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Study of the effectiveness of response to intervention used in elementary school

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Study of the Effectiveness of Response to Intervention used in Elementary School

by

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Thesis

Submitted to the Department of Special Education

Eastern Michigan University

in partial fulfillment of requirements

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in

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Abstract

The purpose of this study was to study the effectiveness of Response to Intervention strategies as they pertain to students' scores on the Northwestern Evaluation Association (NWEA) test. This study sought to answer the following questions: 1) What are the different tiers of a three-tier RTI model? 2) Is one tier more effective than the others? 3) How does participation in the RTI model affect scores on the NWEA? and 4) What is the long-term effectiveness of participation in RTI, after services have been discontinued? This was a study conducted over four years in a select elementary school; the subjects were students identified as having reading difficulties by their previous NWEA scores. Students who participated in RTI were tracked and evaluated by their subsequent NWEA scores over the course of the study. Most students made improvements during their participation in RTI and continued to improve after services had been discontinued.

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Introduction and Background

The purpose of this study is to examine the implementation of Response to Intervention (RTI) as it pertains to student performance. This paper describes the Response to Intervention model that has become a credible educational practice as an alternative to traditional special education placement for students with high incidence disabilities. Response to Intervention is a useful approach to providing database decision-making for any students who may be in need of extra interventions for improving their performance.

Response to Intervention officially became part of special education law and policy when incorporated within the 2004 amendments to the Individuals with Disabilities Education Act. In the simplest terms, it was designed to replace the flawed diagnostic procedures that had been used previously to identify students with specific learning disabilities. It is also widely used as a tool to identify struggling learners and to give them the support they need to be successful in general education (Ciolfi & Ryan, 2011). Over the years, many schools have implemented RTI as a way to support students who were struggling in reading and math and to improve their scores on standardized tests including the Dynamic Indicators of Basic Early Literacy Skills (DIBLES), the Michigan Education Assessment Program (MEAP), and the Northwest Evaluation Association (NWEA).

This paper will examine the following areas.

1. What are the different tiers of the RTI model?
2. Is one tier more effective than the others?
3. How does participation in the RTI model affect scores on the NWEA test?
4. What is the long-term effectiveness of participation in RTI after services have been discontinued?

Changes Affecting Public Education

In 2001, Congress passed the No Child Left Behind Act (NCLB), which included new educational standards. The intention of this Act was to close the achievement gap with accountability, flexibility, and choices so that no child is left behind, meaning that every child would receive high quality, research-based education regardless of their socio-economic status, disabilities, or other factors. Not surprisingly, the Act also included a section dealing with the literacy problem in the United States. NCLB states that school districts and individual schools use effective and research-based reading intervention programs so that all students are reading at grade level by the end of third grade (Wrights Law).

The Act stipulated the use effective, research-based programs, learning strategies, and learning systems that have been proven to prevent and remediate reading problems and failure. Unfortunately, many students are entering school already behind, which leads to many problems later in life.

Also in 2001, President Bush ordered the creation of the Presidents' Commission on Excellence in Special Education; this commission was set up to study issues related to federal, state, and local education programs. The outcome was centered on improving both the programs and the academic performance of students with disabilities. The commission discovered that the current model of special education "waits for a child to fail" instead of focusing on prevention and intervention, especially when trying to identify a student with a learning disability. While there are interventions using research-based strategies for students who are struggling in early grades, many of them are not geared toward identifying students who have a learning disability. This can be interpreted that those students are not receiving the help they need when it could benefit them the most, in the early years of education (Cameron, Parks, Schulte, Stiefel, 2006).

A major recommendation from this commission was to turn to a model of prevention, not a model of failure (Commission Report, p. 9). The Commission stated that reforms must move the current special education model towards early identification and aggressive interventions using scientifically based instruction. These findings meant changes for the nations' schools as well as changes in teacher preparation (Cameron et al., 2006).

In answer to NCLB, the government also felt the need to reform the Individuals with Disabilities Education Act (IDEA). President George W. Bush signed the reauthorized Individuals with Disabilities Education Act (IDEA) into law on Dec. 3, 2004. The provisions of the act became effective on July 1, 2005. Included in the reform was special consideration to align the law with the newly signed NCLB. The reformed IDEA states a child must not be determined to be a child with a disability if the deciding factor is lack of appropriate instruction in reading, lack of appropriate instruction in math, or limited English proficiency (U.S. Department of Education, Office of Special Education Programs, 2007).

Research-based Strategy Used by Public Schools

Response to Intervention is an evidence-based approach, which was, in part, designed to redefine how reading difficulties are identified in public schools. Although it applies to other areas, the author is focusing on the reading aspect for the purpose of this study. RTI is a preventive model that features multiple tiers of interventions that are utilized based on students' individual needs. It is considered a preventive model because these tiers of support are introduced to the student in the earliest stages of development and children's progress is carefully monitored to ensure progress in achieving criterion benchmarks. RTI features a "continuum of increasingly intensive and specialized instruction" (Justice, 2006) that is

implemented in pre-K and kindergarten and generally continued until the end of second or third grade.

Response to Intervention is also a blueprint for school reform, changing the ways students are viewed and instructed. Up until this point, students were placed in special education programs often without first examining how the student was learning and what he or she is learning. Traditionally, schools have believed that "failure to succeed in a general education program meant the student must, therefore, have a disability" (Prasse, 2009). Rarely does special education testing assess the effectiveness and quality of the teaching that the student has received. The facts are

- o In the United States, the special education redesignation rate (the rate at which students have exited special education and returned to general education) is only 4 percent (U.S. Department of Education, 1996).
- o According to the U.S. Department of Education, the graduation rate of students with special needs is 57 percent (National Center on Secondary Education and Transition [NCSET], 2006).
- o Up to an estimated 50 percent of the U.S. prison population were identified as students with special needs in school (NCSET, 2006).

Since 1975, when special education was written into Federal law (PL 94.142), there has been a steady increase of students qualifying for services. Recently there has been an increase in numbers. In fact, six million children, more than 10% of students in the United States, are found eligible for special education services. Fully half of the national special education population is identified as having a learning disability (LD), with the percentage of school age students classified as LD more than doubling since 1980 (Vaughn & Fuchs, 2003).

