

2013

Evaluating the effectiveness of response to intervention in ELA and Math for sixth, seventh, and eighth grade students

Shehla Khan

Louisiana State University and Agricultural and Mechanical College

Follow this and additional works at: https://digitalcommons.lsu.edu/gradschool_theses



Part of the [Physical Sciences and Mathematics Commons](#)

Recommended Citation

Khan, Shehla, "Evaluating the effectiveness of response to intervention in ELA and Math for sixth, seventh, and eighth grade students" (2013). *LSU Master's Theses*. 2604.

https://digitalcommons.lsu.edu/gradschool_theses/2604

This Thesis is brought to you for free and open access by the Graduate School at LSU Digital Commons. It has been accepted for inclusion in LSU Master's Theses by an authorized graduate school editor of LSU Digital Commons. For more information, please contact gradetd@lsu.edu.

EVALUATING THE EFFECTIVENESS OF
RESPONSE TO INTERVENTION
IN ELA AND MATH FOR SIXTH, SEVENTH,
AND EIGHTH GRADE STUDENTS

A Thesis

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirement for the degree of
Masters of Natural Science

in

The Interdepartmental Program in Natural Sciences

by
Shehla Khan
B.S., Louisiana State University, 2006
August 2013

Acknowledgements

First and foremost, I would like to thank my thesis advisor, Dr. Cherry, for his continued support, valuable feedback, and thorough editing. I would like to extend my gratitude to my committee member, Dr. Dana Browne, for his help with the data analysis and presentation, as well as my cohort members, Shawn Liner, Mary Feighery, and John Underwood, for their beneficial comments.

Table of Contents

Acknowledgements	ii
List of Tables.....	iv
List of Figures	v
Abstract	vi
Introduction	1
Demonstrated Effectiveness of RTI.....	9
Methodology	20
Results	24
Discussion	34
Summary and Conclusion	38
References	39
Appendix A: Integrated Louisiana Educational Assessment Program (iLEAP)	42
Appendix B: Louisiana Educational Assessment Program (LEAP).....	43
Appendix C: Application for Exemption from Institutional Oversight.....	44
Appendix D: Parental Permission Form	46
Appendix E: ELA Lesson Plan for Middle School 2009 Pre RTI	47
Appendix F: Math Lesson Plan for Middle School 2009 Pre RTI.....	49
Appendix G: Math Lesson Plan for Middle School 2012 (RTI Implemented)	50
Appendix H: ELA Lesson Plan for Middle School 2012 (RTI Implemented)	51
Appendix I: Sixth Grade Behavior Tracking Data for 2009-2012 School Year	55
VITA	56

List of Tables

Table 1:	Math Pretest Results for the Control and Experimental Groups N (Number of Participants), Mean, Standard Deviation (STD Dev), and the Statistical P- value	24
Table 2:	Math Posttest Results for the Control and Experimental Groups. N (Number of Participants), Mean, Standard Deviation (STD Dev) and the Statistical P- value	25
Table 3:	Math Leap and iLEAP Results for the Control and Experimental Groups.....	26
Table 4:	ELA Pretest Results for the Control and Experimental Groups N (Number of.....	27
Table 5:	ELA Posttest Results for the Control and Experimental Groups.....	28
Table 6:	ELA iLEAP/LEAP Results for the Control and Experimental Groups	29
Table 7:	Average iLEAP and LEAP Scores in ELA from 2009-2010 and 2011-2012	30
Table 8:	Average iLEAP and LEAP Scores in Math from 2009-2010, 2010-2011 and 2011- 2012N (Number of Participants), Mean, Standard Deviation (STD Dev).....	31
Table 9:	Eighth Grade Tier I and Tier II Pretest for Experimental Group.....	32
Table 10:	Eighth Grade Tier I and Tier II Leap Results for Experimental Group.....	33
Table 11:	Summary of Results.....	35

List of Figures

Figure 1: Average Math Pretest Scores for Each Grade Level.....	24
Figure 2: Average Math Posttest Scores for Each Grade Level	25
Figure 3: Average Math iLEAP and LEAP Scores for Each Grade Level.....	26
Figure 4: Average ELA Pretest Scores for Each Grade Level	27
Figure 5: Average ELA Posttest Scores for Each Grade Level	28
Figure 6: Average ELA iLEAP and LEAP Scores for Each Grade Level.....	29
Figure 7: Student Progress Tracking in ELA iLEAP and LEAP Tests 2009-2012 for 6th, 7th and 8th Grade Students (RTI).	30
Figure 8: Student Progress Tracking in Math iLEAP and LEAP Tests 2009-2012 for 6th, 7th and 8th Grade Students (RTI)	31
Figure 9: Average Math and ELA Pretest Scores for Tier I and Tier II Students.....	32
Figure 10: Average LEAP Scores for Eighth Grade Tier I and Tier II Experimental Group	33

Abstract

This study examined the combined effectiveness of Tier I and Tier II instruction in the context of a Response to Intervention framework with sixth, seventh and eighth grade students both in ELA and Math. The Tier I interventions emphasized topics from the Grade Level Expectations that the students were having difficulties grasping during regular classroom instruction. Tier II instruction mainly emphasized preparing students for the standardized iLEAP and LEAP tests. These students were then compared with a group of similar students who did not receive tiered instructions (control group). Students who participated in Tier I or Tier II instructions outperformed the control group in Math on standardized tests and the post tests. There was no significant difference found between the two groups in ELA.

Introduction

Statement of the Problem

Many schools in Louisiana are facing a common dilemma; they are performing below a proficient level. If these schools continue to perform below standards, they will face the consequence of state takeover. Many schools in Louisiana have already been taken over by the state and placed under the jurisdiction of charters. Private charters, due to their small size and limited numbers, cannot provide public school options to all of the students displaced by the takeovers. This results in the overcrowding of the remaining schools in the district, thus affecting the quality of education (“Impact of Charter...,” 2003). There is very little research available on the effects of state takeovers; however, it has been reported that student achievement oftentimes falls short of expectations after a state takeover (Institute on Education Law and Policy, n.d).

In Louisiana, schools that are taken over by the state are first placed under a special Recovery School District (RSD) before they are given to private charters. If the schools operating under RSD become proficient and maintain their proficiency for five consecutive years, they are given back to the district. RSD recommends the use of “Response to Intervention (RTI),” a tiered process intended to provide high-quality, research based instruction and interventions tailored to a student’s academic and behavioral needs (Klotz & Canter, 2007). RTI adopted on a consistent school wide basis is expected to improve student learning and raise standardized test scores (ASCA, 2011).

Purpose of the Study

The purpose of this study is to determine the effectiveness of a school wide approach to Tier I and Tier II instruction under RTI. It is also intended to help teachers and administrators determine the value of RTI and its tiered instructions. In particular, the study investigates whether tiered instruction results in a significant increase on standardized and posttest scores in ELA and Math of sixth, seventh and eighth grade students when compared with similar students from the previous two years (control group), when formal tiered instruction was not being used. Since Tier II interventions in this study are scheduled during

teachers' planning periods, the teachers lose their time for planning. As a result, many teachers have to stay after school to make up for the lost planning time. If these interventions do produce significant results, many teachers are more than willing to stay after school. Otherwise, if these interventions do not produce the desired results, they may be seen as a wasted effort. Teachers could be using their planning periods to more effectively plan for their classes and work on exercising other proven strategies.

Unfortunately, some teachers may not see the value of Tier II instructions or may not see themselves capable of providing effective interventions, possibly resisting individualized Tier II interventions (Walker, 2004). Above all, the willingness of teachers to provide interventions is crucial to the RTI model's success (RTI Action Network).

Once a positive correlation is established between RTI and the test scores, the administrators and teachers will have concrete evidence in favor of RTI as applied in this case. The administrators will be more willing to allocate the available resources to teacher trainings, and the teachers will be more prepared and less hesitant in adopting RTI.

Response to Intervention

Response to Intervention (RTI) relating to education in the United States can be traced back to The Elementary and Secondary Education Act (ESEA) that was passed in 1965 as a part of President Lyndon Johnson's War on Poverty (U.S Dept. of Education, 2001). The ESEA allowed the federal government to fund educational programs that were established by the states. Congress reauthorized the ESEA as the No Child Left Behind Act (NCLB) in 2002 (Office of Superintendent of Public Instruction, 2002). The NCLB act attempts to assure that all children are given the opportunity to achieve an excellent education. Students must meet or excel in Reading and Math based on state standards. In NCLB act data collection, data analysis, and reporting of the data comprise both general and special education students (U.S. Dept of Education, 2001).

The NCLB is based on four fundamental principles: stronger accountability for results, increased flexibility and local control, expanded options for parents, and proven education methods. Under NCLB,

the stronger emphasis on better results is demonstrated by standardized tests and assessments, Adequate Yearly Progress, qualified teachers and paraprofessionals, and accountability systems established by the state. Louisiana was in fact ahead of the curve here. In 1997, Louisiana approved legislation that mandated several significant changes in public education for grades kindergarten through 12th grade. The law established a student and school accountability system, giving the Board of Elementary and Secondary Education (BESE) the authority to create such a system (U.S Dept. of Education, 2001).

The District Accountability System was created, and the first “School Performance Scores” (SPS) were granted in 1999. According to “Accountability at a Glance,” Louisiana schools have shown steady increase in SPS scores since 1999, and have been nationally recognized for their improvement. Schools that earn an SPS below 75 are designated Academically Unacceptable (AUS). This was the latest step in a steady increase of standards, with an initial AUS cutoff score of 30, which was raised to 45 in 2003, 60 in 2005 and 75 in 2012. A school is no longer classified as AUS when its SPS exceeds the cutoff score. Each year the school remains in AUS status, it must implement additional remedies designed to improve academic performance. These remedies include District Assistance Teams, supplemental educational services (free tutoring), school choice, and ultimately state takeover. Expanded options for parents include the right for children to transfer from lower-performing schools to better-performing public schools within the school district. State law provides for the takeover of schools that are identified as Academically Unacceptable under both the school and district accountability system for four or more consecutive years (LA Dept. of Education, 2010).

The legislation passed in 2003 also allows for the operation of a special state-wide district, called the Recovery School District (RSD), to be administered by the Louisiana Department of Education and subject to the authority of the Board of Elementary and Secondary Education. The RSD provides for the supervision, management, and operation of a school placed under its jurisdiction until the school can be brought to an acceptable level of performance. The RSD emphasizes educational programs that are shown to be effective according to scientific research (LA Dept of Education, 2010). An example would be

Reading First, which uses proven methods of early reading interventions in the classrooms. As a result of this implementation in schools, states are given federal support to apply this scientifically based reading research program (U.S Dept. of Education, 2001).

Response to Intervention is a program that has proven to be effective (Klotz & Canter, 2006). There are many models of Response to Intervention, and different schools adopt different models based on the needs of their student body. One particular model, the three tiered model of Response to Intervention, has gained significant popularity and is being implemented by many school districts (Edyburn, 2009).

The first step in RTI implementation using the three tiered approach is a universal screening process which helps identify students who may be at risk for academic failure or have a history of academic failure (Muoneke, 2007). The tools that RSD generally uses for these screenings include Dynamic Indicators of Basic Early Literary Skills (DIBELS), Scholastic Reading Inventory (SRI) Assessments, Benchmark Assessments, Math Curriculum Based Assessments (Math CBM), and State Assessments (LA Dept. of Education, 2010).

In step two of RTI, students are assigned to appropriate Tiers to ensure grade-level success. Students who are found to be struggling or identified as “at risk” through universal screenings and/or results of state or district wide tests receive Tier I, which is supplemental instruction during the school day in the regular classroom. The length of time for this step can vary, but it generally should not exceed eight weeks. During that time, student progress is closely monitored using a validated screening system such as benchmark assessments and Grade Level Expectations (GLEs). At the end of this period, students showing significant progress return to the regular classroom program. Students showing inadequate or no progress proceed to Tier II (RTI Action Network).

The Tier II intervention in this study involves pulling students from their elective classes (P.E., Art, Music, etc.) and providing them with slower paced supplemental instruction. This instruction is provided in small groups for Math and ELA. The ultimate goal of these interventions is to help students

achieve a passing score on LEAP/iLEAP tests (see appendix A for details). The skills that are targeted in these interventions are determined by the students' progress on weekly assessments. These interventions are scheduled twice a week and can last up to an hour.

Tier III interventions are provided by special education teachers, speech therapists, and Math or ELA coaches in a ratio of 1:3 to students who received unsatisfactory scores on state assessments and are struggling inside their regular classes. These students are provided with intensive support to achieve grade-level success. At Tier III, the students receive individualized, intensive interventions that target the students' skill deficits for the remediation of existing problems and the prevention of more severe problems (LA Recovery School District, n.d).

In each of the above Tiers, students' progress on their weekly assessments and unit assessments is monitored on a regular basis. Data collection is one of the most crucial aspects of RTI. Data collected during monitoring are used to assess students' academic performance, to measure a student rate of improvement or responsiveness to instruction, and to evaluate the effectiveness of instruction (RTI Action Network).

The present study is being conducted to determine the effectiveness of RTI in a particular school in Baton Rouge, Louisiana. RTI is a new concept to the school, and many teachers are not familiar with its structure. Last year, Tier II of RTI was implemented for a period of two months, and the school performance scores (SPS) grew from a 59.7 to a 65.0. It appears that RTI may have positively impacted the Standardized test scores, which are a huge factor in determining the SPS. Tier II instruction was provided twice a week in Math and ELA, for which the students were pulled from their elective classes. These interventions mainly focused on test preparation. This year however, RTI (although still in its initial stages) is being carried out as a tiered school-wide process that will be implemented for the entire school year, and is expected to produce desired results. Tier I of RTI is being implemented in every classroom from September through April. Tier II, however, is only being used for Math and ELA. The primary focus of these interventions is to help students score proficient on standardized tests (Basic or

above). Although the teachers participating in these interventions have not received any formal training on the implementation of RTI, its fidelity is still monitored by the school administration and by state monitors who observe the classrooms once each semester.

Definitions of Terms

1. Analysis of Variance (ANOVA) - Refers to a statistical test used to determine if more than two population means are equal.
2. Benchmark Assessment- Refers to Assessment program utilized by East Baton Rouge Parish School System. All students in grades 2-8 who access the general curriculum are tested in the core subject areas: English/language arts, mathematics, science, and social studies. Benchmark Assessments are paper and pencil tests administered using the Edusoft scan and score platform from Riverside Publishing.
3. Grade Level Expectation- Refers to Louisiana's Grade-Level Expectations (GLEs) – Refers to identifying what all students should know or be able to do by the end of each grade from pre-kindergarten through grade 12 in Math, English, Science and Social Studies.
4. School Performance Scores- Every year, schools receive numerical scores known as School Performance Scores (SPS). Louisiana's goal is for every school in the state to have an SPS of 120 by the year 2014.
5. Response to Intervention- Refers to a method of academic intervention used in the United States to provide early, systematic assistance to children who are having difficulty learning.
6. REWARDS Intermediate and Secondary- Refers to a reading strategy that helps students break down words into manageable, decodable chunks to support them in reading with fluency.
7. Tier I Interventions- Refers to core classroom instruction that all the students receive, it is differentiated instruction utilizing scientifically based best practice. Assessment in this tier is ongoing to identify the strengths and weaknesses for each student. Any needed interventions at

this level are within the framework of the general education classroom and can be in the form of differentiated instruction, small group review, or one-on-one remediation of a concept.

