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The Map Reading Probe's Effectiveness in Predicting Performance Within an RtIISystem

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DISSERTATION APPROVAL

This is to certify that the thesis presented to us by Richard J, Scherr, Jr. on the 1st day of June, 2013, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

COMMITTEE MEMBERS' SIGNATURES

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ABSTRACT

Public-school districts nationwide are utilizing student progress toward proficiency on state-wide achievement assessments as their means of monitoring student achievement. Of late, the three-tiered system of reading instruction and intervention (RtII) has shown the most promise to increase reading proficiency levels schoolwide. However, little research exists to support the use of the MAP reading probe within an RtII framework for advancing reading achievement. This study provides a statistical analysis of the use of MAP as a predictor of reading performance on statewide assessments in a suburban K-5 elementary school currently utilizing RtII as a means of advancing student achievement in reading. The study results showed that the use of the MAP reading assessment throughout the school year proved to be an accurate predictor of reading progress in all three tiers of the school's RTI system, as well as an accurate indicator of student performance on the statewide reading assessment. The implications of these findings, as well as suggestions for future research, also are discussed.

CHAPTER 1: INTRODUCTION

Statement of the Problem

State-wide assessments, a product of No Child Left Behind (NCLB), are measures intended to hold school districts accountable for assisting students toward increased academic competence in reading, writing, and math. Given the high-stakes nature of these assessments, school districts have often chosen to utilize the results of state-wide assessments to drive educational decision-making in such areas as curriculum and the allocation of instructional resources. However, while statewide assessments help determine students' proficiency in academic content and skill areas, they provide limited information regarding how to help students progress academically over the course of a school year. More specifically, districts must develop a system that permits teachers to monitor how well academically at-risk students respond to specific interventions throughout the school year so that more timely responses to a perceived lack of progress can be made (Shapiro, Solari, & Petscher, 2008).

To develop a more responsive reading intervention system, educators require reliable indicators of reading achievement throughout the student's progression of reading skill acquisition, based on a continuum of foundational reading skills. Current research helps educators understand when most children acquire proficiency throughout the stages of reading skill acquisition, particularly the critical early reading skills that are important for the development of more complex reading skills later on. With this information, children can be provided with reading interventions at an earlier age, thereby giving them a better chance of achieving and maintaining reading proficiency levels as they get older (McCloskey, n.d. [a]).

Multi-tier intervention models, such as response to instruction and intervention (RtII), are ideal for incorporating prevention-oriented assessment tools that can reliably evaluate reading skills growth. This model seeks to address early reading difficulties through a responsive research-based curriculum, instruction, and ongoing assessment through reliable data. Further, school districts can use the assessment system to improve student outcomes on statewide assessments and identify those students at risk for not reaching proficiency levels before administering the statewide assessment (McGlinchey & Hixson, 2004; Shapiro et al., 2008).

Many school districts that have implemented the RtII model have reported positive progress in improving the educational process of identifying at-risk students and providing the correct interventions at the appropriate times. However, a review of current research shows that only certain reading assessment methods can be utilized successfully in such a model, and the data that demonstrate the reliability and validity of these assessments are rare.

One popular reading assessment tool is the Measures of Academic Progress (MAP) reading assessment. The MAP is designed to provide detailed, actionable data about where each child is on their unique learning path. An advantage of the MAP assessment is that it automatically adapts to the student. When a question is answered correctly, the MAP presents a more challenging question. When a question is answered incorrectly, the next question is less difficult. Additionally, the MAP questions are specifically designed to include topics that interest children, including details about what they know and what they are ready to learn (NWEA, 2003).

One may theorize that the MAP reading assessment may be a more accurate monitoring tool for students in the latter stages of elementary school, when reading comprehension is much more the focus than other reading skills. Therefore, an analysis of the use of the MAP as a progress assessment tool in a school or school district actively engaged in the RtII process would be beneficial.

Purpose of the Study

Current studies have demonstrated moderate to high correlations between the MAP and statewide achievement tests. Yet, many questions remain related to the diagnostic efficiency of using a benchmark assessment to predict performance on state standardized assessments to help school districts make instructional decisions for their at-risk students.

The purpose of this study is to both replicate and add to previous research on the relationship of the MAP reading assessment and a statewide standardized reading achievement test, the Pennsylvania System of School Assessment (PSSA), utilizing the third-, fourth-, and fifth-grade cohorts of a suburban elementary school in a time period encompassing the school years 2005-2006 to 2013-2014.

The study examined the instructional stability of MAP at two administration points (fall and spring) along with the reading section of the PSSA to determine if core instruction in Tier 1 is successful at addressing the needs of the majority of students to ensure reading success in later grades. The study also examined the intervention efficiency of MAP at two administration points (fall and spring) along with the reading section of the PSSA to determine if interventions delivered through an RtII model were successful in improving at-risk students' reading skill development.

The findings of this study will have substantial implications for the decision-making process when using the RtII framework. Measurable indicators are needed to evaluate the success of RtII to determine if the model is accomplishing its intended goal (Shapiro, 2011). With diagnostically sound and short-term sensitive data sources, educators not only can evaluate the overall effectiveness of implementation of RtII but also can determine the efficiency of interventions (intervention efficiency) and core instruction (instructional stability).

Research Questions

1. What proportion of students was identified as Proficient on the PSSA reading assessment by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?
2. What proportion of students was identified as At-Risk of earning a Not Proficient category rating on the PSSA reading assessment based on MAP fall, winter, and spring reading assessment score categories by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?
3. What is the relationship between MAP category ratings (Not Proficient/Proficient) and PSSA score categories (Proficient/Not Proficient) by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?
    a. What proportion of students identified as At-Risk with the MAP reading assessment earned PSSA scores in the Proficient range (operationally defined as the

Improvement Index) by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

b. What proportion of students identified as Not At-Risk with the MAP reading assessment earned PSSA scores in the Proficient range (operationally defined as the Instability Index) by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

c. What proportion of students identified as At-Risk with the MAP reading assessment earned PSSA scores in the Not Proficient range (operationally defined as the Sensitivity Index) by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

d. What proportion of students identified as Not-at-Risk with the MAP reading assessment earned PSSA scores in the Proficient range (operationally defined as the Specificity Index) by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

e. What is the percentage of improvement over chance represented by the relationship between MAP reading assessment score categories and PSSA reading assessment score categories (operationally defined as the Kappa Index) by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

CHAPTER 2: REVIEW OF THE LITERATURE

The Need for a System of Learning Interventions

Inadequate Responses to Students with Learning Challenges

The statistics regarding the literacy rate among American children and adults are very concerning. For example, approximately 38% of fourth-graders in the United States have been identified as reading below the grade reading level (Broxterman & Whalen, 2013). While many of these students have been identified with learning disabilities in reading and are receiving special-education interventions, some below-average readers "fall through the cracks" because no uniform educational policy is available for teaching all readers who, at any time during their schooling, perform below the average range (Aaron et al., 2008).

The learning disability (LD) identification construct in its present form has resulted in many poor readers being left behind (Sailor, 2009). The decades-long utilization of an insufficient model for identifying reading learning disabilities has, in turn, prevented the development of a uniform educational policy that emphasizes RtII for teaching below-level readers in every school.

History and research show that many students in America have been left behind in the education system because of a lack of special attention and failure to identify their learning needs (Berninger, Abbott, Vermeulen, & Fulton, 2006). For instance, in 1992, the National Center for Education Statistics (in cooperation with the Educational Testing Service) conducted a National Adult Literacy Survey to profile the English literacy of adults in the United States. According to this survey, the average adult in the United States reads between the eighth- and ninth-grade reading levels (Russo et al., 2009).

In the past 15 years, 15 million students have graduated from high school reading at or below the basic level (Sailor, 2009). This alarming statistic clearly indicates that the current system of reading instruction/methodology in the United States needs to be reexamined to permit the identification of specific learning obstacles experienced by students who have difficulty reading, beginning in the early learning stages.

Studies show that poor performance at lower grades progresses to high school and continues to make the education of below-average readers challenging. For instance, approximately 70% of high-school students need some form of reading remediation (Woolley, 2011). These students have been discovered to be able to read words but not to be able to comprehend their meaning. Such problems could have been identified and eliminated much sooner if the educators started using the RtII model from the early grades (Block, Parris, Reed, Whiteley, & Cleveland, 2009).

Unfortunately, American students' low literacy rates also affect the collegiate level. American College Testing (ACT) reports that only 51% of ACT-tested high-school graduates in 2005 were ready for college-level text (Block et al., 2009). Additionally, minority groups (i.e., African Americans, Hispanic Americans, Native Americans) and students from low-income families are typically even less prepared for college reading than their age-level peers (Shapiro, 2011). Research by ACT indicates that 28 of 49 states with reading standards fully define grade-level standards only through eighth grade (Tomlinson, 2011).

Reading is not taught much, if at all, to regular-education students during high school. If teachers do not perceive students as college-bound, they may be less likely to teach those students the higher level critical-reading skills they would need in college

(Shapiro, 2011). A lack of appropriate reading instruction, at any age, clearly has repercussions in many areas of life. Students should not be left behind at any level.

The Educational System Impacts of No Child Left Behind

Public outcry regarding America's poor literacy rate increased after the 1983 publication of *A Nation at Risk* by the National Commission on Excellence in Education (Bursuck & Blanks, 2010). This pressure from the public caused the government to create *Goals 2000*, a list of academic goals for the nation's school children (Bursuck & Blanks, 2010). These two documents led to the federal government enacting the No Child Left Behind (NCLB) legislation in 2001 (Shapiro, 2011). NCLB was championed by President Bush, one in a line of presidents who had promised this nation that they would find a way to fairly educate all children (Machek & Nelson, 2010). President Bush guaranteed every child in America would read on grade level and compute complex mathematical problems, every teacher would be highly qualified, and every school would make adequate yearly progress, the latter to prove these outcomes were legitimate (VanDerHeyden & Burns, 2010).

In addition to George Bush's efforts to improve every learner's performance in the statewide tests, the U.S. Department of Education under President Obama advocated for the use of curriculum-based measurements (CBM). CBM helped set standards for performance on statewide tests and acts as an assessment for identifying students' learning status according to the set learning and performance standards (Elbaum, Arguelles, Campbell, & Saleh, 2004). NCLB's most visible stipulation was that all states must test their public-school students in reading and math every year from third through eighth grade, plus once in high school, and reveal the results. The only option to these

actions was to face a number of penalties, including a loss of federal funds (Whitten, Esteves, & Woodrow, 2009). Public schools also were instructed to show test results for certain student populations, including minority groups, English-language learners, and learning-disabled students, to fulfill NCLB, demands that schools make annual progress in closing the achievement gaps between rich and poor, black and white, by the year 2014 (Feifer, 2008).

In one sense, NCLB has succeeded in putting the national spotlight on the issues of tolerance for failing schools and for allowing wealthier children to have more educational opportunities than poor children (Feifer, 2008). Verily, the consequences of a school's failure to show adequate yearly progress are significant: the loss of government funding or the state takeover of the schools themselves (VanDerHeyden & Burns, 2010).

The NCLB initiative initially drew much criticism. Many critics believed that the plan was inconsistent, inappropriate, underdeveloped, and underfunded and would leave even more learners and educators behind (Fletcher et al., 2011). Educators have long debated the idea of teaching to a test in order to maximize the percentage of school districts' students who obtain proficiency (Feifer, 2008).

Critics of current and former teaching practices have pointed out that "teaching to the test" reduces the potential for teacher creativity, innovative instruction, varied teaching strategies for diverse populations of students, and teacher/student motivation (VanDerHeyden & Burns, 2010). The Center on Education Policy, an independent nonprofit organization, collected and analyzed data from state education websites to provide an indication of how well America's public schools were performing under NCLB (Elbaum et al., 2004).

The results were sobering, as many teachers were found not to understand the concept of NCLB, nor the importance of performing to the set standards of the statewide tests. The intention of NCLB was not to show teachers how to train students to pass their exams, but to motivate teachers to use interventions and tools for influencing educational programming (Fletcher et al., 2011).

The US Department of Education has established rules and regulations for the incorporation of curriculum-based measurement (CBM) as a form of accountability (Burns et al., 2010). These are methods for monitoring students' performance and progress, as well as for identifying students who are at high risk of failing statewide tests (Tomlinson, 2011). Therefore, schools are under pressure to demonstrate high levels of student performance. The pressure to avoid penalties for having too many students who don't achieve grade-level standards in reading has resulted in the decision by many school district administrators to begin incorporating RtII models in their schools to be able to identify and intervene with students who are at risk of failing statewide achievement tests (Burns et al., 2010).

Years after the inception of NCLB, educators have come to realize that the use of an RtII model is truly an effective way to achieve high performance and ensure that learners perform well on statewide tests (Kim, Petscher, Schatschneider, & Foorman, 2010). They have realized that RtII provides a framework for educators to adopt the best intervention strategies and to identify students with special learning needs, as well as those at risk of failing the statewide tests (Fletcher et al., 2011). Instructing students using specific methods aimed solely with the goal of attaining high scores on statewide assessments can be considered ethically inappropriate, and can have damaging effects on

the validity of the test (Elbaum et al., 2004). Teachers must understand that the main goal of CBM is not to teach students specifically how to pass national exams, but rather to give students specialized attention that builds their understanding and directs attention to all students' learning needs (Woolley, 2011).

Research reveals that RtII interventions have had great impact in positively influencing educational programs (McCloskey, n.d. [c]). A survey conducted by National Accessible Reading Assessment Projects in more than 60 schools in Texas to determine the efficiency of using RtII inventions concluded that schools that implemented RtII interventions in 2011 were able to achieve more than 50% improvement in their performance in statewide assessments (Fletcher et al., 2011). Moreover, teachers interviewed commented that RtII interventions were more efficient than CBM, though the two approaches could work together and improve the learning experience for all students (Feifer, 2008). Pressure has increased for all schools and districts to produce high levels of results on statewide achievement tests.

Consequences of Not Meeting State-Wide Reading Proficiency Standards

Schools not able to meet school-wide reading performance goals face great consequences. These consequences make RtII an important framework and tool to be used by all educators and schools to ensure that they reach the set goals of performance and avoid the repercussions of failure (Woolley, 2011).

Poor performance by students in America has severe consequences for the students, educators, schools, and district education boards across the country. These repercussions also do not spare the state and federal governments. All stakeholders need

to dedicate their efforts to improve the performance of all students, as well as ensuring that no student is left behind in the education system (Feifer, 2008).

The government has threatened to limit its funding for poorly performing schools; thus, all public schools are under pressure to improve the performance of all their learners. In addition, research has shown that 70% of college students in America are poor performers, a statistic that is likely to be linked to poor performance in elementary school **(**Vaughn et al., 2011). Therefore, the inability to identify poorly performing students early has grave repercussions on higher learning (Feifer, 2008).

Research also indicates that college professors generally do not teach poorly performing students the critical-thinking skills needed to grasp the complex subject matter presented (Vaughn, 2011). Therefore, teachers at the elementary-school levels must use an effective process, such as RtII, to identify students' learning needs and implement appropriate strategies to help struggling students learn and comprehend for their future benefit, as well as for their schools to meet school-wide reading performance goals (Tobin, 1997).

Response to Intervention Permits All Learners to Improve

This lack of response to some poor student readers is a primary reason for the integration of RtII into the system of every school in the country. Doing so would create the framework for teachers to identify students at risk for poor performance and help them at critical early stages. One of the best benefits of RtII is that it helps educators to base their decisions and strategies on evidence-based data rather than on speculations (Russo, Tiegerman-Farber, & Radziewicz, 2009). Thus, RtII can provide school teams with the opportunity to screen all learners at early grades and identify them early enough

to provide specialized instruction that more closely aligns with students' developmental "learning windows" for reading.

Response to intervention and instruction (RtII) is important in all schools and districts in America because of its ability to help schools and educators more efficiently and more expeditiously identify the learners or students at risk for poor learning outcomes (Aaron, Joshi, Gooden, & Bentum, 2008). With RtII, educators and schools are able to monitor the progress of such students and provide evidence-based interventions early enough for corrective or appropriate strategies to be adapted to help them (Tomlinson, 2011). In addition, the intensity of RtII can be adjusted according to learners' performance, improvement, and responsiveness (Woolley, 2011). RtII provides an opportunity for every learner to improve.

RtII is important because it will help ensure that no child is left behind, "falling through the cracks," or misidentified as having an LD. Research shows that 20% of students identified as having a reading LD do not meet LD criteria (Burns, Scholin, Kosciolek, & Livingston, 2010). Instead, these students lag behind because, for various reasons, they are slow learners, or the style or pace of instruction by their teachers does not match their learning needs (Berninger et al., 2006). As such, every school should consider incorporating the RtII model to identify every student's learning speed and style and thus adjust accordingly (Tomlinson, 2011).

Studies have revealed that an RtII model can help educators improve learning for all students and thus prepare them for college and the critical thinking required at all stages of life (Burns et al., 2010). No Child Left Behind (NCLB) is a campaign that is closely related to the statewide performance standards set for all public schools. It

ensures that all students are effectively involved in the learning process and ensures that students achieve the established performance goals and standards (Bursuck & Blanks, 2010).

Response to Intervention and Instruction (RtII)

Learning Disabilities in Reading and the Development of RtII

The federal, state, and local education administrations in the United States were forced to take steps to improve the performance of the public schools and their students, especially after the publication of "A Nation at Risk" in 1983 (Pearce & Gayle, 2009). Research conducted in support of the Individuals with Disabilities Education Act (IDEA) reveals that since schools started using the RtII model, the interaction between tutors and learners with disabilities has changed significantly (Pearce & Gayle, 2009).

The groundwork for the RtII model was laid back in the 1970s when, in general, schools in the United States were found to be doing an ineffective job of meeting the needs of children with reading disabilities. In 1976, the federal government first started the initiative to improve the special-education response for disabled learners (Pederson, 2009). Public opinion led to government promises that children would no longer be "left behind" academically. In support of the Individuals with Disabilities in Education Act (IDEA), government-appointed committees engaged in research to identify the specific areas that should be utilized for the identification of specific learning disabilities. (O'Connor, Swanson, & Geraghty, 2010).

The research studies associated with this determination of learning disability categories revealed that children with special learning needs comprised more than 17% of

all students enrolled in public schools. Different categories of LDs were classified under federal special-education guidelines (O'Connor et al., 2010), and remain in place today.

A breakdown of the prevalence of learning disabilities in one study showed that 43% of the disabled students had SLDs, 19% of the children classified as disabled had speech or language impairments, 5% of disabled children had autism, and 2.1% had multiple disabilities related to other health impairments. The remaining percentage was composed of students with hearing, visual, and orthopedic impairments, and disabilities associated with traumatic brain injury (O'Connor et al., 2010).

Prior to the 1970s and 1980s, many unidentified learning-disabled students had been struggling with low grades and often wound up dropping out of school. More recently, however, it has been shown that, if given the appropriate attention, specially-designed support, instruction, and progress monitoring through the RtII model, special-education children have shown the capacity to achieve at levels considered proficient for their grade level. As a result, the RtII model has been incorporated in many public schools in order to help give the appropriate intervention to students performing below average (Pederson, 2007).

The success of the RtII model led to an increased need for the states and education departments to restructure the learning process for special-education students in order to ensure that they also can meet the same achievement standards as those of their peers who do not require special learning interventions **(**O'Connor & Klingner, 2010).

Some research has shown that struggling students or those at risk for poor performance often experienced a discrepancy between ability and achievement in such

areas as oral expression, reading comprehension, reading skills, listening comprehension, and written expression. These children were found to be developing slowly when compared to the ages by which they should have achieved specific learning skills (O'Connor & Klingner, 2010).

After examining traditional teaching and intervention strategies over an extended period of time, the government, through a research study conducted by NICHHD and the U.S. Department of Education, determined that most traditional intervention approaches, such as the ability-achievement discrepancy model, were inappropriate (Rutenberg, 2009). The findings of this research study revealed that the RtII model was more appropriate because it was more focused on problem-solving learning challenges through evidence-based and scientific approaches (Rutenberg, 2009).

The RtII model approach has helped identify and assist students with LDs by asking and finding answers to the following questions: What exactly is the problem? Why does the problem exist? What should be done to address the problem? Did the intervention work? What needs to be done next to ensure that the student's performance continues to improve? Finding the correct answers to these questions has been the most important and integral part of the RTII model (Roehrig, Petscher, Nettles, Hudson, & Torgesen, 2007).

More recently, research has concluded that schools that use the RtII model were able to appropriately and correctly develop and select the best alternative intervention solutions and progress monitoring to help students improve performance through the three-tiered system of intervention (Roehrig et al., 2007). Since the inception of RtII, students and teachers have generally experienced a much-improved learning experience.

More and more teachers have spoken out in favor of the RtII model compared to the traditional approaches, especially because of its innate advantages and relative shortage of disadvantages (McCloskey, n.d.[c]).

