
	Advanced	4.50	0.047*	0.954
Advanced	Beginning	-4.03	0.17	-
	Intermediate	-4.50	0.047*	0.954

Note. Oa group = Other group; md = mean difference; p = probability value; Cohen's d = effect size indicator. P < .05.

To answer research question 4 with the analyzed data, the level of implementation had an impact on the rate of referral for special education services based on demographic factors of gender and ethnicity. In the gender analysis, findings showed that for the male students, there was a difference (3.24) between the beginning group's mean special education referral rate and the advanced group's mean referral rate. Also, for the male students, there was a difference (2.78) between the intermediate group's mean special education referral rate and the advanced group's mean referral rate. Results indicated for the female students, there was a difference (2.14) between the intermediate group's mean special education referral rate and the advanced group's mean referral rate

In the ethnicity analysis, results indicated that for African American students there was a difference (3.07) between the intermediate group's mean special education referral rate and the advanced group's mean referral rate. Results revealed for students in the Other classification that there was a difference (4.50) between the intermediate group's mean special education referral rate and the advanced group's mean referral rate. However, the three levels of implementation of the RTI components did not cause a statistically significant difference in the referral rate for special education services for White students, Hispanic students, and Asian students.

Findings for Null Hypotheses

Null hypothesis 1. Null hypothesis 1 stated there is no statistically significant difference in the students' special education referral rates as a result of the implementation levels of the four levels of RTI components. The hypothesis was tested through one-way ANOVA. The hypothesis was rejected. ANOVA statistics showed a statistically significant difference in the students' special education referral rates as a result of the implementation levels of the four levels of RTI components ($F(2, 32) = 7.25, p = 0.003$).

Null hypothesis 2. Null hypothesis 2 stated that there is no statistically significant difference in the students' special education referral rates based on gender and ethnicity as a result of the implementation of the four levels of RTI components. The hypothesis was tested through one-way ANOVA. The hypothesis was rejected. In the gender analysis, findings showed that for the male students, there was a statistically significant difference between the beginning group's mean special education referral rate and the advanced group's mean referral rate. For the male students, there was a statistically significant difference between the intermediate group's mean special education referral rate and the advanced group's mean referral rate ($F(2, 32) = 7.62, p = 0.002$). Results indicate that for the female students, there was a statistically significant difference between the intermediate group's mean special education referral rate and the advanced group's mean referral rate ($F(2, 32) = 4.42, p = 0.020$).

In the ethnicity analysis, results indicated that for African American students, there was a statistically significant difference between the intermediate group's mean special education referral rate and the advanced group's mean referral rate ($F(2, 32) = 6.42, p = 0.005$). Findings revealed for students in the Other classification that there was a statistically significant difference between the intermediate group's mean special education referral rate and the advanced group's mean referral rate ($F(2, 32) = 3.81, p = 0.033$).

Chapter 5: Discussion

Introduction

The problem this study investigated was that some elementary schools have high special education referral rates (Polirstok & Gottlieb, 2006). The purpose of this study was to determine the impact of the levels of implementation of four Response to Intervention (RTI) components on the overall special education referral rates of elementary school students at 35 schools. These schools were located in the southeastern portion of Virginia. The four RTI components are (a) using intervention teams to problem-solve for struggling students, (b) selecting the appropriate intervention, (c) monitoring student progress, and (d) graphing data for visual analysis. The four levels of implementation are (a) lacks skills or basic knowledge of this component, (b) beginning to learn this component (beginning level), (c) developing skill with this component (intermediate level), and (d) fully competent in this component (advanced level).

Data were collected on active participants (teachers) and inactive participants (students) at 35 elementary schools. The 35 elementary schools are in one division in the southeastern portion of Virginia. This study used student data taken from special education referral rates that occurred during the time interval of July 2011 to July 2012. The quantitative research designs utilized in this study were the descriptive-survey and causal comparative research designs. Descriptive statistics calculated were percentages, frequencies, means, standard deviations, and effect sizes. The inferential statistical model was the one-way analysis of variance (ANOVA). The following are the four research questions and the relevant null hypothesis.