Progress monitoring in Tier I shows individual student growth over time and determines whether students are progressing as expected. In this process, data are collected, students are identified using benchmark scores, and measurable goals are set for the next data collection point for those who display difficulties. The team comprising content area teachers, coaches, the school psychologist and school counselors then follows a problem-solving process to determine interventions for at-risk students that will work within whole-class instructions. The classroom teacher implements the interventions, observations are conducted to ensure the fidelity of the classroom instruction, and the problem-solving team periodically reviews the progress of students.

8. Tier II- Refers to the second tier which comprise supplemental and targeted interventions that mostly occur outside of the general education classroom in small group settings, but in some case Tier II can also occur inside the classroom. Core instruction is still delivered by the classroom teacher, but small groups of similar instructional levels may also work inside the classroom under a teacher's instruction and/or guidance. This type of targeted instruction in this study is typically delivered for 45 minutes per day, two to four days per week.

Progress monitoring in Tier II occurs more frequently, the main purpose of progress monitoring is to determine whether interventions are successful in helping students learn at an appropriate rate. Decision rules are created to determine when a student might no longer require extra interventions, when the interventions need to be changed, or when a student might be identified for special education.

9. The iLEAP tests- Refers to test that are aligned with Louisiana's content standards, benchmarks and grade-level expectations in English Language Arts, Mathematics, Science and Social Studies, and are administered in grades 3, 5, 6, and 7. The iLEAP was developed in response to No Child Left Behind, the current federal education act.

10. LEAP Test- Refers to state tests that measure students' knowledge and skills in English Language Arts, Math, Science and Social Studies to see how well they have mastered the state's standards. The state's goal is for all students to perform at the Basic achievement level or above by the year 2014. For students in grades 4 and 8, the English Language Arts and Math portions of the LEAP test are promotional tests. To pass, students must achieve a minimum of Approaching Basic on one part and Basic on the other.
11. Pretest/Posttest- Refers to a district-provided comprehensive Benchmark test given in August and in May to determine growth.
12. Title I School- Refers to the largest federal education-funding program. It provides funding for high poverty schools to help students who are behind academically or at risk of falling behind.
13. TOWRE Sight Word Efficiency- Refers to a norm referenced test which is used to measure word reading accuracy and fluency.

Demonstrated Effectiveness of RTI

Hoover et al. (2008) at the University of Colorado-Boulder conducted a study to analyze the national perspective on RTI and the level of emphasis on current and projected state-wide efforts to implement RTI in all 50 states and the District of Columbia. An 86% response rate was obtained and every state indicated some emphasis on RTI either in current practice or in development. Statewide training efforts are underway in 90% of the states, primarily emphasizing an overview of RTI, progress monitoring, and the use of data-driven decision-making. Generally, three decisions must be made: who needs the intervention, what type of intervention is needed, and is the intervention working.

A similar study on RTI was conducted on a much larger scale by Vaughn and her team at The University of Texas at Austin. The purpose of their study was to determine the effectiveness of year long intensive RTI interventions on older students with learning difficulties. The study also aimed at addressing the gap in current research pertaining to interventions for middle-school students with reading difficulties. The primary research question was: what is the effect of secondary intervention Tier II) provided in relatively large groups (10-15) on the reading related outcomes of individuals with learning difficulties? Vaughn et al. (2006) hypothesized that the Tier II struggling student will gain significantly more than the control students and that they will close the achievement gap with the typical readers without learning difficulties over the course of the year.

The study was conducted in two large urban cities. Sixth graders from seven different middle schools participated in the study. 56 to 80 percent of these students qualified for free or reduced lunch. All struggling readers, as well as a random sample of typical readers, were selected. Struggling readers were identified on the basis of scores received on the Texas Assessment of Knowledge and Skills (TAKS) administered in the spring of each academic year. Participants selected on the basis of this screening were potentially at risk of not passing the state achievement test; these included students who had a bubble score between 2,100 (cutoff) and 2,150 (one standard deviation above the passing score). Typical readers who scored higher than 2,150 were not included in the study.

The preliminary sample included 2,034 sixth grade students who had state test scores available for the previous year and were scheduled to attend one of the seven designated middle schools. On the basis of state test scores the students were classified as either struggling ($n = 759$) or typical ($n = 1,275$) readers. The 759 struggling readers were randomly assigned in school with a 2:1 ratio to either a researcher - provided Tier II intervention group ($n = 506$) or a control group without interventions ($n = 253$).

Out of the total 759 struggling students from the preliminary sample, only 212 Tier II students and 115 comparison students were available to participate in the study because the rest of the students did not attend their scheduled middle school. These students did not differ significantly from those that did not remain in the treatment group on any measure on the pretest (all $p > .05$). Each school contributed between 15 to 97 students to this group of 327 students participating in the study. Gender differences, site, free or reduced-cost lunch status, age, and ethnicity did not contribute to any significant difference amongst these participants (all $p > .05$). Out of the initial 1,275 typical readers, only 249 were available to participate in both the pre and posttest. All participating students were given a pretest and a posttest to measure their skills on decoding and spelling, fluency, and comprehension.

Tier I instruction was provided to all the students in the sixth grade by the sixth grade content area teachers. These teachers attended a 6 hour professional development session at the beginning of the school year on evidence-based practices for teaching vocabulary and comprehension; they then collaborated with their study groups approximately once each month throughout the school year.

The small group Tier II interventions were provided to students who were classified as struggling on the basis of their standardized test scores from the previous year. The interventions were provided by nine interventionists, seven with master's degrees and two undergraduates. All of the interventionists were certified to teach ELA or ELA related content. These interventionists received 60 hours of training which included sessions on standardized intervention, addressing the needs of struggling readers, active engagement and classroom and behavioral management, and implementing effective instruction and behavior management. During the course of the year, the interventionists continued to participate in

professional developments every nine weeks. They also collaborated with the teams on a bi-weekly basis. The interventions were provided in groups of 10–15 students for approximately 50 min every day from September through May. Tier II interventions were given in three phases. Each phase emphasized a different skill.

Phase I intervention consisted of approximately 25 lessons taught over 7–8 weeks with major emphasis on word study and fluency. Different strategies were used to promote fluency, namely oral reading, peer teaching and daily practice. Students who mastered the sound and word reading progressed to an advanced level of decoding multi syllable words utilizing the program REWARDS Intermediate (Archer, Gleason, & Vachon, 2005).

Vocabulary was also addressed each day by teaching the meaning and usage of words with examples and non examples. New vocabulary words were reviewed daily. Comprehension was addressed through teacher guided comprehension exercises.

In Phase II of the Tier II intervention, the major emphasis was on comprehension and vocabulary. However, strategies learned in phase I relating to word study and fluency skills were reviewed on a daily basis depending on students' progress. Phase II lessons lasted for 17–18 weeks. Vocabulary activities included reading the word, learning the definition, and matching the word with different scenarios. The students were also introduced to word families and parts of speech, spelling, and finally application of the word. Vocabulary words for instruction were chosen from the text read in the fluency and comprehension component. Interventionists also used REWARDS program with Social Studies lessons and materials (Archer, Gleason, & Vachon, 2005).

Phase III of the Tier II interventions continued over approximately 8–10 weeks and maintained the instructional emphasis on vocabulary and comprehension. Word Study and vocabulary in Phase III were identical to Phase II. However, interventionists used fluency and word reading activities and novel units developed by the research team. Fluency and comprehension were taught through application of strategies

for reading and understanding text to both expository science and social studies content and narrative text (novels), with a focus on applying the strategies to independent reading.

After the interventions were completed, data analysis consisted of evaluating the data statistically and graphically for skewness and normality. For the pretest, 6 out of the 11 variables exhibited skewness which was improved after an outlier (with three standard deviations above the mean) was removed from the data. A somewhat similar pattern was noted for the posttest when the outliers were intact. However, after the removal of the outlier, the data distributions were much improved. For measures involving only two time scores, pretest and posttest, the instrument used was analysis of covariance where posttest scores served as the dependent variable and pretest scores as covariate. Measures that required multiple reporting of points were analyzed using growth models. The main focus of the analysis was to compare the posttest results of the struggling readers who received treatment with the comparison group of struggling readers who did not receive treatment. The variables that displayed statistically significant differences, especially in the case of the treatment group, were further evaluated taking into consideration the other covariates like site, age, additional instruction time, fidelity, and group size. The nested data were also considered, the pre and posttests of typical readers were included in the study for the viewer to see the achievement gap between struggling readers and typical readers.

The first pre and posttest results for the struggling readers in the comparison group and Tier II groups were presented. The analyzed variables included decoding and spelling, comprehension, and fluency. In smaller sites the struggling readers in Tier II outperformed the struggling readers in the comparison group on several measures including the TOWRE Sight Word Efficiency measure. However, gains were small and were more visible in specific subgroups of students at a particular site or level of performance on the pretest. Overall, the Tier II students did not make significantly higher gains as compared to the control students. Vaughn et al. (2006) points out in their study that although the control students did not receive Tier II instruction, they received an enhanced version of Tier I instruction which was provided by teachers who were trained in providing effective strategies similar to the Tier II

providers. This enhanced instruction may be the reason that the Tier II and control groups made comparable gains. They also pointed out that many of the control students received reading instructions outside of content area instruction.

The findings from this study reveal that the goal of closing the achievement gap between struggling readers who received Tier II and the students not at risk may be optimistic. Although the findings for Tier II students were positive, they were not substantial.

The present study is very much similar to Vaughn et al's. The Tier II groups are similar in size and the Tier I format of instruction is also similar to Vaughn et al's. However, Vaughn et al. did not evaluate the effectiveness of Tier I instruction compared to similar students from previous years. The major focus of the present study is to evaluate the effectiveness of Tier I as well as Tier II. The comparison is not made only between Tier I and Tier II students; rather the study compares the results with similar students in previous years who did not receive either of the two Tiered instructions. In addition, the intervention model presented in the Vaughn et al. study is a costly model that utilizes significant outside resources, and the gains made do not clearly justify the cost. In the present study there is no extra cost involved; the resources are already available on site. The Vaughn et al. study reported that the gains made in smaller sites were larger than gains at the larger sites. Therefore, further investigation may be needed at the smaller sites.

In another study related to the outcome of Tier II, Roshong (2009) investigated the effectiveness of standard protocol Tier II interventions among third and fifth grade students. In his study, Roshong analyzed the data using two different statistical tests: Analysis of Covariance (ANCOVA) and Propensity Score Analysis. The study hypothesized those students who received Tier II standard protocol in reading intervention, when compared with students who did not receive these interventions, would make higher adjusted achievement gains on The Ohio Achievement Test in reading.

Roshong examined the efficacy of a daily implemented reading intervention program in an urban/suburban public school system (Office of Assessment, Ohio Department of Education, 2009b) in

the Midwest. He classified his study as an observational study in which the treatment groups were selected by eligibility “over which the researcher did not have any control, resulting in sample bias.” Students in grades three and five were either assigned to a regular reading group or an intervention group, Tier II (traditional group plus an additional daily reading intervention). “Students selected for interventions were within a response to intervention framework incorporating a three-Tiered model of intervention intensity,” (Roshong, 2009). These students were selected on the basis of their performance in the general curriculum, 80% of the students were assigned to receive traditional instruction, 15 to 20 % of the students who did not meet their benchmark were assigned to the Tier II group, and less than 5% received Tier III interventions. However, the focus of their study is only on Tier I and Tier II interventions.

Roshong hypothesized that third and fifth grade students receiving Tier II standard protocol reading intervention will have different achievement gains on the Ohio Achievement Test in reading as compared to students who received only the Tier I reading intervention after taking into consideration the effects of prior reading achievement, oral reading fluency, economic disadvantage, and race.

The participants of the study included all third and fifth grade students who participated in either the Tier I intervention or the Tier II intervention during the 2005-2006, 2006-2007, and 2007-2008 school years. Students who participated in Tier III were excluded from this study. 573 third graders and 579 fifth graders were included in the study. The number of students each year varied both in the third and fifth grade. During the entire course of the study all of the students attended the same elementary school.

Of the 573 third grade students who were enrolled in the school during 2005-2008, only 166 were eligible for Tier II interventions. Of the 579 fifth grade students who were enrolled in the school during 2005- 2008, only 136 qualified to receive Tier II instruction. During each year, the population targeted for the Tier II interventions scored in the lower 20% on reading fluency. Participants who did not have scores both from the spring and fall for the IOWA Test of Achievement were excluded from the study.

Findings from Roshong's study revealed that third grade students receiving either Tier I or Tier II reading intervention made positive gains over a course of a year. Although the reading gains of students receiving Tier II interventions were significantly lower than their peer who received only Tier I intervention, both groups made positive gains. Fifth grade Tier I and Tier II students performed equally well there was no significant difference in the reading gains of the two groups indicated by a P value greater than 0.05.

In Roshong's study, students targeted for Tier II instructions were the students who scored in the lowest 20% percent on the reading fluency test; there was no cut-off range. The students in the lowest 20% group varied each year. For example, one year, the lowest 20% students had scores between 20 and 30. While during another year the lowest 20% students had scores between 30 and 50, depending on the whole group performance. In instances where the data are not very wide spread, the range of students' scores in the lowest 20% is not very far from students who scored higher. For Fifth grade students this variation may have caused the scores to be comparable in the Tier I and Tier II groups.

In another study conducted at Berkeley High School, Rozalski (2008) described an attempt by a rural high school to improve reading achievement. This project utilized a three Tiered model of RTI to help its students become proficient in reading. The school had an enrollment of approximately 750 students. Eleven percent of the school population received special education services. The faculty and staff were pleased to have a heads up on interventions that were soon to be adopted in the state curriculum. The school's principal staffed the project with his own faculty. The teachers participating in the study used their planning periods for collaboration and implementation of RTI interventions. For this study a total of 67 students in grades 9 through 11 were assessed using the Woodcock Johnson III Reading Fluency Test, an informal reading inventory for word recognition and reading comprehension, and the SRA Corrective Reading and Comprehension Assessments.