How RtII Works

Before the advent of RtII systems in-school programs, many schools encountered challenges in providing suitable support to all students, especially their struggling students **(**Ehri, 2005). The introduction of RtII systems has made it easier for schools to systematically identify, strategize, and address students with special learning needs (Dietz & Roy, 2010). In addition, RtII systems have allowed educators to offer effective early-intervention services for young students and compulsory and remedial intervention services for older students. RtII has made possible the provision of evidence-based services for all students, especially those at risk for poor performance (Ehri, 2005).

The emergence of research-based intervention approaches under RtII systems has enabled schools to offer high-quality services to students who struggle with the regular curriculum. Prior to the advent of this program, struggling students were essentially abandoned or, at best, referred to special schools as their learning difficulties became worse (Dietz & Roy, 2010). Thankfully, RtII has enabled effective and timely intervention (Ehri, 2005). RtII has been shown to work well utilizing a three-tiered system of RtII interventions. It is programmed to include Tiers 1, 2, and 3, described as follows:

Tier 1 – Classroom assessment and instruction and early intervention for at-risk students.

Tier 2 – Remedial service assessment and instructional additions and modifications to regular-classroom instruction for students who are not making progress consistent with standards (Dietz & Roy, 2010).

Tier 3 – More specific and intense assessment and remedial instruction through special education, remedial programs, or regular-classroom instruction modifications. An effective three-tiered model reduces the number of children referred for comprehensive evaluations at Tier 3 because issues of "instructional disability," which by design are largely addressed at Tiers 1 and 2 (Ehri, 2005).

Students referred for evaluation at Tier 3 are the most complex cases, and they require thorough assessments to help determine appropriate instructional intervention strategies. Since the advent of three-tiered RtII systems, many schools have improved their ability to provide effective interventions and services to struggling students who have unique learning needs **(**Dietz & Roy, 2010).

One of the purposes of three tiers is to ensure that schools and districts take appropriate steps toward utilizing the least-restrictive learning environment. The RtII system, through its three-tiered approach, helps teachers classify students as above average, proficient, or experiencing learning difficulties (Pederson, 2007).

Current educational guidelines prevent school psychologists from labeling students as having learning disabilities if they cannot show that they have been given the necessary interventions and appropriate and adequate general instruction. Also, educational professionals have to prove that some students are experiencing learning disabilities even when they are being given close attention and while their progress is

being monitored continuously. This burden of proof has compelled many schools to begin using different methods for identifying LDs **(**Pederson, 2007).

The Discrepancy Model of Identifying Learning Disabilities

The ability-achievement discrepancy approach, in which students with LDs were profiled based on IQ test deficiencies, was proving that it was simply not capable of meeting the needs of all students. The discrepancy approach did not work well because it involved a comparison of one student's performance to another's. The RtII system has provided educators with a more comprehensive, data-driven, learning-specific means of identifying and remediating children with reading difficulties (Pederson, 2007).

There are two primary methods utilized to respond to, and ultimately identify, specific learning disabilities (SLD) in reading. One is RtII, while the other is the ability-achievement discrepancy model. This section includes a critical evaluation of the ability-achievement discrepancy model (Langdon, 2004). This literature review must critically evaluate the ability-achievement discrepancy model to compare it with the RtII model and determine which is more effective in identifying struggling students or learners at risk of poor performance.

The ability-achievement discrepancy model has been used for more than 50 years in the United States educational system. It was codified by the U.S. Office of Education in 1977 and has since been used in many district schools around the country (Gersten & Dimino, 2006). Though it has become unpopular in many school districts, to date, it is still the primary means of identifying children with LDs.

However, researchers report that the discrepancy model's effectiveness in the identification of struggling students is limited. Research reveals that more than 77% of

educators interviewed about the effectiveness of the ability-achievement discrepancy model said that it is effective only when combined with other methods of identifying SLDs **(**Gersten & Dimino, 2006). One major problem with the ability-achievement discrepancy model is its limited ability to identify SLDs in a conclusive manner. For example, some studies have shown that as many as 50% or more of those evaluated using this approach actually do not meet the discrepancy criterion (Glover & DiPerna, 2007).

The research is clear in casting doubt on the effectiveness of the ability-achievement discrepancy model because, when the criterion is not met, the basis for SLD status is not attained, leaving education professionals to question the validity of classification, as well as the criterion. In addition, this model often compares one learner's performance with other students' performances in a certain school-based largely on the school's reading curriculum (Johnson, Jenkins, Petscher, & Catts, 2009).

The ability-achievement discrepancy model also tends to be based on average cognitive performance and thus tends to identify only students who perform below that average mark, within a specific discrepancy typically based on 1.5 standard deviations (Gersten & Dimino, 2006). The inability to close such a discrepancy may not mean that the student is struggling or at risk. Calling such a student "low-performing" may be incorrect; depending upon the situation, the term *underperforming* might be a better choice (Gersten & Dimino, 2006).

In general, this model often does not identify the exact reason for the student's poor performance. For instance, a student may be struggling or having reading difficulties because he or she has low processing speed, or the student may be finding instructions too complex to understand (Gersten & Dimino, 2006). The ability-achievement

discrepancy model has limited effectiveness in identifying children in need of additional reading interventions because it does not identify the exact reasons for the difficulties the student is experiencing. It identifies only the discrepancy by which a learner is performing below average (Kim et al., 2010).

Also, the criterion used to identify students with special learning needs or requirements may emphasize only one aspect and ignore others. In essence, the ability-achievement discrepancy model tends to indicate special learning requirements for only the students with the required discrepancy, even though others without the discrepancy may still require different learning needs (Johnson et al., 2009)

Research Key to the Development of RtII Systems

Reading Skill Acquisition and Its Importance to RtII

To understand how to improve remediation strategies for students who demonstrate difficulties with reading, one must understand the mental constructs that comprise the reading process and the timelines in which most children acquire reading skills (Goffreda & DiPerna, 2010). Additionally, in order for educators to be able to monitor the reading progress of students or learners, they must be able to understand the ages and stages through which children best acquire specific reading and comprehension skills (McCloskey, n.d.[a}.

Approximately 50% of all special-education placements are for SLDs, and about 80% of those are for reading disabilities (Cutting, Materek, Cole, Levine, & Mahone, 2009). As a result, education has put a significant emphasis on the acquisition of reading skills as part of school reform processes (Merrell, Ervin, & Gimpel, 2012).

Models of Reading Skill Acquisition

The Gray Model

A common approach to studying reading processes involves the need to identify and understand the specific stages through which learners acquire reading skills. The models of reading stages through which children acquire reading skills have become more refined and restructured over the years **(**Hixson & McGlinchey, 2004).

For instance, in 1925, Gray described five critical periods that involve the following specific stages: The first stage is getting ready to read; the second stage is the process of acquiring initial reading skills; the third stage is the period of rapidly perfecting reading skills; the fourth stage involves applying reading and learning skills; and the fifth and last stage is refining reading practices, processes, tastes, activities, and attitudes (Hixson & McGlinchey, 2004). Gray assigned specific grade levels and definite goals to each stage. At that time, Gray's model enabled educators to have at least some indication of whether or not their students were acquiring reading skills at the expected pace (Wright et al., 2013).

The Chall Model

In 1983, Chall proposed a more comprehensive model of reading skill acquisition, one that continues to be referenced today. Chall's prereading stage, known as Stage 0, occurs between the ages of 6 months and 5 years. During this time, children acquire a basic sense of language and an awareness of the printed word (Hixson & McGlinchey, 2004). They are often able to learn the alphabet and identify simple words. Preschool children also sometimes engage in a practice referred to as "pseudo reading," during which they pretend to read stories by looking at the pictures and relating what they think the stories should be saying, rather than what the text actually contains (Johnson, 2007).

This method of reading, during which children actually superimpose their own ideas in the text, is called the "top-down method." (Carlson & Levin, 2012).

In Stage 1, which typically occurs during first and second grades, children acquire the rudiments of reading. They begin to make sound-symbol associations, and they start to acquire a sight-word vocabulary (Hixson & McGlinchey, 2004). Children often engage in much trial and error as they try to establish the sound-symbol linkages. Their attempts to read aloud are awkward and not fluent. In contrast to children in the prereading stage, children in Stage 1 utilize the "bottom-up" approach to reading, during which their focus is on the printed word as they attempt to make the sound-symbol associations. Their own preconceived ideas about the meaning of text are strictly a secondary process (Risko & Walker-Dalhouse, 2012).

In second and third grades, Stage 3 of the Chall model is characterized by children's acquisition of a rapidly expanding sight-,word vocabulary, which allows quicker, more efficient reading and greater linguistic sophistication **(**Hocutt, 1996). Word analysis skills also become better developed, including the more advanced rules of phonics development and the basic structural elements of words. Children's greater language awareness allows them to use context clues to aid in decoding and comprehension (Hocutt, 1996). At this stage, children are primarily reading to confirm what they already know; however, the language and content of what they are reading is not as sophisticated as what they encounter in daily life (Risko & Walker-Dalhouse, 2012).

The second stage progresses to Stage 3 during late elementary school and junior high school, when reading begins to serve a more specific purpose for children. Their

focus is now reading to acquire new knowledge, including the use of introductory content areas (Hocutt, 1996). The linguistic sophistication of reading material now surpasses everyday speech and much of what they encounter in the media. In Stage 3, children begin to master the more advanced rules of phonics, including morphology, as well as a greater level of language awareness and sophistication (Johnson, 2007). Children are now more focused on reading silently and are working to develop recall and summarization skills (Risko & Walker-Dalhouse, 2012).

Stage 4 marks an even higher level of reading sophistication. By the high-school years, children are reading for higher level thought processes, including the ability to discern a perspective and to compare ideas (Hoover, 2010). Advanced readers begin to discern multiple meanings from increasingly more sophisticated text. They begin to appreciate different genres, figures of speech, and verbal ambiguities. The sheer volume of reading and new information reaches a high point (Harvey & Goudvis, 2007). During the college years and beyond, readers have developed the ability to analyze, synthesize, and make judgments about what they read (Hoover, 2010). They learn to read at variable paces, skimming, scanning, and studying based on their purpose for reading. Their level of reading skill has progressed to the point that they are able to create their own views and philosophy based on what they have read (Harvey & Goudvis, 2007).

One should remember that Chall's model is a conceptual model, meaning that a number of variations can impact how quickly children acquire reading skills (Hoffman, Jenkins, Dunlap, 2009). Obviously, some children reach a certain stage and never progress beyond it while others take longer to attain a certain stage. Learning styles,

reading curriculum, and environmental influences are just a few of the many factors that can impact how quickly children acquire reading skills (Harvey & Goudvis, 2007).

The Components of the Reading Process

Reading is sometimes defined as a complex cognitive process of decoding symbols in order to construct or derive meaning (VanDerHeyden & Burns, 2010). The National Reading Panel, a committee created by the National Institute of Child Health and Human Development (NICHHD; Risko & Walker-Dalhouse, 2012), conducted research to determine grade level parameters during which students are most likely to acquire certain reading skills. This research was important because it ultimately provided reading instructors with more accurate timelines by which to measure reading progress and improve remedial strategies for their students. Educators can then employ intervention strategies based on the age group and the skills that the learners are expected to develop at specific ages (McCloskey, n.d.[a]].

NICHHD and the U.S. Department of Education were assembled for the purpose of researching and reporting on reading instruction in the United States (Goffreda, DiPerna, & Pedersen, 2009). In the National Reading Panel's report, the NICHHD identified five major reading components: phonics, phonemic awareness, vocabulary development, fluency, and reading comprehension (NICHHD, 2000). These five reading components form the specific or basic ages or grades during which reading skills and comprehension are acquired as learners progress from one class or grade to the next. These specific ages or grades for acquiring specific reading skills are important markers for utilization in the RtII model (Goffreda & DiPerna, 2010). The following paragraphs discuss these reading components in more detail.

Phonics is the connection between sounds and letter symbols. The combination of these sound-symbol connections creates words (Goffreda et al., 2009). For example, the written word *bed* is simply the collection of letters and corresponding sounds that readers in the English language have long agreed constitute the word *bed.*

Phonemic awareness is closely related to phonics in that both involve the connection between sounds and words (Shapiro, 2011). While phonics is the connection between sounds and letters, phonemic awareness involves the understanding that words are created between the association of *graphemes* (small units of words) and *phonemes* (small units of sound**) (**Harlaar, Dale, & Plomin, 2007).

Phonemes are typically learned before a child begins to read because they are centered on the sounds of language, rather than on the written word. This stage is the first reading stage for a growing child in the process acquiring learning skills and comprehension. A child enters this stage anywhere during the span of 6 months to 5 years. As an aside, one of the most common reading disabilities occurs when children (for a variety of reasons) are unable to make the phoneme-grapheme connection (Harlaar et al., 2007).

The development of vocabulary occurs as more advanced readers begin to build both their oral vocabularies (spoken words that are recognized) and their written vocabularies (written word recognition) (Goffreda et al., 2009). Vocabulary development occurs throughout one's reading life. As is generally thought, human beings never stop learning, and thus, all throughout one's life, humans encounter new words or vocabulary that they are able to incorporate in their learning process in order to gain success (Harlaar et al., 2007). A child who is able to acquire reading skills at an age-appropriate pace

should be able to learn and read new vocabulary with minimal challenges, often incorporating the new vocabulary into what she or he has already learned about previously acquired, similar vocabulary (Harlaar et al., 2007).

Fluency involves the reader's ability to read with speed, accuracy, and expression. Successful reading fluency, whether by sight only or with speaking, requires multiple reading skills and cognitive processes working efficiently and in synch (Harlaar et al., 2007). Good fluency skills maximize the reader's ability to comprehend what he is reading. Fluency is acquired so readers can form a mental picture of the information the text is intended to communicate. If readers are "bogged down" when trying to read each individual word, they are often not able to create a mental picture of the meaning of the text. Reading fluency and the following reading skill, reading comprehension, are considered the end results of the reading process (Risko & Walker-Dalhouse, 2012).

Reading comprehension is the main reason people read. It is the act of putting together words in isolation and combining them with prior knowledge in order to develop meaning. Like vocabulary and reading fluency, reading comprehension skills develop over time through instruction, practice, and the accumulation of background knowledge (Kavale, 2001).

Reading comprehension is considered the most complex of reading skills because it involves the other four aspects of reading, as well as general thinking skills (Wong, 2004). Reading comprehension is the ability to understand complex text material, analyze the text or instruction, and attach meaning. By using their experience and the school curriculum, educators are able to ascertain if a reader is developing and progressing

normally as far as fluency, vocabulary, and reading comprehension are concerned (Wright, Graney, Ardoin, & McDougal, 2013).

Reading Comprehension

Dr. Sheldon Horowitz of the National Center for Learning Disabilities describes reading comprehension as a process by which the reader must be thoughtful and intentional while reading, monitoring the words and their meanings as the reading progresses (Dietz & Roy, 2010). Reading comprehension is a complex cognitive process that depends upon a number of neurological processes working in a synchronous, automatic way (Davis, Florain, & Great Britain, 2004).

According to Catherine Snow, reading comprehension can also be considered the interaction between the reader, the text, and the activity in which the comprehension is a part (Sailor, 2009). The reader brings to the process all of his or her capacities, abilities, knowledge, and experiences. Text is broadly construed to be any printed or written text. The activity refers to the processes, purposes, and consequences associated with the act of reading (Dietz & Roy, 2010). These three dimensions define a phenomenon that occurs within a larger sociocultural context. This context is shaped by the reader and, in turn, interacts with each of the three elements (Carlson & Levin, 2012).

Snow makes an interesting observation about the relationship between fluency and reading comprehension (Dessoff, 2007). She notes that fluency can be conceptualized as both an antecedent to, and a consequence of, comprehension. Snow observes that some aspects of fluency depend on a thorough understanding of the text. Conversely, some components of fluency (e.g., quick and efficient word recognition) appear to influence a reader's ability to comprehend the material (Dessoff, 2007). While

good fluency does appear to improve a child's ability to comprehend text, children with weakness in reading fluency also are sometimes able to comprehend well (Carlson & Levin, 2012).

It is important to note that reading comprehension differs from locating information in text. "Occupational readers" spend a great deal of time locating needed information in text (Dessoff, 2008). This exercise is governed by its own cognitive processes, referred to as "the set of cognitive operations that are necessary for the reader to identify specific information in text, such as names, places, propositions, and/or phrases" (Sailor, 2009, p.220). By contrast, many variables have been shown to influence the performance and acquisition of reading comprehension, including verbal cognitive ability, background knowledge and instantiation of word knowledge, text structure, and efficient cognitive processes (Russo et al., 2009).

Difficulties Impacting Reading Skill Acquisition

As mentioned, a variety of linguistic, auditory, and visual skills are essential for the successful development of reading skills. These language factors can be problematic for some children because the flow of oral language does not always make the break between words clear. Difficulties arise in the ability to break messages into words, the ability to break messages into their sequences of sound, the ability to retain sounds in memory, the ability to articulate sounds, and the ability to recognize sounds in written form (Cutting et al., 2009).

Visual factors that are sometimes difficult for developing readers include recognition of visual cues, left-to-right orientation, recognition of word patterns, and recognition of letters and letter shapes (Klick, 2000). Auditory factors that sometimes

complicate reading for young readers are the recognition of letter sounds, recognition of sounds in letter groups or patterns, sequencing of sounds, corresponding sounds to visual stimuli, discriminating sounds from other sounds, and discriminating sounds within words (Cutting et al., 2009).

Highly-developed reading skills require a number of cognitive and auditory/visual operations to work efficiently and in concert with one another (Davis et al., 2004). Researchers are learning about the brain functions and connections that work together to generate each cognitive- processing operation, and in response, they are developing brain-based interventions (Daly, Martens, Barnett, Witt, & Olson, 2007). Often, a slight weakness or dysfunction in just one cognitive or processing operation can significantly disrupt reading skill acquisition (Hunley, McNamara, & National Association of School Psychologists, 2010).

Difficulties Impacting Reading Comprehension Skill Acquisition

A number of factors can contribute to the existence of a SLD in reading comprehension. One of the most common factors is difficulty with word reading (Daly, et al., 2007). Slow word reading increases demands on other processes, such as working memory, meaning that the ability to comprehend and extract meaning from connected text is impaired (Merrell et al., 2012).

This explanation does not account for children who exhibit adequate word-reading ability but nonetheless struggle with reading comprehension. In these cases, the children's reading comprehension difficulties are typically the result of weakness in oral language, contextual word reading, and/or executive functioning. Multiple studies have

shown correlations between weakness in oral language and reading comprehension difficulties (Hunley et al., 2010).

Weaknesses in executive-functioning skills, such as working memory, planning, organization, and self-monitoring, can also adversely affect a child's ability to comprehend text (Brown-Chidsey & Steege, 2010). Contextual word reading differs from sight-word reading. Contextual word reading refers to the ability to define words based on the context in which they are used. Previous studies have shown a strong correlation between context word reading and reading comprehension skills (Clark & Alvarez, 2010).

Much research has been focused on attempts to understand why some children struggle with reading comprehension tasks (Busch & Reschly, 2007). Suspected sources of the difficulty have been generally split into three broad categories: text level processing, underlying language difficulties, and memory skills (Hunley et al., 2010).

Difficulties with text level processing were further defined as difficulties with making inferences, difficulty monitoring comprehension, and poor recognition of story structure (Busch & Reschly, 2007). Researchers placed poor comprehending students in two groups to compare their abilities to make literal inferences. The first group was given text to read (Davis et al., 2004). The text was removed, and then the participants were asked questions requiring a basic recall of information from the story. The second group read the same text and then was allowed to refer back to the text to answer questions (Crone, 2004). Predictably, the second group performed better. The same conditions were utilized to assess the students' abilities to answer inferential questions. This time, both

groups performed poorly. The ability to refer back to the text was not helpful for these poor comprehending students (Davis et al., 2004).

Researchers hypothesized that those students who had difficulty making inferences lacked background knowledge of the subject matter (Crone, 2004). In another study, poor comprehending students were allowed to read text based on background knowledge that had been provided beforehand (Gunning, 2014). The results determined that even with background knowledge, the poor comprehending students continued to have difficulty making inferences. Additionally, students with poor comprehension also displayed difficulty with both written narratives and spoken narratives (Gunning, 2014).

Understanding exactly why aspects of reading comprehension are difficult for some students is important, because this understand permits the development of very specific, research-based RtII interventions (Crone, 2004).

Reading Comprehension Interventions

Effective teachers keep in mind two separate instructional goals when teaching comprehension to their students (Dessoff, 2008). The obvious intent is to make sure that their students thoroughly understand the content material. However, a more important long-term goal is to help their students to become self-regulated, active readers who are able to utilize a variety of strategies to help themselves comprehend text throughout their lives (Olivert, 2007).