Research question 1. What are the levels of implementation of the four RTI components in the 35 elementary schools in the selected division? Research question 1 is supported by Finding One and Finding Two.

Research question 2. What are the special education referral rates in the 35 elementary schools? Research question 2 is supported by Finding Three.

Research question 3. What is the difference in referral rates based on the implementation levels of RTI? Research question 3 is supported by Finding Four, Finding five, and Finding Six.

Research question 4. Does the level of implementation have a greater or lesser impact on the rate of referral for special education services based on demographic factors (gender, ethnicity or socio-economic status)? Research question 4 is supported by Finding seven.

Null hypothesis 1 (research question 3). There will be no significant difference in the students' special education referral rates as a result of the implementation levels of the four levels of RTI components.

Null hypothesis 2 (research question 4). There will be no significant difference in the students' special education referral rates based on gender and ethnicity as a result of the implementation of the four levels of RTI components.

Discussion of Findings

In this section is a discussion of the seven major findings in the dissertation study. Findings from the study are compared with the literature reviewed. The following is the discussion of the findings and the current literature.

Finding one. Over one-half (19 of 25) of the schools in the target division perceived they have implemented the four RTI components at the advanced level. For instance, of the 19 advanced level (AL) schools, 8 of 19 (42.11%) schools reported the highest possible AL rating for each of the four RTI components. The highest possible rating was 3. The schools were numbers 3, 5, 8, 10, 16, 20, 24, and 29. Of the 19 schools, 7 of 19 (36.84%) schools reported the rating of 3 for 3 of the 4 RTI components. These schools were numbers 1, 2, 7, 12, 14, 23, and 31. Consequently, 15 of 19 (78.95%) schools reported a rating of 3. Responders at 10 of the 35 schools perceived the schools had a mean rating of intermediate level (IL) for the four RTI components. These responders were associated with the following schools: 4, 6, 15, 17, 18, 21, 25, 32, 33, and 35. They reported that the multidisciplinary intervention team was not fully competent but was adequately developing the skill associated with a structured problem-solving team model. The educators at the 10 IL schools reported that teachers were adequately developing the skill to select scientifically-based interventions that matched students' deficits. Teachers were developing the skill to conduct frequent progress monitoring of students in academic and behavioral areas and to transform progress-monitoring data into visual displays.

This dissertation finding was consistent with research such as Marzano (2009) and Wright (2012). These two researchers indicated that selecting the correct intervention, collecting

baseline data, and using good progress monitoring skills are critical to the effective implementation of RTI. Wright (2012) indicated that schools at the advanced stage of RTI implementation have considerable proficiency in executing the skills at a very high level. The high level of execution of the skills results in greater classroom achievement and a lower rate of referral of students for special education services (Marzano, 2009).

Finding two. A few responders perceived their schools (6 of 35) were just beginning to implement the four RTI components.

Responders at 6 of the 35 schools reported that the schools had an average rating of beginning level (BL). The responders were affiliated with the following schools: 9, 19, 22, 26, 28, and 30. They reported that the multidisciplinary intervention team was just beginning to learn how to follow a structured problem-solving team model. The educators at the six BL schools perceived teachers were just learning how to develop the skill to select scientifically-based interventions. The teachers were just beginning to develop the skill to conduct frequent progress monitoring of students in academic and behavioral areas and to transform progress-monitoring data into visual displays. Interesting, 5 of 6 (83.33%) BL schools had an average BL rating of .50 for the four RTI components. The remaining of the six BL schools had an average rating of .75. In each of the BL schools with the .50 rating, two RTI components were rated with a zero. A rating of zero means responders lacked the skills or basic knowledge of the component.

Examples of the skills in the four RTI components were: (a) creating an atmosphere in which the referring teacher felt welcome; (b) setting clear, objective, and measurable goals for student progress; (c) conducting structured classroom observations of students to determine rates of on-task behavior and academic engagement; (d) converting progress monitoring data into visual displays (Wright, 2012).

