The Effectiveness of Response to Intervention on First Grade Students Reading Abilities

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Submitted in Fulfillment for the Requirements for
61-683 Research Paper

Fall 2013

June 2, 2014
Abstract

This one year study evaluated the effects of response to intervention (RtI) and its’ effectiveness on first grade student’s reading abilities. The MClass reading program and Pathways monitored the students’ progress throughout the year. Reading level, comprehension, fluency, and word decoding were progress monitored five times during the course of the school year. At the middle of the year and end of year benchmark testing was completed to determine if the student was meeting grade level expectations. Twenty first grade students at an elementary school were involved in this study. Based on initial testing of the first grade class ten of the twenty students qualified for needing RTI. These students will receive reading intervention five days a week for thirty minutes with the Reading Specialist teacher. They will receive Tier 1 instruction in the classroom and Tier 2 instruction with the Reading Specialist teacher. Pathways interventions will be used. Students may be rotated in and out of the Tier 2 groups based on needs when new testing is completed. If at some point a student is not showing progress in Tier 2 then Tier 3 strategies will be implemented. The study was completed by teacher testing and monitoring during small group instruction. Bi-weekly meetings took place between classroom teacher and reading specialist teacher. Student results were progress monitored every 6 weeks to determine if and what progress was being made in order to revise instructional strategies.

Findings that were made during the study were that students who entered first grade not on grade level for reading and if no other outside circumstances, ie special needs, inhibited them then significant results were made in reading from having RTI services. Students who just needed the extra assistance on a more individualized basis responded very well to Tier 2 instruction. Students who did not need RTI services but were just in the Tier 1, classroom instruction, group also made significant gains in their reading levels. Both sets of students made progress in their
reading ability. The difference in the groups is that while both have growth the rates of progress were different. RTI students were staying right on pace with hitting grade level benchmarks while the students who did not receive RTI services were able to exceed grade level benchmarks due to the fact that they entered first grade on or above grade level.
Introduction

*Background, Issues and Concerns*

There have been concerns that students are not entering school ready to read or with proper letter and sound recognition. Response to Intervention (RTI) is a system put in place to help identify students at risk for not reading on grade level. It is important that students are able to identify sounds in words, recognize letters and spelling combinations in order to read on grade level to not only know the principles of reading but to also read to understand content.

*Practice under Investigation*

The practice under investigation will be looking at students DIBELS, hand held reading scores from Reading 3-D. These scores will show phonemic awareness, blending of sounds to form words, fluency, and comprehension. There will be an investigation to see if there is a significant difference in students who receive RTI than students who do not receive RTI. This will be looking at data from the Reading 3-D hand held testing and Pathways testing in the classroom.

*School Policy to be Informed by Study*

According to the Common Core students in First grade should enter, beginning of year (BOY) at a Reading Level C, by middle of the Year (MOY) students should be at a Reading Level G, and end of year (EOY) students should be at a Reading Level I. If there is a significant difference in reading levels than the student would need to receive RTI services.
Conceptual Underpinning

Students learn to read at different rates. Students who enter first grade at the on grade reading level will have a higher level of success with learning to read compared to those students not entering on grade level. The RTI practice focuses on the tiers of instruction and meeting students needs. Students are able to learn to read in a variety of ways and with different types of instruction. RTI will enable students to achieve at grade level because it provides students with daily intense skill practice necessary to be successful in reading. RTI will help struggling students be identified sooner and will be provided instruction based on their individual needs to help meet them where they are at academically and provide the interventions.

Statement of the Problem

If there is a difference in a students’ reading level versus where they should be reading, then the classroom teacher and RTI teacher need to work closely on interventions to make sure each student is reading on grade level, comprehending reading materials, decoding, and understanding letter sounds.

Purpose of the Study

To complete research on the RTI program and process to find out if RTI is beneficial to students and teachers. To find out more about how RTI affects student achievement in Reading. This can help teachers be better teachers by learning more about readers and how to help students become better readers.
Research Question(s)

Is there a difference in students reading levels for those that receive RTI versus those students reading levels that don’t receive RTI?

Null Hypothesis

There is no difference between a student’s reading progression who does receive RTI services than a student who does not receive RTI services.

Anticipated Benefits of the Study

To learn more about diagnosing a student’s area of need in Reading. To be able to offer more guidance to students in need that are not in RTI but may need extra assistance of their own in the classroom.

Definition of Terms

RTI- Response to Intervention, a multi-tier approach to the early identification and support of students with learning and behavior needs.