At minimum, students must learn how to use the reading comprehension strategies of summarizing and retaining information, identifying main ideas, and recalling details (Carlson & Levin, 2012). According to a study by Block et al., the six major classroom instruction methods for reading comprehension include (a) workbook

practice; (b) individualized schema-based learning (silent, independent book reading with teacher monitoring); (c) situated book practice (silent independent book reading with prior teacher instruction regarding the skill or strategy to practice); (d) conceptual learning (two student-selected expository books on the same subject read back to back); (e) transactional learning (silent reading followed by discussion); and (f) basal readers (Russo et al., 2009).

Block et al studied the instructional responses of a varied group of elementary-school students from Grades 2 through 6 and learned that the three most successful instructional responses shared the following characteristics: allowing student choice of books to be read for guided, independent-reading practice; the reading of more than seven pages of continuous text from fiction or nonfiction classroom books; and 15 to 20 minutes of silent reading that contained specific teacher actions (Dessoff, 2008). Additionally, Block's study concluded that improvement in students' reading comprehension skills was not brought about by extra instructional time, but rather by the appropriate combination of instructional techniques delivered with efficacy (Russo et al., 2009).

Collaborative Strategic Reading (CSR), developed by Janette Klinger and Sharon Vaughn in 1998, has been proved an effective reading comprehension intervention for children with LDs in reading comprehension (Ysseldyke, Burns, Scholin, & Parker, 2010). Teachers favor CSR because it can be used successfully with both learning-disabled and regular-education children, and it is effective in classes of various content areas, including science and social studies (Rathvon, 2008). Learning-disabled students appear to prefer CSR because they are able to actively participate in a small-group format

and feel successful (Deno et al., 2009). Overall, students who learn under CSR exhibit improved reading comprehension, increased vocabulary, enhanced cooperative skills, and enriched content area learning (Olivert, 2007).

CSR involves the implementation of four steps, typically in a small-group setting (Deno et al., 2009). The teacher repeats these four steps for each significant reading assignment until students are able to utilize them independently. In the first stage, *Preview*, the students are taught how to review the entire passage before actually beginning their reading (Deno et al., 2009). The purposes of this strategy are to teach students to learn as much as they can about the reading in a brief period of time, to activate students' background knowledge of the topic, and to teach students to make predictions about what they expect to learn from the reading. This stage puts children in a better position to actively learn from the text (Rathvon, 2008, p.33).

In the next stage, *Click and Clunk,* students learn to monitor their reading comprehension and to identify when they have breakdowns in understanding (Deeney, 2010). Clicks refer to the parts of the text that make sense to the readers, while Clunks represent the parts of the text that do not make sense to the reader (Davis et al., 2004). When Clunks occur, the students utilize their "Clunk Cards," each of which provides "fix-up" strategies to help students convert the Clunks to Clicks (Deeney, 2010). Fix-up strategies include breaking down unfamiliar words, looking for prefixes or suffixes, and rereading the sentence without the unfamiliar word or phrase in order to gain context clues (Olivert, 2007).

Students learn how to identify the main idea in sections of text (usually paragraphs) during the *Get the Gist* stage (Deeney, 2010). This strategy helps students

improve their understanding and memory of their reading. The teacher instructs the students to first say out loud what they think is the most important idea. After several students give their ideas, the teacher asks other students to choose the idea they liked best and to explain why. Then the students work alone or in pairs to write the gist of the passage. The teacher repeats the procedure with the written gist (Deeney, 2010).

In the last stage, *Wrap Up*, students review the key ideas in the passage and formulate questions and answers about the passage in order to improve their knowledge, understanding, and memory of the reading (Rathvon, 2008). CSR also utilizes cooperating learning group roles within the small group, cue sheets, and CSR Learning Logs to track what has been learned. Then, teachers often use follow-up activities to further reinforce what has been learned (Olivert, 2007).

Additional Research Involving Reading Skill Acquisition

In the last few decades, much research has been conducted to learn more about how and when reading skills are acquired. This information clearly can be used to develop more efficient and effective reading curricula for children, particularly those in preschool and early elementary school (Hintze & Pelle Petitte, 2001**).** For example, studies have shown that when parents read to their children beginning at age 2 years, the children's language and vocabulary skills are likely to be more advanced than those of other children, often by as much as 9 months – an advantage that appears to last well into elementary school (Hintze & Pelle Petitte, 2001).

This reading advancement is most likely to appear when parents employ a technique called *dialogic reading*, during which parents engage their children in conversations about the text during reading time (Wright et al., 2013). Research reveals

that 90% of children who start developing phonemic awareness and phonics by the age of 2 years (with the help of their parents or guardians) are at less risk than children who do not begin phonemic awareness and phonics at this age, of performing poorly at elementary schools (Hintze & Pelle Petitte, 2001).

Tools for Monitoring Reading Progress

AimsWeb

AimsWeb is a system of graphing progress toward goals and modifying interventions according to students' progress (Shapiro et al., 2008). AimsWeb is a benchmarking and progress-monitoring tool that prioritizes teachers' responsibilities and expectations as they identify and help students with learning difficulties achiever higher performance (Shapiro et al., 2008).

According to AimsWeb's instructions for use, teachers are expected to benchmark all students at least three times a year in their specific grade level. Benchmarking is an important aspect of continuous learning and performance progress and monitoring (Shapiro et al., 2008). It should be completed by teachers because the teachers are most familiar with their students' performances and capabilities. Teachers should also print and analyze students' performance reports. Reviewing students' performance reports is important because this practice gives teachers the opportunity to identify students who have not been performing well and those who need continuous progress monitoring (Shinn, 2007).

AimsWeb encourages teachers to analyze students' classroom performance and reports in order to determine if they are performing below or above average and if they

require any progress monitoring to help them improve (McCrudden & Schraw, 2010). There are different types of progress monitoring, and thus, teachers should survey students' performance in order to determine the type of progress-monitoring level they require and the one that specifically suits their needs (Shapiro et al., 2006).

Effective intervention, according to AimsWeb, requires setting and adjusting goals for all the students who are undergoing continuous progress monitoring. Research revealed that 93% percent of all teachers who used the AimsWeb system of graphing progress toward goals and modifying interventions according to students' progress had achieved 100% success in helping their students attain higher levels of performance in class and in district and state-wide assessments (Shinn, 2007).

Measures of Academic Progress (MAP)

The Measures of Academic Progress (MAP) is a relatively new system that allows identification of a reading disability by using curriculum-based assessments, as well as assessments by the school psychologist, that are specifically designed to prove or disprove the source of the suspected reading difficulty (Leroux, Vaughn, Roberts, & Fletcher, 2011). This system is designed to provide actionable and detailed data regarding the progress of each child according to his or her specific and unique learning needs and path. The MAP system is advantageous because it is adaptable for every specific child or group of children depending on the LDs that the child or the groups of children show (Leroux et al., 2011).

Research has shown that the MAP system has the ability to identify disabilities in students because it is designed in a manner that allows for the restructuring and improvement of educational and instructional strategies throughout the learning and

teaching process. The MAP reading assessment is designed in such a manner that it automatically adapts to students by asking questions that reflect their capacity. For instance, when a student answers a question correctly, the next one is a bit harder in order to challenge the student and to ascertain the student's achievement level. On the other hand, the system is able to accommodate students with a lower achievement level by asking simpler questions when they answer the previous questions incorrectly (Leroux et al., 2011).

Research reveals that MAP has a greater capacity to identify children with LDs. The MAP's design, the structure of its questions, and its instruction methods allow utilization of the MAP reading assessment for more accurate identification of students who cannot respond appropriately to general instructions like other students. Such students are likely to have LDs that can be identified at an early stage through the use of the MAP reading assessment (Leroux et al., 2011). (Silberglitt & Hintze, 2005).

Existing Research: MAPS as an Effective Progress Monitoring Tool

The MAP assessment is a scientifically based, progress-monitoring system (Stecker, Fuchs, & Fuchs, 2008). It can be used by teachers to appraise or assess the effectiveness of their instruction for individual students who might have special learning needs or difficulties, and can also be used for their entire class. MAP allows teachers to identify and set the goals for their students' learning in a specific, measurable time (Stecker, Fuchs et al., 2008). Teachers can utilize MAP to monitor their students' performance and progress throughout the established time period, allowing them to determine before the time period ends whether their students will meet the established goal(s). In part, teachers are able to measure whether or not the students have been able to

meet the set reading goals by comparing expected the results according to the set goals with the students' actual rates of learning, according to what the students were able to demonstrate in their most recent tests and retests. From the discrepancy between the goals and the test results, teachers are able to adjust their teaching strategies and instructional levels and strategies accordingly (Smyth, 2008).

In a survey conducted by the National Reading Panel in 57 public schools that used the MAP reading assessment, results showed that the system was 99% effective in identifying and determining students with LDs. The report compiled by the National Reading Panel revealed that 90% of students who did not respond favorably on the learning and instructional strategies scientifically and technologically proposed by the MAP reading assessment were found to have LDs (Leroux et al., 2011).

Systems that monitor reading progress should be designed for use by all students in a school. Reading progress monitoring accessible to every student would help because ensure overall improvement for the entire school. The need for reading progress monitoring should be included in the general instructions for all students. Additionally, the system that monitors reading progress should be designed for individual students who may have unique learning needs or for students who struggle with poor grades. The ability of struggling students to access reading progress monitoring tools as well as the more successful students in their school means that struggling students will be more likely to continually improve their grades (Leroux et al., 2011).

MAP has been used in schools, especially in Grades 3 to 5, for the past 8 years. However, some schools also have introduced this method to second-grade students (Simmons et al., 2008). MAP is a computerized adaptive test allows the coordinated

efforts of school administrators, parents, teachers, and school psychologists to make informed decisions regarding the strategies to promote students' academic improvement. The implementation of MAP should be well structured, designed, and planned (Lembke et al., 2010).

During the initial stages of implementing MAP, students should participate in several MAP tests in order to assess their mathematical, reading, and comprehension capabilities (Shinn & Good, 1992). MAP involves assessing how much difficulty or ease is encountered in answering questions in order to determine how the following questions are to be structured. The instructional level of each and every question is based on the student's ability to answer the previous question (Shinn, 2007). If the student answered the previous question correctly, the following question is structured at a more difficult instructional level. Conversely, when students answer the previous question incorrectly, the instructional level of the question that follows is simpler and reflective of the student's cognitive capacity (Simmons et al., 2008).

In order for MAP to be effective, schools are expected to ensure that students participate in these tests at the beginning of every semester or term, that the tests are not timed, and that students are allowed to repeat the tests twice or thrice in a year. These procedural details help to ensure that student performance is continuously monitored and that the students adapt to learning as expected (Shinn & Good, 1992).

Not all students require MAP because this computerized adaptive system is appropriately designed for students undertaking science and mathematics subjects, as well as reading exercise. In addition, the MAP tests should be tailored in a manner that

fits the individual learning need for every student by making the questions difficult as the test progresses and by allowing every student to take a unique test (Shinn & Good, 1992).

MAP is used by schools and tutors to measure students' progress and academic growth. It is an important tool for teachers because it enables them to determine the areas in which students are strong as well as the areas in which they are weak and need specific help (Shinn & Good, 1992). Teachers are therefore able to make informed decisions regarding the instructional and teaching strategies they need to employ in order to help their students. MAP measures the growth of the students throughout the year and from one year to the next in a chart of equal interval or scale. By looking at the progress charts generated by the MAP system, teachers are able to establish if their students are making progress or falling behind in their academic levels, affording the teachers the opportunity to restructure the instructions at the classroom level (Simmons et al., 2008).

Extensive research concludes that MAP has been effective in helping teachers track the reading progress of their students. Of teachers who have used MAP in class, 97% have reported that it is effective in measuring and tracking students' academic growth (Simmons et al., 2008). According to these teachers, the adaptability of the MAP tests to every specific student makes this system extremely beneficial for every student because it considers the specific needs of each student (Simmons et al., 2008).

Validity and Reliability of MAP Assessments

MAP assessments have been used in academic settings for more than 30 years. Abundant data and research confirm the reliability and validity of MAP assessments. The results for MAP assessments have yielded statistical valid correlations in all the multiple tests and retest events for the same student. The results are consistent, indicating that

MAP assessments are reliable and help teachers make informed decisions based on valid and reliable results (Simmons et al., 2008).

A survey was carried out in 10 schools where students in Grades 3 and 4 were directed to undertake the MAP assessments at the beginning of the semester (Silberglitt & Hintze, 2005). The purpose of the survey was to confirm the validity and reliability of MAP tests. The students took the tests and then took the retests several days later. The same procedure was carried out twice more, at 4-month intervals. In total, the researchers required the students in third and fourth grade take the tests and retests three times within the year. The results showed consistent and statistically significant correlations in the students' scores (Silberglitt & Hintze, 2005).

Additionally, the students' results showed consistent growth. There were no extreme results from students that would have lowered the correlation. These results confirmed the reliability and validity of MAP in measuring the growth of students in school. In addition, the results confirmed that MAPS was an essential tool for teachers that could be relied upon when making decisions about the instructional strategies needed in order to help their students achieve high academic growth and development (Silberglitt & Hintze, 2005).

Several benefits of MAP assessment make it an effective progress-monitoring tool (Smyth, 2008). For example, it can lead to accelerated learning for all students or for a specific group of students with special learning needs, because the MAP facilitates the ability of teachers to provide more appropriate instruction and interventions almost immediately. The teachers are more informed on instructional decisions because of the validity and reliability of MAP as a progress-monitoring tool. The goals set by

teachers indicate their higher expectations for students, and thus more efforts are made to ensure that the goals are met (Smyth, 2008).

Research reveals that 65% of students who have used MAP assessment progress monitoring for just 1 year at least three times per year have been able to attain faster the state standards for statewide assessments (Stage, Abbott, Jenkins, & Berninger, 2003). In addition, the research showed that in the second year of undertaking the MAP tests and retests, more students (i.e., 97%) were able to achieve the state-wide assessment achievement standards (Stage et al., 2003). Studies reveal that the internal reliability of the test items is highly impressive. Of all teachers who have used MAP assessment, 94% say that its efficacy is exceptional primarily because of the volume and breadth of its test items and its level of adaptability to each individual student's needs (Stecker, Lembke, & Foegen, 2008). Studies show that the MAP assessment system has been designed, planned, and constructed in a manner that permits highly reliable results. The system is also continually updated and maintained in a manner that assures teachers, students, and school administrators a high level of reliability, adaptability, and validity of test results, allowing students a higher probability of achieving the academic goals set by their teachers

The MAP's Use in Reading Curriculum and Intervention Modifications

The MAP assessment has been proven effective, reliable, and valid because it is adaptive and considers the individual needs of every student (Silberglitt & Hintze, 2005). It has the capacity to give unique treatment in terms of assessment questions to every student depending on his or her capability and progress (Stecker, Lembke et al., 2008). Therefore, because of its effectiveness, teachers and school administrators can use its

results as a means of driving modifications and/or improvements to a school's reading curriculum and/or remedial reading program (Vaughn et al., 2011).

To improve a school's reading curriculum, the school team most first set goals for the acquisition of secondary and primary reading goals, most often after determining the current performance level of every student. After setting the goals, redesign and restructuring of the teaching process and instructional strategies are often required to help students reach the established goals and thus improve on overall reading performance levels withing the school or school district. The design aspects of MAP allow it to be used by school administrators to drive changes in the teaching process, as well as in curriculum development and redesign of remedial reading programs (Stecker, Fuchs et al., 2008). MAP's results accurately reflect the students' skills and needs so schools and teachers can use it to design and improve on processes, learning activities, tools, and aids, as well as on remedial programs used by the school and the teachers to improve overall school performance, particularly on statewide and district assessments (Stecker, Lembke et al., 2008).

MAP Facilitates Expansion of Reading Knowledge Among Educators

RtII is particularly important in today's world because its focus on ensuring that all children achieve academic excellence. RtII calls for all stakeholders to restructure and redesign their teaching, instructional, and assessment approaches in order to accommodate all students regardless of the special academic needs they may have (Wanzek & Vaughn, 2010). RtII is composed of tools that teachers require to identify and adjust their teaching practices and instructional strategies in order to help students who are struggling with poor performance to improve. Teachers, school administrators, other

stakeholders must employ the strategies to identify and monitor student progress and to help students at risk of failing to improve their academic performance (Vaughn et al., 2011).

The understanding of the reading process has improved considerably with the help of RtII and MAP assessments. Now all education stakeholders have more insight, knowledge, and experience because of the need to use effective RtII approaches to help all students, especially those struggling with poor grades resulting from inconsistent instructional strategies and those with significant cognitive deficits or disabilities. All invested educational team members, both individually and as a team, become by design more capable and more useful when it comes to providing expedient and appropriate interventions (Wallis & Steptoe, 2007). Because of the effectiveness of MAP in conjunction with a system of RtII, a school's educational partners become more confident in their ability to provide the best interventions at the most appropriate time (Wallis & Steptoe, 2007).

With the help of RtII and MAP, a school district's reading instruction process is redesigned and restructured in a manner that suits the academic needs of every student in a school or school district. Students now find that achieving higher grades is easier because they are receiving the most appropriate instructional, teaching, and assessment strategies that work for them according to their intellectual capacity, as well as their special learning requirements (Wanzek & Vaughn, 2010).

Both RtII and MAP allow teachers to monitor and evaluate targeted students at an early stage (in Tier 1), a time that is most advantageous for determining their students' capability and progress (Wallis & Steptoe, 2007). These combined systems give teachers

the means to assess the effectiveness of Tier 2 and Tier 3 interventions in order to determine the number of students who require additional instruction to help them improve more and reach above-average performance (Woodward & Talbert-Johnson, 2009).

Lastly, an understanding of both RtII and MAP improves the learning process by enabling teachers to design additional, more effective interventions to help students who are not responding well to instruction and intervention strategies in Tiers 1 and 2 (Woodward & Talbert-Johnson, 2009). The learning process is becoming fruitful now that there is the potential for truly no child being left behind. Typically, students who do not respond satisfactorily to Tier 3 interventions are considered to have a more serious cognitive, physical, and/or learning disability, and are often placed in special classes or special needs schools. Even in these learning settings, students are able to benefit by the RtII and MAP construct to receive specialized attention, and still be able to achieve academic improvement (Wanzek & Vaughn, 2010).

Dynamic Indicators of Basic Early Literacy Skills (DIBELS)

Students' ability to read and comprehend in a manner relative to their age and specific grade is critical for teachers and schools (Woodward & Talbert-Johnson, 2009). Teachers are concerned with the need to establish whether students have developed reading and comprehension skills at the age and grades as expected. Teachers can predict to some degree the student's success in academic performance by establishing whether students can read well or not. Research has revealed a significant relationship between high reading ability and successful school performance (Woodward & Talbert-Johnson,

2009). Additionally, studies show that students who are able to read well in Grades 3 and 4 are able to achieve high performance in Grades 8 and 9 (Stecker, Lembke et al., 2008).

DIBELS oral reading fluency scores have been used by different states to determine statewide reading test scores. Studies have confirmed the accuracy of DIBELS oral reading fluency as a measure for predicting students' reading comprehension outcomes (Wanzek & Vaughn, 2010). If a student has an automatic ability to read, decode, and understand a text easily, quickly, and accurately, he or she is said to have an adequate reading fluency. According to DIBELS oral reading fluency, the scores that a student gets in an oral reading fluency test have a strong relationship to the student's likely scores in a statewide assessment in the future (Stuart, 2006). This relationship is due to the strong correlation between the factors that lead to fluent reading and achievement of better results in statewide assessments. Research reveals that the factors that contribute to a student's excellent reading skills are the same factors that lead to that student achieving high scores in later grades and in college.

DIBELS or MAP: Which Is Better at Predicting Outcomes?

Schools often utilize the Dynamic Indicators of Basic Early Language Skills (DIBELS) oral reading fluency probes to predict the possibility of students passing statewide assessments (Stuart, 2006).

In recent research conducted in Indiana to determine the effectiveness and reliability of using the DIBELS oral reading fluency probes to predict the possibility of students passing statewide reading assessments, a positive correlation was indicated

between DIBELS oral reading fluency scores and statewide assessment scores (Wanzek & Vaughn, 2010). The research activity involved assessing 400 students in 10 different elementary schools and comparing the students' DIBELS oral reading fluency scores with their final statewide assessment results. The findings of the research revealed that 100% of all the students who had passing scores on the DIBELS oral reading fluency also passed on their statewide assessments (Wanzek & Vaughn, 2010).