Thirty students were selected for this study based on their performance on the Woodcock Johnson III Reading Fluency Test. These students were provided with year long RTI interventions, starting with

small groups so that students could be monitored. While the students participating had access to a general education curriculum, time was given for development of reading skills as well. For this project, instructions were “evidence-based” and adopted the best practice as outlined by the State. The interventions were at three level, the Tier I instruction was given to all students at the classroom level. Every student was given the opportunity to benefit from before and after school tutoring as needed. If the student made sufficient progress, no further action was needed. However, the students who were lagging behind as evidenced by the assessment results and student monitoring were provided with further interventions at either Tier II or Tier III level as needed.

The interventions resulted in an overall improvement in all Tiers. Students receiving only Tier I instructions showed the least growth. Baseline data for Tier 1 students were a grade equivalency fluency rate of 9.9, comprehension equivalency of 8.6, and word identification of 9.0. The overall fluency growth was .1 grade level (to 10.0); the word identification rate improved by .4 of a grade level to 9.4. However, the comprehension level did not change.

Students who received Tier III instruction demonstrated the most significant growth; their fluency, comprehension, and word-identification levels increased by two grade levels. Fluency improved from 4.7 to 6.6, comprehension from 3.5 to 5.4, and word identification from 3.8 to 5.9. In the future, Berkeley has plans to expand the RTI instruction to more students and reorganize instruction to make it more efficient and effective.

Response to Intervention for students struggling in Math is a comparatively new approach. Newman-Goncher et al. (2009) have published a review of 9 studies conducted on the effectiveness of Math interventions including a summary of nine Key Studies on Multi-Intervention and Response to Intervention for students struggling in Mathematics. All nine studies had a well defined screening process, Tier II instructional process, and a student progress monitoring system.

The first of Newman-Goncher’s studies is The Prevention, Identification, and Cognitive Determinants of Math Difficulty by Fuchs et al. (2005). It was a randomized control study (RCT) that

determined the effectiveness of Tier II instruction with first grade Math students. Both the control and intervention groups received regular Math instruction inside the classroom. The intervention group, however, received 40 minutes of extra tutoring which included 30 minutes of small group instruction and 10 minutes of computer time using Math Facts software. Participants included 564 first graders and 41 first grade teachers from 10 different schools, six of which were Title I, with forty-three percent of the participants having received free or reduced lunch. All participants of the study were given a pretest. Based on the scores of the pretest, 139 lowest scoring students were randomly assigned to tutoring (N=70) and control (N = 69). The study reported that “Tutoring as a supplement for classroom Math instruction does significantly improve at-risk students’ growth in Mathematics, but it does not close the performance gap entirely between the at-risk and not-at-risk students.”

The second study, The Effects of Tier II Intervention Delivered as Booster Lessons (Bryant et al. 2008) looked at a Tier II “Booster” intervention on the Mathematics achievement of first and second grade students. Participants included 266 students from an elementary school in central Texas who were given the Texas Early Mathematics Inventories-Progress Monitoring test. 51 first and second grade students who scored below the 25th percentile were identified as having difficulties in Math and were selected for Tier II booster instructions. This instruction was supplemental to regular instruction and was provided by 4 tutors in small group settings conducted for 15 minutes 3-4 times a week for 18 weeks. The concepts emphasized in these sessions were number and number relations, quantitative analysis, and basics of algebra. Results showed that at-risk first graders provided with the intervention demonstrated insignificant gains.

The next four studies in this summary explored the effectiveness of Tier I and Tier II instruction provided to third grade students pertaining to Mathematical problem-solving. The interventions focused on teaching third graders (identified as at-risk) how to translate word problems into equations.

Tier 1 Intervention: Demystifying Complex Word Problems: Responsiveness to Mathematical Problem-Solving Instruction: Comparing Students at-Risk of Mathematics Disability With and Without

Risk of Reading Disability (Fuchs et al. 2004) evaluates the effectiveness of a Tier I approach on three groups of students: students having disabilities in reading and Math, students with a disability in Math but average reading abilities, and students with no apparent disability. The interventions consisted of 32 lessons lasting 24-40 minutes.

After the completion of interventions, the results showed significant improvement for students who received supplemental Tier I whole class intervention. Students at-risk for Math and reading disabilities identified by pretest improved less when compared with students who had better scores on screening tests on computation and labeling. Students with difficulties only in Math but not reading showed comparable progress to their non disabled peers.

The following three studies examined Tier II interventions that addressed the same topic, but with much more intensive small group instruction. Effects of Preventative Tutoring on the Mathematical Problem Solving of Third-Grade Students at Risk for Math and Reading Disabilities (Fuchs et al. 2008) evaluated the effectiveness of preventive tutoring interventions delivered to students who failed to benefit from the whole classroom instruction in solving word problems. Third grade students who had low scores both in Math and reading were eligible for the preventive tutoring and were randomly assigned to either the control group or the experimental group. Students in the experimental group received tutoring three times a week for 13 weeks on solving Mathematics word problems. The preventive tutoring included one-on-one instruction delivered for 20-30 minutes per session. Students received tutoring three times a week for 12 weeks. Tutors used scripted lessons provided by the research team. The researches assessed the students on four word problem measures. Results showed significant growth on two of the measures and not so much significant improvement on the other two measures. The overall effect was positive. Results from the other two studies showed significant growth for students who received both Tier I and Tier II instruction.

The above mentioned studies were conducted at various grade levels and the results presented differed from study to study. In most of the studies students benefited from both Tier I and Tier II

instructions. However, the Tier II instruction, even when combined with Tier I, was not enough to close the achievement gap in many instances between struggling and regular students.

The review of the above studies suggests that more research is needed to determine the effectiveness of RTI, especially for older students with Math and/or reading difficulties. While Vaughn's study was the only one to explore the effectiveness of RTI in ELA at the middle school level, none of the reviewed studies examined the effectiveness of RTI in Math at the middle school level. The present study will add to the research conducted by Vaughn on the impact of RTI in ELA while initiating research concerning the effect of RTI in Math at a middle school level. It will also help determine whether or not there is any value to RTI at the school being studied.

Methodology

This study determined the combined effectiveness of Tier I and Tier II interventions on sixth, seventh and eighth grade students in a middle school located in Baton Rouge, Louisiana. It was conducted to determine whether sixth, seventh and eighth grade students who received Tier I or Tier II instructions based on the RTI model would make significantly different achievement gains from students who did not receive tiered instruction during previous years. This study can be classified as an observational study which compared the scores of standardized tests, pretests and posttests from 2011-2012 with the scores from the previous two years.

The school that was under study is a Title I school with a population of 552 students, 99.8% of whom receive free or reduced lunch. 52% of the students are female and 48% are male between the ages of 12 to 17. The student population consists of 99% African American and 1 % Caucasian. 20% of the students are classified as special education, out of which 13% have specific learning disabilities in Reading. Prior to 2011, the school was classified as an academically unacceptable school (AUS). It went through major administrative restructuring in 2009 under the supervision of the RSD which recommended using RTI for intervention purposes. Participants included all sixth, seventh, and eighth grade students who completed the ILEAP or LEAP tests, pretests, and posttests while enrolled in the school for the duration of the study.

The control group encompassed all students from the 2009-2011 school years who had scores available from iLEAP/LEAP and the Posttest held in April and May of those years. On the other hand, the experimental group comprised all students from the 2011- 2012 school year who had scores available from all tests held in April and May of that year.

The implementation of RTI included both Tier I and Tier II interventions. Tier I instruction was provided by the classroom teacher inside the classroom either as a whole group or in small groups. Small group instruction was held twice a week, or as needed, for 45 minutes. Small groups were based on the

data received from benchmark or weekly assessments given at the end of each week on concepts taught during the week; Tier I groups would change each week based on the weekly assessment results.

Lesson plans for the pre RTI year for both ELA and Math can be found in Appendices E and F. Plans for the RTI year are included in Appendices G and H. Looking at the lesson plans, there seems to be little or no difference between 2009-2010 and 2011-2012 instructional days or between Math and ELA lesson plans. During the pre RTI year, the teachers also utilized small groups for instruction. However during the RTI year, these groups were driven by the data obtained weekly from the assessments.

The criteria for Tier II student selection was based on the students' last standardized test scores. Students selected were 30 or fewer points (Approaching Basic) away from becoming proficient in ELA, Math, or both. These students were divided into groups and assigned to a teacher. The teacher, during his or her planning period, pulled those students from their P.E or elective classes two to three times a week and coached them on problems related to the concepts taught during the week. They also prepared the selected students for the standardized test. The teachers who provided the interventions were their classroom teachers and had not received any formal training on how to provide interventions. The problem sets these students worked on for standardized test preparation were provided by the ELA and Math coaches. The Math and Science teachers in the school provided Tier II interventions in Math, while the ELA and Social Studies teachers provided interventions in ELA. After interventions had been provided on a certain concept or GLE, students were given an assessment. Students who scored below 80% on their given assessments were provided with extra instruction and interventions. The interventions continued until there was one week left for the standardized test. Students took either the iLEAP or LEAP test depending on their grade level. The standardized test was administered two days following the spring break in April. Edusoft Posttests were administered during the first week of May, right before the summer break.

Data Analysis

For the data analysis, we used the scores from district pretests, posttests and the standardized tests. Analysis involved comparing the results of students (within their grade level) from the previous two years, 2010 and 2011 (control group) when there was no RTI, with students from the 2011-2012 school year who received RTI interventions.

ANOVA single factor analysis was performed on the sixth grade Math pretest to see that the variance of the control and experimental groups' pretests were not significantly different from each other, and therefore represented the same population. Since there were two control groups, an F-test was performed on both (N=160, N= 179) to see if the variance of the two groups was not significantly different from each other (P = 0.46). Since the two groups were not significantly different, a t-test assuming equal variance was performed on the control groups to see if the means of the two control groups were not significantly different. After it was established that the means were not significantly different, the data for the two control groups were combined. A t-test was conducted on the pretests of the control group and the experimental group to ensure that they were not significantly different. The same analysis was then performed on seventh and eighth grade Math pretests, Math posttests, ELA pre- and posttests, and ELA and Math standardized tests for each grade level (see tables for details).

We also calculated the raw gains both in ELA and Math at each grade level. To calculate the raw gains, the following formula was used:

$$\text{Raw Gain} = \text{Posttest} - \text{Pretest}$$

Since we did not have a posttest available for every single pretest, we only used the scores of students who had both a pretest and a posttest. Before doing so, we made sure that students who had posttests were not significantly different from students who did not have posttests. To do so, we performed a t-test on the group of students who had an available posttest and students who did not have a posttest. Whenever we obtained a p value greater than 0.05, we continued with calculating the raw gains.

There were instances when the pretests were significantly different for the two groups. In those instances, we did not proceed with the raw gains.

Once the raw gains were calculated for the control group and experimental groups, we compared them using a t-test to determine if the raw gains of the experimental group were significantly higher than the control group.

Finally, we compared the Tier I students with the Tier II students in Math and ELA for eighth grade to see if Tier II students performed better than Tier I students on the standardized test using the above statistics.

Results

The Math pretest results for the control and experimental groups were consistent for each grade level, with a p value > 0.05 in each case, indicating that there was no significant difference in pretest scores of the control and the experimental group at any grade level (Table 1, Figure 1).

Table 1: Math Pretest Results for the Control and Experimental Groups N (Number of Participants), Mean, Standard Deviation (STD Dev), and the Statistical P- value

Control Group				Experimental Group			
Grade Level	N	Mean	Std Dev	N	Mean	Std Dev	P value
6 th	340	17.3 \pm 0.3	5.9	170	16.5 \pm 0.4	5.5	0.10
7 th	324	19.9 \pm 0.3	6.0	127	19.4 \pm 0.6	6.7	0.40
8 th	341	20.0 \pm 0.3	5.0	152	19.8 \pm 0.5	5.5	0.31

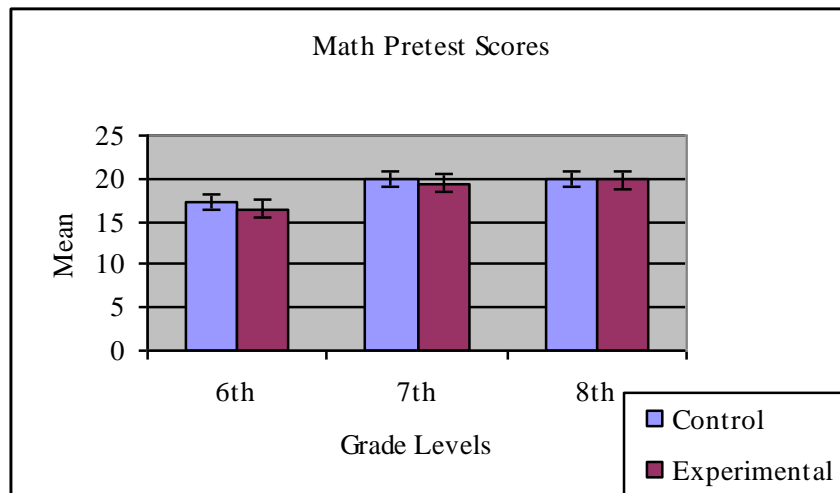


Figure 1: Average Math Pretest Scores for Each Grade Level

For Math posttests, the scores of the experimental groups were significantly higher than the scores of the control groups for all grade levels with a p-value < 0.01 (Table 2, Figure 2).

Table 2: Math Posttest Results for the Control and Experimental Groups. N (Number of Participants), Mean, Standard Deviation (STD Dev) and the Statistical P- value

Control Group				Experimental Group			
Grade Level	N	Mean	Std Dev	N	Mean	Std Dev	P value
6 th	268	25±1	8.3	188	30±1	10.4	P < 0.01
7 th	286	28±1	8.7	128	35±1	12.2	P < 0.01
8 th	306	27±1	7.4	135	36±1	10.5	P < 0.01

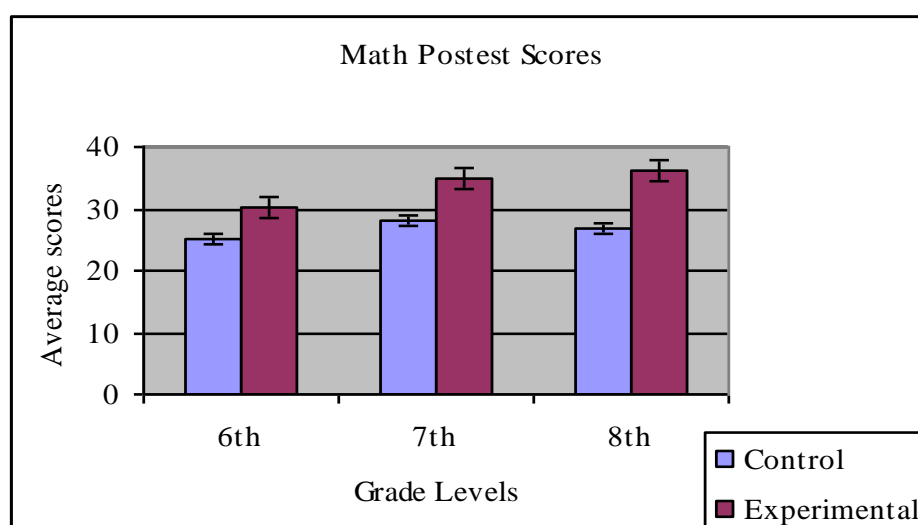


Figure 2: Average Math Posttest Scores for Each Grade Level

For the Math iLEAP test, the sixth grade scores for the experimental group were not significantly different from the control group (p-value > 0.05). However for the seventh and eighth grade, scores for the iLEAP and LEAP were significantly higher for the experimental group indicated by the p-value < 0.01. (Table 3, Figure 3).