The skills and activities are represented by the 22 items on the RTI SRS. Through their responses, BL respondents were indicating that their schools had intervention teams that were learning to follow a structured problem solving model; the teams were in the early stages of developing skills and endeavoring to be competent in supporting teachers by encouraging them to refer struggling students to the intervention teams.

Applebaum (2009) and Wright (2012) reported that a multi-disciplinary intervention team that competently follows a structured problem-solving model was a research-based strategy that resulted in student academic success and student good behavior in the classroom. Complying

with Wright's premise was the goal of the BL schools. Wright (2012) further contended that once educators were fully competent with the RTI model, they would acquire skills that were effective in enhancing academic achievement, reducing classroom discipline referrals, and reducing the referral rate of students for special education services at all grade levels. Based on this dissertation finding, the BL schools, at this point in time, were not in compliance with what Wright contended was needed to reduce the rate of referrals of students for special education services.

Finding three. The level of implementation had an impact on the rate of referral for students to special education services. The five lowest rates of referral of students for special education services are 1.82, 2.02, 2.32, 2.45, and 2.50. The rates of referrals are for schools 20, 3, 24, 29, and 10, respectively. The five schools are all AL schools. Additionally, the other 12 AL schools have the lowest rates of referrals (1.82, 2.02, 2.32, 2.45, 2.50, 2.68, 2.68, 2.87, 3.00, 3.06, 3.08, and 3.14). These 12 AL schools are 20, 3, 24, 29, 10, 5, 13, 2, 23, 16, 27, and 11. The five highest rates of referral of students for special education services are 15.30, 6.22, 6.15, 5.85, and 4.99. The five rates of referrals are for schools 21, 19, 22, 30, and 28, respectively. The school (21) with the highest rate of referral (15.30) is an IL school, while the remaining four schools (19, 22, 30, and 28) are BL schools.

The AL and BL RTI components supported the NCLB act which required states to set annual objectives for increasing students' reading achievement and reducing rates of referral for special education services (NCLB, 2001). The NCLB act's ultimate goal is to ensure that all children have an opportunity to obtain a high quality education (NCLB, 2001). The No Child Left Behind Act, Public Law 107-110 established high standards for reading achievement and referral of students for special education services (U.S. Department of Education, 2007). Consequently, school divisions are allowed to use federal funds to support effective research-based frameworks, such as the AL and IL. These levels increase elementary school students' math and reading achievement and improve school goals toward referral of students for special education services. The NCLB legislation clearly reveals research-based instructional frameworks such as the strategies in the AL and IL are necessary for school success (Benders & Shores, 2007).

The RTI method for intervening with at-risk learners has been developed over the last several decades (Wright, 2007). A major force in the rise of RTI has been widespread

dissatisfaction with existing methods for identifying and providing services to children with learning disabilities. The roots stretch back at least to the middle of the twentieth century when influential figures in the field of behavior analysis identified the importance of using the discipline's methods of experiment and data analysis to solve problems in social settings (Wright, 2007). An emerging understanding developed that students' learning problems are not based solely on genetic ability, but rather that their instructional environment plays an important role in students' success or failure (Wright, 2007). Consequently, the dissertation findings support the literature reviewed (Benders & Shores, 2007; Wright, 2007) that AL and IL can positively impact referral rates and therefore improve students' success in school. The two levels benefit at-risk learners and support the tenets of the NCLB.

Finding four. The African American students had a higher referral rate for special education services than the white students.

When all African Americans in the 35 schools were considered, the African American student mean referral rate (4.26) for special education services was higher than the White American student mean referral rate (3.89). Further, for the African American student, the minimum referral rate was 1.38; the maximum was 16.21. The range was 14.83. The mean was 4.26. For the White American student referral rate, the minimum referral rate was zero; the maximum was 18.18. The range was 18.18. The mean was 3.89. When the African American and the White American students' mean referral rates were compared, the difference is 0.37. The 0.37 difference indicates the African American students' mean referral rate is 0.37 percentage point greater than the White American student referral rate.