However, DIBELS oral reading fluency probes do not provide intervention strategies for students who do not perform well (Woolley, 2010). It only predicts whether they will pass or fail in the statewide assessments and if they have fluent reading skills. The MAP reading assessment adapts to every student's unique needs. It not only measures performance but also tracks progress and helps teachers to make informed, reliable, and valid decisions regarding restructuring the reading process and instructional levels to fit every student's unique needs (Ysseldyke et al., 2010). The DIBELS oral reading fluency probe also does not help teachers to determine the students' weak areas or to guide them on the instructional level required by every student. Instead, DIBELS oral reading fluency leaves educators to make general judgments on decisions regarding the reading process and instructional strategies (Woolley, 2010).

From the information researched in this chapter, one can conclude that both the MAP and the PSSAs are comprehension-based assessments, whereas the DIBELS oral reading fluency/PSSA combination are capable of only comparing oral reading fluency to comprehension results (Ysseldyke et al., 2010). It is clear that oral reading fluency and reading comprehension are completely different skills; it is not reasonable to expect performance in one skill to predict performance in the other. Comprehension-based

assessments measure more secondary reading skills than those measured by reading fluency (Ysseldyke et al., 2010). Therefore, the MAP and the PSSA assessments are better than the DIBELS/PSSA assessments for monitoring and addressing a student's reading progress, particularly in reading comprehension.

Implementation of RtII Systems

Role of the School Psychologist and Others in the RtII System

According to the National Association of School Psychologists' Code of Conduct, school psychologists have a professional obligation to continually obtain additional training and education to provide the best possible services to children (Daly, Chafouleas, & Skinner, 2005). The use of RtII in schools and in district education systems provide great opportunities for school psychologists to help students by engaging in system design, encouraging and spearheading team collaboration, and servicing and attending to individual students (Kavale, 2001).

System design includes identifying and analyzing the existing information and literature regarding how to solve problems faced by poorly performing students within an RtII system, thus developing the best strategies and approaches that can be used by these students' schools based on available resources (Kavale, 2001). School psychologists have the training and professional knowledge to evaluate and identify the newest and best models for service delivery in an education system (NASP, 2010).

Psychologists also have the role of working collaboratively and continuously with the school's administration to identify the most important stakeholders in the process of using RtII (Klick, 2000). In addition, while designing the system, school psychologists are also charged with identifying and overcoming challenges or obstacles to system

development as well as developing initial training requirements. School psychologists are also involved in designing evidence-based models that can integrate well with the school's needs and resources (Klick, 2000**)**. When included in designing the RtII system, school psychologists are also skilled in identifying systematic patterns of students' special needs, such as patterns of persistent or pervasive difficulties in student achievement (Klick, 2000).

As far as team collaboration is concerned, school psychologists have the best professional knowledge and experience to act as leaders, thus playing an important role in the implementation of the RtII model. They can coordinate the efforts of all other school personnel, provide training needs, provide oversight for monitoring progress, and coordinate the integration of data required for decision-making processes (Langdon, 2004).

In addition to coordinating the efforts of the other stakeholders and school personnel in the implementation of RtII, school psychologists also have the responsibility to serve individual student's needs. They can do so by consulting with teachers, parents, guardians, and the students themselves regarding intervention activities both at home and in the classroom. RtII approaches require early identification and intervention that typically appear in Tier 1, meaning that school psychologists have a greater responsibility to spend more time with young children in kindergarten or first grade (Klick, 2000).

In collaboration with classroom teachers, school psychologists also have to determine the best intervention strategies that fit each student. To help individual students, school psychologists evaluate a student's academic and mental functions in order to determine whether such students are improving (Langdon, 2004).

Are School Psychologists Qualified to Help Implement RtII Systems?

According to Langdon, school psychologists are qualified and have the necessary professional skills or knowledge to play important roles in the process of implementing RTII approaches. However, they may encounter many challenges in the process of executing their roles and responsibilities (Langdon, 2004).

Some observers consider the role of the school psychologist in diagnosing and remediating reading disabilities as neither integral nor effective **(**Langdon, 2004). In his 2009 commentary, Michael W. Kibby of the University of Buffalo (SUNY), a reading clinic director with more than 40 years of reading diagnostic and reading remediation experience, openly questioned why school psychologists are involved in the evaluation of struggling readers. Certainly, many school psychologists would take umbrage with such a suggestion, perhaps even refusing to take Kibby seriously based on what they consider to be their past important contributions to in the implementation of RtII in schools (Langdon, 2004).

However, a review of Kibby's commentary reveals a rather compelling argument. Kibby correctly pointed out that, in the typical school setting, the school psychologist has always represented the end means of acquiring alternative reading instruction (special education) for struggling readers, and so may not be perceived by school administrators as important in the process of implementing an RtII system (Kibby, 2009).

In a typical intervention scenario, the school psychologist's intervention involves a psychoeducational evaluation, consisting of an intelligence test, an assessment of affect and motivation, and, possibly, a test of perceptual ability, as well as observations and teacher input (Langdon, 2004). The school psychologist typically concludes the

following: the problem reader exhibits cognitive skills at or near the average range; through teacher input, that the child is not reading at grade level; that the child needs special help in reading; and that instruction should focus on the child's strengths and avoid his or her limitations. Kibby also emphasized the information a school psychologist's report typically does not include: more evidence regarding specific reading weaknesses, suggested reading goals, suggested instructional methods, or suggested reading instruction materials (Kibby, 2009).

While a conclusion that all psychoeducational evaluations for problem readers occur in this fashion would be both unfair and inaccurate, Kibby was essentially correct when he stated that many school psychologist evaluations are of minimal use when deciding how to teach problem readers how to read (Kibby, 2009). Some school psychologists have limited knowledge in the process of teaching students or in deciding on the best teaching strategies. However, teachers, parents, students, and schools can still benefit by incorporating the role of school psychologists in the process of implementing RtII approaches (Langdon, 2004).

Pros and Cons of Assigning Learning-Disabled Students to a Reading Specialist

Many educators play important roles in helping students with LDs by using either traditional (and often outdated) methods or more modern methods of learning interventions. RtII enables students who are struggling to receive appropriate help and reading intervention early in and throughout their learning experience (Kim et al., 2010).

Reading specialists play a pivotal role in the RtII process, as well as in helping students with reading disabilities. Sometimes students are assigned to a reading specialist. This decision has its pros and cons, which must be considered and weighed carefully

before implementation. A reading specialist does have the capacity to serve as a teacher for struggling students. He or she also has the experience and professional knowledge to act as a coach, a literacy coordinator, or a supervisor (Kim et al., 2010).

Assigning a disabled or struggling student to a reading specialist provides the student with the opportunity to be mentored and coached throughout the learning experience. The advantage of working with reading specialists is that they have the knowledge to diagnose the cause of the reading difficulty experienced by a poorly performing student and also to act as a teacher and a mentor **(**Lembke et al., 2010).

Reading specialists play important roles in the implementation of the RtII model. They can design or help in the process of designing the RtII system, as well as help to provide resources needed to accomplish the intended goals. They have the knowledge to identify students with special reading needs and to devise the best intervention strategies for them. Therefore, reading specialists can work with teachers and other school personnel to ensure successful implementation of RtII (Lembke et al., 2010). In addition, they can coordinate the collaborative efforts of all the involved parties by offering effective advice on the successful implementation of RtII interventions. Just as important, the reading specialist can work with individual students, thus attending to the individual and unique needs of the disabled and struggling students (Dynamic Measurement Group Inc., 2010).

Reading specialists can provide intensive instructions that meet the learning speed and the understanding capacity of specific students. The reading specialists can provide such instructions either within or outside the classroom (Glover & DiPerna, 2007). The reading specialists also consult with classroom and subject-specific teachers regarding the

performance and progress of the assigned disabled students and thus determine the best strategies to help the students in the teachers' various classes. Therefore, the students get much help from the combined efforts of teachers and the reading specialists. The reading specialists can also observe the progress of the assigned students and consult with teachers and parents regarding how to work with the students, as well as determine the appropriate instruction level that is appropriate for each student (Glover & DiPerna, 2007).

Assigning a disabled or a struggling student to a reading specialist may result in several challenges (Dynamic Measurement Group Inc., 2010). For instance, the instruction level of the classroom teachers and reading specialists may vary greatly and thus be confusing to some students. The approach used by the reading specialists may also be different from the approach the student is used to in the classroom, thus contributing further to the problems faced by the struggling student (Dynamic Measurement Group Inc., 2010).

The Challenges of Implementing and Adapting to RtII

The most common challenges encountered by school psychologists in the process of identifying and helping struggling students using the RtII model include having limited time and resources available to execute their duties effectively (Goffreda & DiPerna, 2010). The use of RtII in a three-tier model does not mean that school psychologists will no longer be administering psychological tests; it means that they will need to refine their assessment skills further to ensure that they are able to accurately characterize a child's

cognitive, academic, and social/emotional capacities and link them to research-based instructional strategies (Goffreda & DiPerna, 2010).

An over-reliance on the traditional methods for reading difficulty interventions creates a challenge for school psychologists who want to expand their roles in identification and intervention approaches for struggling students (Gersten & Dimino, 2006). However, school psychologists can overcome such challenges by being open to new ideas and strategies in an RtII approach. In addition, they should be ready to collaborate with the other key stakeholders, including classroom teachers, specific-subject tutors, parents, and school administrators, in the implementation of RtII. RtII should not be one person's responsibility, but rather a cohesive, concentrated, and intensive team effort (Lembke, McMaster, & Stecker, 2010).

The RtII model is a multitiered approach that helps educators to provide special services to poorly performing or struggling students who are at great risk of failing in academics at increasing levels of intensity (Hoover, 2010). RtII has been used for making decisions on how to help learners through whatever resources are available within regular education or special education. This system results in an integrated and cohesive system of instruction and intervention guided by child outcome data results (Hoffman et al., 2009).

Successful RtII Systems are a Team Effort

For many educators, the reasons for improving reading interventions for children with reading disabilities are far more implicit. Most education professionals are highly motivated to teach children to the best of their knowledge and ability (Hoffman et al., 2009). Teachers and psychologists typically do their best to recognize t help students at a

great risk of poorly performing. In addition, school psychologists play important and integral roles in identifying and remediating learning disabilities in children (Maleyko & Gawlik, 2011).

Before the arrival of RtII, school psychologists had the important and almost exclusive duty to identify and strategize ways to help students with learning needs (Jenkins, Graff, & Miglioretti, 2009). However, a prior, more limited role in assisting students with learning difficulties does not mean that school psychologists should be eliminated in the process of implementing an RtII system of identifying and monitoring the progress of struggling students. Some school psychologist may have limited knowledge, but they still have the responsibility to upgrade their skills and knowledge and thus get involved in the entire process (Jenkins et al., 2009). School psychologists will also need to be prepared to provide the kind of detailed, thorough assessments required at Tier 3 in order for the model to be implemented effectively at all three tiers (Hoffman et al., 2009).

RtII requires early identification or detection of special learning needs as well as behavioral needs in children. After the identification of needs, a close learning relationship is needed between the learner and the teacher, as well as the special-education specialist and parents (Johnson, 2007). RtII requires the involved parties to employ the appropriate learning tools and resources to ensure that the student is able to make continuous progress in the education system and get good grades (Langdon, 2004).

School personnel (and especially school psychologists) play pivotal roles in using RtII to identify and help students at risk of poor performance. Use of RtII requires a high level of collaboration, as well as the altering of some processes in the classroom learning

in order to accommodate struggling students (Kavale, 2001). School psychologists can adapt to a variety roles and responsibilities in the process during which a school plans and implements the strategy of using the RtII model to identify and help students who are at high risk of poor performance, depending on the skills of other RtII members and the overall needs of the RtII team (Jenkins et. al., 2009).

The Effectiveness of RtII Systems

Research Supporting the Use of RtII Systems

RtII should be implemented in all schools and by all educators because of its benefits and features that allow educators to improve performance for all students and especially for students with special learning needs and special-education needs (Vaughn et al., 2011).

Research reveals that interventions have been very effective in improving performance of students. Research also reveals that reading interventions have been able to improve learning for both students who graduate and those who drop out of schools (Fuchs & Fuchs, 1999). The ability for a student to graduate can be associated with effectiveness of reading interventions employed by teachers to identify students at risk of poor performance as well as to help them (Vaughn et al., 2011).

Despite the underlying assumptions that have to do with special-education eligibility, a number of significant elements of RtII make it a suitable and effective tool for use by educators to improve learning experiences for both students with special learning needs or disabilities, and students who are able to learn at a grade level (or beyond) pace (Whitten et al., 2009).

Research has revealed that RtII provides learners with generally more efficient instruction from classroom instructors who are familiar with this instructional framework. A research study carried out in more than 50 public schools in different parts of the United States revealed that 80% of educators who had used RtII reported that RtII improved the learning of poor performers because it required teachers to alter classroom instruction in ways that made content more accessible to these poorly performing students (Tobin, 1997).

RtII has been effective in getting educators to implement benchmark assessment procedures to identify at-risk students and monitor the progress of all students. Research by ACT indicates that 90% of schools and districts that implemented RtII procedures noted positive improvements in progress monitoring and statewide tests scores **(**Fuchs & Fuchs, 1999).

Recognizing or identifying learners who are making slow progress has been the greatest benefit of RtII implementation (Fuchs & Fuchs, 1999). In one study, research revealed that of all students identified to have special learning needs (through the use of RtII as the means of LD determination), 97% had been able to complete school and graduate with grades above the standard grade set by the government through CBM (Whitten, Esteves, & Woodrow, 2009).

This study also can be used to show how the use of RtII can reduce the number of children who get frustrated with school and drop out. For example, the same research by ACT indicated that only 21% of poor performers graduated before the schools acquired the RtII model to identify, track, and monitor students at risk of poor performance. Even

worse, more than 50% of the remaining 79% dropped out of school before reaching fourth grade (Whitten et al., 2009).

RtII offers more instructional options to the learners who are in need of additions and/or alternatives to the standard general-education instruction. This extra support may be offered by the general-education classroom teacher or any other person (Fuchs & Fuchs, 1999). Therefore, through RtII, multiple educators within one RtII system can effectively monitor progress and modify instruction in accordance with the assessment data gathered.

More than 87% of students whose teachers used an RtII model as a prevention-oriented response to efficient intervention approach within an outcomes-driven model reported that their performance and classroom learning experience had improved significantly (Tobin, 1997). These results are thought to be related to the fact that RtII procedures allow educators to modify instruction and pace to take into account the needs of at-risk learners.

As educators start to take part in the process of RtII application, they must have access to high-quality, formative assessment tools. In addition to documenting the progress of the learners, these tools should offer data about the general efficiency of the system of educational supports, as well as of the quality of education (Goffreda & DiPerna, 2010). The studies reviewed here suggest that RtII models have helped ensure that no child is left behind, as well as ensure that schools and teachers realize the performance goals set by state and federal legislation and assessed through the use of statewide testing programs (Shapiro, 2011).

Research reveals that RtII has been highly effective in terms of the intensity and duration required for students to respond positively and improve in their performance after the implementation of the RtII system across multiple tiers (Nation & Angell, 2006). For more than 20 years, school districts such as the St. Croix River School District have been managing special education using RtII interventions, even though for a long time its program had not been identified as an RtII model. The school district reported that, over the years, it has witnessed consistently high levels of success, reading improvement, and achievement by their students (Nation, 2008).

Several conclusions were drawn during the study regarding the effectiveness of the RtII system in the St. Croix River School District. The researchers noted that St. Croix's RtII system entailed frequent and continuous learning based on instructional and performance measurement that utilized universal outcome measures. This component has been known to increase the effectiveness of using RtII for identifying and helping students with LDs, as well as those at risk of low performance (Nation & Angell, 2006).

Secondly, the researchers concluded that St. Croix's RtII system ensures continuous and frequent measurement rather than on-and-off measures. Therefore, teachers and students are continuously engaged in the learning process, which involves measuring the general or universal outcome learning aspect. A follow-up survey conducted by the St. Croix River Education District revealed that the level of performance achieved by students in the district (both those with LDs and those who are at risk of failing as a result of poor instructional strategy) improved significantly compared to the level achieved when the district was not using the RtII system (Mellard et al., 2009).

Teachers in the St. Croix River School District achieved better results for at-risk students by using RtII assessments. The teachers believed that this improvement would not have been achieved using traditional intervention systems and their associated assessment methods because those methods do not embrace the continuous nature of measuring all students' general learning outcomes (Nation & Angell, 2006).

Other reading remediation models only compare one student's performance to the performance of other students and rarely emphasize the corrective measures to be adopted. A survey conducted in California in 60 schools that use the RtII system revealed that 87% of the teachers said that RtII intervention is effective because it provides frequent and continuous measurement using universal outcome measures (Nation & Angell, 2006).

The second component that ensures the RtII system's effectiveness is that it allows teachers to offer research-based instruction within a multitiered service delivery model (Pennsylvania Department of Education, Bureau of Assessment & Accountability, 2008-2009). It is not based on instructional strategies applied at only one level in the learning system. Teachers can offer evidence-based or research-based instructional strategies throughout the three-tiered system of RtII interventions (Langdon, 2004).

The RtII system works well and is most effective when programmed to include Tiers 1, 2, and 3. Tier 1 involves classroom assessment and instruction and early intervention for at-risk students. Through this system, students at risk for poor performance are identified in Grade 1 through Grade 4. Teachers give students general instructions and can identify those with significant cognitive LDs (Pennsylvania Department of Education, Bureau of Assessment & Accountability, 2008-2009).

At Tier 2, teachers can devise and implement remedial service assessment and instructional additions and modifications to regular-classroom instruction for students who are not making progress consistent with standards. Tier 3 allows for more specific and intense assessment and remedial instruction through special education, remedial programs, or modifications to regular-classroom instruction (Dietz & Roy, 2010).

Research shows that RtII has been very effective because it allows instructional and remedial programs for students across multiple tiers. RtII programs can improve performance for both disabled students and those who learn slowly and may require different instructional and teaching strategies. Research also shows that when the RtII model is effectively programmed throughout the three-tiered system, it reduces the number of students referred for comprehensive evaluations at Tierbecause issues of "instructional disability" have been dealt with Tiers 1 and 2 (Ehri, 2005).

The third component that makes the RtII system effective is that it is a means for the restructuring of school-wide organization philosophies and principles to ensure the schools achieve the most effective instructional capacity for each student according to their specific learning needs. The system allows all the stakeholders to collaborate and take responsibility for helping each child achieve high performance in state-wide assessments (Ehri, 2005).

Advantages and Disadvantages of the RtII System

Schools, districts, teachers, and students alike experience many advantages from using the RtII system. The most significant and most obvious benefit of the approach is that it eliminates the perception that students with LDs are left unaided and in danger of failing (Roehrig et al., 2008). In general, parents are more satisfied with this system

because they know that their children will get the appropriate help promptly. Teachers are also generally pleased with the RtII model because it allows them to more efficiently and quickly identify problem areas so their students can achieve their best within the general-education system (McCloskey, n.d. [b]).

Almost immediately, when ongoing assessment data indicates a problem area is experienced by a particular student or a group of students, teachers can adopt and implement the most efficient interventions to address the problems (Roberts, Good, & Corcoran, 2005). Other school staff members and the school administration can also help the students and thus improve the school's performance (Roehrig et al., 2008).

RtII allows schools the opportunity for early intervention when teachers notice the learning difficulties of students. Through the RtII system, schools can take the initiative to help struggling learners and thus help them meet high achievement levels, beginning at the earliest stages of the reading skill acquisition process (Roberts et al., 2005). Schools have to be careful to avoid chronic failure within the RtII system by being flexible, creative and committed to the process. Through the RtII system, the school dedicates itself to helping every student at risk of failing, even if only one student experiences LDs (Roberts et al., 2005).

Another RtII system advantage is that it identifies precise and detailed instructional strategies that can specifically benefit a particular student or group of students (McCloskey, n.d. [c]). It is better than traditional intervention methods because, unlike other models, RtII provides valuable and essential information needed to develop subsequent interventions (Roberts et al., 2005).

RtII also provides information to teachers that enables them to restructure their instructional strategies to fit specific learning requirements of students at risk of performing poorly in state-wide assessment exams. A long-term research study lasting more than three years, conducted by the NICHHD, revealed that poor or inadequate classroom instruction levels were the primary reason for the failure of students with different LDs levels (Reavis, 2005). Additionally, this research study established explicitly that a relationship exists between performance discrepancy and the type of response used to identify and help students with LDs. According to the findings of this research, using RtII reduced the level of severe performance discrepancy in special-education programming and a regular-education curriculum (Reavis, 2005).

RtII can differentiate between poor or inconsistent instruction and the effects of a student's disability. Using the RtII system, which provides evidence-based data, teachers and schools can identify students with LDs and those who are achieving at grade level (Reavis, 2005). Research reveals that, for a long time, some students who appeared incapable of performing at grade level in reading had been mistakenly identified as having LDs. These students failed, not because they had disabilities, but because the appropriate instruction and teaching strategies had not been used to determine their specific area of difficulty (Pullen, Tuckwiller, Konold, Maynard, & Coyne, 2010).