Pre-referral Process

With the reauthorization of IDEIA in 2004, schools were required to organize programs so that students who are struggling can receive intensive intervention before being identified for special education services. Pre-referral intervention is used identify, develop, and implement alternative education strategies for students who have problems in the classroom, before the student is referred to special education. A team of individuals consisting of the teacher, the parents, an administrator, and any other adult involved in the education of the student generally conducts this process (Project IDEAL, 2008).

Pre-referral interventions have often been used without documentation of the student's progress. Monitoring and record keeping provide the information needed to make decisions about the student's future instruction (Cortiella, 2006). Successful implementation of RTI requires a number of essential components that ensure high-quality instruction, careful monitoring and documenting of progress, and close collaboration between general education and special education. It is important to note that the validity of the RTI diagnostic approach for identifying students with learning disabilities depends on the quality of the instruction model as it is implemented in a school or school district. The effectiveness depends on students receiving high quality initial instruction and the availability of intervention to struggling students (Torgesen, 2007).

RTI changes the relationship between general and special education; up until this point, general and special education were viewed as separate entities within the school system. In the RTI model, both general and special educators, as well as parents, must work together to decide what interventions are needed, how to implement them, and to make sure that the interventions are implemented in a timely manner.

Standardized Tests

Added pressure was put on Michigan public schools with the changes in both the Michigan Education Assessment Program (MEAP) and The Northwest Evaluation Association (NWEA) grading scales. The MEAP is required to be given every year, as stated in NCLB, and overall scores will determine if the school is considered a failing school, whether teachers are considered effective, and how much federal funding the individual schools will receive. The NWEA is given three times a year and is used by several schools to help identify those students who are struggling in reading and math. This test has become even more important for schools with the changes in how students can be identified as having a learning disability, as many of these students will now be included in the population of students who are required to take the MEAP. In many schools, RTI is the answer to those identified by the NWEA as being below grade level.

Review of Related Literature

Literacy "the quality or state of being literate.

Literate: derives from Middle English and Latin terms meaning "marked with letters" and "letters, literature." Two definitions are provided:

1) "Able to read and write," and

2) "Versed in literature or creative writing…having knowledge or competence

(Merriam-Webster's Collegiate Dictionary)

Many children face significant challenges in learning to read because they lack necessary early literacy skills when they begin school. Children who are poor readers at the end of elementary school are most often those who failed to develop literacy skills during preschool and kindergarten. Deficits in early reading skills tend to remain or even increase through elementary

school, widening the gap between those who possess good literacy skills and those who do not (Badian, 2000; Stanovich, 2000). Unfortunately, students who enter school with limited literacy skills rarely catch up and have traditionally been at high risk for being referred for special education later. A child who completes the second grade without being able to read has only a 25% chance of reading at grade level by the end of elementary school (Snow, 2008).

According to the 2003 National Assessment of Educational Progress (NAEP), 37 percent of fourth graders and 26 percent of eighth graders could not read at the basic level; and on the 2002 NAEP, 26 percent of twelfth graders could not read at the basic level. That is, when reading grade-appropriate text, these students cannot extract the general meaning, make obvious connections between the text and their own experiences, or make simple inferences from the text. In other words, they cannot understand what they have read.

Children who have not developed some basic literacy skills by the time they enter school are three to four times more likely to drop out in later years (National Adult Literacy Survey, 2003). Unfortunately, literacy problems often lead to problems later in life including being in trouble with the law, poverty, unemployment, and often lifelong literacy problems such as not being able to fill out simple job applications, having difficulty with transportation requirements such as passing a written drivers test, not being able to process printed news, and having difficulty with written directions. In this 2003 survey, adults with lower levels of literacy were more likely to report that their reading skills limited their job opportunities than were adults in the higher literacy levels. Thirty-five percent of adults with Below Basic prose literacy and 34 percent of adults with Below Basic document literacy reported that their reading skills limited their job opportunities "a lot" (National Adult Literacy Survey, 2003).

In response to growing pressure from both the State and Federal Governments regarding both the literacy instruction of students and the process in which students are identified as having a disability, many schools adopted RTI as a way to track both students' progress and abilities.

The RTI approach is designed to help school personnel make two kinds of decisions: (1) instructional planning (deciding how and what to teach), and (2) eligibility for special education services. For instructional planning, it is a comprehensive multi-tiered strategy to enable early identification of students who are at academic risk. Progress is monitored to examine the extent to which individual students are progressing academically. RTI is also used to identify students who are eligible for special education services. It is most often used for the category of students with learning disabilities. States are permitted (not mandated) to use data on student responsiveness to evidence-based interventions in deciding whether to provide special education services (Hoover, Baca, Wexler-Love, Saenz, 2008).

In theory, RTI will reduce inappropriate referrals to special education, especially of minority students, low-income students, or students who otherwise have received weak reading instruction (Torgesen, 2007). A 2002 report for the National Academy of Sciences examined the overrepresentation of minority students in special education. It argued that special education eligibility should not occur until the student failed to make gains using "high quality, evidence based instruction." (Donovan and Cross, 2002). This encouraged schools to provide services to students struggling in reading within the general education setting in the early grades before considering special education. Special education would be considered only for students who failed to respond to evidence-based interventions

In the past, many students were not provided with additional assistance in reading until they were officially diagnosed with a learning disability, so they often struggled in early elementary

school. The changes to special education laws and added pressure from the government on

literacy scores changed the way districts operated. For reading instruction in the primary grades

(K-2), many schools began screening students at least once a year to identify students who were

at risk for reading failure. Based on these scores, if a student was seen as at-risk for reading,

then they were provided with more intensive reading interventions. Students' responses to the

interventions were then measured to determine whether they had made adequate progress and

either (1) no longer need the intervention, (2) continue to need some intervention, or (3) need

more intensive reading intervention (Education Northwest).