Table 3: Math Leap and iLEAP Results for the Control and Experimental Groups
N (Number of Participants), Mean, Standard Deviation (STD Dev) and the Statistical P- value

Control Group				Experimental Group			
Grade Level	N	Mean	Std Dev	N	Mean	Std Dev	P value
6 th	289	272±3	53.3	196	272±4	54.0	0.88
7 th	305	269±3	58.3	154	289±5	60.1	P < 0.01
8 th	340	305±2	42.8	142	313±3	34.1	0.046

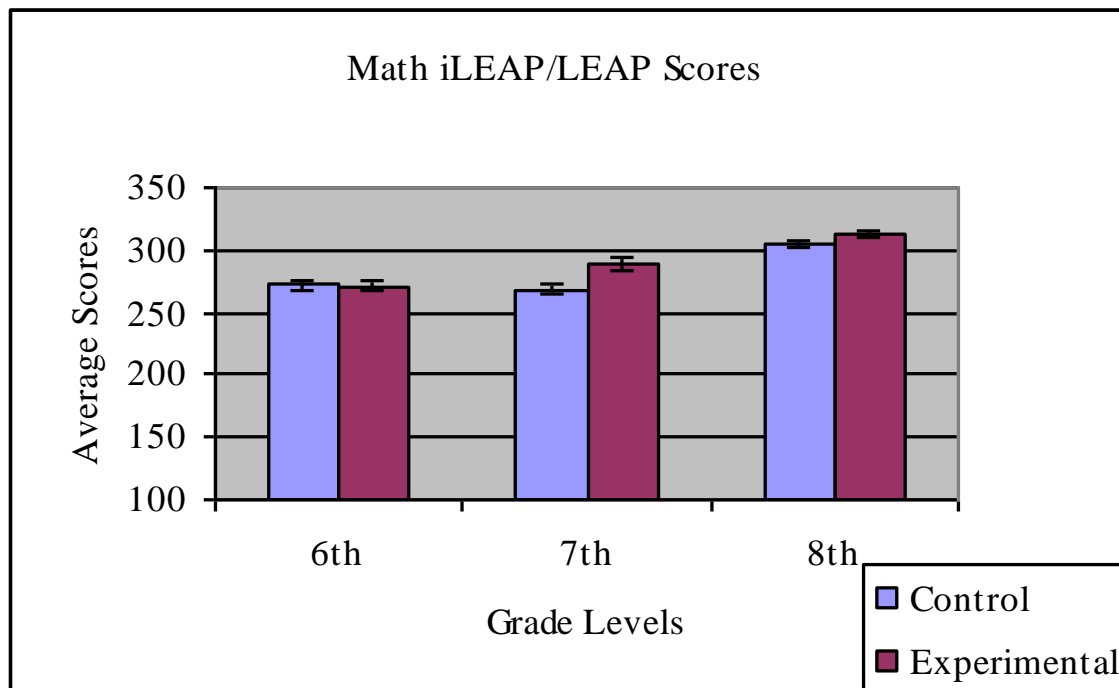


Figure 3: Average Math iLEAP and LEAP Scores for Each Grade Level

For ELA, pretest results were not significantly different for the control and experimental groups as indicated by a p-value > 0 .05 in each case (Table 4, Figure 4).

Table 4: ELA Pretest Results for the Control and Experimental Groups N (Number of Participants), Mean, Standard Deviation (STD Dev) and the Statistical P- value

Control Group				Experimental Group			
Grade Level	N	Mean	Std Dev	N	Mean	Std Dev	P value
6 th	289	21 ± 1	8.0	167	21 ± 1	6.2	0.20
7 th	259	22 ± 1	7.7	131	23 ± 1	10.6	0.10
8 th	316	29 ± 1	11.3	139	29 ± 1	12.0	0.70

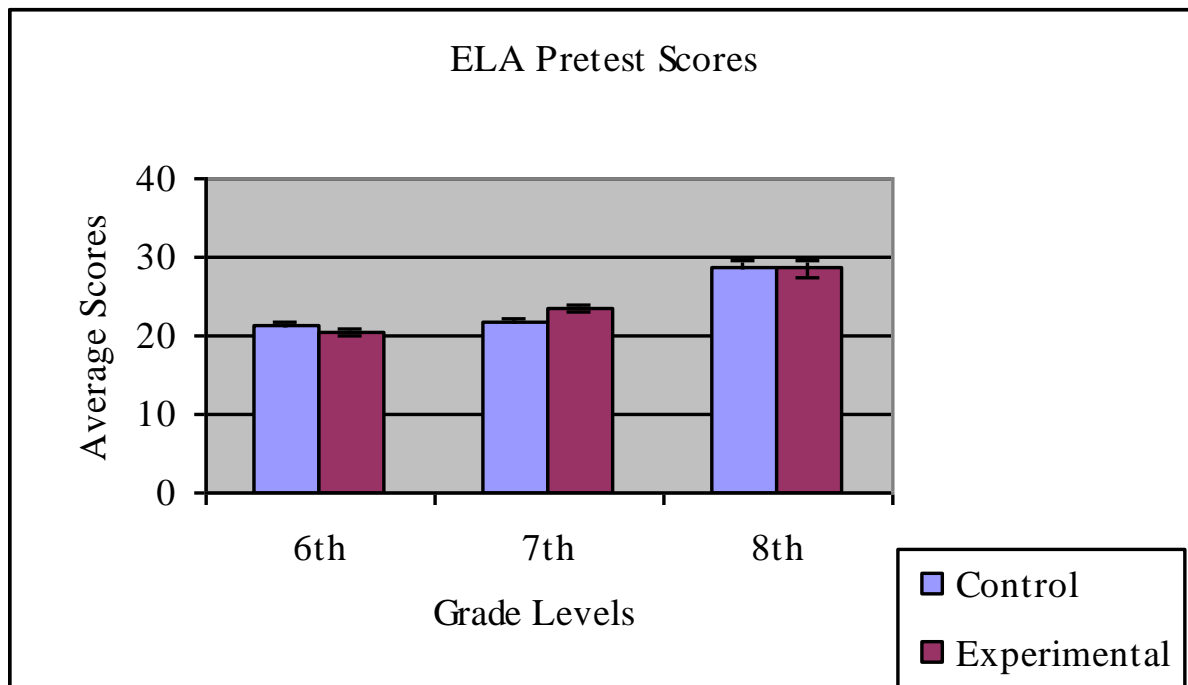


Figure 4: Average ELA Pretest Scores for Each Grade Level

For ELA, the average experimental scores for the posttests were significantly lower than the control groups at each grade level, with a p-value < 0.05 in each case (Table 5, Figure5).

Table 5: ELA Posttest Results for the Control and Experimental Groups
N (Number of Participants), Mean, Standard Deviation (STD Dev), and the Statistical P-value

Control Group				Experimental Group			
Grade Level	N	Mean	Std Dev	N	Mean	Std Dev	P value
6th	246	33±1	12.9	162	29±1	10.4	P < 0.01
7th	271	39±1	13.7	129	33±1	13.8	P < 0.01
8th	274	35±1	12.3	118	32±1	12.8	0.04

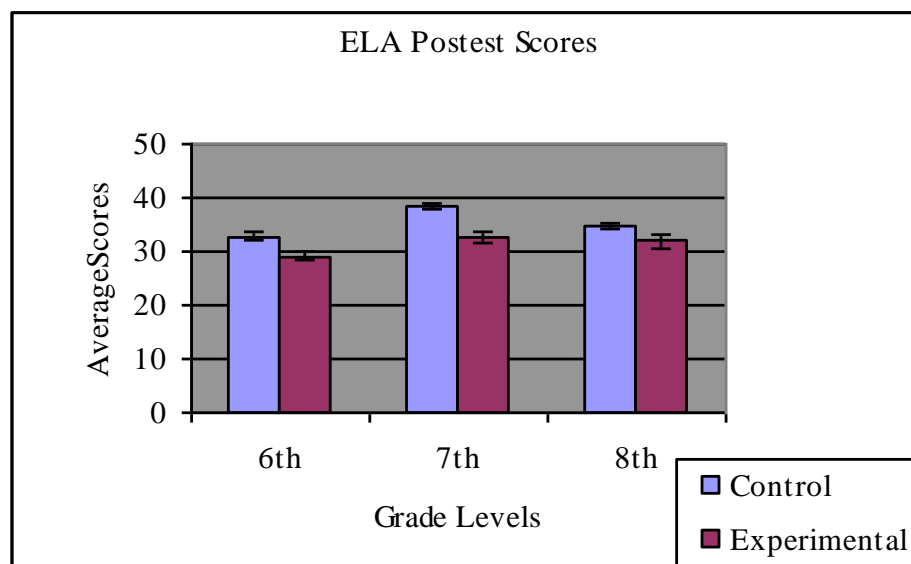


Figure 5: Average ELA Posttest Scores for Each Grade Level

The ELA iLEAP and LEAP scores for the experimental group were not significantly different from the control group at any grade level with a p-value > 0.05 in each case (Table 6, Figure 6). This and the previous result indicate that with regards to ELA, RTI had little or no positive impact on the standardized test scores.

Table 6: ELA iLEAP/LEAP Results for the Control and Experimental Groups
N (Number of Participants), Mean, Standard Deviation (STD Dev), and the Statistical P- value

Control Group				Experimental Group			
Grade Level	N	Mean	Std Dev	N	Mean	Std Dev	P value
6 th	340	266±3	50.4	196	265±4	49.7	0.8
7 th	305	269±3	52.5	154	265±4	49.4	0.5
8 th	340	305±2	42.5	142	305±3	39.9	0.9

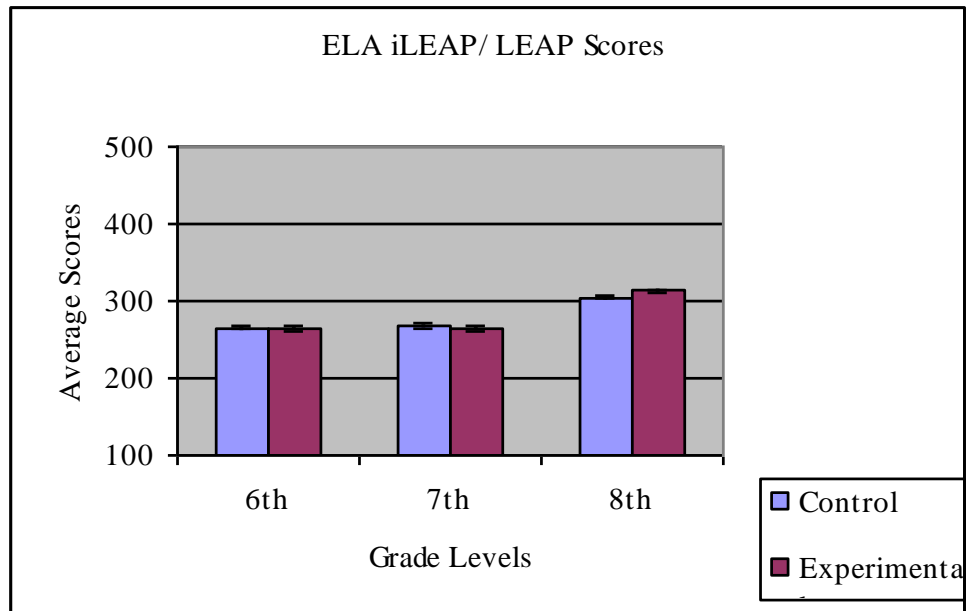


Figure 6: Average ELA iLEAP and LEAP Scores for Each Grade Level

Next, we compared the results of ELA iLEAP tests for sixth graders in the 2009-2010 school year with seventh graders in the 2010-2011 school year. The iLEAP scores of seventh graders in 2009-2010 were compared with the LEAP scores of eighth graders in 2010-2011, and the iLEAP scores of seventh graders in 2010-2011 (without RTI) were compared with the LEAP scores of eighth graders in 2011-2012 (with RTI) using the T-statistics. We found an improvement in the eighth grade scores during the RTI year, but it was not significantly better than the improvement between the seventh and eighth grade in the previous year ($P\text{-value} > 0.05$) as shown in figure 7.

Table 7: Average iLEAP and LEAP Scores in ELA from 2009-2010 and 2011-2012
N (Number of Participants), Mean, Standard Deviation (STD Dev)

2009-2010 Scores				2010-2011 Scores			2011-2012 Scores		
Grade Level	N	Mean	Std Dev	N	Mean	Std Dev	N	Mean	Std Dev
6th	141	269±5	52	148	262±4	48	196	264±4	50
7th	165	266±5	52	140	272±5	50	154	265±5	49
8th	177	305±5	42	163	303±4	40	142	305±3	40

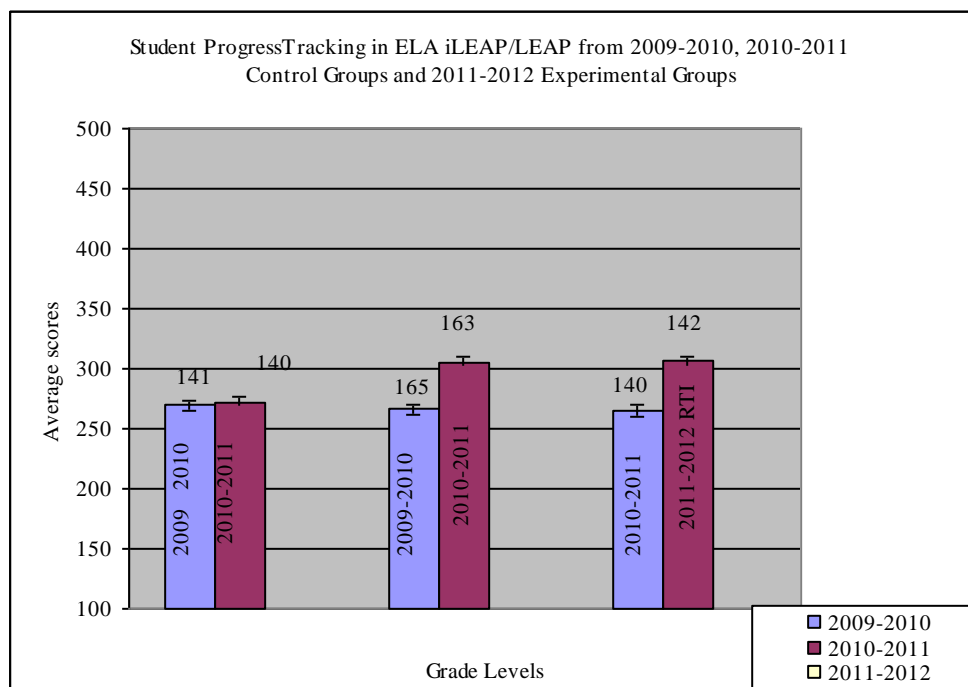


Figure 7: Student Progress Tracking in ELA iLEAP and LEAP Tests 2009-2012 for 6th, 7th and 8th Grade Students (RTI).