Effective RtII systems identify students' learning needs at early stages and help eliminate children's learning delays. The first step in using this system is to identify students with learning challenges. At this point, students who are found to be performing poorly but are not learning disabled are identified and set apart so that appropriate strategies can be used to help them improve. The students with LDs are also identified at

an early stage (Pullen et al., 2010). Although much data is available showing that RtII is effective in identifying and improving educational and instructional strategies for students at risk of poor performance, schools and districts have implemented relatively few RtII models to provide the appropriate intervention to students at risk of failing (Shapiro, Keller, Lutz, Santoro, & Hintze, 2006).

RtII provides specialized instruction levels to all students who need modifications. Suppose a student or a group of students is nonresponsive to the general inodificationsstruction level that is effective for most students in the class. In that case, the RtII model provides a means for considering an LD as a factor responsible for the discrepancy. Because of RtII, it has been shown that the number of students who qualified for special-education support under previous systems of intervention and remediation decreases significantly (Pullen et al., 2010). Therefore, through the RtII system, the danger of misclassifying a student as having a significant LD is significantly reduced. The system differentiates between students who fail because of inadequate and inconsistent instruction and those who fail because of cognitive LD (Powell, Higgins, Aram, & Freed, 2009).

Research has concluded that RtII helps schools and teachers reduce the overall identification of LDs and decrease instructional failure's risk to bring about positive results (Peterson & Shinn, 2002). For many years, teachers were able to identify students with LDs or those who were performing poorly without any LDs. At that time, little was done to help these students reach their highest performance level. Although they were identified as having LDs, they continued to perform below grade level (Powell et al., 2009).

Thankfully, the efficacy of treatment response has greatly improved with the use of the RtII system. The RtII system emphasizes treatment validity. It follows through on the remediation process by suggesting the best instructional and teaching strategies that should be adopted by teachers (Peterson & Shinn, 2002). Therefore, the problem of students being identified as having LDs and being left with no adequate help is minimized through the use and implementation of the RtII system (Powell et al., 2009).

The RtII system also addresses the system flaws related to poor or inconsistent instruction. With this system, teachers know exactly what is required of them and how they can restructure their teaching to be consistent with their students' needs (McCloskey, n.d. [b]). It eliminates the possibility of students failing continuously due to inadequate or inconsistent instruction by teachers, who may not know what to do to help their students (Powell et al., 2009). The system suggests strategies to deal with the specific learning needs of students at risk of poor performance. RtII provides feedback that helps direct the instruction from teachers based on the specific weaknesses of the learners. It also gives feedback to school administration, parents, students, and other essential stakeholders in the education process (Peterson & Shinn, 2002).

A research study carried out as part of the development of NCLB, involving American parents' perceptions of the RtII system, revealed that 97% of parents preferred to take their children to schools that used the RtII system. These parents were convinced that their children received the maximum educational assistance available and consequently exhibited significant academic performance improvement. One of the reasons they cited was that the RtII system provides feedback to all stakeholders,

including parents, regarding the instructional and learning strategies teachers were applying to help their children (Peterson & Shinn, 2002).

Another advantage of the RtII system is that it allows continuous monitoring of students' performance and progress. Proponents of the RtII model have shown that the RtII response system can identify students with LDs and determine the appropriate instructional and teaching strategies for them **(**Peterson & Shinn, 2002). The RtII system provides an opportunity for teachers to continually monitor students' performance via a multitier reading approach, meaning that students are monitored throughout their academic careers. Through the use of the RtII system, teachers can monitor the performance and progress of their students. Teachers can also restructure teaching strategies for their students according to their improvement and progress (Pullen et al., 2010).

The flexible design of the RtII system allows all the stakeholders to get involved in the learning and students' progress monitoring (O'Connor & Klingner, 2010). Teachers can now intervene at the earliest indication that students are experiencing specific learning needs. Every person, including the teachers, the school principal, parents, special-education specialists and tutors, the reading specialist, the school psychologist, the students, and social workers (among others), all share the responsibility for helping every child achieve his or her highest potential in school. All these stakeholders need to collaborate, specifically analyze the needs to design, and then plan and implement the best and most efficient instructional and teaching strategies to help students with LDs (Pullen et al., 2010).

Despite the many advantages cited for the RtII system, some disadvantages and challenges affect its implementation. One of the most critical aspects that contributes to the success of the RtII system is teacher support. Some commentary suggests that some teachers may have difficulty changing from the remediation strategies they know to those that allow an RtII system to succeed (Pullen et al., 2010). Teachers must accept and be in full support of the RtII system before being successfully implemented in a school. School officials and administrators also must buy into and support this instructional framework before a district education system can implement the RtII system in any of its public schools (Mellard, McKnight, & Woods, 2009). The unwillingness and inability of team members to adapt to the RtII system are among the most challenging aspects of implementing an RtII system in many schools in the United States. The challenge of getting all the involved parties to support the RtII system's implementation potentially limits its effectiveness (Nelson, 2008).

Teamwork is emphasized when an RtII system is first implemented. Implementing an RtII system is not one person's responsibility but rather the responsibility of a group of people who jointly can plan, design, and spearhead RtII in a school or a school district (Nelson, 2008).

The RtII team has the responsibility to identify issues of direct and significant relevance. They must also be careful to select the most efficient solutions to address RtII problems, opportunities, and challenges based on school needs, resources, and specific student groups (Pullen et al., 2010). Experienced and knowledgeable individuals who have previously helped implement an RtII system should work together with the team chosen to spearhead RtII to maximize the potential for success (Nelson, 2008).

A Summary of the Literature Review

This literature review began with the documentation of several government statistics and independent research studies that supported the unsettling observation that, since the 1970s, many school students failed to receive the proper interventions for observed weaknesses in reading. Nationwide public concern and governmental response, including the ground-breaking No Child Left Behind legislation, were the catalysts for systemic change in how schools responded to children who could not achieve at grade level in reading and other subject areas.

It was soon determined that a system of Response to Intervention and Instruction (RtII) held the most promise of ensuring that all children received timely and appropriate academic instruction and intervention. A brief explanation of how RtII works was provided, and a discussion of how research into reading learning disabilities contributed strongly to the development of RtII. In turn, this discussion led to an analysis that helped explain why the discrepancy model of determining learning disabilities was not adequate for determining reading-challenged students' needs.

Additional discussions involved a review of research and theoretical models that helped develop an RtII system of reading interventions. Research determining how and when reading skills are acquired during a child's developmental timeline was essential to reading RtII development. Several models of reading skill acquisition were provided, along with an explanation of each individual reading skill. Of particular importance to developing an RtII system for reading was research regarding specific difficulties that prevented school children from acquiring certain reading skills. Research involving the

acquisition of reading comprehension skills and reading comprehension interventions was also highlighted.

The importance of constant progress monitoring within the reading RtII system was discussed. This discussion involved a description of various progress monitoring tools that could theoretically be utilized in RtII. Tools that were presented for discussion included the AimsWeb, the MAPS, and the DIBELS. After a thorough explanation of each tool, how the tool works, and research involving each tool's ability to predict reading performance, the discussion concluded that the MAP reading probe was the most reliable and best equipped to meet students and teacher's needs a system of reading RtII.

The next section of the literature review included a discussion involving how RtII systems are implemented, focusing on the role of education professionals in the system. Feedback from education professionals and research into RtII systems indicated potential challenges involving the development of a new system of RtII. However, while it is clear that school psychologists and reading specialists are key individuals in developing and implementing an RtII system, total investment and involvement of all educational parties is essential for the system's success.

The final section of the literature review involved the reporting of extensive research showing that a properly implemented and monitored RtII system was the best available instruction and intervention system for all school children. The advantages of RtII far outweighed any disadvantages. Since successful RtII systems rely on constant monitoring of reading progress, and the MAPS reading probe is highly effective in RtII systems, the need for research into the efficacy of MAPS within a system of RtII is clear. This research study is intended to both add to, and expand on, such research.

CHAPTER 3: METHOD

Source of Data

This study will use shelf data from one suburban-rural school in eastern Pennsylvania. Data was collected for those students with available Measures of Academic Progress (MAP) reading domain scores and Pennsylvania System of School Assessment (PSSA) reading scores for a cohort of students enrolled in the fourth grade during the 2013-2014 school year. The total study student sample size for the cohort was 82 students.

Measures of Academic Progress (MAP)

MAP is a computerized standardized adaptive assessment tool that dynamically measures students' performance by individually calibrating item selection for each student to determine a performance level (NWEA, 2003). If a student incorrectly answers a question, the next question is slightly less challenging, or conversely, if a student correctly answers a question, the next question is slightly more difficult. This process continues throughout the assessment, allowing for a specific measure of the student's actual achievement level. In addition to growth scale (Rasch unit) scores, the MAP results are interpreted as performance ranges (below basic, basic, proficient, and advanced) that correspond to the performance level ranges of the PSSA.

The process of constructing the MAP involves several steps that include test design, the definition of content, item selection, and test production (NWEA, 2003). MAP tests can be designed specifically for an agency or school district, allowing for unique goals to be assessed. Most MAP assessments include roughly four to eight goals

with five to six subgoals, each of which is typically based on state standards and curriculum-driven.

No time limit is set for completion of the MAP. Students are not permitted to skip any item and cannot return to previously administered items. The assessment is designed for as many as four administrations per student per year. Upon completion of the test, the student's score and individualized goals appear on the screen. Reports can be generated for individual students, classes, grade levels, or entire districts. Scores are reported as Rasch Unit (RIT) scores, typically ranging between 150 and 300. The standard error of measurement is reported to be between 2.5 and 3.5 RIT points. In addition to RIT scores, percentile ranks are provided and collapsed into categories corresponding to PSSA performance categories.

The MAP demonstrates acceptable concurrent validity compared to the PSSA for Grades 5 and 8, with a validity coefficient of .84 reported in technical descriptions of the tests' psychometric characteristics (NWEA, 2003). Additionally, the MAP math test is reported as being highly and consistently correlated with other academic achievement measures used by a variety of states. Studies regarding reliability for the MAP demonstrated robust findings with test-retest reliability in the spring of 2002, ranging from .84 to .91 for Grades 2 through 10.

For this study, the MAP is aligned with the Pennsylvania State Standards. The Assessment Anchor Content Standards (Assessment Anchors or Anchors) are organized into five content domains. These domains are similar to the five National Council of Teachers of Mathematics (NCTM) Standards and the five National Assessment of Educational Progress (NAEP) Reporting Categories. Pennsylvania Academic Standard

Statements were examined and aligned with the NAEP Reporting Categories and NCTM Standards.

The five major reading components of MAP include phonemic awareness, phonics, fluency, vocabulary, and reading comprehension (NICHHD, 2000). Although it can be categorized as a curriculum-based measurement (CBM) tool, and the MAP math assessment takes much longer to administer than the other traditional CBM tools, such as AIMSWeb. The MAP is computer-scored and can be administered to students in groups, offering considerable advantages in efficiency and convenience.

Pennsylvania System of School Assessment (PSSA)

The PSSA is a standards-based assessment that contains three content-specific assessments, including reading, math, and writing. The current study focuses only on the reading portion of the PSSA. It is administered in all public schools within Pennsylvania for all students in Grades 3 through 8 and 11th grade (PDE, 2009).

The four performance levels are defined as follows (PDE, 2007):

- *Advanced*- This level reflects superior academic performance. Advanced work indicates an in-depth understanding and exemplary display of the skills included in the Pennsylvania Academic Content Standards.
- *Proficient*- Proficiency reflects satisfactory academic performance. Proficient work indicates an adequate demonstration of the skills included in the Pennsylvania Academic Content Standards.
- *Basic*- This level reflects marginal academic performance. Basic work indicates a partial understanding and limited display of the skills included in the Pennsylvania Academic Content Standards. This work is approaching satisfactory

performance, but has not yet reached it. Additional instructional opportunities and increased student academic commitment is needed to achieve the Proficient level.

- *Below Basic*- The lowest level reflects inadequate academic performance. Below Basic work indicates little understanding and minimal display of the skills included in the Pennsylvania Academic Content Standards. Additional instructional opportunities and increased student academic commitment are necessary to achieve the Proficient level.

Procedures

Student names were removed from the data file and replaced with identification numbers to ensure confidentiality (Ysseldyke et al., 2010). MAP RIT scores and descriptive category data for fall and spring in Grade 3 and each successive grade level were used for statistical analyses. The four category descriptors of Basic, Below Basic, Proficient, and Advanced were further collapsed into the categories of Not Proficient (a combination of the Basic and Below Basic categories) and Proficient (a combination of the Proficient and Advanced categories). PSSA scaled score, and descriptive category data for Grade 3 and each successive grade level also were used for statistical analyses. The four category descriptors of Advanced, Proficient, Basic, and Below Basic were further collapsed into the categories of Not Proficient (a combination of the Below Basic and Basic categories) and Proficient (a combination of the Proficient and Advanced categories).

Statistical Analyses

The relationship between MAP reading scores and descriptive categories and PSSA reading scores and descriptive categories were examined using descriptive and

nonparametric statistical analysis techniques. Analyses involved the following: The construction of 2 x 2 cross-tabulation tables as shown in Table 1, and the calculation of the following indices (also shown in Table 1): Percentage of Students At Risk, Percentage Change in Performance Category, Sensitivity, Specificity, Improvement, Instability, and Kappa (representing predictive capacity beyond chance level). The development of status change categories are shown in Table 1.

Table 1

Construction of Cross-Tabulation Tables and Indices Used in Statistical Analyses of Data

		PSSA Score Category	
		Not Proficient	Proficient
MAP Score Category	At Risk or Not Proficient	A	B
	Not At Risk or Proficient	C	D

Note. Percentage of Students At Risk = (A+C/(A+B+C+D)) x 100;
Improvement Index = (B/(A+B)) x 100;
Instability Index = (C/(C+D)) x 100;
Sensitivity Index = (A/(A+C)) x 100;
Specificity Index = (D/(B+D)) x 100;
Kappa = ((po-pe)/(1-e)) x 100 where Po = pA +pD,
Pe = ((pA +pC)(pA+pB)) + ((pB +pD)(pC+pD)),
pA=A/Total N, pB=B/Total N, pC=C/Total N, pD=D/Total N

Operational definitions for the indices and patterns to be used to analyze the data and to interpret findings are as follows:

- Percentage of Students At-Risk: The percent of students at-risk is operationally defined as the percentage of students At-Risk of Not Being Proficient on the PSSA and MAP during the same school year.

- Improvement Index: The Improvement Index is operationally defined as the percentage of students categorized as Not Proficient on the MAP but who were identified as Proficient on the PSSA. The Improvement Index represents the success rate of students identified as At Risk of Being Not Proficient on the PSSA.
- Instability Index: The Instability Index is operationally defined as students who were identified as Proficient on the MAP who conversely earned scores in the Not Proficient range on the PSSA during the same school year.
- Sensitivity: Sensitivity is operationally defined as the proportion of students who were identified as Not Proficient on the PSSA who also were identified as Not Proficient on the MAP during the same school year.
- Specificity: Specificity is operationally defined as the proportion of students who were identified as Proficient on the PSSA who also were identified as Proficient on MAP during the same school year.
- Kappa: The Kappa statistic indicates the percentage of increase over chance level represented by the overall percentage of agreement of MAP and PSSA category level assignments during the same school year.

CHAPTER 4: RESULTS

Research Question 1

Research Question 1: What proportion of students was identified as Proficient on the PSSA reading assessment by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

Table 2 displays the percentage of students who achieved Proficient on the PSSA reading assessment. The percentages are presented by school attendance groupings within intervention levels. Attendance groupings were based on the number of days absent (0-5 days absent; 6-10 days absent; >10 days absent). Intervention levels were based on the amount of assistance provided to students and their educational classification status (Level 0 = No intervention and no classification; Level 1 = No intervention but 504 or individualized education plan (IEP) for nonacademic reasons; Level 2 = Reading intervention in groups of 10 or fewer taught by teacher or paraprofessional; Level 3 = Reading intervention in groups of two taught by a special-education-certified teacher.

Table 2

Proportions of Students Earning Proficient Status on the PSSA, by Attendance Category Within Intervention Level and by Total Group

Intervention Level 0

Days of Absence	Student Total	PSSA Proficient	Percent
0-5	19	19	100%
6-10	15	15	100%

>10	8	8	100%
Total	42	42	100%

Intervention Level 1

Days of Absence	Student Total	PSSA Proficient	Percent
0-5	5	5	100%
6-10	2	2	100%
>10	2	2	100%
Total	9	9	100%

Intervention Level 2

Days of Absence	Student Total	PSSA Proficient	Percent
0-5	7	4	57%
6-10	6	2	33%
>10	4	2	50%
Total	17	8	47%

Intervention Level 3

Days of Absence	Student Total	PSSA Proficient	Percent
0-5	5	1	20%
6-10	3	1	33%
>10	6	1	17%
Total	14	3	21%

All Levels Combined (Total Group)

Days of Absence	Student Total	PSSA Proficient	Percent
0-5	36	29	81%

6-10	26	20	77%
>10	20	13	65%
Total	82	62	76%

Note. PSSA = Pennsylvania System of School Assessment.

A total of 42 fourth-grade students received no specialized reading instruction intervention prior to the PSSA assessment (Level 0). All 42 passed the PSSA reading assessment, indicating that total number of days absent did not impact student performance for those fourth graders who did not require additional reading interventions.

A total of nine fourth-grade students received 504 interventions or had an IEP for nonacademic difficulties (difficulties not directly related to the acquisition of reading skills; Level 1). All students with this intervention level passed the PSSAs, indicating that the number of days absent did not impact performance on the PSSAs for this sample of students.

A total of 17 students received Intervention Level 2. Of these 17 fourth graders, slightly fewer than half (47%) achieved Proficient on the reading PSSA. The highest percentage of students who were PSSA Proficient (57%) were also absent the fewest days (0-5). However, the lowest percentage (33%) of students who attained Proficient on the reading PSSA were in the second level of absentee rate (6-10 days), while half of those students in the 10 days or greater category attained Proficient.

Intervention Level 3 was remarkable for having the lowest percentage of students attain PSSA reading proficiency. Of the 14 total students in this sample, only three attained Proficient. The number of Proficient students represents 21% of the total sample. As in Intervention Level 2, a direct relationship between days absent and the percentage of students passing the reading PSSA was not apparent. The highest percentage of PSSA-Proficient students was in the 6 to 10 days absent category, while the lowest percentage (17%) was in the group with more than 10 days absent.

Based on the total sample as previously shown, slightly more than three quarters (76%) of all the fourth graders examined in this study achieved PSSA reading proficiency. Additionally, a more direct relationship between days absent and the percentage Proficient is noted; in other words, as the days absent increased, a smaller percentage of the total sample achieved PSSA reading proficiency.

Research Question 2

Research Question 2: What proportion of students was identified as At-Risk of earning a Not Proficient category rating on the PSSA reading assessment based on MAP fall, winter, and spring reading assessment score categories by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

The data in Table 3 will permit a better understanding of the relationship between attendance categories and intervention levels and shows the proportion of students identified as At-Risk of earning a Not Proficient category score on the PSSA reading assessment based on MAP scores obtained in the fall, winter, and spring. As in the case

of Table 2, percentages of students At-Risk are presented by attendance group within intervention level.

Table 3

Proportions of Students Earning Not Proficient Status on the Fall, Winter, and Spring MAP Reading Assessment, by Attendance Category within Intervention Level and by Total Group

---

Intervention Level 0

		Percent Earning MAP Not Proficient Status		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	19	0%	5%	0%
6-10	15	13%	0%	0%
>10	8	0%	0%	0%
Total	42	9%	2%	0%

Intervention Level 1

		Percent Earning MAP Not Proficient Status		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	20%	0%	0%
6-10	2	0%	0%	0%
>10	2	0%	0%	0%
Total	9	33%	0%	0%

Intervention Level 2

Percent Earning MAP Not Proficient Status

Days of Absence	Student Total	Fall	Winter	Spring
0-5	7	57%	29%	14%
6-10	6	67%	83%	67%
>10	4	50%	0%	25%
Total	17	5%	41%	35%

Intervention Level 3

		Percent Earning MAP Not Proficient Status		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	100%	80%	80%
6-10	3	100%	100%	100%
>10	6	83%	83%	83%
Total	14	93%	86%	86%

All Levels Combined (Total Group)

		Percent Earning MAP Not Proficient Status		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	36	33%	19%	14%
6-10	26	42%	31%	27%
>10	20	35%	25%	30%
Total	82	37%	24%	22%

Note. MAP = Measures of Academic Progress.