BOY- Beginning of Year, Reading testing completed in September to determine students at risk for intervention needs.

MOY- Middle of Year, Reading testing completed in December to monitor progress and determine new intervention groups.

EOY- End of Year, Reading testing completed in May to monitor progress and check for grade level reading level achieved. To also determine interventions students may still show a need for in the next grade level.
Effectiveness of RTI

Tier 1- instruction in classroom setting, follows core curriculum, all students receive, High-Quality Classroom Instruction, Screening, and Group Interventions

Tier 2- students that are below grade level but need less intensive services, small group instruction, targeted interventions

Tier 3- intensive interventions, small group or one on one instruction, comprehensive evaluation

MClass- combines quick indicators of foundational-skills development with a running-record Text Reading and Comprehension (TRC) diagnostic to determine how students find meaning in text.

Summary

If students who are receiving RTI are reading at higher levels and closing the gap in reading than students that are not receiving RTI, then teachers should be implementing RTI practices to all students. The purpose of the study is to find out more about the effects that RTI has on student learning of reading. The research question that the study is based on states is there a difference in students reading levels for those that receive RTI versus those students reading levels that don’t receive RTI? During research of RTI the benefits to the study are to learn more about diagnosing a student’s area of need in Reading. To be able to offer more guidance to students in need that are not in RTI but may need extra assistance of their own in the classroom.
Review of Literature

Response to Intervention, RTI, began as a response to addressing student outcomes with those of special needs but quickly emerged as a general education initiative. RTI is a service provided for students in grades K-2. “It is intended to provide an educational experience to all students that is focused on delivering effective education and intervention programs and on frequent progress monitoring of student outcomes using those measured student outcomes (RTI) to adjust and change programs and interventions and necessary” (Prasse, n.d.p. 1). RTI for most schools begins with Tier 1 instruction, core instruction; this is met by the classroom teacher in daily classroom lessons. This is the differentiated instruction approach. In this tier RTI advocates believe that 75-80% of students should reach desired outcomes. Tier 2 instruction, this is the group of students that fall short of meeting “benchmark” expectations (grade level). They have some risk for academic failure and receive small group instruction. Tier 3 instruction, this is the grouping of students with high risk. They may meet/fall in the category of special education services. These students would be in very small groups and possibly one-on-one instruction (Shapiro, n.d.).

The need for RTI in schools has grown since the No Child Left Behind Act in 2001. No Child Left Behind was put in to place to hold the education system more accountable for students’ progress. Students in grades 3-8 would be tested yearly in Math and Reading (ed.gov). In previous years, before NCLB, when a student was not meeting grade level expectations the interventions used were a parent teacher conference, observing the student and their behaviors, providing basic instructional interventions. Now schools are looking toward matching the student with a service based on their personal need, RTI (Algozzine, 2007). When using an RTI based model a student is receiving small group or one on one instruction from a specialized reading
Effectiveness of RTI

teacher. The instruction is taught in correlation to the classroom instruction but is meeting the student at their level and pace. Frequent monitoring is completed to track the students’ progress and ensure proper instruction is being given. “Interventions must be carried out with fidelity” (Algozzine, 2007).

How should the RTI process begin? Starting with primary grades and early intervention strategies are excellent ways to help ensure struggling readers are caught early and assistance to them is provided. This is done through student screenings, which should be completed at least once a year to identify any educational gaps. Screening should consist of testing phonemic awareness, nonsense word fluency, text reading and oral reading fluency. When a student is given the interventions how the student responds to those will determine how long the student will need intervention. “Student responses to the interventions are then measured to determine whether they have made adequate progress and either (1) no longer need the intervention, (2) continue to need some intervention, or (3) need even more intensive intervention” (Gersten, 2009 p. 4).

RTI cannot just be something that a block of time is set aside for or is merely implemented because it is something to do. RTI implementation is a very important step for teachers and schools to make sure is being done as a best practice. “RTI is an evolving practice; a school-based collaborative consultation RTI model offers a process that enables a school to apply RTI principles to its unique setting and concerns” (Hoover, 2011 p. 1). Implementing RTI practices can help the struggling learner and meet the student or students where they are. Somewhere between 90-95% of students are projected to be successful in Tier 1 and Tier 2. Gathering data is a key aspect of RTI. Gathering data can be done by screening children,
progress monitoring, and using assessments to check their learning (Hoover, 2011). Using the findings will help group students and the RTI team can best support them.