RTI Models

There are two basic protocols for implementing the RTI model

Problem solving model. The problem-solving model is based upon a few trained individuals

who serve as "case managers" for general education teachers who express concern. Together, the

case manager and teacher take a systematic approach, which they use to make a determination

for special education referral. The approach is seen in Figure 1.
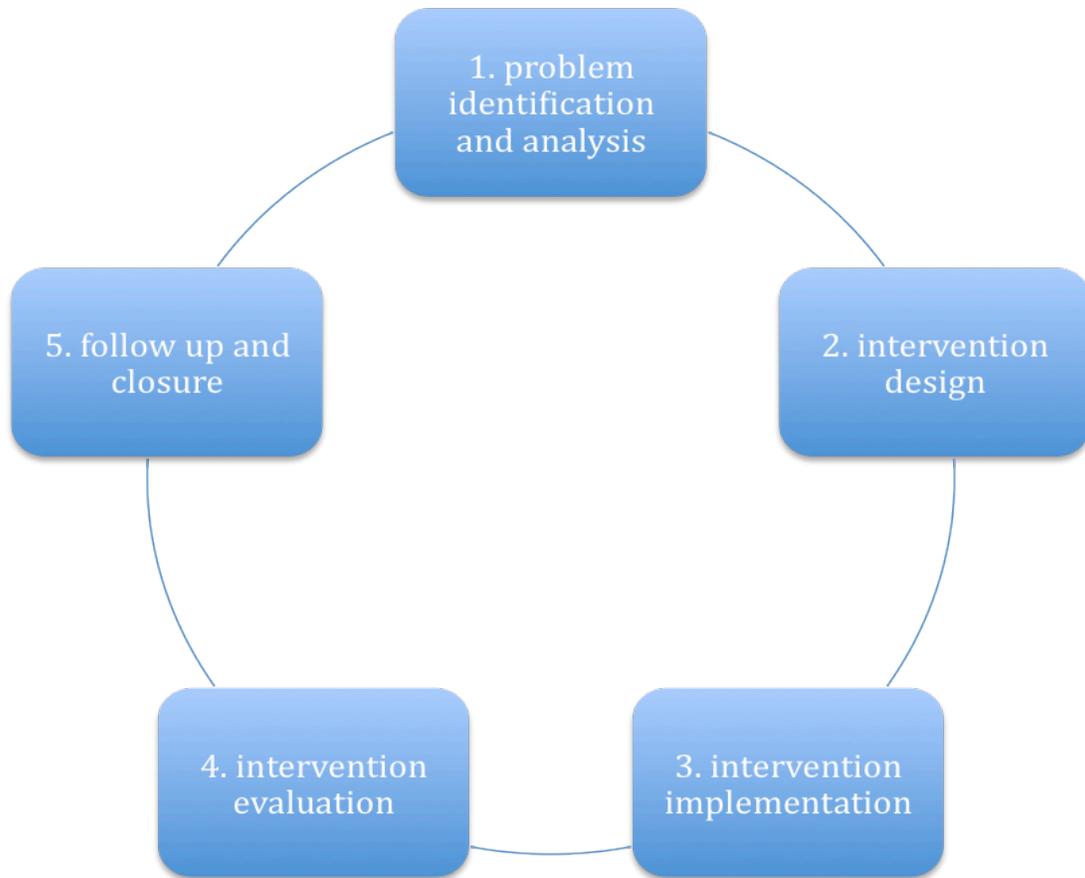
(Figure 1- Problem Solving Model)

The problem solving model is seen as an extension of pre-existing child study (or child find) teams (Cameron et al., 2006).

Standard protocol model. The standard protocol model is a school wide system that uses the same approach for all students, such as Reading First. (Figure 2)
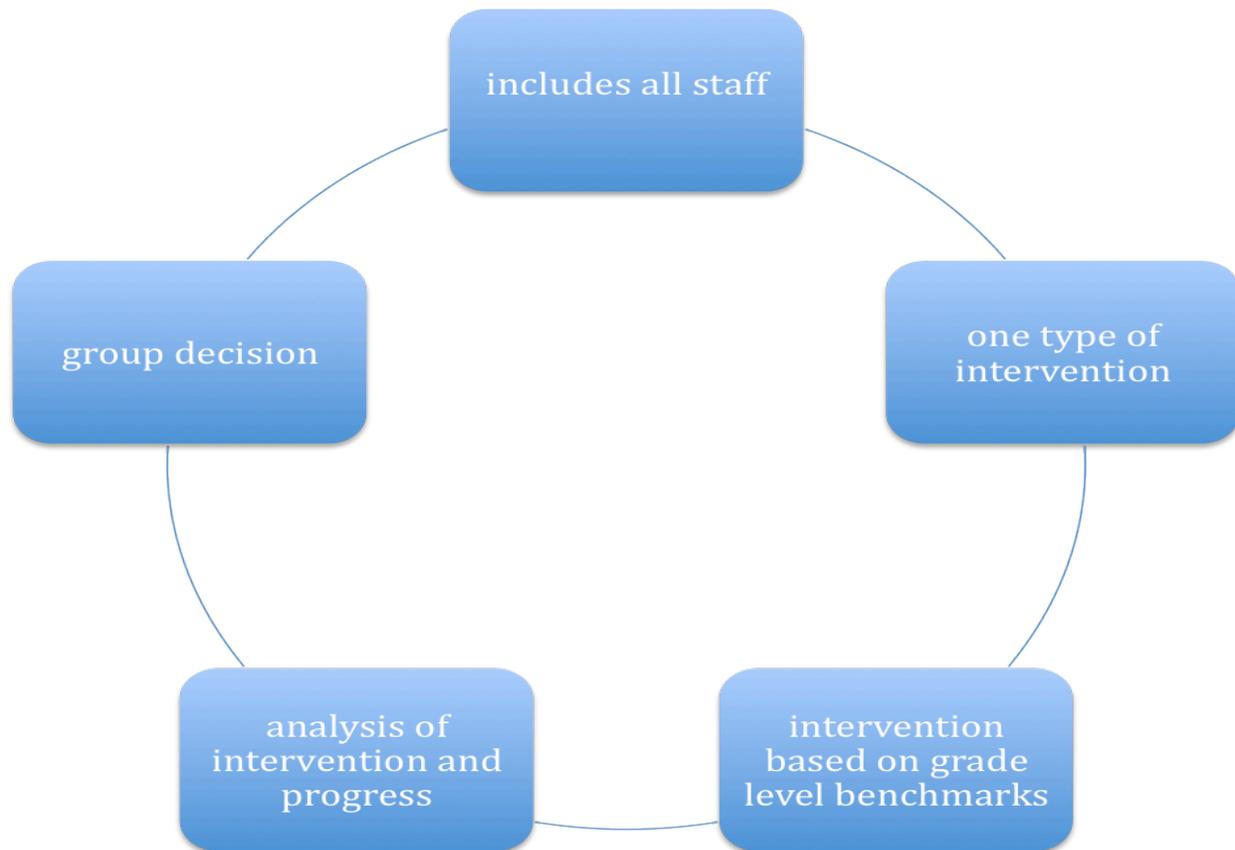
(Figure 2- Standard Protocol Model)