Over-representation in special education has been shown to cause harm to many African American students (Artiles, Bal, & King-Thorius, 2010). These students may be denied access to the general education curriculum, receive services that do not meet their needs, and may be misclassified or inappropriately labeled. A higher referral rate for special education services too often leads to mislabeling; mislabeling can result in low expectations for achievement that are held for African American students (Artiles, Bal, & King-Thorius, 2010). Consequently, the potential for social-emotional problems increases and post-school outcomes are seriously undermined. Mislabeled African American students may experience similar negative results as students with disabilities, such as inequity in educational opportunity, differential graduation rates, differential earning power upon graduation, and differential enrollment in postsecondary

educational institutions (Bradshaw, Mitchell, O'Brennan, & Leaf, 2010). The dissertation finding supports the research of Artiles, Bal, and King-Thorius (2010) and Bradshaw, Mitchell, O'Brennan, and Leaf (2010). Many African American students need to be exposed to the AL and IL to reduce the gap in referral rates and academic achievement that exist between them and the white students.

Finding five. The male student students had a higher referral rate for special education services than the female students.

When all students in the 35 schools were considered, the average minimum referral rate for special education services for a school was 1.82; the average maximum was 15.27. The range was 13.45. The mean was 4.13. When all males in the 35 schools were considered, findings showed the mean male referral rate (5.42) was higher than the mean female referral rate (2.91). Also, for the males, the minimum referral rate for a school was 2.15; the maximum was 16.66. The range was 14.51. The mean was 5.42. Regarding the female referral rate, the minimum referral rate was 0.73; the maximum was 13.33. The range was 12.60. The mean was 2.91. Comparing the male and the female students' mean referral rates showed the difference between the two subgroups' rates was 2.51. This difference indicates the male rate of referral for special education services is 2.51 percentage points greater than the female mean referral rate.

A variety of reasons are given for why over-identification of some male students for special education services exists. According to Ferri, Connor, and Connor, (2010), the most common reasons are (a) difficulty in constructing instructional programs that address male students' unique learning strengths and needs, (b) ineffective procedures and processes used to refer and classify male students for special education, and (c) lack of knowledge that a problem exists and how to resolve this problem. When over-representation in special education occurs, male children or any children who actually do not have disabilities are suddenly treated as if they are disabled, and the label that accompanies categorization tends to persist throughout their school experience.

According to Mustian (2010), the overrepresentation of male students for special education services is unjustifiable by any standard. This researcher indicated reasons why many African American male students may be overrepresented relative to referrals for special education services. Mustian's (2010) reasons are (a) failure of the general education system to educate male children from diverse backgrounds, (b) inequities associated with special education

referral and placement procedures, (c) misidentification and the misuse of tests, (d) lack of access to culturally-based instruction, (e) insufficient multicultural resources, and (f) less well-trained teachers that can effectively instruct the minority male student. The dissertation finding supports the research of Ferri, Connor, and Connor, (2010) and Mustian (2010). Many male students need to be exposed to the AL and IL to reduce the gap in referral rates that exist between them and the female students.

Finding six. The Asian students had the lowest referral rate which was about one-third the size of the African American and the White subgroups' referral rates.

The mean referral rate for special education services for each of the seven demographic subgroups were arranged in rank order. A rank of one indicates the highest mean referral rate, and the rank of 7 indicates the lowest mean referral rate for a subgroup. The male student subgroup received the rank of 1, and the African American student subgroup received the rank of 2. Therefore, these two groups had the two highest mean special education referral ranks. The two lowest mean ranks were 7 and 6 for the Asian American student subgroup and the female student subgroup, respectively.

Discussions about ethnic representation in special education do not generally express concern about Asian American students with disabilities, as these students have historically been underrepresented in special education, accompanied by overrepresentation in gifted programs (Stein, 2013). Stein (2013) revealed that the percentages of Asian American students in the categories of mental retardation, learning disabilities, emotional disturbance, and speech-language disorders were generally lower than their representation in the general school enrollment. The authors reported a higher placement rate in the categories of learning disabilities and mild mental retardation for limited English proficient students compared to their eligibility for speech-language disorders and emotional disturbance.