The data in Table 3 show that by the spring of their fourth-grade school year, all 42 students at Level 0 earned MAP scores in the Proficient range and nearly all of those students also earned MAP scores in the Proficient range in the fall and in the winter. Given the low risk of failure in the fall, winter, and spring for the students in this level, attendance did not appear to have an impact on their overall performance.

Similar to the Intervention Level 0 table, the Intervention Level 1 table also shows that all nine of the students in this group had attained MAP scores in the Proficient range by spring of their fourth-grade year. The five students in the 0 to 5 days absent group obtained MAP scores in the Not Proficient range in the fall but had attained Proficient status by winter. Their good attendance record could have helped them to achieve Proficient status by winter.

Of the 17 students who received small-group interventions by a teacher or a paraprofessional (Intervention 2), 35% earned MAP scores in the Not Proficient range in the spring of their fourth-grade year. The highest percentage of students earning Not Proficient scores in the spring occurred in the attendance group who missed 6 to 10 days of school, while the next highest percentage occurred among the attendance group who missed more than 10 days of school. With only a few exceptions, the percentage of students earning MAP scores in the Not Proficient range declined as the year progressed. While one could argue that good attendance helped the students at this level improve their reading skills, one would have difficulty reconciling the fact that the students who missed the most school (more than 10 days absent) were almost as successful as the students who missed only 0 to 5 days and more successful than the students who missed 6 to 10 days of school.

At Intervention Level 3, the most intensive of the three intervention levels, 86% of the 14 students in this group earned MAP scores in the Not Proficient range in the spring. Attendance did not appear to play a significant role in the number of students who earned MAP scores in the Not Proficient range, as only one student of the 14 was able to earn a score in the Not-At Risk range in the winter and spring after receiving a Not Proficient score in the fall, and one student earned MAP scores in the Proficient range in the fall, winter, and spring. The student who performed the best at this intervention level missed more than 10 days of school. For the remaining 12 students, their MAP At Risk status did not change from fall to spring.

In the Total Group analysis, 22% of the 82 students earned MAP scores in the Not Proficient range in the spring of their fourth-grade year. Considering attendance groups within the total sample, the percentage of students earning MAP scores in the Not Proficient range decreased from fall to winter to spring for the 0 to 5 days absent and the 6 to 10 days absent groups. The more than 10 days absent group showed a decrease from fall to winter, but then showed an increase from winter to spring. Additionally, the number of students earning scores in the Not Proficient range in the spring increased as attendance decreased. When intervention level is also considered, however, this trend of improvement consistent with attendance does not hold; the students who were most At Risk in the fall and who received more intervention did not necessarily show improvement consistent with their attendance level.

Research Question 3

Research Question 3: What is the relationship between MAP category ratings (Not Proficient/Proficient) and PSSA score categories (Proficient/Not Proficient) by total

sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

To analyze the relationship between MAP category ratings and PSSA score categories, cross-tabulation tables were constructed. The data from these cross-tabulation tables were used to calculate the Improvement Index, Instability Index, and Sensitivity, Specificity, and Kappa values. Results of these analyses are reported in Tables 4 through 7.

Research Question 3a

Research Question 3a: What proportion of students identified as At-Risk with the MAP reading assessment earned PSSA scores in the Proficient range (operationally defined as the Improvement Index) by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

Table 4 displays Improvement percentages, the calculations of which are based on the number of students seen as At-Risk on the MAP reading assessment who still were able to earn Proficient range scores on the PSSA reading assessment.

Table 4

Improvement Index Percentages Comparing the Fall, Winter, and Spring MAP Reading Assessment with the PSSA Reading Assessment, by Attendance Category within Intervention Level and by Total Group

---

Intervention Level 0: No intervention

Improvement Index

Days of Absence	Student Total	Fall	Winter	Spring
0-5	19	100%	100%	--
6-10	15	100%	--	--
>10	8	--	--	--
Total	42	100%	100%	--

Intervention Level 1: No intervention but 504 or IEP for nonacademic difficulties

		Improvement Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	100%	--	--
6-10	2	100%	--	--
>10	2	--	--	--
Total	9	100%	--	--

Intervention Level 2: Reading intervention in groups of 10 or fewer taught by teacher or paraprofessionals

		Improvement Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	7	50%	--	--
6-10	6	25%	20%	25%
>10	4	50%	--	100%
Total	17	40%	14%	33%

Intervention Level 3: Reading intervention in groups of two taught by special-education-certified teacher

		Improvement Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	20%	25%	25%
6-10	3	33%	33%	33%
>10	6	0%	0%	0%
Total	14	15%	17%	17%

All Levels Combined (Total Group)

		Improvement Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	36	50%	29%	20%
6-10	26	55%	25%	27%
>10	20	14%	0%	17%
Total	82	43%	20%	22%

Note. MAP = Measures of Academic Progress; PSSA = Pennsylvania System of School Assessment; IEP = Individualized Education Plan.

Separate calculations give insights regarding the influence of intervention levels and attendance categories. For Intervention Levels 0 and 1, all the students who were At-Risk on the MAP ended up being Proficient on the PSSA reading assessment. The

At-Risk MAP scores at these intervention levels occurred in the fall and winter, meaning that these students did earn Proficient scores on the MAP in the spring, prior to taking the PSSA reading assessment.

Improvement percentages decreased significantly at Intervention Levels 2 and 3 for those fourth-grade students who demonstrated a need for additional reading interventions beyond those provided within the regular-education curriculum. In general, the earlier students were identified as Not Proficient on the MAP reading assessment (i.e., fall and winter), the more likely they were able to improve to the point of Proficient on the PSSA reading assessment. In other words, higher percentages of students from fall and winter were able to attain Proficient on the PSSA reading assessment than those students whose MAP scores were Not Proficient in the spring. The tables do show some exceptions to this trend, the most notable being Intervention Level 2 spring, when 100% of the students Not Proficient on the reading MAP attained Proficient range scores on the PSSA reading assessment, even though these students were absent from school more than 10 days. For Intervention Level 3, the students most in need of additional reading supports, the percentages of improvement stayed consistent throughout the year, indicating that some students did not attain reading proficiency and improved little despite receiving additional reading interventions for the entire school year.

The Total Sample table showed the same trend as the Levels 2 and 3 tables in that improvement to the PSSA reading Proficient level decreased significantly as the year progressed for students who were Not Proficient on the MAP reading assessments. The total sample table also indicates that students who were absent from school 10 days or fewer were less likely to make the improvement to the PSSA reading Proficient level than

those students who were absent from school for more than 10 days. In most cases, fewer than half of the students who were Not Proficient on the MAP reading assessment were able to attain Proficient range scores on the PSSA reading assessment.

Research Question 3b

Research Question 3b: What proportion of students identified as Not-At-Risk with the MAP reading assessment earned PSSA scores in the Proficient range (operationally defined as the Instability Index) by total sample as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

Table 5 provides percentages for students who were Not-At-Risk (or Proficient range) on the MAP reading assessment who attained Proficient range scores on the PSSA reading assessment. The goal for this data set is to better understand the stability of the relationship between the MAP reading assessment proficiency and the PSSA reading assessment proficiency, particularly when considering intervention level and attendance.

Table 5

Instability Index Percentages Comparing the Fall, Winter, and Spring MAP Reading Assessment with the PSSA Reading Assessment, by Attendance Category Within Intervention Level, and by Total Group

---

Intervention Level 0: No Intervention

		Instability Index		
Days of Absence	Student Total	Fall	Winter	Spring

0-5	19	0%	0%	0%
6-10	15	0%	0%	0%
>10	8	0%	0%	0%
Total	42	0%	0%	0%

Intervention Level 1: No intervention but 504 or IEP for nonacademic difficulties

		Instability Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	0%	0%	0%
6-10	2	--	0%	0%
>10	2	0%	0%	0%
Total	9	0%	0%	0%

Intervention Level 2: Reading intervention in groups of 10 or fewer taught by teacher or paraprofessional

		Instability Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	7	33%	20%	33%
6-10	6	50%	0%	50%
>10	4	50%	50%	67%
Total	17	43%	30%	45%

Intervention Level 3: Reading intervention in groups of two taught by special education certified teacher

		Instability Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	--	100%	100%
6-10	3	--	--	--
>10	6	0%	0%	0%
Total	14	0%	50%	50%

All Levels Combined (Total Group)

		Instability Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	36	4%	7%	10%
6-10	26	7%	0%	5%
>10	20	8%	13%	14%
Total	82	6%	6%	9%

Note. MAP = Measures of Academic Progress; PSSA = Pennsylvania System of School Assessment; IEP = Individualized Education Plan.

For Intervention Levels 0 and 1, the relationship is quite stable. Data indicate that all of the students who were Not-At-Risk on the MAP reading assessment were also

Proficient on the PSSA reading assessment. This correlation was true regardless of the intervention level or the number of days absent. For fourth graders not identified as needing additional reading supports, the data show that the ability of the MAP to predict proficiency on the PSSA reading assessment was strong.

For Intervention Levels 2 and 3, the relationship between the MAP and PSSA reading scores was predictably less stable. In most cases, the percentage of Not-At-Risk MAP students who did NOT attain Proficient on the PSSA reading assessment was 50% or greater. Additionally, the more days a student was absent, the less likely a Not-At-Risk MAP score would predict proficiency on the PSSA reading assessment.

On the overall sample table for Instability, a clear pattern emerged. The pattern of percentages indicated that the later a student progressed into the school year, the less likely he or she would be able to attain Proficient on the PSSA reading assessment. Overall, the percentages varied between 4 and 14%. The overall Instability percentage for the entire sample of fourth-grade students was just below 10%.

Research Question 3c

Research Question 3c: What proportion of students identified as At-Risk with the MAP reading assessment earned PSSA scores in the Not Proficient range (operationally defined as the Sensitivity Index) by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

Table 6 provides data on the Sensitivity Index. This Index indicates how well the reading MAP is able to predict PSSA reading scores in the Not Proficient range for students who are Not Proficient on the MAP.

Table 6

Sensitivity Index Percentages Comparing the Fall, Winter, and Spring MAP Reading Assessment with the PSSA Reading Assessment, by Attendance Category within Intervention Level and by Total Group

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Intervention Level 0: No intervention

		Sensitivity Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	19	--	--	--
6-10	15	--	--	--
>10	8	--	--	--
Total	42	--	--	--

Intervention Level 1: No intervention but 504 or IEP for nonacademic difficulties

		Sensitivity Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	--	--	--
6-10	2	--	--	--
>10	2	--	--	--
Total	9	--	--	--

Intervention Level 2: Reading intervention in groups of 10 or fewer taught by teacher or paraprofessional

		Sensitivity Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	7	67%	67%	33%
6-10	6	75%	100%	75%
>10	4	50%	0%	0%
Total	17	67%	67%	44%

Intervention Level 3: Reading intervention in groups of two taught by special-education-certified teacher

		Sensitivity Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	100%	75%	75%
6-10	3	100%	100%	100%
>10	6	100%	100%	100%
Total	14	100%	91%	91%

All Levels Combined (Total Group)

		Sensitivity Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	36	86%	71%	57%
6-10	26	83%	100%	83%
>10	20	86%	71%	71%
Total	82	85%	80%	70%

Note. MAP = Measures of Academic Progress; PSSA = Pennsylvania System of School Assessment.

For the tables showing Intervention Levels 0 and 1, this statistic does not come into play, because no students in these subsamples were in the Not Proficient range on the MAP.

Sensitivity percentages are significant, however, in the tables for Intervention Levels 2 and 3. In Intervention Level 2, the percentages are mostly greater than 50%, while the overall percentage for the subsample is 44%. The percentages decrease for the most part from fall to spring; otherwise, there are no apparent patterns to the data for Intervention Level 2. A fairly large percentage of the MAP Not Proficient students appear to have managed to attain Proficient on the reading PSSA assessment.

The sensitivity percentages are strong indicators in the Intervention Level 3 table. In all, 91% of the students who were At-Risk on the MAP reading assessment were also in the Not Proficient range on the reading PSSA. The data indicate that for students who have the most significant need for reading interventions, the MAP can be a strong predictor of Below Proficiency on the PSSA reading assessment.

In the total sample of 82 students, the MAP was approximately 70% accurate in this Sensitivity Index, meaning that when Below Proficiency scores were predicted on the PSSA from those students who were At-Risk on their reading MAP, the MAP was

accurate in seven of 10 students. This accuracy did decrease from fall to spring and did not appear impacted by the number of days a student was absent.

Research Question 3d

Research Question 3d: What proportion of students identified as Not-At-Risk with the MAP reading assessment earned PSSA scores in the Proficient range (operationally defined as the Specificity Index) by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

The Specificity Index is focused on the statistical relationship between fourth-grade students Not-At-Risk on the MAP reading assessment and those who earned scores in the Proficient range on the PSSA reading assessment. Data for the Specificity Index are provided in Table 7.

Table 7

Specificity Index Percentages Comparing the Fall, Winter, and Spring MAP Reading Assessment with the PSSA Reading Assessment, by Attendance Category within Intervention Level and by Total Group

Intervention Level 0: No intervention

		Specificity Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	19	89%	95%	100%
6-10	15	87%	100%	100%
>10	8	100%	100%	100%

Total	42	90%	98%	100%

Intervention Level 1: No intervention but 504 or IEP for nonacademic difficulties

		Specificity Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	80%	100%	100%
6-10	2	0%	100%	100%
>10	2	100%	100%	100%
Total	9	67%	100%	100%

Intervention Level 2: Reading intervention in groups of 10 or fewer taught by teacher or paraprofessional

		Specificity Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	7	50%	100%	100%
6-10	6	50%	100%	100%
>10	4	50%	100%	50%
Total	17	50%	88%	75%

Intervention Level 3: Reading intervention in groups of two taught by special-education-certified teacher

		Specificity Index		
Days of Absence	Student Total	Fall	Winter	Spring

0-5	5	0%	0%	0%
6-10	3	0%	0%	0%
>10	6	100%	100%	100%
Total	14	33%	33%	33%

All Levels Combined (Total Group)

		Specificity Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	36	79%	93%	97%
6-10	26	70%	90%	90%
>10	20	92%	100%	92%
Total	82	79%	94%	94%

Note. MAP = Measures of Academic Progress; PSSA = Pennsylvania System of School Assessment; IEP = Individualized Education Plan.

The students who composed the subsamples on Intervention Level 0 and Intervention Level 1 reached 100% in all attendance levels by spring of the school year. In each of Level 0 and Level 1, a few of the students were At-Risk initially in the MAP reading assessment but, by spring, had attained Proficient on both the MAP reading assessment and the PSSA reading assessment.

In Intervention Level 2, fourth-grade students were 100% by the spring of the year in two of the three attendance levels. For students who were absent more than 10 days, the percentage dropped to 50%.

For unexplained reasons, students who were absent more than 10 days in Intervention Level 3 achieved 100% in the Specificity Index. No students in the other two attendance levels in Intervention Level 3 achieved Proficient on the PSSA reading assessment. In keeping with the data analysis of the other Question 3 subsamples, the percentages of students in the defined relationships generally declined as the intervention level became harder and more days of school were missed.

In the overall sample, 94% of students who attained Proficient on the MAP reading assessment also reached the Proficient level on the PSSA reading assessment. For reasons that cannot be explained, the students in the group who were absent more than 10 days achieved the highest statistical ratings. One should note that the percentages of students achieving Proficient on both the MAP and the PSSA increased as the school year progressed.

Research Question 3e

Research Question 3e: What is the percentage of improvement over chance represented by the relationship between MAP reading assessment score categories and PSSA reading assessment score categories (operationally defined as the Kappa Index) by total sample, as well as within attendance categories, within intervention levels, and across attendance categories within intervention levels?

With the Kappa Index, the aspect being statistically analyzed is the percentage of improvement over chance between the MAP and the PSSA reading assessment score categories. Kappa values for the sample are provided in Table 8.

Table 8

Kappa Index Percentages Comparing the Fall, Winter, and Spring MAP Reading Assessment with the PSSA Reading Assessment, by Attendance Category Within Intervention Level and by Total Group

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Intervention Level 0: No intervention

		Kappa Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	19	0%	0%	--
6-10	15	0%	--	--
>10	8	0%	--	--
Total	42	0%	0%	--

Intervention Level 1: No intervention but 504 or IEP for nonacademic difficulties

		Kappa Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	0%	--	--
6-10	2	0%	--	--
>10	2	--	--	--
Total	9	0%	--	--

Intervention Level 2: Reading intervention in groups of 10 or fewer taught by teacher or paraprofessional

		Kappa Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	7	16%	70%	36%
6-10	6	25%	57%	25%
>10	4	0%	0%	-50%
Total	17	17%	53%	19%

Intervention Level 3: Reading intervention in groups of two taught by special-education-certified teacher

		Kappa Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	5	0%	-25%	-25%
6-10	3	0%	0%	0%
>10	6	100%	100%	100%
Total	14	44%	28%	28%

All Levels Combined (Total Group)

		Kappa Index		
Days of Absence	Student Total	Fall	Winter	Spring
0-5	36	51%	65%	60%

6-10	26	41%	81%	69%
>10	20	78%	76%	66%
Total	82	55%	74%	66%

Note. MAP = Measures of Academic Progress; PSSA = Pennsylvania System of School Assessment; IEP = Individualized Education Plan.

The data are not relevant in Intervention Levels 0 and 1 because all of the students in these subsamples achieved Proficient on both the MAP and PSSA reading assessments. For Intervention Level 2, the greatest percentage of improvement over chance was seen in the winter of the school year, at all three attendance levels. The Kappa scores started relatively low in the fall, peaked in the winter, and then fell back down at or near the original levels in the spring. One should note that in the attendance level where students missed more than 10 days in the spring of Intervention Level 2, the percentage over chance was negative 50%.

In Intervention Level 3, the anomaly seen in the subsample group of students missing more than 10 days of school continued, with this group achieving 100% improvement over chance. In the other two attendance subgroups, the improvement level was at or below 0% over chance.

In the total sample for Kappa, the percentage of improvement over chance followed the same yearly pattern as the percentages seen in Intervention Level 2. Approximately two-thirds of students in the overall sample of 82 fourth graders achieved

improvement over chance when comparing the MAP reading scores with the PSSA reading results.

CHAPTER 5: DISCUSSION

Based on national scrutiny that resulted in the passage of landmark national legislation such as IDEA 2004 and NCLB 2001, standards and school accountability have become a requirement and responsibility of school districts throughout the United States (U.S. Department of Education, 2001; U.S. Department of Education, 2004).

The United States' public-school system as a whole has not done enough to correct the problem of providing effective, successful reading interventions to those students who struggle with reading. A high dropout rate, a general lack of academic enthusiasm, and students who graduate at an eighth-grade reading level (or less) are just some of the repercussions of the current system of special-education reading interventions (McCloskey, n.d.[b].

Schools and their school psychologists previously identified reading disabilities in a way that was not detailed, nor were appropriate suggestions for reading interventions provided. When students were identified based on the learning discrepancy model, they were typically placed in a reading support system that often did not pinpoint the child's exact difficulty with reading. The result is that many children undergo years of special-education intervention while making little or no progress (McCloskey, n.d.[b}.

This dissertation has discussed a more effective, more appropriate means of identifying children with reading disabilities. It begins with allowing school psychologists to employ a cross-battery system (individual subtests from various assessments) that will help pinpoint the part of the reading process that are not working for the problem reader. Once the processing difficulty is isolated, academic teams can

design specific interventions to allow students to improve or work around the problem area (McCloskey, n.d. [c]).

Along with improving the means of identifying difficulties with reading, designing a system of interventions that can be constantly monitored and is data-driven has become essential. These needs have resulted in the U.S. education system moving toward a response to intervention and instruction model (RtII, formerly RtII model; National Center for Learning Disabilities, 2010; Wang, Porfeli, & Algozzine, 2008), that includes state-administered standardized assessments and school-district-administered screening and progress-monitoring procedures (Pennsylvania Department of Education, 2009).

In the area of reading, oral reading fluency measures (e.g., DIBELS) have become standard practice in elementary schools, as they have been thought to predict performance on state standardized reading comprehension assessments, such as the Pennsylvania System of School Assessment (PSSA; Clay, 1993; Clay, 2000; Good & Kaminski, 2002; Pennsylvania Department of Education, 2009; the University of Oregon Center on Teaching and Learning, 2009).

Some states, including Pennsylvania, have implemented other reading comprehension measures, such as the 4Sight assessments, to prepare students for these state assessments and monitor student progress (Pennsylvania Department of Education, 2009). The relationship between oral reading fluency measures and reading comprehension has been examined in many research studies by comparing DIBELS ORF assessments and state-administered standardized assessments (Buck & Torgesen, 2003; Crawford, Tindal, & Stieber, 2001; Fuchs, Fuchs, Hosp, & Jenkins, 2001; Good,

Simmons, & Kame'enui, 2001; Good, Simmons, Kaminski, & Wallin, 2002; Keller & Shapiro, 2005; McGlinchey & Hixson, 2004; Roehrig et al., 2007; Shapiro et al., 2006; Shapiro, Solari, & Petscher, 2007; Shaw & Shaw, 2002; Stage & Jacobsen, 2001; Wiley & Deno, 2005; Wood, 2006).