The standard protocol has several advantages over the problem solving method: it includes all staff and one intervention strategy, it is easier to assess accuracy, more students can participate in the intervention, and it lends itself to group analysis (Carney and Stiefel, 2008). These can be seen as advantages because it provides an opportunity to reach more students that the problem solving model. It is also generally more cost effective for schools and is easier to train staff and implement this type of protocol.

Both models use a multi-tier model, usually three or four tiers, with the interventions becoming more intense with each tier. For this study, a three-tier model was used. (Figure 3)
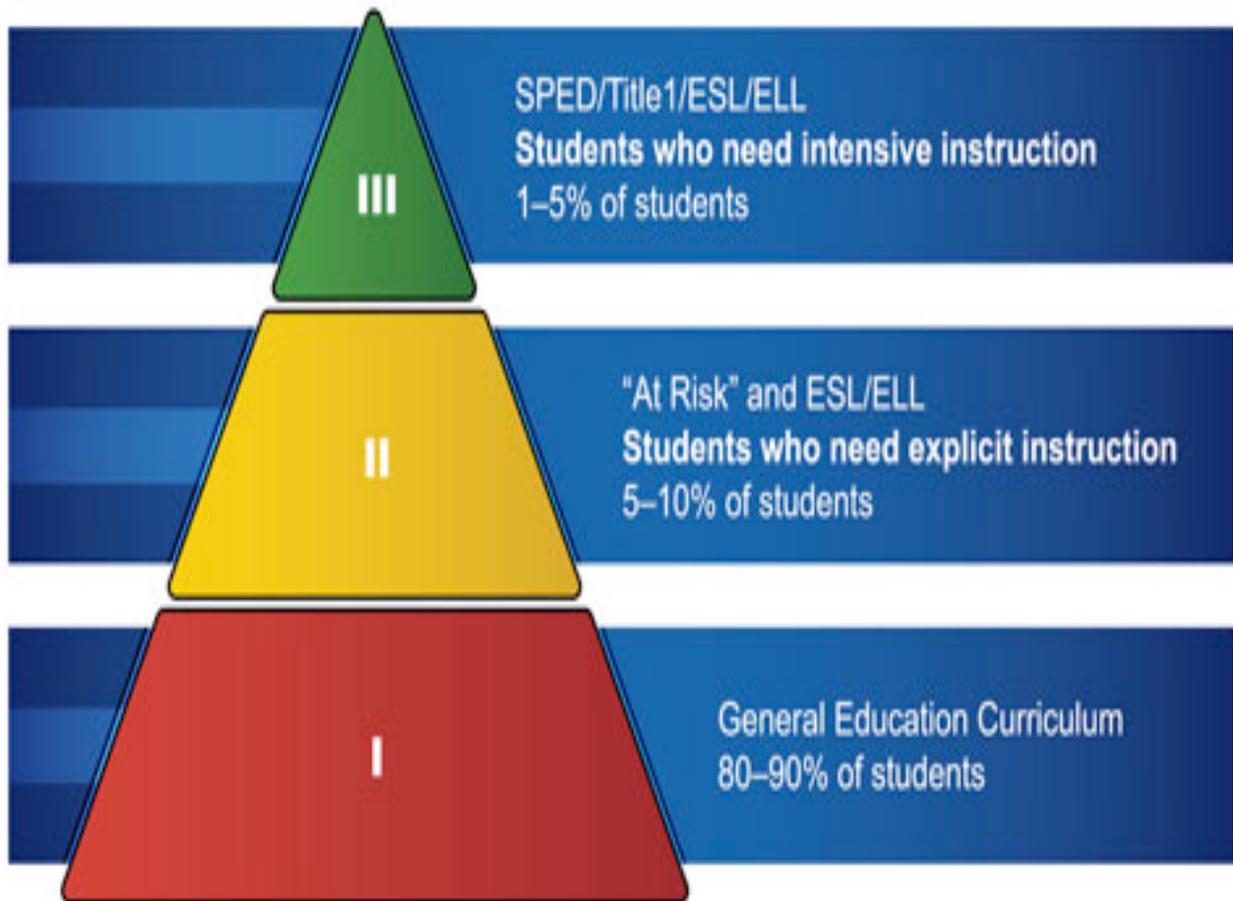
(Figure 3, Three tier model- Reading Horizons)

Tier 1: This tier consists of general education instruction for all students that are both evidence based and is aligned with state standards. In tier 1, there is either continuous or periodic progress monitoring to help identify students who are not meeting specific benchmarks and who would benefit from more intensive instruction. Tier 1 instruction is often labeled universal or core instruction.

Tier 2: Interventions are provided only to students who demonstrate problems based on screening measures or weak progress with regular classroom instruction. In addition to general

classroom instruction, tier 2 students receive supplemental, small group reading instruction

aimed at building foundational reading skills

Tier 3: Interventions are provided to students who do not progress after a reasonable amount of

time with the tier 2 interventions and require more intensive assistance. Tier 3 usually involves

one-on-one tutoring with a mix of instructional interventions. Ongoing analysis of student

performance data is critical on tier 3. Systematically collected data are used to identify successes

and failures in instruction for individual students. If students still experience difficulty after

receiving intensive services, they are generally evaluated for possible special education services.

   Both models also use the following intervention strategies for struggling readers (Table 1).

The assumption is that students will move through the tiers, receiving whatever level of

intervention is appropriate for them, until they are meeting grade-level benchmarks and are

discontinued from receiving services under the RTI program. The intervention strategies are in

Table 1.