According to Waitoller, Artiles, and Cheney, (2010), the rate of placement for Asian American students in learning disabilities programs rose from 1.4% in 2000 to 1.7% in 2010. Conclusions about these patterns must be drawn with caution, however, given the disparity between the actual numbers across ethnic groups. With Asian Americans representing only 3% of the general enrollment, comparisons of percentages with other, larger ethnic groups can be misleading (Waitoller, Artiles, & Cheney, 2010). Generally, the dissertation findings support the research of Stein (2013) and Waitoller, Artiles, and Cheney, (2010).

Finding seven. The schools with an advanced level of implementation had a lower rate of referral for students to special education services than the schools with either an intermediate level or a beginning level of implementation. The majority (19) of the schools was at the advanced level of implementation and had the lowest rate of referral for students to special education services. There was a significant difference (2.46) between the beginning group's mean special education referral rate (5.46) and the advanced group's mean referral rate (3.00). The p value associated with these results was $p = 0.026$. Cohen's d effect size indicator was calculated for the beginning and advanced level mean rate of referral for special education services. The computed effect size statistic was 3.67, indicating the difference (2.46) between the beginning level and advanced level mean rates as having a large effect (Johnson & Christensen, 2011).

Additional analysis showed a statistically significant difference (2.49) between the intermediate group's mean referral rate for special education services (5.49) and the advanced group's mean referral rate (3.00). The p value is $p = 0.006$. Cohen's d effect size indicator was calculated for the intermediate and advanced level mean rate of referral for special education services. The computed effect size statistic was 1.21, indicating the difference (2.49) between the intermediate level and advanced level means as having a large effect (Johnson & Christensen, 2011).

Fagan and Wise (2000) and Fletcher, Lyons, Fuchs, and Barnes (2007) favored the fully implemented RTI model over the discrepancy model relative to reducing the rate of referral to special education services for students. Special education eligibility that includes the use of IQ-achievement discrepancy model requires a significant amount of time and fiscal resources and provides little information to guide intervention (President's Commission on Excellence in Special Education, 2002). In the discrepancy model, school psychologists spend the majority of their time conducting assessments for the committee on special education to determine eligibility for special education services (Fagan & Wise, 2000). Many state education departments and school districts are moving away from the IQ-achievement discrepancy model and moving toward using RTI, and the effective use of RTI (AL and IL) has decreased the rate of referral of students for special education services. Therefore, this dissertation finding is consistent with the research of Barnes (2007) and Fagan and Wise (2006).

Implications

There are seven implications that emerged from the findings. The following are the seven implications.

Implication one. The school divisions should ensure the educator is competent in the skills and activities needed to achieve the advanced level of implementation for all four components of the RTI. Awareness and ongoing professional development on the skills and activities in the four components should be high on the priority list of school divisions in order to achieve the advanced level of implementation.

Implication two. School administrators should actively support full implementation of the RTI model at all grade levels in order to facilitate lower referral rates of students for special education services. For this implication, school administrators must serve as change agents. Fullan's (2007) idea of change must be embraced by educators and administrators. Fullan indicated that change in practice is necessary for educational change. With Fullan's assertion in mind, administrators' should prepare and provide the support and training teachers need to feel comfortable with the change resulting from the implementation of the RTI components. Teachers need legitimate administrative support to be able to ensure the RTI components are effective in reducing the special education referral rates.

Implication three. School administrators should provide educators with the resources to enable them to be fully competent in selecting scientifically-based interventions that match the students' underlying deficits or concerns.

Implication four. School divisions should train and coach educators on how to use baseline data. Further, divisions should train and coach educators on how to conduct frequent progress monitoring of students in academic and behavioral areas. Progress monitoring tools such as time series graphs, charts, and other visual displays can demonstrate whether the student is benefiting from the intervention.

Implication five. School administrators and researchers should continue to investigate effective teaching and counseling strategies for male and African American students so that their referral rates for special education services are reduced.

