A STUDY OF THE IMPACT OF RESPONSE TO INTERVENTION ON STUDENT ACHIEVEMENT SCORES IN ELEMENTARY SCHOOLS.

By

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Abstract

This research project utilized data that reaches back five school years. Scores from MAP Communication Arts tests and Performance Series Communication Arts tests were collected. An ANOVA was calculated with MAP scores and Performance series data. The independent variable was the level of RTI students have received. The first group in the ANOVA consisted of students who received no RTI. Group 2 received one year of RTI and group 3 received two years of RTI. The dependent variable in the first ANOVA was MAP scores and the dependent variable in the second ANOVA was Performance Series scores. This study was inconclusive because there was a significant difference in the MAP Index, however, there was no significant difference in ELA Performance Series. Additionally, the review of literature does not provide strong enough reasoning to conclude that RTI does make a difference in student achievement.
Introduction

Background, Issues and Concerns

A suburban school district located in the Midwest has recently began implementing Response to Intervention (RTI). In the 2010-2011 school year few elementary schools began implementing RTI while other schools were still hesitant. While educators understand the importance of meeting individual students’ needs, it is growing increasingly more difficult with higher enrollment. Over the past decade, this particular district has seen exponential growth in its population. After having a failed bond issue that would have opened a new elementary school and added onto an existing high school, the district is dealing with higher class sizes at all grade levels.

As the district looks to improve student achievement schools have begun to implement the RTI framework which should help to meet students where they are for instructional purposes. The district is still working to figure out how RTI will work best with its population of students. Conversations are beginning to trickle up to intermediate and secondary schools. With this mindset, it is time to decide if RTI is actually impacting student achievement. This project will work to analyze the possible impact RTI is having on student achievement and will be able to make recommendations for further implementation.

Practice under Investigation

The use of small group interventions conducted within the framework of RTI.
**School Policy to be Informed by Study**

Elementary schools in this particular Midwest school district as well as surrounding districts, are moving to a model where a block of time is used for the sole purpose of conducting small group interventions. During this time, every available adult in the building works with small groups of students. Most schools focus this instructional time on Communication Arts. Teachers use progress monitoring tools to assess students’ progress over 6-8 weeks of intervention.

**Conceptual Underpinning**

In 2002, President George Bush signed the No Child Left Behind (NCLB) act which changed the way society holds schools accountable. NCLB mandated that schools make a certain amount of progress each year (AYP) in order to maintain accreditation. Educators began analyzing data unlike any process seen before. Students were analyzed as individual and specific skill deficits were identified. Response to Intervention (RTI) was implemented to help meet those needs. Response to Intervention is a framework for executing specific research based interventions to meet students’ very specific needs. Students generally fit into one of three tiers of instructional needs. Tier 1 instruction is found in general classroom instruction. Tier 1 instruction refers to large group classroom instruction. Sometimes, large group instruction falls short of meeting every student’s need and those students need extra help from the teacher. One powerful aspect of RTI is that students can receive tier 2 support which is conducted in a small group setting. Often times, students require instruction at a tier 2 level which is specific research based instruction tied to a very specific goal. RTI creates a focus on data collection and student gains. Students receive intense interventions 3-5 times a
week (sometimes more than 5). Another powerful aspect of RTI is tier 3 instruction. Tier 3 instruction is generally given in a one on one environment, 5 days a week and sometimes more than once a day. This intense intervention which targets specific skills should help to close the achievement gap by increasing student achievement. The real beauty of RTI is that it gives teachers a framework to customize public education to ensure that every student has his or her needs met.

Statement of the Problem

As schools begin to implement RTI there is a lack of information explaining its impact on student achievement in our community.

Purpose of the Study

The purpose of this study is to investigate if an RTI impacts student achievement, and to what degree.

Research Question(s)

RQ: Is there a difference in student achievement between students who receive RTI and students who do not receive RTI?

Null Hypothesis

Ho: There is no difference in student achievement between students who receive RTI and students who do not receive RTI?

Anticipated Benefits of the Study

This study has the potential to greatly impact the way schools conduct instructional interventions, if they are conducted at all! In the status quo, schools spend 30 minutes every day working with small intervention groups. This adds up to 150 minutes of instruction each week. This study will show if these minutes are being well
spent. Teachers do not have enough time in to dedicate 150 minutes per week to a program that is unsuccessful. If the study finds that RTI is making a difference, it will help lead schools to better meeting the needs of students.