A large question that many districts struggle to find a definite answer on is- Is RTI successful? One studies’ findings suggest that, “Many states and districts do not have a way of determining if RTI has been successful in reducing the number of children identified as learning disabled. Districts also differ widely in when—or if—they seek parental consent to place children in a response to intervention framework, and how long the children stay once placed there” (Samuels, C, 2014 p. 1). Another study suggests that, “research findings show that RTI is effective when implemented in the early grades, that it can improve learning outcomes in reading and math, and that it can reduce the need for special education. The use of formative assessments can have a positive effect on teachers’ instructional decision making. There is strong evidence for the effectiveness of tiered interventions in reading for students identified as at risk for learning difficulties” (“Research Summary”, 2012 p. 1).
Research Methods

Research Design

A quantitative study was conducted to see if there is a difference in reading levels in students that are receiving RTI instruction and those students that are not receiving RTI instruction. The independent variable is the students, both boys and girls in first grade. The independent variable is the status of the students, either RtI students or non-RtI students. The dependent variable is the reading levels completed during the BOY, MOY, and EOY testing windows. If the difference is found significant in those students reading levels who are receiving RTI, teachers should be informed and implement RTI based instruction for all students.

Study Group Description

The group will be 20 students in first grade. Their ages range from 6-8 years old. The students will be both boys and girls. The building demographics are 1% Asian, 10% African American, 4% Hispanic, and 83% Caucasian. The building is at a 66% free and reduced lunch population. According to the DESE website the building is listed under Title 1 but is not yet deemed Title 1 in the district.

Data Collection and Instrumentation

Data from the I-pad Reading 3-D program will be collected to determine student reading level and growth from the 2013-2014 school year. Building demographics will be gathered from the DESE website.
Statistical Analysis Methods

A t-test was conducted to find if there is a significant difference in Reading levels for those receiving RTI versus Reading levels of students not receiving RTI. The source was separated into two categories: students in RTI and students not in RTI. The mean, mean D, t-test, df, and p-value were conducted in this test. The alpha level was set for 0.25.
Findings

Multiple t-tests were completed in order to determine if there was a difference in students reading fluency, reading level, nonsense word fluency and sight word recognition in those students receiving RTI services than those students who are not receiving RTI services. The following tables and graphs will show the findings and the data that was completed for the middle of the year testing and end of year testing. There is one school year of analysis to review.

Figure 1

In Figure 1 the bar graph shows the number of students that are receiving RTI and not receiving RTI. This graph shows student numbers as 10 students receiving RTI and 10 students not receiving RTI. The graph's data represents students during the middle of the school year. Students are given benchmark tests at the beginning, middle, and end of the year. Beginning of the year testing is done in order to determine what kindergarten students retained or gained
Effectiveness of RTI during the summer months and are not the most effective measure of student growth, which is why middle of the year starts the findings.

Figure 2

**t-Test Analysis Results for Fluency in RTI and Non-RTI students**

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-test</th>
<th>df</th>
<th>p-value</th>
</tr>
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<tbody>
<tr>
<td>RTI (n=10)</td>
<td>1.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-RTI (n=10)</td>
<td>2.5</td>
<td>-1.1</td>
<td>-3.2</td>
<td>18</td>
<td>.005</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

The independent variable was status of the students who were receiving RTI and not receiving RTI. The dependent variable was the fluency score. There were 20 students from the class and they were divided into two groups. There were 10 students in the RTI group and 10 students in the Non-RTI group. The mean for the RTI group was 1.4 and the mean for the Non-RTI group was 2.5. The difference between both groups was -1.1. The t-test value was -3.2. The degrees of freedom were 18.

The null hypothesis was: There is a significant difference in the RTI group and the Non-RTI group. The difference is -1.1.

The null hypothesis is rejected because the p-value of .005 is less than the alpha value of .25.
The independent variable was status of the students who were receiving RTI and not receiving RTI. The dependent variable was the reading level. There were 20 students from the class and they were divided into two groups. There were 10 students in the RTI group and 10 students in the Non-RTI group. The mean for the RTI group was 1.1 and the mean for the Non-RTI group was 2.7. The difference between both groups was -1.6. The t-test value was -5.74. The degrees of freedom were 18.

The null hypothesis was: There is a significant difference in the RTI group and the Non-RTI group. The difference is -1.6.