Tier 1 Core Reading Program	Tier 2 Strategic Supplemental Intervention	Tier 3 Intensive Intervention
All students working at advanced, benchmark, strategic, or intensive levels.	Students not making adequate progress in Tier 1.	Seriously at-risk students not making adequate progress in Tiers 1 and 2.
Research-based reading program targeting the five essential components: phonemic awareness, phonics, reading fluency, vocabulary, and comprehension.	Specialized, research-based supplemental reading program that targets specific student weakness.	Sustained, research-based intensive stand-alone reading program that targets specific student weaknesses.
Explicit, systematic instruction With repeated opportunities for practice and review.	Explicit, systematic supplemental instruction with repeated opportunities for practice/review; supports Tier 1.	Explicit, systematic instruction designed and customized to meet students' needs; includes an acceleration plan.
At least 90 minutes per day.	At least 30 additional minutes per day.	At least two additional 30-minute sessions per day or an additional 90-minute session.
General education classroom with flexible groupings.	Appropriate setting designated by school; homogeneous small group instruction (e.g., about six students).	Appropriate setting designated by school; homogeneous small group instruction (e.g., about four students).
Fall screening for all students, plus winter and spring progress monitoring using program specific assessments.	Diagnostic assessment to determine specific needs for intervention, plus progress monitoring biweekly.	Diagnostic assessment to determine specific needs for intervention, plus progress monitoring weekly or biweekly, additional progress monitoring using program-specific assessments.

(Table 1- Intervention Strategies- Ypsilanti Public Schools 2010)

RTI and Early Literacy

Learning to read and write begins early in children's development, long before they even enter kindergarten. Literacy skill development in early childhood provides the foundation for long-term academic success. Over the past two decades, researchers have identified key emergent literacy skills that develop progressively in children during their pre-school years and are highly predictive of later success in learning how to read (Burns, Griffin, & Snow, 1999; Casey and Howe 2002; Neumann and Dickenson, 2001). These skills are the areas that are most often used when screening younger students for reading difficulties and are used during the progress monitoring during the RTI process. Students are evaluated based on their grade level benchmark scores from a variety of screening tools. These skills are listed in Table 2

Phonological awareness	Awareness of the phonological structure, or sound structure, of spoken words
Oral Reading Fluency (ORF)	The ability to read text
Letter Knowledge	Understanding that letters are different from each other, knowing their names and sounds
Print awareness	Knowledge of letters, print symbols, and reading conventions
Oral language	Speaking and listening, or expressive and receptive language.

(Table 2- Emergent Literacy Skills)

During the past 15 years, the continuity and stability of reading programs has been examined in several descriptive studies (Simmons, Coyne, Oi-man, McDonagh, Harn, Kame'enui, 2008). With typical instruction, children identified as at risk of reading difficulties have minimal odds

of overcoming these risks. Burns et al. discovered that 71% of children with the lowest

preschool assessment scores read below grade level at the end of third grade, whereas 93% of

preschool children who performed at or above grade level maintained their performance 5 years

later (Burns, Griffin, & Snow, 1999).

Intervention research on early reading difficulties provides evidence that poor reading

performance is not only modifiable but in many cases preventable (Foorman, Breier, & Fletcher,

2003; Shatschneider, Fletcher, Francis, Carlson, & Foorman, 2004). Research evidence supports

the effectiveness of prevention and intervention efforts with young children identified as at-risk

for reading difficulties in kindergarten; early childhood has emerged as an instructional period

where essential early-literacy skills can be established (Cavanaugh, 2004; O'Conner, 2000;

Torgesen, Wagner, Rashotte, Lindamood, Conway, & Gavin, 1999). Just as important, there is

evidence to suggest that these early literacy skills may be jumpstarted so as to better position

students for future reading success.

Scanlon (2005) identified 430 kindergarten children who performed below the 30th percentile

on the Letter Identification subtest of the Woodcock Reading Mastery Tests- Revised (WRMT-

R,) and randomly assigned them to either of two intervention groups, an intervention group (2

days per week, small-group instruction focusing on phonemic, alphabetic, and orthographic

skills) or to a typical practice comparison group. Students in the comparison group received

school designed intervention, some of which involved extra instruction on literacy skills.

Participants in the treatment group continued in first-grade interventions if their composite scores

on the Letter Identification, Word Identification, and Work Attack subtests were at or below the

midpoint of the distribution of composite scores for children who participated in the kindergarten

intervention. The results of this study revealed clear benefits for the kindergarten intervention

program, as evidenced by using response to kindergarten and first grade intervention skills between the intervention and comparison groups at the end of kindergarten. Also, by the substantial reductions for the kindergarten intervention group in the proportion of children who scored substantially below grade-level expectations in early literacy skills the end of first grade.

Fall standard scores of first grade treatment children who continued intervention averaged 88.67 on Word Identification WRMZT-R and 77.39 on Word Attack WRMT-R. Findings at the beginning of first grade indicated that 51% (80/161) of students who received kindergarten intervention were out-of-risk, compared to 40% (63/158) of student in the comparison condition. It should be noted that criteria for continuation were based on school-based standards. End-of-first-grade results further indicated significant reductions in severe reading disabilities.

In another longitudinal experimental study, Torgensen et al. (1999) examined the relative effectiveness of three prevention-focused interventions implemented during the second half of kindergarten and extending through second grade. They standardized measures of reading skills to facilitate the interpretation of outcomes and to examine the performance of children who were least responsive to instruction. Children who scored in the bottom 30th percentile on letter-naming tasks, who had the lowest combined scores on letter-naming and phonemic tests, and scored above 75 on verbal intelligence on the pretest were randomly assigned to one of four instructional groups and were provided intervention for 2.5 years. At the end of intervention, the mean performance of children in the most effective interventions (phonemic awareness plus synthetic phonics) performed in the average range on all reading measures. In a valuable contribution to the study of RTI, this study's finding revealed that 24% and 36% of students in the most effective instructional groups performed more than one standard deviation below the mean on Word Attack and Passage Comparison, compared to 53% and 56% of students in the

no-treatment group. In sum, kindergarten-initiated and extended interventions substantially

reduced the number of children who performed below the 15th percentile on standardized reading

measures.