Among other things, this research has shown that some students who lack decoding and fluency skills are effective in reading comprehension. The converse is also true in that many students who read quite fluently have a difficult time extracting meaning from the text (McGlinchey & Hixson, 2004). These disconnects exhibited by some students in the acquisition of reading skills has necessitated a study that will identify and compare state reading assessment performance with a reading progress measure that is also comprehension-based: the Measures of Academic Progress (MAP).

The current study anticipated results for a small suburban school district in southeastern Pennsylvania similar to those reported in previous studies. This study also intended to expand upon prior research by examining individual benchmark assessments of reading comprehension to identify the association of At-Risk or Not-At-Risk status on MAP measures and Not Proficient or Proficient status on the Pennsylvania state's reading assessment, the PSSA.

The sample used in the study was one fourth-grade cohort of 82 students during the 2003-2004 school year. Analyses involved calculating multiple indices (Improvement, Instability, Sensitivity, Specificity, and Kappa Indices) that reflected the consistency of progress-monitoring results with PSSA results by intervention level, attendance level, and intervention level across attendance level.

Data Summary

Total Proficient on PSSA

Table 2 provides an overview of the number of students that tested in the Proficient range on the Pennsylvania PSSA reading test. Of a total of 82 students, 62 students tested Proficient or better, slightly better than three-quarters of the sample size. At Intervention Levels 0 (no intervention) and 1 (504 plan or IEP for nonacademic reasons), every student in these levels was proficient on the PSSA. With the help of the MAP, school instructional personnel were able to accurately identify those students who did not present with reading difficulties and so did not waste instructional resources on these children. Additionally, missed instruction because of absenteeism did not impact the performance of these students on the PSSAs; they were Proficient regardless of the number of days they were absent. These students are among the fortunate majority who are neurologically intact and complete regarding all the neurological functions and processes required to be a successful reader.

At Intervention Level 2 (instruction in groups of 10 by a regular-education teacher or paraprofessional), eight of 17 of the students (slightly fewer than half) attained Proficient on the PSSA reading assessment. The students who were absent the fewest days appeared to have the best chance of attaining the Proficient level. For the students who did not attain the Proficient level t the school academic team should have discussed whether or not to move those children to Intervention Level 3. Those students who spent the year in reading Intervention Level 3 had the smallest chance of gaining Proficient on the PSSA. Only 21% of those students did so.

When examining the table for the total sample, a clear pattern emerged relative to the relationship between absenteeism and PSSA proficiency. The students who were absent the least had the best chance of being PSSA Proficient, while the students who were absent 10 days or more had the poorest chance. Additionally, as noted in the previous paragraph, the more intensive the intervention level, the less likely a child was to attain PSSA reading proficiency.

Total Not Proficient on PSSA

For Intervention Levels 0 and 1, this statistic does not apply, since every student in these two levels attained Proficient on the reading PSSA In several instances on these levels, the student's MAP scores in the fall and winter were below the Proficient range. However, by spring, these students were in the Proficient range on both the MAP reading assessment and the PSSA reading assessment. In these cases, the instructional team accurately predicted that these students would attain proficiency by the end of the year.

At Intervention Level 2, 35% of the students in small-group instruction were Not Proficient on the PSSA. In general, the percentage tended to decrease from fall to spring, meaning that the students who were Not Proficient on the MAP in the fall had the best chance of attaining reaching the Proficient level on the PSSA reading assessment in the spring. In other words, the more instruction the students were given, the more likely they were to perform better on the PSSA. Intervention Level 2 saw the highest percentages of Not Proficient in the general sample. Only three of the students in this subsample achieved Proficient. In other words, the most intensive reading interventions available to fourth graders in the school during the 2003-2004 school year were typically not enough to help the children attain Proficient on the PSSAs.

In the overall sample for PSSA Not Proficient, two trends were noted. First, as the year progressed from fall to spring, fewer students were Not Proficient on the MAP/PSSA reading assessment. Second, a moderately strong relationship was noted between absence and proficiency level. The more that a student was absent, the more likely they were to earn a Not Proficient score. Seventy-six percent were Proficient on the PSSA reading assessment while 22% were not, meaning that 2% of the sample was unaccounted for in terms of PSSA results.

Improvement: At-Risk on MAP Versus PSSA Proficient

In Intervention Levels 0 and 1, a few students were At-Risk on the MAP during the fall and winter assessments. In each case, the student was Proficient on the MAP by the spring semester and Proficient on the reading PSSA as well. The school team did a good job of recognizing that some students were struggling but still had the potential to become Proficient-range readers.

At Intervention Level 2, 33% of the students who were Not Proficient on the MAP went on to attain the Proficient level on the PSSA. Surprisingly, all four of the students who were absent 10 or more days attained a PSSA level of Proficient. The percentages of Not Proficient MAP/Proficient PSSA students did not show a definitive pattern of improvement over the course of the year. The percentages varied widely. At Intervention Level 3, the lowest rate of improvement was seen for students who were At-Risk on the MAP (i.e., 17%). Not surprisingly, the students who received the most intensive reading instructions typically did not attain PSSA Proficient. Again, no pattern was noted based on the relationship between attendance and proficiency levels. The Total Sample table showed that the percentage of students who were Not Proficient on

the MPA and yet Proficient on the PSSA decreased in general as the year progressed. The MAP does a better job of predicting Not Proficient on the PSSA as the year progresses.

Instability: Not-At-Risk on MAP Versus PSSA Proficient

On Intervention Levels 0 and 1, the relationship between MAP Proficient and PSSA Proficient was very stable. By the end of the school year, all of the students in these subgroups had attained Proficient on both assessments.

The Instability changes were significantly higher on Intervention Levels 2 and 3. The percentage of students Proficient on the MAP and Not Proficient on the PSSA ranged between 33 and 67% on Level 2 and 50 to 100% on Level 3. The overall sample size showed more pronounced patterns. In general, the Instability percentage decreased as the year progressed. Attendance appeared to impact this pattern, as the greatest levels of instability were seen in children who were absent more than 10 days. Overall, roughly 10% of students who were Not-At-Risk on the MAP did not achieve the Proficient level on the PSSA.

Sensitivity: At-Risk on the MAP Versus Not Proficient on the PSSA

As previously reported, the Sensitivity Index does not apply to Intervention Levels 0 and 1, since each student in these two levels attained Proficient on the PSSA reading assessment. In Intervention Levels 2 and 3, in general, as the degree of Intervention increased, so did the ability of the MAP to predict a less-than-Proficient score on the PSSA. In Intervention Level 3, the percentage was almost 100%. The overall sample box showed that, with a few exceptions, the Sensitivity percentage decreased as the school year progressed, meaning that some students were able to attain

Proficient on the PSSA in spite of being At-Risk on the MAP for most (if not all) of the year. Attendance did not have any impact on the trends shown in the Sensitivity tables.

Specificity: Not-At-Risk on the MAP Versus PSSA Proficient

On Intervention Levels 0 and 1, by the end of the school year, the Specificity percentage was 100%. As previously noted, several students in both levels were At-Risk on the MAP, but by the end of the school year, they had progressed to Proficient on both the MAP and the PSSA reading assessment.

Not surprisingly the Specificity Index percentages were not as stable in Intervention Levels 2 and 3. In Intervention Level 2, the percentages were 100% for the two lower attendance levels but 50% when students missed more than 10 days of school. However, in Intervention Level 3, the opposite trend was observed, in that only the students who were absent more than 10 days had a Specificity Index of 100%.

In terms of the overall sample, the Specificity Index was an impressive 94%. The Specificity Index percentages increased as the year increased for each attendance level. Attendance levels did not impact the pattern of percentages in the Specificity Index.

Kappa: Percentage of Improvement Over Chance Between the MAP and PSSA Scores

As in previous indices, Kappa does not apply to Intervention Levels 0 and 1 because all the students attained Proficient in both the MAP and PSSA reading assessment indices. However, the scores fluctuated considerably in Intervention Levels 2 and 3. In Intervention Level 2, the percentages were generally lower in the fall, highest in the winter, and then back down to a lower level in the spring. Of particular interest is the 50% below-chance figure for spring and an attendance level of more than 10 days

missed. In Intervention Level 3, the students who were absent more than 10 days achieved 100% over chance. In the other two attendance subgroups, the improvement was 0% or less over chance.

Summary Discussion

A review of the data indicates that the MAP is a generally effective predictor of performance on the Pennsylvania PSSA reading assessment. As noted, the MAP did a very good job of ide those students who were thought to be able to attain the Proficient PSSA reading level without the help of Tier 2 or Tier 3 interventions. For those students who were At-Risk on the MAP during the fall and winter semesters, their MAP scores were probably close enough to Proficient that they could be afforded reading instruction without additional supports. In such cases, a "neutral range" between At-Risk and Not-At-Risk scores on the MAP would be advantageous. The addition of a neutral range would provide educators with an additional tool to help determine through statistics whether a child needs extra reading supports.

In the total sample tables for each research question, students who were absent from school for more than 10 days generally fared the poorest on MAP scores, PSSA scores, and general overall improvement. A flaw in the system as identified in this study is that there was no indication as to whether students were moved between Intervention levels. For example, some students may have improved their reading skills to the point that they no longer needed reading interventions. Conversely, the team may have decided for some students that more significant modifications were needed. Noting which students were moved and whether correct decisions were made would have been interesting, in particular, knowing the data that helped to drive the decisions.

Another general trend that can be noted in the overall-sample tables is that the higher the intervention level of the student, the less likely the student was to attain Proficient on the MAP or the reading PSSA. For those fourth-graders struggling with reading, standard practice would have been to chart their progress on AimsWeb to see if they were moving toward their goal (ultimately, to reading proficiency). As the MAP is administered only three times a year for all students, the educational team might want to consider administering it more often for those children who struggled with reading comprehension to provide a more accurate map of a child's reading progress. Another point to consider is the nature of the reading disability itself. The data in this study did not differentiate between the different types of reading disabilities. Since the reading process's end results are oral reading fluency and comprehension, determining whether students with decoding/phonemic awareness/fluency issues progressed more slowly than those students whose reading difficulties were primarily in comprehension would have been interesting.

The students in Intervention Level 3 had the lowest percentage of PSSA reading proficiency (21%). This number has to be concerning for the school because it suggests that the school's special-education program is not adequate.

The beginning of the solution to this problem lies with the way these children are evaluated. The academic team must obtain as much specific information as possible as to the nature of the reading difficulty. This information is most efficiently attained by the use of a cross-battery assessment, mentioned earlier in this report. The psychologist, with the help of the academic team, forms a hypothesis regarding the child's specific reading

problem. Then, specific subtests are chosen from a variety of cognitive, achievement, and processing assessment batteries to better isolate the child's reading weakness.

Commonly, children who have difficulty with reading fluency are weak in phonemic awareness, the ability to make associations between graphemes (groups of letters) and phonemes (the sound that specific groups of letters make). In this case, the psychologist and the rest of the team need to determine if the problem is more auditory or more visual. Depending on the specific nature of the weakness, specific drills and interventions can be set up so that the obstacle to successful reading is eventually removed.

Of course, such a remediation program requires intensive one-to-one assessments and interventions, and yet, this is the nature of RtII: the academic team doing whatever is necessary to help a child improve. For example, the principal of the school whose data were utilized in this study admitted that, at one time, they were able to enlist one of the school custodians to drill a student as part of the student's intervention. With regard to NCLB and all students reading proficiently, too much effort is not possible. As the saying goes, the common approach in schools should be "all hands on deck."

At Intervention Level 2, success was more mixed in terms of whether students were able to attain PSSA reading proficiency. One can fairly easily speculate why this was the case. Perhaps some of the Level 2 students had multiple reading difficulties and found that surmounting all of them to the point of MAP or PSSA proficiency was too difficult. Perhaps some of the students merely experienced gaps in their education, and when these gaps were filled in, their reading skills increased. Some children are just not

good test takers. They may even demonstrate proficiency in unstructured reading situations, but then underperform on the MAP or PSSA assessment.

A significant obstacle to a child's general overall success with reading comprehension is the level of his or her verbal comprehension skills. Clearly, children with lower levels of verbal comprehension are going to struggle more with comprehension questions. These children may be able to be taught how to search for facts in a reading passage but then struggle on questions that are more implicit in nature. In such cases, encouraging the child to read more is generally wise, even if the reading is strictly for recreational purposes. The child should be encouraged to converse with an older peer or an adult about what was read to help open up and strengthen the neural pathways needed for good comprehension skills. Then, the child needs to undergo interventions that involve helping him or her understand the types of comprehension questions and how to isolate the information that will lead to an answer. Children often are better at some types of comprehension questions than others. The MAP and the PSSA are both structured so that academic teams can be provided with feedback regarding the types of comprehension questions that are difficult for students.

Another common source of failure for students with reading challenges is psychological in nature. These students likely have been weak in reading their entire academic careers, and these students will become convinced that they are bad at reading. Thus, no matter how hard they try or how much intervention they receive, they still have the underlying feeling of inferiority, which prohibits progress in reading as much as any other factor. The children who do not receive the appropriate support or encouragement need to be worked with in such a way that their levels of self-reliance and self-confidence

increase. Involving students in charting their progress is a good way of keeping them engaged in a plan of remediation. Otherwise, these students are at risk of dropping out of high school or, at best, of graduating with reading levels far below their actual grade level. Even if a child does not attain reading proficiency on assessments like the MAP and the reading PSSA, simply the knowledge that they have progressed and improved their reading skills is enough to take pride in.

A factor that is important to a child's academic success in reading and in other subject areas is the support at home. A child's parents must prioritize their child's education and provide support at home. Simply put, when a child sees that education is essential to a significant adult in his or her life, he or she is more likely to place a high value on good education and strong academic performance as well.

The data showed that 17% of the children who were At-Risk on the MAP nonetheless achieved Proficient on the PSSA reading assessment. When looking for an explanation for this result, the idea that immediately comes to mind is that the school is spending extra time and resources to teach children how to take and excel on the PSSAs. Also, the norms and sample standardization between the MAP and the PSSA possibly are different, to the extent that a child who is Not Proficient on one test is Proficient on the other. The data suggest that the MAP may actually be a more difficult reading assessment for most students than the PSSA. Almost all the students who were Not-At-Risk on the MAP by spring semester were Proficient on the PSSA; yet, some students who earned At-Risk scores on the MAP attained Proficient on the reading PSSA.

The structure of the MAP assessment is different from that of the PSSA. The MAP automatically adjusts its questions based on a child's reading ability at the time of

the test, whereas the PSSA reading assessment is a series of reading passages, each with its own set of questions that gradually increases in complexity. With all other factors considered, a student might perform better on the reading PSSA than on the MAP.

Almost all of the total-sample tables in the data section reveal that time plays an important role in whether a child can improve reading skills. Some children who were At-Risk on the MAP in the fall and winter were nonetheless able to attain Proficient on the reading PSSA, most likely because they benefitted from the extra amount of instruction. In addition, children who had lower absentee rates typically did better on the MAP and the reading PSSA. These patterns are not as apparent on the subsample tables, but in these cases, the subsamples typically consist of 10 or fewer students. The low subsample size causes the percentages in these tables to be highly variable from semester to semester.

Limitations

Without question, the most significant limitation in this study is the sample size. With a total of 82 students, identifying some trends was possible when considering the entire sample. However, when the subsamples were considered, spotting trends was difficult because subsample groups varied between only one to 10 students. Typically, the total subsample tables were used to make observations regarding the relationship between MAP/PSSA proficiency, intervention level, and attendance. Percentages tended to be over-inflated or under-estimated because of small subsample numbers. In addition, gauging the data's accuracy is difficult when the sample size involves only one cohort. Confirming the accuracy and data trends is much easier when comparing them to other cohorts.

In every study, at least a few assessment subjects do not fit the necessary parameters needed in the study. In this case, students in the fourth-grade cohort for 2003-2004 who did not take all three of the MAP assessments and/or the PSSA assessment were excluded. A total of six students were excluded, which constitutes less than 10% of the total sample. There were also situations in which students had to be categorized correctly in terms of their level of disability. For example, since this study focused on reading disabilities, students with disabilities in other subject areas were not grouped with students receiving interventions.

Possibilities for Future Research

Of significant value would be the replication of this study with larger sample sizes and more than one cohort. Being able to confirm trends in the data between cohorts is important. Additionally, designing a study that compares student performance on the reading MAP with that on the reading PSSA would be useful to see if any differences in the tests themselves may make one more advantageous than the other. Also, it would be informative to add the "neutral range" mentioned earlier in this discussion.

A number of additional factors should be considered in a study such as this one. Additional demographic information, such as gender, socioeconomic status (free lunch), and ethnicity, would be appropriate, as would more specific information about the nature of the disability. Determining how well reading MAP scores predict PSSA scores at different grade levels would be noteworthy. For example, research has already shown that oral reading fluency is a less reliable indicator of a child's comprehension skills as he or she gets older.

If possible, another study could compare reading performance in two different schools, one that uses the RtII system (preferably with the cross-battery method for determining LDs) and one that bases LDs on the discrepancy model and uses specialized reading curricula as a means of intervention. For this study, having all other factors equal would be difficult but, if undertaken, would almost certainly go far in showing how much better a properly-managed RtII system is compared to the systems most schools and school districts are using today.

Another study that would add to the mountain of research concerning the relationship between oral reading fluency and performance on statewide testing would be as follows: Have at least several cohorts of students from second, third, and fourth grades take both the DIBELS oral reading fluency and the MAP reading assessment to determine which one does a better job of predicting PSSA reading performance. Such a study would help schools differentiate students with low fluency/good comprehension from students with good fluency/low comprehension.

Conducting more research regarding the nature of comprehension questions and the methods that are used to explain how to answer them would be useful. Of the different types of comprehension questions, one could determine which are most difficult at various grade levels and also assess which instructional strategies are best at teaching each type of comprehension question. Also, helpful would be a study that shows the relationship between a child's verbal cognitive skills and reading comprehension skills. Verbal comprehension has already been shown to be a key component of a child's success with reading comprehension.

Because instruction time has been shown to be very significant in terms of whether a child attains proficiency on either the MAP or the PSSA, studies should be done that analyze various instruction techniques so that schools may be better informed on what works best for specific types of reading problems. A beneficial and important characteristic of RtII systems is their flexibility and variability in terms of the types of interventions used. Effective interventions are typically very individual; what works well for one student may not be best for another.

The fact that many reading intervention programs are available is well known, and one of the most difficult jobs for a school district is choosing the right one. Some work well as a general curriculum model, while others are targeted for students who require specialized interventions. Yet, most of the available reading intervention programs are not designed to take advantage of all that has been learned recently regarding the neurological processes of reading. Successful readers need to have literally dozens of neural pathways working in concert with one another. If just one of those pathways malfunctions, the entire reading process (either reading fluency or reading comprehension) can be disrupted. Research that further unlocks reading from a neurological standpoint must continue, so at some point, a brain can be literally trained in the area that is insufficient.

REFERENCES

Aaron, P. G., Joshi, R. M., Gooden, R., & Bentum, K. E. (2008). Diagnosis and treatment of reading disabilities based on the component model of reading: An alternative to the discrepancy model of LD. *Journal of Learning Disabilities*, *41*(1), 67-84.

Berninger, V. W., Abbott, R. D., Vermeulen, K., & Fulton, C. M. (2006). Paths to reading comprehension in at-risk second-grade readers. *Journal of Learning Disabilities*, *39*(4), 334-351.

Block, C. C., Parris, S. R., Reed, K. L., Whiteley, C. S., & Cleveland, M. D. (2009). Instructional approaches that significantly increase reading comprehension. *Journal of Educational Psychology, 101(2), 262-281.*

Brown-Chidsey, R., & Steege, M. W. (2010). *Response to intervention: Principles and strategies for effective practice*. New York, NY: Guilford Press.

Broxterman, K., & Whalen, A. J. (2013). *RTII team building: effective collaboration and data-based decision making*.

Buck, J., & Torgesen, J. (2003). *The relationship between performance on a measure of oral reading fluency and performance on the Florida Comprehensive Assessment Test* (Technical Report No. 1). Tallahassee: Florida State University, Florida Center for Reading Research.

Burns, M. K., Scholin, S. E., Kosciolek, S., & Livingston, J. (2010). Reliability of decision-making frameworks for response to intervention for reading. *Journal of Psychoeducational Assessment*, *28*(2), 102-114.

Bursuck, B., & Blanks, B. (2010). Evidence-based early reading practices within a response to intervention system. *Psychology in the Schools*, *47*(5), 421-431.