The null hypothesis is rejected because the p-value of .00002 is less than the alpha value of .25.
Figure 4

**t-Test Analysis Results for Nonsense Word Fluency in RTI and Non-RTI students**

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-test</th>
<th>df</th>
<th>p-value</th>
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<tbody>
<tr>
<td>RTI (n=10)</td>
<td>1.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-RTI (n=10)</td>
<td>2.5</td>
<td>-1.1</td>
<td>-2.91</td>
<td>18</td>
<td>.009</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

The independent variable was status of the students who were receiving RTI and not receiving RTI. The dependent variable was the nonsense word fluency score. There were 20 students from the class and they were divided into two groups. There were 10 students in the RTI group and 10 students in the Non-RTI group. The mean for the RTI group was 1.4 and the mean for the Non-RTI group was 2.5. The difference between both groups was -1.1. The t-test value was -2.91. The degrees of freedom were 18.

The null hypothesis was: There is a significant difference in the RTI group and the Non-RTI group. The difference is -1.1.

The null hypothesis is rejected because the p-value of .009 is less than the alpha value of .25.
The independent variable was status of the students who were receiving RTI and not receiving RTI. The dependent variable was the sight word list score. There were 20 students from the class and they were divided into two groups. There were 10 students in the RTI group and 10 students in the Non-RTI group. The mean for the RTI group was 1.6 and the mean for the Non-RTI group was 2.9. The difference between both groups was -1.3. The t-test value was -5.36. The degrees of freedom were 18.

The null hypothesis was: There is a significant difference in the RTI group and the Non-RTI group. The difference is -1.3.

The null hypothesis is rejected because the p-value of .00004 is less than the alpha value of .25.

The following t-test results are from the end of the year testing. The graphs and charts represent the data that was completed.
In the above bar graph the results show that 6 students were receiving RTI services and 14 students were not receiving RTI services.

**Figure 7**

**t-Test Analysis Results for Fluency in RTI and Non-RTI students**

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-test</th>
<th>df</th>
<th>p-value</th>
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<tbody>
<tr>
<td>RTI (n=6)</td>
<td>1.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-RTI (n=14)</td>
<td>2.93</td>
<td>-1.43</td>
<td>-2.89</td>
<td>18</td>
<td>.010</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25
The independent variable was status of the students who were receiving RTI and not receiving RTI. The dependent variable was the fluency score. There were 20 students from the class and they were divided into two groups. There were 6 students in the RTI group and 14 students in the Non-RTI group. The mean for the RTI group was 1.5 and the mean for the Non-RTI group was 2.93. The difference between both groups was -1.43. The t-test value was -2.89. The degrees of freedom were 18.

The null hypothesis was: There is a significant difference in the RTI group and the Non-RTI group. The difference is -1.43.

The null hypothesis is rejected because the p-value of .010 is less than the alpha value of .25.

Figure 8

**t-Test Analysis Results for Reading Level in RTI and Non-RTI students**

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-test</th>
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<th>p-value</th>
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<tbody>
<tr>
<td>RTI (n=6)</td>
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<tr>
<td>Non-RTI (n=14)</td>
<td>3.07</td>
<td>-1.90</td>
<td>-5.30</td>
<td>18</td>
<td>.00005</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

The independent variable was status of the students who were receiving RTI and not receiving RTI. The dependent variable was the fluency score. There were 20 students from the class and they were divided into two groups. There were 6 students in the RTI group and 14 students in the Non-RTI group. The mean for the RTI group was 1.17 and the mean for the Non-
RTI group was 3.07. The difference between both groups was -1.90. The t-test value was -5.30. The degrees of freedom were 18.

The null hypothesis was: There is a significant difference in the RTI group and the Non-RTI group. The difference is -1.90.

The null hypothesis is rejected because the p-value of .00005 is less than the alpha value of .25.

Figure 9

**t-Test Analysis Results for Nonsense word fluency in RTI and Non-RTI students**

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-test</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTI (n=6)</td>
<td>1.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-RTI (n=14)</td>
<td>3.21</td>
<td>-2.05</td>
<td>-4.90</td>
<td>18</td>
<td>.0001</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

The independent variable was status of the students who were receiving RTI and not receiving RTI. The dependent variable was the fluency score. There were 20 students from the class and they were divided into two groups. There were 6 students in the RTI group and 14 students in the Non-RTI group. The mean for the RTI group was 1.17 and the mean for the Non-RTI group was 3.21. The difference between both groups was -2.05. The t-test value was -4.90. The degrees of freedom were 18.
The null hypothesis was: There is a significant difference in the RTI group and the Non-RTI group. The difference is -2.05.