One of the critical RTI questions is whether children who are identified as being at-risk in

kindergarten will improve and move out of risk by third grade if they receive RTI. To

investigate this, Simmonson et al. (2008) created predominant risk patterns across kindergarten

through grade 3 using the 30th percentile score on different screeners as cut off values. In this

particular test, they used DIBLES. Students who exceeded the 30th percentile on beginning of

year DIBLES screeners (i.e. Nonsense word fluency [NWF] in fall of grade 1, Oral Reading

Fluency [ORF] in Fall of grades 2 and 3) were considered out of risk; students who fell below

the screening cut scores were considered at risk and received intervention.

In this study, Simmonson et al. examined the performance of 41 students identified at the

beginning of kindergarten as at risk for experiencing reading difficulties and followed them

through the end of third grade. All students received intensive, small-group intervention in

kindergarten that focused on code-based reading skills. In addition, students still performing

below the 30th percentile at the beginning of first grade continued to receive intervention. Each

of the 41 students was reevaluated at the beginning of the second and third grade and they were

provided intervention if scores fell below the 30th percentile on DIBLES ORF.

A primary purpose was to determine whether timely, sustained, small-group instruction

informed by student unresponsiveness could alter the reading trajectories of students at risk of

reading difficulties and if they could attain a level of reading performance similar to that of their

peers who were not at risk. In other words, could an RTI approach to intervention normalize the

reading achievement of at-risk students by the end of third grade?

In this study, 38 of 41 (93%) kindergarten children identified as at risk scored at or above the 30th percentile on the WRMT-R Passage Comprehension measure at the end of third grade. The majority of children identified as at risk of reading difficulty did attain adequate levels of reading proficiency.

Research Design and Methodology

Methodology

This researcher chose an urban school located in an at-risk district in Michigan for her study. The school consists of 450 students and is considered an at-risk school in which 90% of the population qualifies for free or reduced lunch. While the school itself has a diverse population consisting of 53% African-American, 41% Caucasian, and 6% other (Hispanic, Asian, etc.), the sample population of this study was 86.7% African American (72 Students), 9.6% Caucasian (8 students), and 3.7% other (3 students). The school itself is considered at-risk under both the MEAP and NWEA organizations as it has been under performing and is on the 5-year watch list to raise its MEAP test scores. Making adequate yearly progress has become increasingly difficult for them to do with the changes in the special education laws, which changed the way the students are found eligible for special education help. Many of the students who are struggling are still in the general education population and still mandated to take the MEAP each year. Another factor is the fact that most students with a learning disability also have to take the MEAP and NWEA, as the state mandated that only 5% of special education students could be exempt from either test.

This particular school has developed several ways to help raise the reading scores of these students. The first is the general education curriculum, which in this case consists of the Reading

First method, which all students have access to. If a student is found to be at-risk, then one of several RTI interventions is implemented. These include: after school tutoring with a teacher, Saturday School, and small group instruction with Title One teachers throughout the school day.

For the purpose of this study, this researcher chose to do a three-year study following a specific group of students who were chosen for RTI based on their reading scores on the NWEA. The students were chosen based on their initial NWEA scores, which is given 3 times a year, and charted based on subsequent scores. If the students continue to make progress, they are moved through the different tiers of RTI and finally services are discontinued if they make adequate yearly progress. The effectiveness of the Response to Intervention strategy is based on the students' NWEA scores, which the school uses to measure how much progress the students have made.

The school was focusing on the students who were "on the bubble," meaning these were the students they felt would make adequate progress to meet state grade-level standards on both the NWEA and the MEAP. The students who were considered "really at-risk" (0-35%) also received intervention but were not the focus of this study. The school felt that while those students would probably make gains, they needed to concentrate more on those students who could attain grade level standards, as decided by their NWEA scores, by the end of the year. In this study only 5/110 were still in the 0-35% group, and all of them were referred for special education at the end of this study.

Data and Analysis

After gathering data for a three-year time period, this researcher looked at two different statistics to judge the effectiveness of 1) individual students' yearly progress with RTI in place and 2) group sample scores on the NWEA. Since the school is monitored using grade level

progress, the researcher felt that these data were more pertinent than individual students' scores, especially since some students did not receive RTI for consecutive years. The researcher tracked individual students during the time they received RTI to justify whether the methods used were effective in raising students' grade level reading scores.

Data in this study were gathered using student numbers, which followed students throughout their elementary school year, in order to protect the identity of the students. This researcher received permission from the school administrator to access and use the information in her study, and while the individual teachers names are known, the students' names were kept anonymous. At the beginning of the study, there were 110 of the 450 students who were receiving level two interventions based on the criterion that the school had set up.

The following procedures are used to estimate proficiency-level cut scores from samples for which both state test and measure of academic progress (MAP) test performance are known: 1) For each grade level within a state sample, the proportion of students achieving each of the No Child Left Behind Act (NCLB)-reported proficiency performance levels on their state assessment is computed (example: for a state that uses three proficiency levels, those percentages for third grade reading might be 20% "below proficient," 45% "proficient," 35% "advanced"). 2) These same percentage points are used to determine the equivalent cut scores on the MAP assessment for that sample of students (NWEA 2011).

The criteria used to determine eligibility for RTI in this school are seen in Table 3.

Percentile on the NWEA	Minutes of RTI	Implementation
0-35% (really at-risk)	30-60 minutes per month	Title one teacher or Para during the school day
35-40% (on the bubble)	90 minutes per week	After school tutoring or Saturday school with eligible teacher
40-45% (on the bubble)	60 minutes per week	After school tutoring with eligible Para-educator
46%-grade level (proficient)	90 minutes per day	Reading First curriculum

(Table 3- Tier 2 Intervention Criterion)

According to this criterion, students who were seen as "really at risk" also received intervention, but it was less intensive than the students who were considered "on the bubble." The students in the 35%-45% rank received more intensive interventions, as the school administration felt that they could attain grade level standards by the end of the three-year period. Those students, as seen in the chart above, received an extra hour and a half of small group reading instruction. This school was under a Reading First grant at the time and utilized very specific and research-based methods to teach reading for students in grades first-third. It is through this methodology that they individualized instruction for all students.

Reading First

Through Reading First, funds are made available for state and local early reading programs that are grounded in scientifically based research. In such programs, students are systematically and explicitly taught the following five skills identified by research as critical to early reading success. The definitions below are from the Report of the National Reading Panel (2000):

- Phonemic awareness: the ability to hear and identify sounds in spoken words.