Definition of Terms

CBM: Curriculum Based Measure
DESE: Missouri Department of Secondary and Elementary Education
MAP: Missouri Assessment Program
Performance Series: A MAP indicator test utilized by districts in Missouri
RTI: Response to Intervention

Summary

The suburban district that my study focuses on is in the Midwest. Currently, the district is aiming to raise student achievement by meeting students on an instructional level through Response to Intervention. Some schools have already been implementing RTI for a couple years, and some schools in the district are just beginning to. This study compares data from students before receiving RTI and from students after receiving RTI. This research attempts to determine if RTI is making a difference in student achievement.
Review of Literature

In 2002, when President George W. Bush signed NCLB into law, he set in motion a change in the way schools do business which continue to impact educators today. Schools are now required to meet AYP each year. Unfortunately, no school has developed a perfect system to ensure each student meets his or her potential. Response to Intervention was developed as a framework to structure intervention periods in schools where teachers will use targeted instruction to increase student achievement.

Research indicates that understanding the fundamentals of RTI is more important than having hours and hours of instruction. There are important components that are necessary to successful implementation of RTI (Roekel, n.d.). Year should follow author in in-text citations. According to Roekel (n.d.), RTI is a school wide, multi-step approach to providing services to struggling students.

While different schools have structured RTI differently, a successful RTI program must have these essential components: utilization of tiers (generally three tiers), utilize evidence based instruction, use data to track student progress. The greatest aspect of RTI is its ability to group students based on level (Roekel, n.d.).

Buffum, Mattos & Weber (2009) designed the following figures to help organize RTI groups and support teachers while designing their groups.
The first tier (referred to Tier 1) generally refers to large group instruction. Students who fall in tier 1 are those who have their needs met in large group
instruction. These students are progress monitored using typical methods applied to a whole class. Rarely do they require more assistance than can be provided in the general classroom setting.

Tier 2 interventions occur 3-5 times a week and provide instruction targeted to one specific skill. Figure one indicates that the population of students qualifying for tier 2 intervention is less than the population of students receiving tier 1 support. A student would generally not be in a “reading intervention.” Their intervention would be more specific, for example: “decoding single syllabic words.” These interventions should be research based and carried out with fidelity (Burns, n.d.). Additionally, comprehensive progress monitoring tools should be utilized to determine if a student is making progress or not.

Tier 3 intervention happens daily at least once. Figure 1 indicates that the student population in tier 3 is less than the population in tier 2 or tier 1. Students who reach tier 3 are not successful with the general large group instruction, and did not show any growth in a tier 2 intervention (Burns, n.d.). Students receiving tier 3 supports should be in a 1 on 1 setting where the instructor executes research based interventions with fidelity (Roekel, n.d.).

When students receive tier 2 or tier 3 interventions, they should be progress monitored weekly using norm based CBMs (curriculum based measure) (Stecker & Lembke). According to Stecker and Lembke (n.d. p.1), “progress monitoring refers to a system of ongoing data collection on academic skills of interest.” It has been concluded by researchers that teachers who use progress monitoring for instructional decision-making purposed have students who achieve more. Stecker and Lembke (n.d.
Additional benefits include: (a) student performance data on important, grade-level skills/content can be gathered quickly and easily; (b) student progress can be analyzed in order to modify instructional programs when needed and/or to adjust student goals upward; and (c) individual student data can be compared to data of other students in the classroom, in the child’s school, or in the school district.”

Research also indicates that RTI is very effective when students are identified early on (Yaccino, 2008). Yaccino (2008) describes our current Special Education model the “wait to fail” model and explains that teachers have followed a practice that dictates they wait for students to fall far behind before offering support. Yaccino (2008) postulates that teachers are hesitant to implement RTI because they view it as being more work for them once the school year starts.

In order for any attempt at implementing RTI to be successful, professional development needs to be highly effective (Kratochwill, Volpiansky, Clements, & Bell, 2007). Professional development is an absolute necessity for RTI to be successful. Without highly qualified teachers, the interventions will not be successful. Key points for professional development: progress monitoring; data based decision making; identifying students with need; choosing appropriate interventions. Multiple meetings should be dedicated to this type of professional development for it to have a significant impact in the teacher’s performance in the classroom.

Dexter and Hughes published a report of multiple field studies of RTI. It should be noted that “many educational approaches or innovations that seem to make sense don’t always work in practice,” (Hughes & Dexter, n.d. para. 1). Hughes and Dexter continue to state, “The research conducted to date with few exceptions has focused
primarily on the efficacy of the components individually but not on the efficacy of the RTI process as an integrated whole. In theory, if the components are effective, then the overall process would be expected to produce results; however, the question of whether the overall process is effective must also be addressed,” (Hughes & Dexter, n.d. para. 2). The following table indicates the research designs used in the studies analyzed by Hughes and Dexter.