The null hypothesis is rejected because the p-value of .0001 is less than the alpha value of .25.

Figure 10

**t-Test Analysis Results for Sight Word List in RTI and Non-RTI students**

<table>
<thead>
<tr>
<th>Source</th>
<th>Mean</th>
<th>Mean D</th>
<th>t-test</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTI (n=6)</td>
<td>2.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-RTI (n=14)</td>
<td>3.43</td>
<td>-1.26</td>
<td>-3.43</td>
<td>18</td>
<td>.003</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

The independent variable was status of the students who were receiving RTI and not receiving RTI. The dependent variable was the fluency score. There were 20 students from the class and they were divided into two groups. There were 6 students in the RTI group and 14 students in the Non-RTI group. The mean for the RTI group was 2.17 and the mean for the Non-RTI group was 3.43. The difference between both groups was -1.26. The t-test value was -3.43. The degrees of freedom were 18.

The null hypothesis was: There is a significant difference in the RTI group and the Non-RTI group. The difference is -1.26.
The null hypothesis is rejected because the p-value of .003 is less than the alpha value of .25.

In Figures 1-5 the results are shown for middle of the year test results. The amount of students in each group was equally divided. In Figures 6-10 the results shown represent end of year test results and show a significant difference in group division and the effects that RTI has on the areas of reading for students. The findings did answer the research question of “Is there a difference in students reading levels for those that receive RTI versus those students reading levels that don’t receive RTI?”
Conclusions and Recommendations

After conducting research both in the classroom and from previous studies this study does show that students not on grade level when entering first grade do show benefits from receiving RTI services on a daily basis. Those students already on grade level when entering first grade showed that RTI services were not needed on a Tier 3 level but that some with certain deficiencies could benefit from Tier 2 RTI services.

Research was completed in order to determine the many ways that RTI services offer reading help to students on all different reading levels. During the research process it was found that RTI services was not the stopping point of helping students to read on grade level. Two students were found to need further testing in order to qualify for Special Education. One student qualified and RTI services were no longer going to be provided to that student and the other student will be tested in second grade and was able to continue receiving Tier 2 instruction in the remained portion of first grade. During the study three other students in Tier 2 and Tier 3 RTI instruction were identified and showed signs that RTI was not providing significant growth for them and they were going to be retained in first grade. Two students also "graduated" from RTI services and were now meeting grade level expectations. Thus showing the difference in the middle of the year to the end of year numbers.

The conceptual underpinning of the study was to determine that if a student enters first grade reading on grade level they will have a higher level of success with learning to read compared to those students not entering on grade level. Students that are taught with RTI will achieve at higher levels that the students not being taught with RTI. RTI provides students with daily intervention strategies to improve their reading. To compare the above statements to the findings of the study it was found that RTI was successful in playing “catch up” with those
students who did not enter first grade on reading level. The RTI students were successful and most were able to reach grade level expectations but they did not exceed those benchmarks. It also showed that the students that did not receive RTI actually exceeded grade level expectations and were able to achieve a higher level of success. Much of the non-RTI student success was based upon their learning time frame, since they entered on grade level for reading more time was able to be spent expanding those skills and focusing more on further development of fluency, word recognition, and comprehension. The findings did support the conceptual underpinnings of the study. RTI did help students perform at grade level and those on grade level when entering first grade achieved at a higher level. Also the identification of struggling learners needing more than just RTI were found sooner and appropriate steps were able to be put in to place.

From concluding research and review of literature studies have found that if a student is in need RTI the data supports the necessity of RTI greatly impacting those students' reading gains. It does help students to further build the reading foundation and by having RTI on a daily basis provides the more intense small group assistance.

After concluding this study further recommendations to be done would be to continue to look at RTI services and how they can meet the changing and differing needs of each student. Teachers and parents both need to continue to learn about ways to help each individual student with reading both in the classroom and at home. A study that could be performed is what and/or where to go with RTI services if, after being in Tier 3 instruction, it is not providing growth for a student and Special Education services are not what the student needs.
References


http://www-tep.ucsd.edu/about/Courses/EDS382/General_Handouts/RTI-Practitioner%20Model.pdf


Research Summary on Response to Intervention. (2012). Retrieved from

http://community.fpg.unc.edu/sites/community.fpg.unc.edu/files/resources/Handout/CONNECT-Handout-7-1.pdf


Shapiro, E. (n.d.). Tiered Instruction in a Response-to-Intervention Model. *RTI Action*