- Phonics: the relationship between the letters of written language and the sounds of spoken language.

- Fluency: the capacity to read text accurately and quickly.

- Vocabulary: the words students must know to communicate effectively.

- Comprehension: the ability to understand and gain meaning from what has been read.

According to the Reading First grant, children need to master these five areas in order to become successful readers. Programs funded under Reading First must demonstrate their capacity to comprehensively and effectively address all five elements.

These components must also be integrated into what the U.S. Department of Education calls "a coherent instructional design." This design must include:

- Explicit instructional strategies that address students' specific strengths and weaknesses,

- Coordinated instructional sequences,

- Ample practice opportunities and aligned student materials.

Ideally, the design would also involve:

- Targeted, scientifically based instructional strategies as appropriate,

- The allocation of time, including a protected, uninterrupted block of time for reading instruction of more than 90 minutes per day,

- Assessment strategies for diagnosing student needs and measuring progress, and

- A professional development plan that ensures teachers have the skills and support necessary to implement the program effectively and to meet the reading needs of individual students.

(Moss, Jacob, Boulay, Horst, & Poulos, 2006)

According to the guidelines of the grant, Reading First schools must use a high quality-reading program. A high-quality reading program that is scientifically research-based must

include instructional content focused on the five essential components of reading instruction integrated into a coherent instructional design. A coherent design includes explicit instructional strategies that address students' specific strengths and weaknesses, coordinated instructional sequences, and ample practice opportunities and aligned student materials, and may include the use of targeted, scientifically based instructional strategies as appropriate. The design should also consider the allocation of time, including a protected, uninterrupted block of time for reading instruction of more than 90 minutes per day (Moss et al., 2006).

A high-quality reading program also includes assessment strategies for diagnosing student needs and measuring progress, as well as a professional development plan that ensures that teachers have the skills and support necessary to implement the program effectively and to meet the reading needs of individual students. Through the use of this practice, the district in this study was able to ensure that every student was getting intensive, high quality reading instruction. If the student failed to respond to this instruction, then the criterion in Table 3 was used to determine what level of intervention the students qualified for.

Certain elements should be visible in any Reading First classroom in the country, regardless of which specific program is in use. Standards and accountability are the foundation of the Reading First classroom. Expectations are clear, as are strategies for monitoring progress toward meeting them. A comprehensive reading program provides the basis for instruction and connects meaningfully to supplemental materials. In-class grouping strategies are in use, including small group instruction, as appropriate to meet student needs. Student placement in groups is flexible, with placement and movement based on ongoing assessment, and different curricula may be in use to instruct different groups. There is active student engagement in a variety of reading-based activities, which connect to the five essential components of reading and to overall, clearly

articulated academic goals. Effective classroom management and high levels of time on task are also evident.

Throughout the course of the study, 27 of 110 students left or reentered the district, leaving 83 students who were tracked for the entire three-year period. In order to test the effectiveness of RTI, this researcher evaluated the students who were receiving tier 2 interventions during the course of this study. During the three-year period, the following scores were charted:
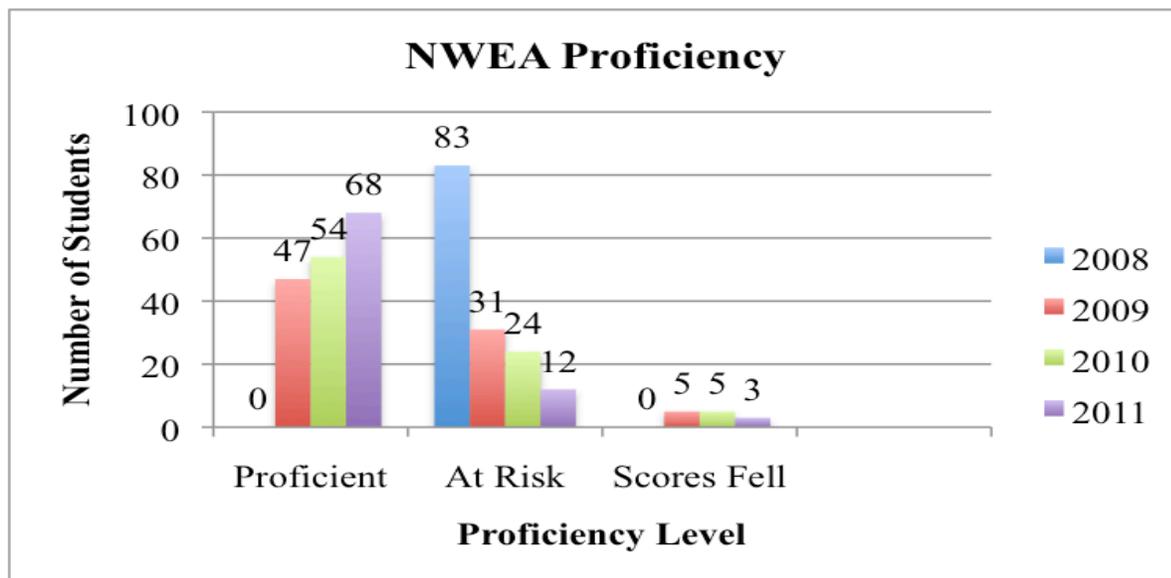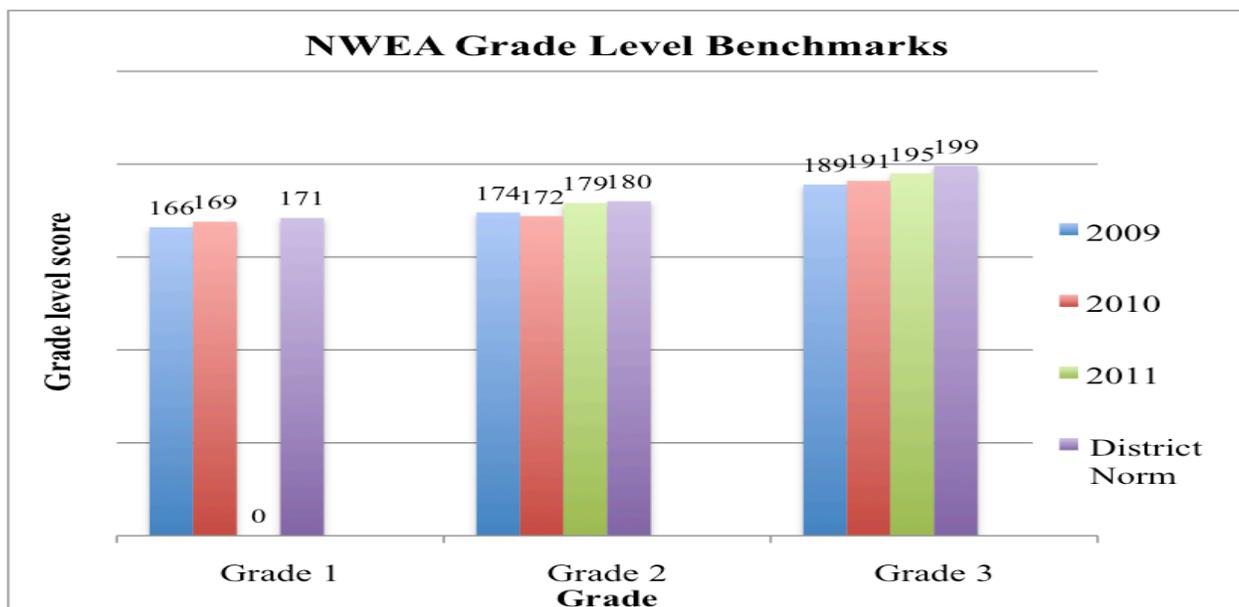