We then performed the same tracking analysis for Math (see table 8 and Fig 8). Fig.8 shows an improvement from seventh to eighth grade during 2010-2011 to 2011-2012 (the “RTI” school year). However, this improvement was only slightly better than the improvement between the seventh and eighth grade control groups.

Table 8: Average iLEAP and LEAP Scores in Math from 2009-2010, 2010-2011 and 2011-2012N
(Number of Participants), Mean, Standard Deviation (STD Dev)

2009-2010 Scores				2010-2011 Scores			2011-2012 Scores		
Grade Level	N	Mean	Std Dev	N	Mean	Std Dev	N	Mean	Std Dev
6th	141	272±4	51.9	140	272±4	53.7	196	272±4	54.0
7th	165	266±5	52	141	271±5	54	154	289±5	60.1
8th	177	305±5	42	163	303±4	43	142	313±3	34.1

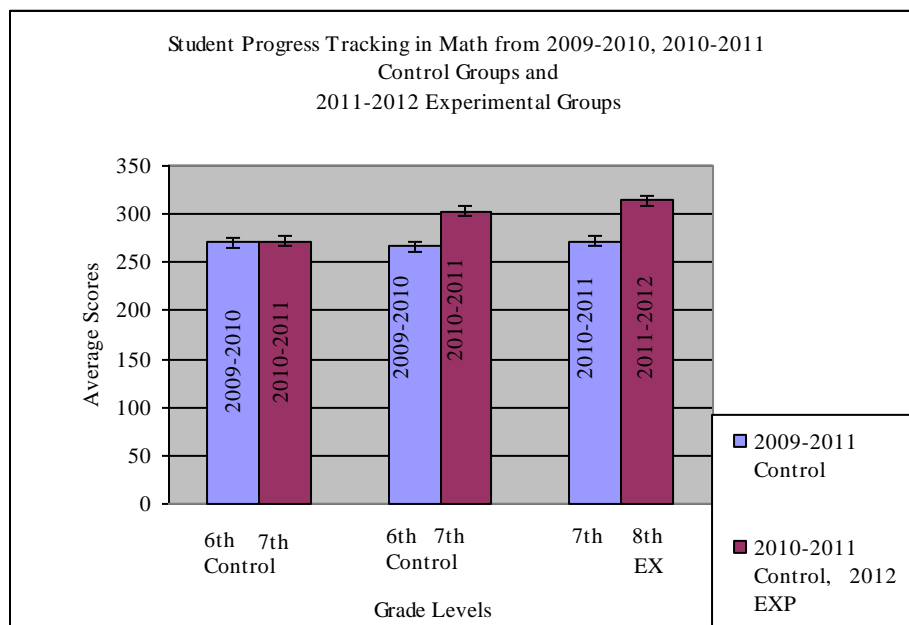


Figure 8: Student Progress Tracking in Math iLEAP and LEAP Tests 2009-2012 for 6th, 7th and 8th Grade Students (RTI)

We compared the results of the pretest for Tier I and Tier II in eighth grade Math and ELA and no significant difference was found between the pretest scores for Tier I and Tier II students with P value > 0.2 (see figure 9 for details and figure 9 for graphic representation). Finally, we compared the LEAP scores for Tier I and Tier II students and we did not find any significant difference in either subject area. Therefore, Tier II students performed no better than Tier I students (See Table 10 for details and figure 10 for graphic representation).

Table 9: Eighth Grade Tier I and Tier II Pretest for Experimental Group
N (Number of Participants), Mean, Standard Deviation (STD Dev) and the Statistical P- value

Tier I				Tier II			
Subject	N	Mean	Std Dev	N	Mean	Std Dev	P Value
Math	142	43±1	34.1	26	46±3	34.5	0.29
ELA	141	52±2	19.43	19	45.4±4	14.9	0.12

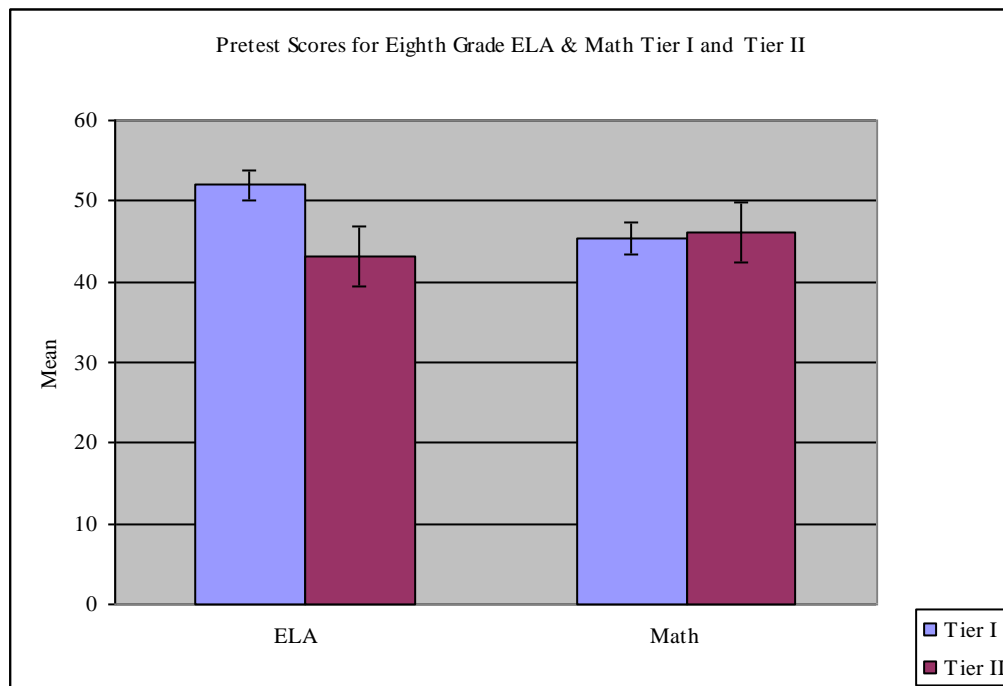


Figure 9: Average Math and ELA Pretest Scores for Tier I and Tier II Students

Table 10: Eighth Grade Tier I and Tier II Leap Results for Experimental Group
N (Number of Participants), Mean, Standard Deviation (STD Dev) and the Statistical P- value

Tier I				Tier II			
Subject	N	Mean	Std Dev	N	Mean	Std Dev	P Value
Math	142	313±3	34.1	26	302.4±7	34.5	0.16
ELA	141	305±3	39.9	19	300.3±7	28.1	0.59

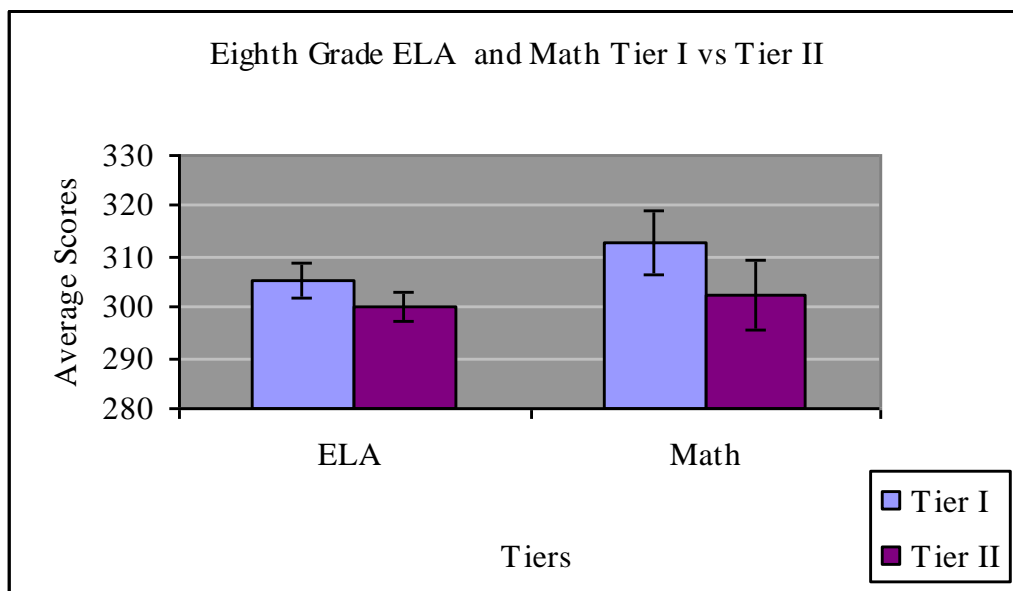


Figure 10: Average LEAP Scores for Eighth Grade Tier I and Tier II Experimental Group

Discussion

The present study examined the effectiveness of a school-wide approach to RTI in ELA and Math. It was hypothesized that students in the experimental groups who received RTI would perform significantly higher in both subjects as compared to the students in the control groups who did not receive RTI as measured by the EDUSOFT posttests and the iLEAP and LEAP standardized tests.

Two studies were greatly reviewed in order to develop a background on the research that was previously conducted. The first study reviewed was Vaughn et al's study which measured the effectiveness of Tier II instruction on struggling readers in the sixth grade at seven middle schools. In this study, students who participated in Tier II interventions showed little or no gains as compared to Tier I students. The second study reviewed was Roshong's study that attempted to determine the effectiveness of Tier I and Tier II instruction (with an RTI framework) on third and fifth grade struggling readers. The results indicated that third grade students who participated in either Tier I or a combination of Tier I and Tier II instructions made significant gains. However, the gains of students receiving only Tier I were higher. The study found no significant difference between the gains of Tier I and Tier II students in the fifth grade.

Unlike previous studies, this study was further expanded to include Math and encompassed all grade levels at a middle school. It examined the combined benefit of both Tier I and Tier II interventions. According to the results of the present study, the experimental groups outperformed the control groups at every grade level on the Math posttests, the seventh grade iLEAP test, and the eighth grade LEAP test. However, on the sixth grade iLEAP test, there was no significant difference observed between the control and the experimental groups.

For ELA, the results were not the same. On the iLEAP and LEAP tests there was no significant difference found between the control and experimental groups at any grade level, and on posttests there was a significant decrease in the scores of experimental group at each grade level. The summary of the results can be found in table 11.

Table 11: Summary of Results

Math				ELA		
Grade level	Post Test	Standardized Test	Normalized Gains	Post Test	Standardized Test	Normalized Gains
6th	↑	No Change	No Change	↓	No Change	↓
7th	↑	↑	↑	↓	No Change	↓
8th	↑	↑	↑	↓	No Change	

↑ Represents significant increase ↓ Represents significant decrease

To investigate the probable causes of this discrepancy in scores for sixth grade math and every grade level for ELA, we examined the student and teacher attendance, behavior data, makeup of the school population, previously conducted studies, student tracking data and the Tier I and Tier II data. It was observed that, compared to the seventh and eighth grade and the previous two years, the sixth grade had a larger number of behavior incidents reported during the RTI school year (See Appendix I for details). This increase in the number of behavior incidents may be attributed to the state and district mandates which came into effect during the RTI year. Because of these mandates, a large population of the special education students in the sixth grade, who were previously in self-contained classes, was mainstreamed with the regular education students, and many of these students had behavior related issues due to their specific disabilities.

In addition, it was found that during the RTI year, two of the ELA teachers in the seventh and the eighth grades were on long term leave due to personal reasons. These classes were taught by long term substitutes.

In examining the makeup of the school population, it was found that during the RTI year the population of Special Education Students was higher than the previous years and the majority of these students had specific disabilities in reading comprehension.

Further review of Vaughn's study revealed that remediating older students with reading difficulties, especially at a high-poverty and low resource area, was a challenge for them also. The study acknowledges that this is an area that has not been researched before, so there is little evidence available on how to successfully remediate these students.

A study conducted by Eichhorn emphasized the importance of teachers' training for an RTI model to be successful. In this study, the teachers had little to no training on the effective implementation of RTI.

While tracking students, no significant difference was observed in either ELA or Math when students were promoted from sixth to seventh grade. However, there was a significant increase noted when students were promoted from seventh to eighth grade for both the control and experimental groups. The reason for this increase, irrespective of RTI, is most likely due to the high stakes nature of the LEAP test. Students who fail the LEAP test are not promoted to the ninth grade, whereas for the iLEAP test, students may continue to the next grade level, even if they do not pass the iLEAP test.

When comparing Tier I and Tier II students both in ELA and Math, there was no significant difference found between the two groups. These findings parallel Vaughn's and Roshong's findings. Similar to Vaughn's study, the students in this study also received an enhanced version of Tier I instruction which may have weakened the effect of Tier II, as it did in Vaughn's study.

While reviewing the several studies conducted by Goncher, we observed that the results conflicted with one another. However, a few studies did report improvement due to Tier II interventions. The studies Goncher reviewed were all conducted at elementary school levels, and the Tier II interventions were mostly provided as supplemental, after-school tutoring by outside tutors. Unlike Goncher's reviewed studies, students in the present study were middle school students, Tier II interventions were provided by

regular education teachers as small group pull-outs from P.E and electives, and the major focus of these interventions was test preparation. Both students and teachers resisted these pull-outs and this may have been one of the reasons for Tier II students not performing any better than Tier I students. For any RTI model to be successful, the willingness of both teachers and students is an essential component (Walker, 2004).

Overall, the Math data showed evidence of improvement during the RTI year. However, there is no similar study available to back these results. Therefore, at this point it is difficult to determine whether these improvements in math were due to RTI alone. Nevertheless, it is suggested to expand the study over a period of several years. Then only can any conclusions be made.

In ELA there was no overall improvement. Lack of improvement may be attributed to the following: student behaviors, teacher absences, unavailability of researched strategies, and the makeup of the school population.

Also at this point, it is not clear if Tier II instruction made any impact at all. Any impact seen could be due to enhanced Tier I instruction delivered inside the regular classrooms. Therefore, more research is needed on how to enhance Tier II instruction to produce better results.