Implication six. Teachers, school administrators, and communication specialists should serve as major contributors to the process of change. Findings from the dissertation should facilitate these educators being change agents to improve the quality of RTI implementation. As

change agents they can use the findings of the dissertation to facilitate identifying the types of support needed for teachers in the 22 areas on the RTI SRS and pinpoint any stumbling blocks in conception or implementation.

Implication seven. Colleges of education should prepare special education and general education teacher candidates to be proficient in the use of the RTI components. The finding from this dissertation study can support this recommendation by providing useful information to university professors on the impact of the levels relative to reducing the rate of referral of students for special education services and relating this information to gender and ethnicity. The dissertation's findings supported the literature that revealed male and African American students are overrepresented in special education (Nelson, 2003; Sencibaugh, 2007). The information from the dissertation's findings can be integrated into field experiences, student teaching, and teacher education courses. For example, teacher candidates should be proficient in (a) setting clear goals and objectives, (b) administering and scoring curriculum-based measurements, and (c) using the progress monitoring component of RTI. The progress monitoring skills should be addressed in assessment courses for special and general educators (Sencibaugh, 2007). Further, in the assessment courses, special and general education majors should have the opportunity to participate in a collaborative course format, where they can learn side by side (Applebaum, 2009).

Participation in a collaborative course formation will enhance proficiency in learning and using the RTI components in an elementary school setting (Applebaum, 2009). The collaborative format in the assessment courses will result in future teachers becoming better equipped to reduce special education referral rates, particularly in the subgroups with extremely high referrals rates. Two of the subgroups discovered in the dissertation study and confirmed in the literature (Marzano, 2009; Poe, 2008; Shore, 2009) were the male student and the African American student.

Recommendations for Future Research

RTI has the potential to revolutionize education so that no child ever really falls behind (Applebaum, 2009). Given the promise of Applebaum's statement, there are seven recommendations for further study emerging from the findings in the dissertation. The recommendations for future study should facilitate this revolution. One recommendation is to

replicate the dissertation study in all elementary schools with RTI in the Commonwealth of Virginia so that the results would be more generalizable. A second recommendation is to conduct a qualitative study among the schools that are on different levels of implementation of the four RTI components to determine why some schools are more advanced at implementing the four components than other schools.

The third recommendation is for future researchers to develop and evaluate the effectiveness of collaborative assessment courses for special and general educators that focus on the RTI component of progress monitoring. Consequently, future researchers will be able to determine if the new collaborative format assessment courses are more effective than the traditional teacher education assessment courses in increasing teacher candidates' knowledge and use of progress monitoring RTI component relative to reducing the rate of referral of students to special education services.

The importance of emphasizing general education teachers' participation in RTI was emphasized by Buffum, Mattos, and Weber (2009). Consequently, the fourth recommendation is for future researchers to investigate if teacher preparation programs in general education prepare their candidates to implement the general education responsibilities that are part of the RTI components. Special education programs often embed a variety of data collection activities, as well as field-based experiences and projects into their curriculum. It is essential to provide these experiences for general education teacher candidates and to evaluate the effectiveness of the data collection activities and field-based experiences using credible evaluation designs. A recommended evaluation design that is widely used is the Context, Input, Process and Product (CIPP) evaluation model (Stufflebeam & Shinkfield, 2007).

Future researchers should explore the parent perspective on the RTI components. For example, future researchers can investigate the question; Do parents of students receiving the components, who were later identified as having a learning disability, see a benefit in the use of these components? Interviewing and surveying parents to gain a sense of the parent satisfaction level would be valuable, as those parents who are proponents of RTI could have a positive impact in their communities.

Acceptance and adoption of an innovation, such as RTI, takes place over time (Wright, 2012). This dissertation was basically a cross-sectional study with data collected at only one specific period in time (Creswell, 2008). Therefore, the seventh recommendation is for future

researchers to conduct longitudinal studies. With longitudinal studies, future researchers can monitor elementary teachers' perceptions and attitudes towards the RTI components. In the monitoring, researchers can ask questions to determine if teachers' concerns about what work effectively and what do not work effectively are purely related to RTI or other situations occurring in the district at the same time (e.g., budget cuts, layoff, other implementations, etc.). This type of longitudinal study should provide valuable information on the long-term effects of RTI.