<table>
<thead>
<tr>
<th>Figure 3: Types of Research Designs (Hughes &amp; Dexter, n.d.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• <strong>Randomized Control Trials (RCTs).</strong> The RCT is considered the best design to control for threats to internal causal validity, because study participants are randomly assigned to groups (i.e., experimental or control group). Randomization ensures equality on all variables between the groups; thus, an outcome (e.g., increase reading skills) can be attributed to the intervention rather than to some other variable.</td>
</tr>
<tr>
<td>• <strong>Quasi-Experimental Designs (QEDs).</strong> The QED is a group design that includes a control group but does not use randomization procedures and thus is considered less rigorous than RCTs. This shortcoming can be partially compensated for if the researchers can show that the experimental and control groups are equivalent at baseline/pretest on all measured variables.</td>
</tr>
<tr>
<td>• <strong>Historical Contrast Design (HCD).</strong> In this design, the posttest of the group receiving the treatment (e.g., RTI) is compared to a similar group from the past. For example, data are obtained for students exposed to RTI for a period of time and the postintervention outcomes (e.g., reading level, rates of referral) are compared to those for students from the same district or school before the implementation of the RTI program. This design is considered to be relatively weak in establishing causality (Shadish, Cook, &amp; Campbell, 2002).</td>
</tr>
<tr>
<td>• <strong>Descriptive.</strong> With this type of study, data are collected (e.g., referral and placement rates) at the onset of implementation of RTI and then any changes or trends over time are noted. The lack of a control or contrast group limits conclusions about the impact of the intervention.</td>
</tr>
<tr>
<td>• <strong>Multiple Baseline (MB).</strong> Multiple baseline designs are a type of single-case methodology. For example, the intervention (e.g., an RTI program) is introduced to one school at a time to see if changes (e.g., levels of special education referrals) occur when, and only when, the intervention is introduced, thus controlling for threats to external validity.</td>
</tr>
<tr>
<td>• <strong>A-B Design (AB).</strong> The weakest of all single-case designs, this design is implemented by taking baseline data (e.g., performance on an academic task) and then implementing the intervention to see if performance increases. However, this procedure does not control for any competing explanations for why the behavior changed.</td>
</tr>
<tr>
<td>• <strong>Correlational.</strong> This design statistically quantifies the relationship between two variables (e.g., degree of implementation fidelity and student outcome). Although this design quantifies a relationship, it does not establish causality.</td>
</tr>
</tbody>
</table>
The following table details every Programmatic field study that was taken into account. Most studies were conducted at the elementary level, and four were conducted in grade 8 or above. The table below only includes studies which took place in elementary settings and focused on reading. The studies that included elementary students typically focused on grades 4 and younger (Hughes & Dexter, n.d.).

<table>
<thead>
<tr>
<th>Authors*</th>
<th>Model Name**</th>
<th>Problem Solving or Standard Protocol</th>
<th>Implementer</th>
<th>Grade Level(s)</th>
<th># of Schools/# of Students Used</th>
<th>Design</th>
<th>Measured Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bollman et al. (2007)</td>
<td>SCRED</td>
<td>Problem solving</td>
<td>Teacher</td>
<td>K–8</td>
<td>NR/NR</td>
<td>Descriptive, QED, &amp; HCD</td>
<td>Reading outcomes/SpecED placements</td>
</tr>
<tr>
<td>Callender (2007)</td>
<td>RBM</td>
<td>Problem solving &amp; standard protocol</td>
<td>Teacher</td>
<td>K–8</td>
<td>150/1,400</td>
<td>Descriptive &amp; QED</td>
<td>Reading outcomes/SpecED placements</td>
</tr>
<tr>
<td>O’Connor et al. (2005)</td>
<td>TRI</td>
<td>Problem solving</td>
<td>Researcher &amp; teacher</td>
<td>K–3</td>
<td>2/22</td>
<td>HCD</td>
<td>Reading outcomes (word identification, word attack, passage comprehension, fluency)/SpecED placement</td>
</tr>
<tr>
<td>Vaughn et al. (2003)</td>
<td>EGM</td>
<td>Standard protocol</td>
<td>Researcher &amp; teacher</td>
<td>2</td>
<td>3/45</td>
<td>Descriptive</td>
<td>Reading outcomes (fluency, word attack, passage comprehension, phonological awareness, rapid letter naming)</td>
</tr>
</tbody>
</table>

Bollman was noted as publishing that students showed a “gradual rise on curriculum-based measures over a 10-year period but lacked a control group against which to compare gains, thus making it difficult to attribute improvement to the program,” (Hughes & Dexter, n.d. para. 13).