Summary and Conclusion

The present study examined the combined effectiveness of Tier I and Tier II interventions in ELA and Math for sixth, seventh and eighth grade students in the context of RTI as a school wide approach. The measurement instruments used for investigative purposes were the district provided posttests and the state provided iLEAP and LEAP tests.

Based on the results of statistical investigation, it can be concluded that in Math there was an overall improvement. Whether this improvement was due to RTI requires further investigation

In ELA there was no improvement. The probable causes of this lack of improvement in ELA are mentioned in the discussion section.

When comparing Tier I and Tier II students, no significant difference was found between the two groups. The enhanced Tier I instruction may have weakened the effect of Tier II, as it did in Vaughn's study.

Even though the results for ELA were not as expected, the improved performance in Math impacted the overall school performance scores which may lead to school administrators and teachers realizing the value of RTI. The school administrators may become more willing to allocate resources in teachers' training, and after gaining experience, teachers may become less hesitant in implementing RTI during the coming school years.

References

- American School Counselor Association (ASCA). (2011). *Position Statements*. Retrieved From ASCA Web site <http://www.schoolcounselor.org/files/PositionStatements.pdf>
- Archer AL, Gleason M, Vachon V. (2005). REWARDS plus: Reading strategies applied to social studies passages. Longmont, CO: Sopns West
- Burns, M. K., Sarlo, R., & Pettersson, H. *Response to Intervention for Literacy in Secondary Schools*. (n.d.) Retrieved from RTI Action Network Web site: <http://www.rtinetwork.org/learn/rti-in-secondary-schools/rti-literacy-secondary-schools>
- Edyburn, D. L. (2009). Special Education Technology Practice. *Response to intervention: Is there a Role for Assistive Technology?* Retrieved from SETP Web site: <http://www.setp.net/articles/article0903-1.html>
- Ganet, J. (2008). Washington State Board of Education: *The National Picture of State Intervention Authority in Low Performing Schools and Districts*. Retrieved from Washington State Board of Education Web site: http://www.sbe.wa.gov/documents/NationalPictureofStateInterventionAuthorityinLowPerformingSchoolsFINAL_000.pdf
- Hoover, J., Baca, L., Wexler-Love, E., & Saenz, L. (2008). *National Implementation of Response to Intervention*. Retrieved from National Association of State Directors of Special Education Web site: <http://www.nasdse.org/Portals/0/NationalImplementationofRTI-ResearchSummary.pdf>
- Institute on Education Law and Policy. *50- State Report on Accountability, State Intervention and Takeover*. (n.d). Retrieved from Institute on Education Law and Policy Web site: http://ielp.rutgers.edu/docs/developing_plan_app_b.pdf
- Klotz, M.B., & Canter, A. (2007). Response to Intervention (RTI): A Primer for Parents. *National Association of School Psychologists*. Retrieved from National Association of School Psychologists Web site: <http://www.nasponline.org/resources/handouts/rtiprimer.pdf>
- Lips, D. (2007). *Reforming No Child Left Behind by Allowing States to Opt Out*. Retrieved from The Heritage Foundation Web site: <http://www.heritage.org/research/reports/2007/06/reforming-no-child-left-behind-by-allowing-states-to-opt-out-an-a-plus-for-federalism>
- Louisiana Department of Education. *Accountability at a Glance*. (2010). Retrieved from Louisiana Department of Education Web site: <http://www.louisianaschools.net/ldc/uploads/14886.pdf>
- Louisiana Department of Education. *Louisiana's Accountability System*. (2011a). Retrieved From Louisiana Department of Education Web site: http://www.doe.state.la.us/topics/understanding_acct.html

- Louisiana Department of Education. *What are the LEAP, iLEAP, GEE and End-of-Course tests?* (2011b). Retrieved from Louisiana Department of Education Web site: <http://www.louisianaschools.net/testing/>
- Louisiana Recovery School District *Response to Intervention (RTI)* (n.d). Retrieved from http://rsdla.net/Libraries/Teaching_and_Learning/RTI_Manual.sflb.ashx
- Muoneke, A. (2007). *Response to Intervention (RTI): A Systematic Approach to Reading and School Improvement* Retrieved from Southwest Educational Development Laboratory Web site: <http://www.sedl.org/pubs/sedl-letter/v19n02/rti.html>
- Newman-Goncher, R., Clarke, B., & Gersten, R. (2009). *Multi-Tier Intervention and Response to Interventions for Students Struggling in Mathematics*. Retrieved from Center on Instruction Web site: <http://www.centeroninstruction.org/files/Summary%20of%209%20studies%20on%20RTI%20Math%20and%20struggling%20Math%20students.pdf>
- Office of Superintendent of Public Instruction. (2002). *Elementary and Secondary Education Act (ESEA)*. Retrieved from Washington Superintendent of Public Instruction Web site: <http://www.k12.wa.us/esea/>
- Roshong, E.D. (2009). *Evaluating Effectiveness of Tier-2 Interventions Within a Response-To-Intervention Framework: A Comparative Analysis of Corrected Means and Propensity Score Analysis Methodologies*. (Doctoral dissertation). (ERIC Document Reproduction Service No. ED513761) Retrieved from ERIC database
- Rozalski, M.E., (2009) *Response to Intervention: A Rural High School's Attempt to Improve Reading Achievement*. Retrieved March, 29, 2012 from Council for Exceptional Children Web Site: <http://www.cec.sped.org/AM/Template.cfm?Section=Home&TEMPLATE=/CM/ContentDisplay.cfm&CAT=none&CONTENTID=11753>
- RTI Action Network. *What is RTI*. (n.d.) Retrieved from RTI Action Network Web site: <http://www.rtinetwork.org/learn/what/whatisrti>
- Stewart, J. (2007). *Correcting the Raw Gain*. [PowerPoint slides]. Retrieved from <http://educationalengineering.uark.edu/research/CorrectGainSummer2007JCS.pdf>
- U.S. Department of Education. (2003). *Challenge and Opportunity: The Impact of Charter Schools on School Districts*. Retrieved from U.S. Department of Education Web site: <http://www2.ed.gov/rschstat/eval/choice/summary.html>
- U.S. Department of Education. (2001). *No Child Left Behind Act*. Retrieved from U.S. Department of Education Web site: <http://www2.ed.gov/policy/elsec/leg/esea02/index.html>
- Vaughn, S., Cirino, P.T., Wanzek, J., Wexler, J., Fletcher, J.M., Denton, C.D. ... & Francis, D. J. (2010). *Response to Intervention for Middle School Students with Reading Difficulties: Effects of a Primary and Secondary Intervention*. (PMC Document Reproduction Service ID: PMC3072689) Retrieved from PMC database

Walker, H. M. (2004). Use of evidence-based interventions in schools: *Where we've been, where We are, and where we need to go*. School Psychology Review, 33, 398-407.

Wong, K.K, & Shen, F. X (2002). City and state takeover as a school reform Strategy (ERIC Document Reproduction Service No. ED467111) Retrieved from ERIC **database'**

Appendix A: Integrated Louisiana Educational Assessment Program (iLEAP)

Interpreting iLEAP Scores

All state assessments are based on [Grade-Level Expectations](#), which are the knowledge and skills students are supposed to have learned at the time of testing. Students do not receive a pass or fail grade, but receive an achievement level score. The five achievement levels a student can score on the iLEAP assessment are: *Advanced*, *Mastery*, *Basic*, *Approaching Basic* and *Unsatisfactory*.

Students in grades 3, 5, 6, and 7 participate in the state's iLEAP, which is not a high-stakes assessment.

Grade 3

	English Language Arts	Mathematics	Science	Social Studies
Achievement Level	Scaled Score Range	Scaled Score Range	Scaled Score Range	Scaled Score Range
Advanced	383–500	386–500	382–500	396–500
Mastery (Proficient)	338–382	343–385	342–381	341–395
Basic	282–337	283–342	292–341	287–340
Approaching Basic	239–281	245–282	249–291	255–286
Unsatisfactory	100–238	100–244	100–248	100–254

Grade 5

	English Language Arts	Mathematics	Science	Social Studies
Achievement Level	Scaled Score Range	Scaled Score Range	Scaled Score Range	Scaled Score Range
Advanced	386–500	405–500	378–500	365–500
Mastery (Proficient)	341–385	355–404	341–377	339–384
Basic	286–340	282–354	292–340	289–338
Approaching Basic	247–285	250–281	248–291	257–288

Appendix B: Louisiana Educational Assessment Program (LEAP)

Interpreting LEAP Scores

All state assessments are based on **Grade-Level Expectations**, which are the knowledge and skills students are supposed to have learned at the time of testing. Students do not receive a pass or fail grade, but receive an achievement level score. The five achievement levels a student can score on the **LEAP** assessment are: *Advanced*, *Mastery*, *Basic*, *Approaching Basic* and *Unsatisfactory*.

Students in 4th and 8th grade must score Basic or higher in either English or math and Approaching Basic or higher in the other subject on the LEAP (Louisiana Educational Assessment Program) to advance to the next grade. Fourth-graders have had to meet this requirement since 2004, while eighth-graders have to meet this requirement since 2006.

Grade 8				
	English Language Arts	Mathematics	Science	Social Studies
Achievement Level	Scaled Score Range	Scaled Score Range	Scaled Score Range	Scaled Score Range
Advanced	402-500	398-500	400-500	404-500
Mastery (Proficient)	356-401	376-397	345-399	350-403
Basic	315-355	321-375	305-344	297-349
Approaching Basic	269-314	296-320	267-304	263-296
Unsatisfactory	100-268	100-295	100-266	100-262

Appendix C: Application for Exemption from Institutional Oversight

Application for Exemption from Institutional Oversight

Unless qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, ALL LSU research/ projects using living humans as subjects, or samples, or data obtained from humans, directly or indirectly, with or without their consent, must be approved or exempted in advance by the LSU IRB. This Form helps the PI determine if a project may be exempted, and is used to request an exemption.



Institutional Review Board
Dr. Robert Mathews, Chair
131 David Boyd Hall
Baton Rouge, LA 70803
P: 225.578.8692
F: 225.578.6792
irb@lsu.edu
ku.edu/irb

– Applicant: Please fill out the application in its entirety and include the completed application as well as parts A-E, listed below, when submitting to the IRB. Once the application is completed, please submit two copies of the completed application to the IRB Office or to a member of the Human Subjects Screening Committee. Members of this committee can be found at <http://www.lsu.edu/screeningmembers.shtml>

– A Complete Application Includes All of the Following:

(A) Two copies of this completed form and two copies of part B thru E.

(B) A brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts 1&2)

(C) Copies of all instruments to be used.

*If this proposal is part of a grant proposal, include a copy of the proposal and all recruitment material.

(D) The consent form that you will use in the study (see part 3 for more information.)

(E) Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project, including students who are involved with testing or handling data, unless already on file with the IRB. Training link: (<http://phrp.nhtaining.com/users/login.php>.)

(F) IRB Security of Data Agreement: (<http://www.lsu.edu/irb/IRB%20Security%20of%20Data.pdf>)

1) Principal Investigator: Dr. Mike Cherry

Rank: Professor

Dept: Physics & Astronomy

Ph: (225) 578-6912

E-mail: phowne@lsu.edu

2) Co Investigator(s): please include department, rank, phone and e-mail for each

Shehla Kahn, MNS Graduate Student
sk@sahraid.com

IRB# ES607 LSU Proposal #

☐ Complete Application

☐ Human Subjects Training

3) Project Title:

Effectiveness of Response to Intervention on ELA and Math in a Regular Middle School Setting

Study Exempted By:

Dr. Robert C. Mathews, Chairman
Institutional Review Board
Louisiana State University
203 B-1 David Boyd Hall
225-578-8692 | www.lsu.edu/irb
Exemption Expires: 8-17-2014

4) Proposal? (yes or no) ☒ NO

If Yes, LSU Proposal Number

Also, if YES, either

☐ This application completely matches the scope of work in the grant

OR

☐ More IRB Applications will be filed later

5) Subject pool (e.g. Psychology students)

Students between the ages of 11-16

*Circle any "vulnerable populations" to be used: (children <18; the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted.

6) PI Signature:

Dr. Mike Cherry

Date

8/4/11

(no per signatures)

** I certify my responses are accurate and complete. If the project scope or design is later changes, I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU institutions in which the study is conducted. I also understand that it is my responsibility to maintain copies of all consent forms at LSU for three years after completion of the study. If I leave LSU before that time the consent forms should be preserved in the Departmental Office.

Screening Committee Action: Exempted ☒ Not Exempted ☐ Category/Paragraph 1

Reviewer Mathews

Signature *Robert Mathews*

Date 8/16/11

withdraw their child's test scores from being included in the study. They can call me at 225-) 803-1132

Privacy: There will be no names mentioned in the study. Results of the study may be published and investigators may review student records, with confidentiality.

Financial Information: There is no cost for participation in the study, nor is there any compensation to the subjects for participation.

Signatures:

The study has been discussed with me and all my questions have been answered. I may direct additional questions regarding study specifics to the investigator. If I have questions about subjects' rights or other concerns, I can contact Robert C. Mathews, Chairman, Institutional Review Board, (225) 578-8692, irb@lsu.edu, www.lsu.edu/irb. I will allow my child to participate in the study described above and acknowledge the investigator's obligation to provide me with a signed copy of this consent form.

Parent's Signature _____ Date: _____

The parent/guardian has indicated to me that he/she is unable to read. I certify that I have read this consent form to the parent guardian and explained that by completing the signature line above he/she has given permission for the child to participate in the study.

Parent's Signature: _____ Date: _____

Study Exempted By:
Dr. Robert C. Mathews, Chairman
Institutional Review Board
Louisiana State University
203 B-1 David Boyd Hall
225-578-8692 | www.lsu.edu/irb
Exemption Expires: 8-17-2014

Appendix D: Parental Permission Form

Parental permission form

Project Title : Determining the effectiveness of Response to intervention on ELA and Math scores

Performance site: Capitol middle School

Investigators: The following investigator is available for questions,
M-F, 8:00 a.m.- 4:30 p.m.
Shehla Khan
Capitol Middle School
(225) 803-1132

Purpose of Study: The purpose of this study is to determine the effectiveness of Response to Intervention applied to ELA and math in the middle school classroom.

Inclusion Criteria: None

Exclusion Criteria: None

Description of the Study: The study will determine the effectiveness of interventions by comparing the gains of pre and post test scores in ELA and Math of students from the previous 2 years (control group) with the scores of students this year who were provided interventions in ELA and math in a regular school setting.

The interventions will be provided in 2 tiers. Tier 1 will be provided inside the classroom by the teacher in groups of 4 students. The groups will be based on the questions the students missed on their weekly assessments. The teacher will work with each group and help them with the concepts they missed.