In the dissertation study is a wealth of information on the RTI components and special education referral rates. Yet, as indicated in the seven recommendations, there is clearly a need for additional investigation on the topic. RTI appears to be here to stay. It appears RTI will continue evolving and improving as time goes on. It is hoped that research continues in this realm, and this research emphasizes improving educational experiences and outcomes provided through the RTI initiative in all schools throughout the nation.

Conclusions

The RTI components were designed to meet the individual needs of students who struggle with learning by identifying their strengths and challenges, by targeting their needs with research-based learning interventions, and by tracking the impact of these interventions through data acquired with progress monitoring measures. This dissertation adds to the body of knowledge regarding the implementation of RTI components by providing the teachers, administrators, and communication specialists' perspectives on levels of RTI implementation and how the perspectives relate to special education referral rates.

School districts and schools can learn valuable lessons from the findings in the dissertation study. School districts and schools need to be willing to adapt the curriculum, staff development, and structure to meet the needs of general and special education teachers implementing the RTI components. To facilitate this effort, the dissertation's findings can serve as the foundation of a professional development program for the school district. A very clear element in the literature emphasized by Shores and Chester (2009) was that schools need to provide substantial ongoing staff development opportunities related to the RTI components. These opportunities need to begin with an overview of what RTI is and also must include

modeling, opportunities for practice, coaching, and opportunities to receive feedback. The overview of RTI can be based on the RTI components delineated in the RTI SRS.

The dissertation's findings support the current literature on the use of assessment and progress monitoring tools (Deno et al., 2009; Griffiths & VandDerHeyden, 2011). Deno et al. (2008) and Griffiths and VandDerHeyden (2011) reported that educators need to use assessment tools to screen and progress monitor students in a consistent manner. The findings also support the work of Allington (2009) who suggested that we cannot merely look at how many minutes we pull a child out and offer instruction at his or her level. Allington discussed the importance of addressing every child's needs throughout the academic day. The researcher is a strong proponent for implementation of RTI components, differentiation of instruction, and the use of materials at the child's level all day and in every subject area. Allington (2009) added that lesson planning models should have a component where teachers are selecting materials and text that are appropriate for their students. Allington studied teachers who selected many levels of texts for subjects being taught. What he observed was that struggling students made significant gains in those classrooms where RTI and differentiation of instruction were implemented effectively.

Local education agencies (LEA) have been encouraged by federal law and policy to establish systematic plans with timeliness and defined responsibilities to ensure the implementation of RTI across their educational systems. In order to have a successful implementation of the RTI components, it is paramount that all district teachers and stakeholders have a clear understanding of the central principles that guide the practice as well as all of its components. As indicated in the dissertation research, teachers, school administrators, and communication specialists are the primary implementers of RTI; their perceptions are critical in its application and success (Bailey, 2010).

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Appendix A

Response-to-Intervention School Readiness Survey (RTI SRS)

Purpose. To implement RTI components effectively, schools must become familiar with a specialized set of tools and competencies, including knowledge of a range of scientifically based interventions that address common reasons for school failure and the ability to use various methods of assessment to monitor student progress in academic and behavioral areas. The RTI SRS is designed to help schools to identify those RTI components that they are already skilled in and those elements that need additional attention. Even if the school is not formally designated as an RTI school, the school can be implementing some level of the four RTI components. Therefore, it is imperative to the study that respondents respond to each of the items on the RTI SRS.

I. Directions. Circle the number that best represents your elementary school.

II. Demographics

Directions: Please check your job status at the elementary school

1. Principal
2. Regular education teacher
3. Special education teacher
4. Communication skills specialist

Directions. The remainder survey is divided into the following sections. Each section represents a primary component of the RTI. The sections are:

III. Using Teams to Problem-Solve

IV. Selecting the Right Intervention

V. Monitoring Student Progress

VI. Graphing Data for Visual Analysis

Complete the items in each of the four sections. Use the following scale for all of your responses. 0 = lack skills or basic knowledge of this components; 1 = just starting to learn this component (beginning level); 2 = developing skill with this component (intermediate level); 3 = fully competent in this component (advanced level). Check the best response.