(Figure 4)

This chart shows that over the course of three-years, using only the original 83 students who were able to complete the entire study, 68/83 (or 81.92%) of students were able to reach grade-level benchmarks using intensive tier 2 interventions, as compared to 15/83 (or 18.08%) who did not reach the standard of proficient. Out of the original 83 students, 5 were later discovered to have a specific learning disability, and subsequently their reading scores actually fell during the course of the study. This finding is probably due to the fact that the State Benchmarks increase year after year, making the test harder to reach grade-level benchmarks. Of the original 83 students, 15 (18%) were eligible to receive services after the three-year period compared to 82%

who were either discontinued for services or referred to special education. Over the course of this study, 21 students moved to "less intensive" intervention groups and continued to make gains on their reading scores on the NWEA.

More important were the findings with the grade level NWEA scores; in this district, schools are scored based on individual grade level, as opposed to individual students, to assess whether adequate yearly progress is made. This researcher used the NWEA scores of grade levels to see if adequate yearly progress was made in the area of reading. This chart shows the grade level growth of normed scores during the three-year period.

NWEA Grade Level Benchmarks

	Grade 1	Grade 2	Grade 3
2009	166	174	189
2010	169	172	191
2011	0	179	195
District Norm	171	180	199

Grade level score — Grade

(Figure 5)

This chart shows that, while students continued to perform below grade level benchmarks as a group, they continued to make progress each year. There is a drop in scores in 2010 with second grade students; this is partially due to the fact that this was the year of district reorganization causing both new students and teachers to come into the school. Overall, these changes effected how students performed on the test. There is also an absence of a first grade score for 2011, as those students were moved to another school and thus no longer part of the study.

Limitations of the Study

The findings in this study are limited due to the migratory nature of the students who were considered at risk. Over the course of the three-year study, 27 students left the school district due to various reasons. There were also 5 students who reentered the district during this time, and while they were eligible to receive intervention upon their return to the district, there was no way of knowing if they received intervention while they were away and if so, whether the intervention was comparable to what they had received with us.

During the three-year period the district had the closure of two schools, those students and teachers were integrated into the remaining school, one of which was the focus of this study. While many of these students were eligible for reading interventions, they did not receive them at their previous schools. Subsequently, when the final data were evaluated, the scores of these students were included in the grade level scores. Due to the fact that this study also depended on the students receiving "Reading First" instruction as their core, research-based instruction, this researcher chose to include only those students who completed the entire three-year program.

The results of this study can be interpreted that, if a student receives high quality, research based literacy instruction as well as RTI intervention; they are able to make gains in the area of reading. However, there is no way of telling the long-term effectiveness of RTI based on this study alone; more longitudinal studies are needed.

Summary

Overall, this study showed that proper use of RTI was an effective tool to raise both individual and overall reading scores on standardized tests. Students in this district, when exposed to a high-quality, research-based reading program and effective interventions, were able

to make adequate yearly progress in reading. However, this study was dependent on all of the components being in place and the use of a school-wide model; more research is needed to determine how changes to either component will affect the overall progress of both students as individuals and as a grade-level group. There is also no way of telling if the students continue to make progress when they move to other districts that may not have an RTI protocol in place.

More research is also needed to discover how these students perform once they are "no longer eligible" for either protocol used in this study; in this case that means in 4th grade and above. In this particular study, both the Reading First protocol and the RTI interventions were only for students in 1st-3rd grade. It is assumed that once the students started performing at grade level, they would continue to perform at grade level on their own. There is no evidence to suggest that these students continued to perform at grade level and to the contrary, students in the upper grades continued to struggle to meet adequate yearly progress (AYP) on the MEAP. Unfortunately, the only data for students in upper elementary (grades 4-6) and beyond is the MEAP. When the MEAP is scored and AYP is presented to the school, it is based on groups of students rather than individual students' scores. The NWEA continues to be used for students in grades 1st-3rd to help monitor the progress of individual students. However, there is no test, other than the MEAP, that is universally used in this district for older students.

In a study by Stiefel and Carney (2008), they suggested that one of the problems for teachers in the implementation of RTI interventions is the lack of policy concerning appropriate measures for students who are struggling in general education classrooms, but who do not respond to Tier 2 interventions and who do not qualify for Tier 3 (special education) services. School personnel are left with the task of designing and implementing interventions and are with many concerns on how this is will look in their district. These concerns include what type of interventions to

use, how long they will implement them before a formal referral to special education, and what to do with the students who do not respond to interventions. This researcher feels a longitudinal study of students in both middle and high school would be beneficial to truly determine the long-term significance of rigorous interventions in early grades.

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