The criteria for tier 2 student selection are the scores of the students' last standardized tests. These students are divided into different groups and assigned to a teacher. The teacher pulls these students from their P.E or elective class two to three times a week and coaches them on the concepts being covered during that week, working with students on problems related to the concept. The math and science teachers in the school provide interventions in math and the ELA and Social studies teachers provide interventions in ELA. The scores of this year's and last year's standardized tests will help determine the study's effectiveness

Benefits: If implementing Response to Intervention (RTI) shows a significant gain, other schools can also adopt this strategy. The school will be taken out of corrective action and its performance will increase. If it does not produce the desired results, the analysis will help further studies to find the best strategy.

Risks: There are no known risks

Right to Refuse: Because the project was previously adopted by the school, the students being studied are already receiving the interventions. However, parents have the right to

Appendix E: ELA Lesson Plan for Middle School 2009 Pre RTI

	Week of (Dates): 12/14-12/18/2009
Grade/Subject 7 th Grade ELA/Rdg.	
Unit from EBRPSS Curriculum; LA Curriculum/Assessment Guide: Unit 2 Non-Fiction/Content Area Reading/Informational Resources	
Objectives(s)/GLE(s)/Guiding Questions:	
<ol style="list-style-type: none"> 1. Can students understand and analyze the differences in structure and purpose among various categories of informational materials (textbooks, newspapers, instructional manuals)? 2. Can students locate information by using a variety of consumer, workplace, and public documents? 3. Can students analyze texts that use the sequential, comparison/contrast, and cause/effect organizational patterns? 4. Can students identify and trace the development of an author's argument, point of view, or perspective in texts? 5. Can students correctly document sources in a works cited list or bibliography? 6. Can students apply a writing process effectively by writing a report containing information collected from various resources? 	
<p>Note: Allow for flexibility. Lesson Plans subject to change w/o notice.</p>	
<p>Monday/Wednesday reserved for intervention/cooperative grouping and Tuesday/Thursday designated for stations/centers.</p>	
<p>Early Finishers: Computers, Reading, Library Pass, extra work from envelope</p>	
<p>GO: Denotes "Guided Questions."</p>	
<p>All work not completed in class is for homework.</p>	
<p>Intervention Groups are based on results from Weekly Assessment(s) and/or deficiencies observed.</p>	
<p>Inclusion Teachers: Ms. Domingo (1A/B); Ms. Hilton (4A/B).</p>	

(table continued.)

Day One A/B (Mon.) 12/14	<p>Instructional Outlines of Lesson and Materials:</p> <ul style="list-style-type: none"> - Bell Ringer.....10min - Anticipatory Set.....10min - Instruction.....20min - Modeling.....15min - Checking for Understanding....embedded in lesson/5min - Guided Practice...25min - Closure ...10min - <p>GLE's: 15d. Write multi-paragraph compositions on student- or teacher-selected topics organized with transitional words and phrases that unify ideas and points. (ELA-2-M1). 15e. Write multi-paragraph compositions on student- or teacher-selected topics organized with overall structure including an introduction, a body/middle, and a concluding paragraph that summarizes important ideas and details.(ELA-2-M1). 16. Organize individual paragraphs with topic sentences, relevant elaboration, and concluding sentences. (ELA-2-M1). 17a. Develop grade-appropriate compositions on student- or teacher-selected topics that include word choices (diction) appropriate to the identified audience and/or purpose. (ELA-2-M2). 17d. Develop grade-appropriate compositions on student- or teacher-selected topics that include clear voice (individual personality). (ELA-2-M2). 17e. Develop grade-appropriate compositions on student- or teacher-selected topics that include variety in sentence structure. (ELA-2- 24a. Write paragraphs and compositions following standard English structure and usage including varied sentence structures including complex sentences (ELA-3-M2). 24b. Write paragraphs and compositions following standard English structure and usage, including antecedents that agree with pronouns in number, person, and gender. (ELA-3-M3)24c. Write paragraphs and compositions following standards English structure and usage including sentences without double negatives. (ELA-3-M3). 25a. Apply knowledge of parts of speech in writing including infinitives and participles. (ELA-3-M4). 25b. Apply knowledge of parts of speech in writing including superlative and comparative degrees of adjectives. (ELA-3-M4)</p> <p>Objectives: TSWBAT: Complete graphic organizers, essay writing, MIA assignments (incl. assignments from ABC book/Leap book), and study guide in cooperative grouping. TSW present report per PowerPoint or poster board (if complete).</p> <p>GQ: Can students apply a writing process effectively by writing a report containing information collected from various resources? Can students analyze texts that use the sequential, comparison/contrast, and cause/effect organizational patterns?</p> <p>Bell Ringer and Anticipatory Set (5-10 minutes): TSW complete activity #2 from CARS p. 5-7-Hilton.</p> <p>Anticipatory Set: TTW review the writing process by asking questions such as the four modes off writing? (Whip Around Method)-Hilton</p> <p>Teacher Instruction/Input (15-20 minutes): TTW allow students to work on study guide and any other assignment per coop. groups -Walker</p> <p>Modeling (10 – 15 minutes): TTW review the components of each type of writing (narrative, expository, descriptive, and persuasive).-Walker/Hilton.</p> <p>Check for Understanding (On-Going): TTW recap information from guided notes and thinking</p>
---	---

Appendix F: Math Lesson Plan for Middle School 2009 Pre RTI

Lesson Plan

		Week of : Oct 5 - 9, 2009
Grade/Subject: 7/Math Unit from EBRPSS Curriculum: Unit 2: Computations with Fractions, Decimals, Proportion		
Unit GLE(s): Number and Number Relations		9. Determine when an estimate is sufficient and when an exact answer is needed in real-life problems using decimals and percents
3. Solve order of operations problems involving grouping symbols and multiple operations		10. Determine and apply rates and ratios
5. Multiply and divide positive fractions and decimals		11. Use proportions involving whole numbers to solve real-life problems
7. Select and discuss appropriate operations and solve single- and multi-step, real-life problems involving positive fractions, percents mixed numbers, decimals, and positive and negative integers		Patterns, Relations, and Functions
8. Determine the reasonableness of answers involving positive fractions and decimals by comparing them to estimates		40. Analyze and verbally describe real-life additive and multiplicative patterns involving fractions and integers
Objectives: SWBAT compute order of operation problems.		Agenda:
Unit GLE: 3		1) Bell Ringer (10 min)
		2) Instruction/Modeling (15 min)
		3) Guided Practice (centers) (40 min)
		4) Independent Work (15 min)
		5) Closure (10 min)
Bell Ringer and Anticipatory Set (5-10 minutes): BR: Preset problem created by math coach, attached. AS: To calculate the total amount owed on a \$35 pair of jeans, the amount of the jeans is added to the sales tax. Sales tax amount is 7% of the price of the jeans. Write an equation to solve this problem.		
Teacher Instruction/Input (15-20 minutes): Teacher will conduct a brief review of the order of operations using NG pg 170.		
Modeling (10 – 15 minutes): Teacher will model the example problems in the note taking guide.		
Check for Understanding (On-Going): Q&A, class participation, prompting questions during instruction.		
Bloom's Taxonomy: K C Ap An S E		
Guided Practice and Interaction with Material(Reference # and Name of Activities from Curriculum) (15 - 20 minutes):		
Centers:		
<ul style="list-style-type: none"> Activity 9: Problem Solving Triangle Puzzle from LCC (GLE 3) Activity 8: Using Symbols and Multiple Operations from LCC (GLE 3). Computer center 1 – Multiplication skills (see attached) Computer center 2 – Percent Skills (see attached) Order of Operations Worksheet Pneumonic – PEMDAS (see attached) 		
Bloom's Taxonomy: K C Ap An S E		
Closure (5-10 minutes) : 3-2-1: Students will write a journal entry of 3 things they know, 2 things they learned and 1 thing they still have questions about.		
Bloom's Taxonomy: K C Ap An S E		
Home Learning Assignment/Independent Practice: ABC book pg 50 & 51.		
Bloom's Taxonomy: K C Ap An S E		
Accommodations/Modifications: Students will be moved as necessary to accommodate learning styles and/or for behavior modifications, peer tutoring, individual instruction, re-teaching		
Technology Integration: Overhead projector, ActivBoard, PowerPoint, Calculators		
Materials Needed: Computer, pencils		
Assessment (formal/informal): Teacher observation, student participation during review. Constructed response prompt, independent learning assignment.		

Monday (10/5)

Appendix G: Math Lesson Plan for Middle School 2012 (RTI Implemented)

Shaping lives, dreams, and futures

Week of: March 26-30, 2012 Week 3 of Week 4		Grade/Subject: 7 th Math	Unit from EBRPS Curriculum: Unit 6 Surveys, Statistics and Patterns	
Unit GLE(s): 31. Analyze and interpret circle graphs, and determine when a circle graph is the most appropriate type of graph to use 32. Describe data in terms of patterns, clustered data, gaps, and outliers 33. Analyze discrete and continuous data in real-life applications 34. Create and use Venn diagrams with three overlapping categories to solve counting logic problems		Unit GLE(s): 36. Apply the fundamental counting principle in real-life situations 37. Determine probability from experiments and from data displayed in tables and graphs 38. Compare theoretical and experimental probability in real-life situations 41. Illustrate patterns of change in length(s) of sides and corresponding changes in areas of polygons		
Monday 3/26/12	Tuesday 3/27/12	Wednesday 3/28/12	Thursday 3/29/12	Friday 3/30/12
Objective: SWBAT calculate the area of a rectangle. SWBAT show change in dimensions of a shape. Unit GLE 41	Objective: SWBAT self assess weaknesses for additional help. Unit GLE all	Objective: SWBAT show how the area changes when the dimensions change of a shape. Unit GLE 41	Objective: SWBAT take Edusoft Test. Unit GLE: All	Objective: Academic Test Release Day
Agenda: Bell ringer (5) Tiny Houses(5) Discussion – Area/Dimension Change (30) RTI/Centers (45) Math Journal(3) Discuss homework (2)	Agenda: Bell ringer (5) Review GLEs (5) Complete Study Guide (30) Self Assessment/Reflection (10) Test Prep (35) Math Journal (3)	Agenda: Bell ringer (5) Honey I Shrunk The Kids (5) Lesson-Area w/change in dimension (30) RTI /Centers (45) Math Journal (3) Discuss homework (2)	Agenda: Bell ringer (5) Review(10-15) Edusoft Test(45-60) Jeopardy(?) Math Journal (3)	Agenda: Math Master- Percents (5) Review(10-15) Weekly Assessment(45-60) Jeopardy(?) Math Journal (3)
Bell Ringer: Test Ready Lesson 10 #1-3 Anticipatory Set: Tiny Houses: http://www.youtube.com/watch?v=CvYh_wtchQ Tour Tiny House: http://www.youtube.com/watch?v=5bRwWuWNUM Discuss square feet and area.	Bell Ringer: Test Ready Lesson 10 #4-6 Anticipatory Set: Go over the GLEs and begin a discussion on procedures for each.	Math Master-Percents Test Ready Lesson 10 #7-9 Anticipatory Set: http://www.youtube.com/watch?v=X67hCtQjnrU After video, begin discussion on what happens to a person's surroundings when they are shrunk or enlarged.	Bell Ringer: Test Ready Lesson 10 #10-11 Anticipatory Set: What have we learned in this unit?	Math Master-Percents 3 minutes, 100 percent problems including convert to decimal & fraction ; percent of a number all using mental math with Expressions.. Anticipatory Set: What have we learned this week?

Teacher Instruction/Input Reg/ESS Teacher alternate • Teacher will review finding the area of different shapes. Area is length multiplied by width. • Teacher will discuss how dimensions can change in a shape and discuss what the resulting shape would look like.	Teacher Instruction/Input Reg/ESS Teacher alternate • Teacher will review how each type of problem is solved from the study guide. • Teacher will discuss keywords used to determine what type of problem is being calculated.	Teacher Instruction/Input Reg/ESS Teacher alternate • http://www.youtube.com/watch?v=ornHLNHKBOo • Teacher will discuss showing how the area of an object changes when the length of the sides change by discussing how to determine the area of a shape. Area = length x width	Teacher Instruction/Input Reg/ESS Teacher alternate • Teacher will review any topics students have before testing. • Teacher will review Jeopardy rules of the game.	Teacher Instruction/Input Reg/ESS Teacher alternate • Teacher will review any topics students have before testing. • Teacher will review Jeopardy rules of the game.
Modeling • http://www.youtube.com/watch?v=L-1wx-uVRs&NR=1 • Model finding the area of each house.	Modeling • Teacher will model problems from the study guide. • Teacher will model additional problems from ABC book as needed.	Modeling • Teacher will model problems from released iLeap problems (see attached)	Modeling • Teacher will model any questions students have.	Modeling • Teacher will model any questions students have.
Check for Understanding Analyzing Reg/ESS teacher • Student will determine area of simple shapes. • Student will illustrate the change in dimensions of a shape.	Check for Understanding Analyzing Reg/ESS teacher • Student will determine which keywords are being used in each problem of the study guide. • Student will calculate problems on the study guide. Student will complete a self assessment of how well they mastered each GLE and reflect on which GLEs need more attention.	Check for Understanding Applying Reg/ESS teacher • Student will illustrate dimensions changing. • Student will calculate area with dimensions changing.	Check for Understanding Analyzing Reg/ESS teacher • Student will be given an assessment on the above GLEs.	Check for Understanding Analyzing Reg/ESS teacher • Student will be given an assessment on the above GLEs.

Appendix H: ELA Lesson Plan for Middle School 2012 (RTI Implemented)

<i>Shaping lives, dreams, and futures</i>				
	Week of : Mar. 12-16, 2012 Week 4th of Week 4 th	Grade/Subject: 6 th grade ELA	Unit from EBRPSS Curriculum	Unit : Myth, Legends, Tall Tale
Unit GLE(s):				
Reading and Responding				
01b.	Identify word meanings using a variety of strategies, including using structural analysis (e.g., roots, affixes) (ELA-1-M1)			
01c.	Identify word meanings using a variety of strategies, including determining word origins (etymology) (ELA-1-M1)			
01d.	Identify word meanings using a variety of strategies, including using knowledge of idioms (ELA-1-M1)			
01e.	Identify word meanings using a variety of strategies, including explaining word analogies (ELA-1-M1)			
03.	Develop specific vocabulary (e.g., scientific, content specific, current events) for various purposes (ELA-1-M1)			
04a.	Identify and explain story elements, including theme development (ELA-1-M2)			
04b.	Identify and explain story elements, including character development (ELA-1-M2)			
04d.	Identify and explain story elements, including plot sequence (e.g., exposition, rising action, climax, falling action, resolution) (ELA-1-M2)			
07.	Explain the connections between ideas and information in a variety of texts (e.g., journals, technical specifications, advertisements) and real-life situations and other texts (ELA-1-M4)			
08.	Compare and contrast cultural characteristics (e.g., customs, traditions, viewpoints) found in national, world, and multicultural literature (ELA-6-M1)			
09.	Compare and contrast elements (e.g., plot, setting, characters, theme) in a variety of genres (ELA-6-M2)			
10a.	Use knowledge of the distinctive characteristics to classify and interpret elements of various genres, including fiction (e.g., myths, historical fiction) (ELA-6-M3)			
10c.	Use knowledge of its distinctive characteristics to classify and interpret elements of lyric and narrative poetry			
10d.	Use knowledge of its distinctive characteristics to classify and interpret elements of drama (short plays)			
11a.	Demonstrate understanding of information in grade-appropriate texts using a variety of strategies, including sequencing events and steps in a process (ELA-7-M1) (see ELA-1-M2)			
11b.	Demonstrate understanding of information in grade-appropriate texts using a variety of strategies, including summarizing and paraphrasing information (ELA-7-M1) (see ELA-1-M2)			
11c.	Demonstrate understanding of information in grade-appropriate texts using a variety of strategies, including identifying stated or implied main ideas and supporting details (ELA-7-M1)			
11d.	Demonstrate understanding of information in grade-appropriate texts using a variety of strategies, including comparing and contrasting literary elements and ideas (ELA-7-M1)			
11e.	Demonstrate understanding of information in grade-appropriate texts using a variety of strategies, including making simple inferences and drawing conclusions (ELA-7-M1) (see ELA-1-M2)			

(table continued.)