- f. creates an atmosphere in which the referring teacher feels welcomed and supported.
0 1 2 3
- g. collects background information / baseline data on the student to be used at the initial Intervention Team meeting.
0 1 2 3
- h. has inventoried school-wide resources that it can use in Team interventions.
0 1 2 3
- i. selects reading and behavioral interventions that are 'scientifically based'
0 1 2 3
- j. sets clear, objective, measurable goals for student progress
0 1 2 3
- k. selects methods of assessment (e.g., Curriculum-Based Measurement, DIBELS) to track student progress at least weekly during the intervention.
0 1 2 3
- l. documents the quality of the referring teacher's efforts in implementing the intervention ('intervention integrity').
0 1 2 3
- m. holds follow-up meetings with the referring teacher to review student progress and judge whether the intervention was effective.
0 1 2 3

V. Monitoring Student Progress

Successful schools have the capacity to collect baseline data, as well as to conduct frequent progress monitoring of students in academic and behavioral areas.

My school can...

- a. conduct structured classroom observations of students to determine rates of on-task behavior, academic engagement, work completion, and rates of positive or negative interactions with adults.
0 1 2 3
- b. collects and assesses student work products to assess the completeness and accuracy of the work--and to estimate the student time required to produce the work.
0 1 2 3

- c. administers and score curriculum-based measurement (CBM) probes in basic skills areas: phonemic awareness, reading fluency, math computation, and writing.
0 1 2 3
- d. use local or research norms (e.g., CBM), or criterion-based benchmarks (e.g., DIBELS) to judge the magnitude of a student's delays in basic academic skills.
0 1 2 3
- e. creates Daily Behavior Report Cards (DBRCs) or other customized rating forms to allow the instructor to evaluate key student academic and general behaviors on a daily basis.
0 1 2 3

VI. Graphing Data for Visual Analysis

Successful schools routinely transform progress-monitoring data into visual displays such as time-series graphs to share with teachers, Intervention Team members, parents, and others. These displays demonstrate whether the student is benefiting from the intervention.

My school can...

- a. convert progress-monitoring data into visual displays such as time-series graphs to aid in instructional and behavioral decision-making.
0 1 2 3
- b. regularly shares charted or graphed information with students, teachers, parents, and administrators as feedback about the effectiveness of the intervention.
0 1 2 3

Thanks for your participation!!!!!!!!!!!!!!

Appendix B

Institutional Review Board (IRB) Permission

Office of Research Compliance
 Institutional Review Board
 2000 Kraft Drive, Suite 2000 (0497)
 Blacksburg, Virginia 24061
 540/231-4358 Fax 540/231-0959
 e-mail irb@vt.edu
 website <http://www.irb.vt.edu>

MEMORANDUM

Date: March 8, 2013
To: Carol S Cash, Sharon A Phillips
From: Virginia Tech Institutional Review Board (FWA00000572, expires May31, 2014)
PROTOCOL TITLE: An Assessment of the Levels of Implementation of Four Response to Intervention Components and Impact of Special Education Referrals in 35 Elementary Schools in the Southeastern Portion of Virginia

IRB NUMBER: 13-221

Effective March 8, 2013, the Virginia Tech Institution Review Board (IRB) Chair, David M Moore, approved the New Application request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report within 5 business days to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at:
<http://www.irb.vt.edu/pages/responsibilites.htm>

(Please review responsibilities before the commencement of your research.)

PROTOCOL INFORMATION:

Approved As: **Exempt, under 45 CFR 46.110 category(ies) 2**
 Protocol Information: **March 8, 2013**
 Protocol Expiration Date: **N/A**
 Continuing Review Due Date: **N/A**

*Date a Continuing Review application is due to IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals/work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to exempt and interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Date*	OSP Number	Sponsor	Grant Comparison Conduct?

*Date this proposal number was compared, assessed as not requiring comparison or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office (irbadmin@vt.edu) immediately.