O’Connor and colleagues investigated the effects of tier 2 and tier 3 reading interventions on a variety of reading skills (Hughes & Dexter, n.d.). Those authors
stated that almost all students showed large gains on their reading CBMs. “All students showed large gains on reading measures, especially those exposed to 30 weeks of intervention,” (Hughes & Dexter, n.d. para. 14).

Three main conclusions can be drawn from literature published about RTI. First, RTI begins with a solid foundation of professional development. Poorly trained teachers will be ineffective no matter the structure set up for instruction. If teachers are properly trained in screening, progress monitoring and executing research based interventions, the students have a better chance to make gains. Second, RTI is structured into three effective tiers. Tier 1 refers to general classroom, or whole group instruction. When students need additional support, they will move to tier 2 support. These students should still receive tier 1 support in the classroom, but will be placed in a small intervention group which should meet at least 3 times a week. Students who do not find success in tier 2 support will have tier 3 support added. These students have made no gains with previous intervention or instruction. This is the smallest population of students and is executed in 1 on 1 settings at least once every day at school. The third main conclusion is that not enough research has been done to draw a strong conclusion. While studies do indicate that students in RTI make gains, it does not point out that students in RTI are making more gains than students that would have been in a control group.
Research Methods

Research Design

This research project utilized data that reaches back five school years. Scores from MAP Communication Arts tests and Performance Series Communication Arts tests were collected. From the MAP C.A. tests that were collected, three years of the data were linked to students who did not receiving any RTI. One group of MAP C.A. scores that were collected were linked to students who received one year of RTI. The fifth and final group MAP C.A. tests that was collected was linked to students who received two years of RTI. Only four years of Performance Series Communication Arts tests were collected because data only exists for the past four years. Two years of Performance Series Communication Arts data is linked to students who received no RTI. One group of Performance Series Communication Arts data is linked to students who received one year of RTI. Finally, one more set of Performance Series Communication Arts data is linked to students who received two years of RTI.

An ANOVA was calculated with MAP scores and Performance series data. The independent variable was the level of RTI students have received. The first group in the ANOVA consisted of students who received no RTI. Group 2 received one year of RTI and group 3 received two years of RTI. The dependent variables were the MAP scores and the Performance Series scores.

Study Group Description

The school where the data used in this district came from has 642 total students as of December 2012. It is not a very diverse population. 84% of the students are
white, 5% are Latino, 5% are Black and less than 0.5% are American Indian or Alaskan Native. 3% of the students are Asian and 7.5% of the students are Native Hawaiian or other Pacific Islander. 3% of the population is two or more races. 25% of the student population is eligible for free and reduced lunch. 7% of the students are on an IEP. There are zero English Language Learners and 7.5% have a 504. The specific study group only consisted of fifth grade scores from the building.

*Data Collection and Instrumentation*

The data used in this study was preexisted and was not determined through any new assessments of student achievement. All data was given willingly by the districts Academic Services Department at the central office. MAP Communication Arts scores for fifth grade were collected for the years 2008-2012. Performance Series is a MAP indicator and is norm referenced standardized test. Fifth grade Performance Series Communication Arts scores were collected for the years 2009-2012.

*Statistical Analysis Methods*

A Statistical Package (ASP) software was used to complete the statistical calculations in this research study. ANOVA was calculated. Additionally, Microsoft Excel was used to organize the data that was collected from DESE and the district academic services department.
Findings

This study performed two different ANOVA tests. The independent variables used were the number of years of RTI the class received. The independent variables were split into three groups. Group 1 received zero years of RTI. Group 2 received 1 year of RTI. Group 3 received 2 years of RTI. The first dependent variable used was the MAP Index for the grade level. The second dependent variable used was ELA Performance Series mean scores for the grade level. Two dependent variables were chosen to lessen the chance of making false conclusions.