3

21.	Develop grade-appropriate paragraphs and multi-paragraph compositions using the various modes of writing (e.g., description, narration, exposition, persuasion), emphasizing narration and exposition (ELA-2-M4)
23.	Develop writing using a variety of literary devices, including foreshadowing, flashback, and imagery (ELA-2-M5)
24b.	Write for various purposes, including evaluations, supported with facts and opinions, of newspaper/magazine articles and editorial cartoons (ELA-2-M6)
24c.	Write for various purposes, including text-supported interpretations of elements of novels, stories, poems, and plays (ELA-2-M6)

Proofreading

25b.	Use Standard English punctuation, including commas and coordinating conjunctions to separate independent clauses in compound sentences (ELA-3-M2)
26.	Capitalize names of companies, buildings, monuments, and geographical names (ELA-3-M2)
27a.	Write paragraphs and compositions following Standard English punctuation, including possessive forms of singular and plural nouns and pronouns (ELA-3-M2)
27b.	Write paragraphs and compositions following Standard English structure and usage, including regular and irregular verb tenses (ELA-3-M3)
29.	Spell high-frequency, commonly confused, frequently misspelled words and derivatives (e.g., roots and affixes) correctly (ELA-3-M5)
30.	Use a variety of resources (e.g., glossaries, dictionaries, thesauruses, spell check) to find correct spellings (ELA-3-M5)

Speaking and Listening

31.	Adjust diction and enunciation to suit the purpose for speaking (ELA-4-M1)
32.	Use Standard English grammar, diction, syntax, and pronunciation when speaking (ELA-4-M1)
34.	State oral directions/procedures for tasks to draw conclusions about the presentation (ELA-4-M2)
35.	Adjust volume and inflection to suit the audience and purpose of presentations (ELA-4-M3)
37a.	Demonstrate active listening strategies for various purposes, including viewing a video to interpret the meaning of the story, to determine the speaker's/character's attitude using verbal and nonverbal cues, and to draw conclusions about the presentation (ELA-4-M4)
38a.	Deliver oral presentations and responses, including a research-based presentation (ELA-4-M4)
38b.	Deliver oral presentations and responses, including formal and informal descriptive presentations that convey relevant information and descriptive details (ELA-4-M4)

Information Resources

39b.	Evaluate media for various purposes, including images/sensory details (ELA-4-M5)
39f.	Evaluate media for various purposes, including sequence of ideas and organization (ELA-4-M5)
41c.	Locate and select information using organizational features of grade-appropriate resources, including frequently accessed and bookmarked Web addresses (ELA-5-M1)
41d.	Locate and select information using organizational features of grade-appropriate resources, including organizational features of electronic text: bulletin boards, databases, keyword searches, e-mail addresses) (ELA-5-M1)
42b.	Locate and integrate information from grade-appropriate resources, including electronic sources (e.g., Web sites, databases) (ELA-5-M2)

Objective:	Objective:	Objective:	Objective:	Objective:
TSWBAT complete three Study Island lessons. TSWBAT differentiate between <i>ie</i> and <i>ei</i> spelling patterns in words.	TSWBAT write a paragraph with a clearly stated focus or central idea. TSWBAT write an organized paragraph with transitional words to unify ideas and points.	TSW review key concepts/skills in preparation for Edusoft/Unit 5 (myths/Legends) Test	TSW review key concepts/skills in preparation for Edusoft/Unit 5 (myths/Legends) test Skills/Concepts: Plot Structure, Author's purpose, Mood. Definitions/Identify Myths, Legends, Folk Tales, Fables	TSWBAT demonstrate with at least 75% accuracy, comprehension skill covered in this unit.
Unit GLE 29, 30	Unit GLE 17c, 17d, 18	Unit GLE 04b, 11a, 11c	Unit GLE 04d, 09, 10a, 11d, 14	Unit GLE 04d, 09, 10a, 04b, 11a, 11c, 17d, 18, 29, 30, 11d, 14
<u>Agenda</u> Accelerated Reader (15 min) Library rotations (40min.) Review <i>ie/ei</i> spelling rule (use <i>i</i> before <i>e</i> , except after <i>c</i> , or when sounded as <i>a</i> , as in neighbor and weigh) (35 min.) Closure (5 min.)	<u>Agenda</u> Bell Ringer (15 min) Review graphic organizers (10min.) Review transitional words (5min.) Choose/ Complete writing prompts (40 min.) Peer editing/Writer's Checklist (15 min.) Closure (5 min.)	<u>Agenda</u> Accelerated Reader (15 min) Review key definitions/ Unit Skills (10min.) RtI/ Centers (45 min.) Discuss homework (5 min.) Closure (5 min.)	<u>Agenda</u> Bell Ringer (15 min) Review Definition (10min.) RtI/ Centers (45 min.) Discuss homework (5 min.) Closure (5 min.)	<u>Agenda</u> Edusoft Unit 5 Test

(table continued.)

<p><u>Bell Ringer</u> Accelerated Reader</p> <p><u>Anticipatory Set</u> Have you ever heard of the ie/ei spelling rule? Do you think you're a good speller?</p> <p><u>Teacher Instruction/Input</u> Reg/ESS Teacher alternate • Teacher will review the ie/ei spelling rule. TTW review spelling words.</p>	<p><u>Bell Ringer</u> Timed Reader—Use ten step reading process</p> <p><u>Anticipatory Set</u> What is the purpose of a graphic organizer? Why do we use transitional words? What is the writing process?</p> <p><u>Teacher Instruction/Input</u> Reg/ESS Teacher alternate • Teacher will review the four square and bubble map graphic organizers. TTW review list of transitional words.</p>	<p><u>Bell Ringer</u> Accelerated Reader</p> <p><u>Anticipatory Set</u> How can you identify the main idea in a passage? What are three character traits you can use to identify your character? Can you name five capitalization/ punctuation rules?</p> <p><u>Teacher Instruction/Input</u> Reg/ESS Teacher alternate • Teacher will discuss how to ascertain the main idea in a passage. Review tips for Finding Main Idea – ABC Books page 151. • Teacher will review list of character traits. • Teacher will discuss basic capitalization and punctuation rules. • Teacher will review definition of sequence/making inferences.</p>	<p><u>Bell Ringer</u> Plot Structure Worksheet</p> <p><u>Anticipatory Set</u> What is the plot structure of a story? Can you name the five elements of the plot structure? What is the difference between a myth, legend, and a folktale?</p> <p><u>Teacher Instruction/Input</u> Reg/ESS Teacher alternate • Teacher will review the five elements of plot structure. • Teacher will review the three purposes for Writing. • Teacher will review the definition of mood. • Teacher will review the characteristics of a myth, legend, fable, and folk tale. (give examples of each read during this unit).</p>	<p><u>Bell Ringer</u> N/A</p> <p><u>Anticipatory Set</u> Are you ready for the Edusoft test?</p> <p><u>Teacher Instruction/Input</u> Reg/ESS Teacher alternate • Teacher will review GLE's covered this unit. TTW explain constructed response.</p>
<p><u>Modeling</u> • Teacher will demonstrate how the rule applies to a list of words.</p>	<p><u>Modeling</u> • Teacher will model how to use four square writing and bubble map graphic organizers to organize/ structure paragraphs. TTW model how to transition from the use of graphic organizer to a structured paragraph. TTW review list</p>	<p><u>Modeling</u> • Teacher will read "Supercroc"-page 169. (Interactive Reader/ Writer) • Teacher will model completing the Main Idea/Supporting Details Graphic Organizer. (Page 174).TTW model</p>	<p><u>Modeling</u> • TTW model identifying the five elements of plot structure using the previously read myth "King Midas and the Golden Touch".</p>	<p><u>Modeling</u> • Teacher will review how to fill out the answer document.</p>

	of transitional words.	completing lines 1 (Introduction) and 2 (What Makes This Croc So Super?)		
<p><u>Check for Understanding</u> • Using the ActivBoard and/or overhead projector, TSW correctly complete the missing <i>ie</i> and <i>ei</i> in spelling words.</p>	<p><u>Check for Understanding</u> • TSW identify which graphic organizers they prefer and why. TSW use their preferred graphic organizer to organize thoughts on a teacher given prompt.</p>	<p><u>Check for Understanding</u> • TSW complete lines 3-6—Main Idea Graphic Organizer—page 174 (Interactive Reader)</p>	<p><u>Check for Understanding</u> • TSW identify the five elements of plot structure using the previously read folktale "Aunt Misery." • Using double bubble maps, TSW compare/contrast myth and a folktale.</p>	<p><u>Check for Understanding</u> • Student will answer questions about the test and assign make up work, if needed.</p>
<p>Guided Practice and Interaction with Materials(Reference # and Name of Activities from Curriculum) <u>RTI</u> <u>Intervention</u> Teacher will work with Group 1</p> <p>•<u>Group1</u> TSW complete page 51 (Word Groups)</p> <p>•<u>Group 2-</u> TSW solve Analogies/ Complete Sentences (pg. 52) TSW complete the Paragraph, Proofread Story</p> <p>••If time permits, rotate</p>	<p>Guided Practice and Interaction with Materials(Reference # and Name of Activities from Curriculum) <u>RTI</u> <u>Intervention</u> Teacher will work with Group 1</p> <p>•<u>Group1</u> With teacher's assistance, TSW choose a writing prompt (Writing Prompts for Middle School) to write a two-three paragraph essay.</p> <p>•<u>Group 2-</u> (Persuasive Prompt) TSW complete two-three paragraph essays, choosing one topic Middle School</p>	<p>Guided Practice and Interaction with Materials(Reference # and Name of Activities from Curriculum) <u>RTI</u> <u>Intervention</u> Teacher will work with Group 1</p> <p>•<u>Group1-</u> Teacher Group With the teacher's assistance, the student will complete questions #1-8 page 173.</p> <p>•<u>Group 2-</u> Grammar for Writing/ Capitalization TSW complete page 150 exercises A and B, page 155</p>	<p>Guided Practice and Interaction with Materials(Reference # and Name of Activities from Curriculum) <u>RTI</u> <u>Intervention</u> Teacher will work with Group 1</p> <p>•<u>Group1</u> – With teacher's assistance, TSWBAT review identifying "Author's Purpose" Interactive Reader page R% (Back of the Workbook) and ABC Books page 146-148. TSW answer questions 1-4/ page 148-149</p> <p>•<u>Group 2-</u> Author's Purpose/ Plot Summary TSW complete # 18-30 BC Books Page 274</p>	<p>Guided Practice and Interaction with Materials(Reference # and Name of Activities from Curriculum) <u>RTI</u> <u>Intervention</u> Teacher will work with Group 1</p> <p>•Group1- N/A •Group 2- N/A</p>

(table continued.)

* <u>Group 3</u>	persuasive prompts list. TSW exchange papers and use iLeap Writer's Checklist to peer edit and correct team members' essays. * <u>Group 3-</u>	* <u>Group 3-</u> Grammar for Writing/ Punctuation TSW complete pages 163 and 164. <u>Group 4-</u> ABC Books/ Usage/ Main Idea/ Topic Sentences. TSW complete page 259 #74 -88	* <u>Group 3-</u> Making Inferences/ Main Idea/ Tone TSWBAT complete page 29 (Making Inferences). Purple Workbooks TSWBAT complete #18-32 on page 251. ABC Books	
<u>Closure</u> TSW complete Closure/ Review Words Activity. (Page 54)	<u>Closure</u> TSW complete KWL charts.	<u>Closure</u> TSW write a 2-3 sentences summary of skills reviewed on today.	<u>Closure</u> TSW list their two strongest skills and their two weakest skills reviewed this week.	<u>Closure</u> TSW submit all testing materials and make up work.
<u>Home-Learning Environment</u> TSW review spelling words. <u>Materials Needed</u> Spelling hand-outs Paper/pencil <u>Assessment</u> Informal—Teacher observation and oral and written student	<u>Home-Learning Environment</u> Using graphic organizer, TSW complete a one paragraph essay on the topic—"Why Students Should or Should Not Be Compelled to Take The LEAP/iLEAP Test." <u>Materials Needed</u> Graphic organizer Rough draft sheet Paper/pencil	<u>Home Learning</u> TSW complete page 165—Grammar for Writing Workbooks <u>Materials needed</u> ABC Books Grammar for Writing Interactive Reader Workbook Paper/Pencil <u>Assessment</u>	<u>Home-Learning Environment</u> N/A Edusoft test <u>Materials Needed</u> ABC books Purple Workbooks Paper/pencil <u>Assessment</u> Informal—Teacher	<u>Home-Learning Environment</u> None on weekends <u>Materials Needed</u> Answer documents Test booklet #2 Pencils and make up work <u>Assessment</u> Formal—Unit Test

Appendix I: Sixth Grade Behavior Tracking Data for 2009-2012 School Year

School Year	Number of Behavior incidents by Grade Levels		
	6th	7th	8th
2009-2010	82	N/A	N/A
2010-2011	58	N/A	N/A
2011-2012	422	170	233

VITA

Shehla Khan was born and raised in Karachi, Pakistan and received her Bachelors of Science from the University of Karachi. She moved to Los Angeles, California with her husband in 1987. In Los Angeles, her three children were born and she taught at a Head Start program for 6 years. She moved to Baton Rouge, Louisiana in 2002 and earned her B.S in Biochemistry from Louisiana State University in 2006. In 2007, she received her teaching certification from Baton Rouge Transition to Teaching and has been teaching Math at a local middle school ever since. Currently, she is in the process of receiving her Masters of Natural Science from Louisiana State University.