Busch, T. W., & Reschly, A. L. (2007). Progress monitoring in reading: Using curriculum-based measurement in a response-to-intervention model. *For Effective Interventions*, (32)4, 223-230.

Carlson, J. S., & Levin, J. R. (2012). *Instructional strategies for improving students' learning: Focus on early reading and mathematics*. Charlotte, N.C: Information Pub.

Clark, J. P., & Alvarez, M. (2010). *Response to intervention: A guide for school social workers*. New York, NY: Oxford University Press.

Clay, M. M. (1993). *An observation survey of early literacy achievement*. Auckland, New Zealand: Heinemann.

Clay, M. M. (2000). *Running records for classroom teachers*. Auckland, New Zealand: Heinemann.

Crawford, L., Tindal, G., & Stieber, S. (2001). Using oral reading rate to predict student performance on statewide achievement tests. *Educational Assessment, 7*, 303-323 doi: 10.1207/S15326977EA0704_04

Crone, T. M. (2004). What test scores can and cannot tell us about the quality of our schools. *Business Review*, (Q3), 5-21.

Cutting, L. E., Materek, A., Cole, C. A. S., Levine, T. M., & Mahone, E. M. (2009). Effects of fluency, oral language, and executive function on reading comprehension performance. *Annals of Dyslexia*, *59*(1), 34-54.

Daly, E. J., Chafouleas, S., & Skinner, C. H. (2005). *Interventions for reading problems: Designing and evaluating effective strategies*. New York, NY: Guilford Press.

Daly III, E. J., Martens, B. K., Barnett, D., Witt, J. C., & Olson, S. C. (2007). Varying

intervention delivery in response to intervention: Confronting and resolving challenges with measurement, instruction, and intensity. *School Psychology Review*, *36*(4), 562-581.

Davis, P., Florain, L., & Great Britain. (2004). *Teaching strategies and approaches for Pupils with special educational needs: A scoping study*. Nottingham, England: DfES Publications.

Deeney, T. A. (2010). One-minute fluency measures: Mixed messages in assessment and instruction. *The Reading Teacher*, *63*(6), 440-450.

Deno, S. L., Reschly, A. L., Lembke, E. S., Magnusson, D., Callender, S. A., Windram, H., & Stachel, N. (2009). Developing a school-wide progress-monitoring system; *District Administration*, 38-43

Dessoff, A. (March 2008). Diagnostic new attention focuses on formative and adaptive . *development, District Administration*, 42-45.

Dietz, S., & Roy, M. (2010, August). *August 2010 update how many schools have not made adequate yearly progress under the no child left behind act?* Retrieved from http://www.cep-dc.org/

Dynamic Measurement Group, Inc., (2010). *DIBELS next benchmark goals and composite score.* Retrieved from http://dibels.org/

Ehri, L. C. (2005). Learning to read words: Theory, findings, and issues. *Scientific Studies of Reading*, *9*(2), 167-188.

Elbaum, B., Arguelles, M. E., Campbell, Y., & Saleh, M. B. (2004). Effects of a student-reads-aloud accommodation on the performance of students with and without learning disabilities on a test of reading comprehension. *Exceptionality*, *12*(2),

71-87.

Feifer, S. G. (2008). Integrating response to intervention (RtII) with neuropsychology: A scientific approach to reading. *Psychology in the Schools*, *45*(9), 812-825.

Fletcher, J. M., Stuebing, K. K., Barth, A. E., Denton, C. A., Cirino, P. T., Francis, D. J., & Vaughn, S. (2011). Cognitive correlates of inadequate response to reading intervention. *School Psychology Review*, *40*(1), 3-22.

Fuchs, L. S., & Fuchs, D. (1999). Monitoring student progress toward the development of reading competence: A review of three forms of classroom-based assessment. *School Psychology Review*, *28*(4), 659-681.

Fuchs, L. S., Fuchs, D., Hosp, M. K., & Jenkins, J. R. (2001). Oral reading fluency as indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading, 5*(3), 239-256. doi:10.1207/S1532799XSSR0503_3

Gersten, R., & Dimino, J. A. (2006). RtII (response to intervention): Rethinking special education for students with reading difficulties (yet again). *Reading Research Quarterly*, *41*(1), 99-108.

Glover, T. A., & DiPerna, J. C. (2007). Service delivery for response to intervention: Core components and directions for future research. *School Psychology Review*, *36*(4), 526-540.

Goffreda, C. T., & DiPerna, J. C. (2010). An empirical review of psychometric evidence for the dynamic indicators of basic early literacy skills. *School Psychology Review*, *39*(3), 463-483.

Goffreda, C. T., DiPerna, J. C., & Pedersen, J. A. (2009). Preventive screening for early readers: Predictive validity of the dynamic indicators of basic early literacy skills

(DIBELS). *Psychology in the Schools*, *46*(6), 539-552.

Good, R. H. & Kaminski, R. A. (2002). *DIBELS oral reading fluency passages for first through third grades* (Technical Report No. 10). Eugene: University of Oregon.

Good, R. H., Simmons, D., & Kame'enui, E. (2001). The importance and decision-Making utility of a continuum of fluency-based indicators of foundational reading skills for third grade high stakes outcomes. *Scientific Studies of Reading, 5*, 257-288. doi:10.1207/S1532799XSSR0503_4

Good, R. H., Simmons, D., Kaminski, R. A., & Wallin, J. (2002). *Summary of decision rules for intensive, strategic, and benchmark instructional recommendations in\ kindergarten through third grade* (Technical Report No. 11). Eugene: University of Oregon.

Harlaar, N., Dale, P. S., & Plomin, R. (2007). From learning to read to reading to learn: Substantial and stable genetic influence. *Child Development*, *78*(1), 116-131.

Harvey, S., & Goudvis, A. (2007). *Strategies that work: Teaching comprehension for understanding and engagement*. Portland, ME: Stenhouse. Hintze, J. M., & Pelle

Petitte, H. A. (2001). The generalizability of cbm oral reading fluency measures across general and special education. *Journal of Psychoeducational Assessment*, *I9*, 158-170. doi: 10.1177/073428290101900205

Hixson, M. D., & McGlinchey, M. T. (2004). The relationship between race, income, and Oral reading fluency and performance on two reading comprehension measures. *Journal of Psychoeducational Assessment*, *22*, 351-364.

Hocutt, A. M. (1996). Effectiveness of special education: Is placement the critical factor? *The Future of Children*, *6*(1), 77-102.

Hoffman, A. R., Jenkins, J. E., & Dunlap, S. K. (2009). Using DIBELS: A survey of purposes and practices. *Reading Psychology*, *30*, 1-16.

Hoover, J. J. (2010). Special education eligibility decision making in response to Intervention models. *Theory into Practice*, *49*, 289-296.

Hunley, S. A., McNamara, K., & National Association of School Psychologists. (2010). *Tier 3 of the RTII model: Problem solving through a case study approach*. Thousand Oaks, CA: Corwin Press.

Jenkins, J. R., Graff, J. J., & Miglioretti, D. L. (2009). Estimating reading growth using intermittent CBM progress monitoring. *Council for Exceptional Children*, *75*(2), 151-163.

Johnson, E. S., Jenkins, J. R., Petscher, Y., & Catts, H. W. (2009). How can we improve the accuracy of screening instruments? *Learning Disabilities Research & Practice*, *24*(4), 174-185.

Johnson, S. (2007). Teaching our children to read, write & spell. *LILIPOH*, Autumn, 10-13.

Kavale, K. A. (2001, August). *Discrepancy models in the identification of learning disability. executive summary*. Washington, DC.

Keller, M. A., & Shapiro, E. S. (2005). *General outcome measures and performance on standardized tests: An examination of long-term predictive validity.* Paper presented at the meeting of the National Association of School Psychologists Convention, Atlanta, GA.

Kibby, M. W. (2009). Why is the school psychologist involved in the evaluation of struggling readers? *Journal of Educational & Psychological Consultation. (19)*3,

248-258.

Kim, Y., Petscher, Y., Schatschneider, C., & Foorman, B. (2010). Does growth rate in oral reading fluency matter in predicting reading comprehension achievement? *Journal of Educational Psychology*, *102*(3), 652-667.

Klick, J. (2000). Do dollars make a difference? The relationship between expenditures and test scores in Pennsylvania's public schools. *American Economist*, *44*(1), 81-87.

Klinger, J. K., & Vaughn, S. (1998). Using collaborative strategic reading. *Teaching Exceptional Children,* July/August, 32-37.

Langdon, T. (2004). DIBELS: A teacher-friendly basic literacy accountability tool for the primary classroom. *Teaching Exceptional Children*, *37*(2), 54-58.

Lembke, E. S., McMaster, K. L., & Stecker, P. M. (2010). The prevention science of Reading research within a response-to-intervention model. *Psychology in the Schools, 47(1), 22-35.*

Leroux, A., Vaughn S., Roberts, G., & Fletcher, J. (2011). *Findings from a three-year treatment within a response to intervention framework for students in grades 6 with reading difficulties*. In *2011 SREE Conference Abstract Template* (pp. 1-B2).

Machek, G. R., & Nelson, J. M. (2010). School psychologists' perceptions regarding the Practice of identifying reading disabilities: Cognitive assessment and response to intervention considerations. *Psychology in the Schools*, *47*(3), 230-245.

Maleyko, G., & Gawlik, M. A. (2011). No Child Left Behind: What we know and what we need to know. *Education*, *131*(3), 600-624.

McCloskey, G. (n.d. [a]). *Balanced literacy from a neuropsychological perspective: A conceptual model of reading*. Informally published manuscript, Psychology, Philadelphia College of Osteopathic Medicine, Philadelphia, PA.

McCloskey, G. (n.d. [b]). *Balanced literacy from a neuropsychological perspective: Reading assessment and instruction in schools: A three tier approach*. Informally published manuscript, Psychology, Philadelphia College of Osteopathic Medicine, Philadelphia, PA.

McCloskey, G. (n.d.[c]). *Three-tier service delivery model, and RtII*. Informally published manuscript, Psychology, Philadelphia College of Osteopathic Medicine, Philadelphia, PA.

McCrudden, M. T., & Schraw, G. (2010). The effects of relevance instructions and verbal Ability on text processing. *The Journal of Experimental Education*, *78*, 96-117.

McGlinchey, M. T., & Hixson, M. D. (2004). Using curriculum-based measurement to predict performance on state assessments in reading. *School Psychology Review, 33*(2), 193-203. Retrieved from http://www.nasponline.org/publications/spr/sprissues.aspx

Mellard, D. F., McKnight, M., & Woods, K. (2009). Response to intervention screening and progress-monitoring practices in 41 local schools. *Learning Disabilities Research & Practice*, *24*(4), 186-195.

Merrell, K. W., Ervin, R. A., & Gimpel, P. G. (2012). *School psychology for the 21st century: Foundations and practices*. New York, NY: Guilford Press.

Nation, K. (2008). Eps prize lecture: Learning to read words. *The Quarterly Journal of Experimental Psychology*, *61*(8), 1121-1133.

Nation, K., & Angell, P. (2006). Learning to read and learning to comprehend. *London Review of Education*, *4*(1), 77-87.

National Association of School Psychologists. (2010). *Principles for professional ethics*. Bethesda, MD: Author.

National Center for Learning Disabilities (2010). Retrieved from www.ncld.com

Nelson, J. M. (2008). Beyond correlational analysis of the dynamic indicators of basic early literacy skills (DIBELS): A classification validity study. *School Psychology Quarterly, 23(4), 542-552.*

O'Connor, R. E., & Klingner, J. (2010). Poor responders in RtII. *Theory into Practice.* 49, 297-304.

O'Connor, R. E., Swanson, H. L., & Geraghty, C. (2010). Improvement in reading rate Under independent and difficult text levels: Influences on word and comprehension skills. Journal of Educational Psychology, 102(1), 1-19.

Olivert, D. P. (2007). *No Child Left Behind Act: Text, interpretation, and changes*. New York, NY: Nova Science.

Pearce, L. R., & Gayle, R. (2009). Oral reading fluency as a predictor of reading Comprehension with American Indian and white elementary students. *School* Psychology Review, 38(3), 419-427.

Pederson, P. V. (2007). What is measured is treasured the impact of the no child left behind act on non-assessed subjects. Clearing House, 80(6), 287-291.

Pennsylvania Department of Education, Bureau of Assessment & Accountability. (2008-2009). *Handbook for assessment coordinators.*

Pennsylvania Department of Education. (2009). *Pennsylvania System of School*

Assessment: 2009-2010 Assessment Handbook. Harrisburg, PA. Retrieved from www.education.state.pa.us

Peterson, K. M. H., & Shinn, M. R. (2002). Severe discrepancy models: Which best Explains school identification practices for learning disabilities?. *School Psychology Review, 31(4), 459-476.*

Powell, D., Higgins, H. J., Aram, R., & Freed, A. (2009). Impact of no child left behind on curriculum and instruction in rural schools. Rural Educator, 31(1), 19-28.

Pullen, P. C., Tuckwiller, E. D., Konold, T. R., Maynard, K. L., & Coyne, M. D. (2010). A tiered intervention model for early vocabulary instruction: The effects of tiered instruction for young students at risk for reading disability. Learning Disabilities Research & Practice, 25(3), 110-123.

Rathvon, N. (2008). *Effective school interventions: Evidence-based strategies for improving student outcomes*. New York, NY: Guilford Press.

Reavis, M.Ed., A. G. (2005). The relationship between oral reading fluency scores and Reading comprehension scores. (Doctoral dissertation, University of Alaska Anchorage), Available from ProQuest Psychology Journals. (AAT 1421644). Retrieved from http://ezproxy.pcom.edu:2048/login?url=http://proquest.umi.com/pqdweb?did=790294631&Fmt=2&clientid=43854&RQT=309&VName=PQD

Roberts, G., Good, R. H., & Corcoran, S. (2005). Story retell: a fluency-based indicator of reading comprehension. School Psychology Quarterly, 20(3), 304-317.

Risko, V., & Walker-Dalhouse, D. (2012). *Be that teacher!: Breaking the cycle for struggling readers*. New York, NY: Teachers College Press.

Roberts, G., Good, R. H., & Corcoran, S. (2005). Story retell: A fluency-based indicator of reading comprehension. *School Psychology Quarterly*, *20*(3), 304-317.

Roehrig, A. D., Petscher, Y., Nettles, S. M., Hudson, R. F., & Torgesen, J. K. (2007). Accuracy of the DIBELS oral reading fluency measure for predicting third grade reading comprehension outcomes. *Journal of School Psychology, 46*, 343-366.

Russo, C., Tiegerman-Farber, E., & Radziewicz, C. (2009). *RTII guide: Making it work: strategies=solutions*. Port Chester, NY: Dude Pub.

Rutenberg, D. (January 2009). High school literacy: A quick stats fact sheet. National High School Center 1-10.

Sailor, W. (2009). *Making RTII work: How smart schools are reforming education through school wide response-to-intervention*. San Francisco, CA: Jossey-Bass.

Shapiro, E. S. (2011). *Models for implementing response to intervention: Tools, outcomes, and implications*. New York, NY: Guilford Press.

Shapiro, E. S., Keller, M. A., Lutz, J. G., Santoro, L. E., & Hintze, J. M. (2006). Curriculum-based measures and performance on state assessment and standardized tests: Reading and math performance in Pennsylvania. Journal of Psychoeducational Assessment, 24, 19-35.

Shapiro, E. S., Solari, E., & Petscher, Y. (2007). Use of a measure of reading comprehension to enhance prediction on the state high stakes assessment. *Learning and Individual Differences, 18*, 316-328.

Shaw, R., & Shaw, D. (2002). DIBELS oral reading fluency-based indicators of third grade reading skills for Colorado State Assessment Program (CSAP). (Technical Report). Eugene: University of Oregon.

Shinn, M. R. (2007). Identifying students at risk, monitoring performance, and Determining eligibility within response to intervention: Research on educational need and benefit from academic intervention. School Psychology Review, 36(4), 601-617.

Shinn, M. R., & Good III,, R. H. (1992). Curriculum-based measurement of oral reading fluency: a confirmatory analysis of its relation to reading. School Psychology Review, 21(3), 459- 480.

Silberglitt, B., & Hintze, J. (2005). Formative assessment using CBM-r cut scores to track progress toward success on state-mandated achievement tests: A comparison of methods. *Journal of Psychoeducational Assessment*, *23*, 304-325.

Simmons, D. C., Coyne, M. D., Kwok, O., McDonagh, S., Harn, B. A., & Kame, E. J. (2008). Indexing response to intervention: A longitudinal study of reading risk from kindergarten through third grade. Journal of Learning Disabilities, 41(2), 158-173.

Smyth, T. S. (2008). Who is No Child Left Behind leaving behind? *Clearing House*, *81*(3), 133-137.

Stage, S., & Jacobsen, M. (2001). Predicting student success on a state-mandated performance-based assessment using oral reading fluency. *School Psychology Review, 30*, 407-419.

Stage, S. A., Abbott, R. D., Jenkins, J. R., & Berninger, V. W. (2003). Predicting response to early reading intervention from verbal IQ, reading-related language abilities, attention rating, and verbal IQ-word reading discrepancy: Failure to validate discrepancy method. *Journal of Learning Disabilities*, *36*(1), 24-33.

Stecker, P. M., Fuchs, D., & Fuchs, L. S. (2008). Progress monitoring as essential practice within response to intervention. *Rural Special Education Quarterly*, *27*(4), 10-17.

Stecker, P. M., Lembke, E. S., & Foegen, A. (2008). Using progress-monitoring data to improve instructional decision making. *Preventing School Failure*, *52*(2), 48-58.

Stuart, M. (2006). Learning to read: Developing processes for recognizing, understanding and pronouncing written words. *London Review of Education*, *4*(1), 19-29.

Tobin, H. (1997). *Implementing academic standards: Papers commissioned by the national*. S.l. Diane.

Tomlinson, C. A. (2011). *How to differentiate instruction in mixed-ability classrooms*. Alexandria, VA: Association for Supervision and Curriculum Development.

University of Oregon Center on Teaching and Learning. (2009). *DIBELS data system: Using data to make decisions for students each and all*. Retrieved from https://dibels.uoregon.edu/

U.S. Department of Education (2001). *No Child Left Behind Act of 2001, Pub. L. No. 107-110*. Retrieved from http://www.ed.gov/nclb

U.S. Department of Education (2004). *Individuals with Disabilities Education Improvement Act of 2004 (IDEIA). Pub L. 108-446.* Retrieved from http://idea.ed.gov/

VanDerHeyden, A. M., & Burns, M. K. (2010). *Essentials of response to intervention*. Hoboken, N.J: Wiley.

Vaughn, S., Wexler, J., Roberts, G., Barth, A. A., Cirino, P. T., Romain, M. A., (2011). Effects of individualized and standardized interventions on middle school students with reading disabilities. *Exceptional Children*, *77*(4), 391-407.

Wallis, C., & Steptoe, S. (2007, June 04). How to fix No Child Left Behind. *Time*, 33-41.

Wang, C., Porfeli, E., & Algozzine, B. (2008). Development of oral reading fluency in young children at risk for failure. *Journal of Education for Students Placed at Risk, 13*, 402-425. doi:10.1080/10824660802427702

Wanzek, J., & Vaughn, S. (2010). Tier 3 interventions for students with significant reading problems. *Theory into Practice*, *49*, 305-314.

Whitten, E., Esteves, K. J., & Woodrow, A. (2009). *RTII success: Proven tools and strategies for schools and classrooms*. Minneapolis, MN: Free Spirit.

Wiley, H. I., & Deno, S. L. (2005). Oral reading and maze measures as predictors of success for English learners on a state standards assessment. *Remedial and Special Education, 26*, 207-214. doi: 10.1177/07419325050260040301

Wong, B. Y. L. (2004). *Learning about learning disabilities*. San Diego, CA: Elsevier Academic Press.

Wood, D. E. (2006). Modeling the relationship between oral reading fluency and performance on a statewide reading test. *Educational Assessment, 11*, 85-104. doi: 10.1207/s15326977ea1102_1

Woodward, M. M., & Talbert-Johnson, C. (2009). Reading intervention models: Challenges of classroom support and separated instruction. *The Reading Teacher*, *63*(3), 190-200.

Woolley, G. (2010). Developing reading comprehension: Combining visual and verbal Cognitive processes. *Australian Journal of Language and Literacy*, *33*(2), 108-125.

Woolley, G. (2011). *Reading comprehension: Assisting children with learning difficulties*.

Wright, J. A., Graney, S. B., Ardoin, S. P., & McDougal, J. L. (2013). *RtII in practice: A practical guide to implementing effective evidence-based interventions in your school*. Hoboken, NJ: Wiley.

Ysseldyke, J., Burns, M. K., Scholin, S. E., & Parker, D. C. (2010). Instructionally valid assessment within response to intervention. *Teaching Exceptional Children*, *42*(4), 54-61.