Table 1

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3</td>
<td>790.567</td>
<td>1.026</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>781.4</td>
<td>1.298</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>781.5</td>
<td>1.298</td>
</tr>
</tbody>
</table>

This table gives a summary of descriptive statistics for MAP index. The dependent variable was the MAP score and the independent variable was the number of years of RTI students received. Students in group 1 received no years of RTI. Students in group two received 1 year of RTI and students in group 3 received 2 years of RTI. There were three years of data for group 1. There was only 1 year of data for groups 2 and 3. The mean score for group 1 was 790.567. The mean score for group 2 was 781.4 and the mean score for group 3 was 781.5. The standard deviation for group 1 was 1.026. The standard deviation for group 2 and 3 was 1.298.
Table 2

Summary of ANOVA Test of Significance Results for MAP Index Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Years of RTI</td>
<td>98.665</td>
<td>2</td>
<td>49.333</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAP Index</td>
<td>5.687</td>
<td>2</td>
<td>2.843</td>
<td>17.350</td>
<td>0.054</td>
</tr>
</tbody>
</table>

Note: Significance = < 0.25

This table is a summary of ANOVA test of significance results for MAP index scores. The independent variable was the Years of RTI and the dependent variable was the MAP index scores. For the years of RTI, the sum of squares was 98.687. For the MAP index, the sum of squares was 5.687. Both had 2 degrees of freedom. The MS for Years of RTI was 49.333 and the MS for MAP index was 2.843. The f-value was 17.350 and the p-value was 0.054. The null hypothesis stated that there is no difference in student achievement between students who receive RTI and students who do not receive RTI. The alpha level was 0.25 and the p-value was 0.054. The p-value is less than the alpha level which indicates that there is a statistical significant difference. The null hypothesis was rejected. A post-hoc pairwise comparison is necessary and can be found in the next table and paragraph.
Table 3

Summary Post Hoc Analysis Results for MAP index.

<table>
<thead>
<tr>
<th>Groups</th>
<th>Groups</th>
<th>Mean D</th>
<th>Std. Error</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>9.166</td>
<td>1.947</td>
<td>0.042</td>
</tr>
<tr>
<td>1</td>
<td>3</td>
<td>8.966</td>
<td>1.947</td>
<td>0.044</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>-0.200</td>
<td>2.384</td>
<td>0.940</td>
</tr>
</tbody>
</table>

Note: Significance = < 0.25

This table summarizes the Post-Hoc Analysis for MAP index. The independent variable was the group numbers and the dependent variable was the MAP index score. Group 1 was made up of students who received no years of RTI. Group 2 was made up of students who received 1 year of RTI. Group 3 was made up of students who received 2 years of RTI.

The first Post Hoc tested groups 1 and 2. The mean difference between groups 1 and 2 was 9.166. The standard error for groups 1 and 2 was 1.947. The null hypothesis stated that there is no difference in student achievement between students who received 1 year of RTI and students who did not receive RTI. The alpha level was 0.25 and the p-value was 0.042. The p-value was less than the alpha level, therefore we reject the null. There is significant difference between groups 1 and 2.

The second Post Hoc tested groups 1 and 3. The mean difference between groups 1 and 3 was 8.966. The standard error for groups 1 and 2 was 1.947. The null hypothesis stated that there is no difference in student achievement between students who received 2 years of RTI and students who did not receive RTI. The alpha level was
0.25 and the p-value was 0.044. The p-value was less than the alpha level, therefore we reject the null. There is significant difference between groups 1 and 3.

The third Post Hoc tested groups 2 and 3. The mean difference between groups 2 and 3 was -0.200. The standard error was 2.384 and the p-value was 0.940. The null hypothesis stated that there is no difference in student achievement between students who received 1 year of RTI and students who received 2 years of RTI. The alpha level was 0.25 and the p-value was 0.040. The p-value exceeds the alpha level by a significant margin. The null hypothesis is not rejected. There is no statistical difference between groups 2 and 3.

Table 4

<table>
<thead>
<tr>
<th>Free or Reduced</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>2792.5</td>
<td>8.5</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2800</td>
<td>12.020</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>2758</td>
<td>12.020</td>
</tr>
</tbody>
</table>

This table gives a summary of descriptive statistics for ELA Performance Series mean scores for fifth graders. The dependent variable was the ELA Performance Series mean score and the independent variable was the number of years of RTI students received. Students in group 1 received no years of RTI. Students in group two received 1 year of RTI and students in group 3 received 2 years of RTI. There were two years of data for group 1. There was only 1 year of data for groups 2 and 3. The mean score for group 1 was 2792.5 with a standard deviation of 8.5. Group 2 had a mean score of 2800 with
a standard deviation of 12.020. Group 3 had a mean score of 2758 with a standard deviation of 12.020.

Table 5

Summary of ANOVA Test of Significance Results for ELA Performance Series.

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Groups</td>
<td>1064.25</td>
<td>2</td>
<td>532.125</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ELA Performance Series</td>
<td>144.5</td>
<td>1</td>
<td>144.500</td>
<td>3.682</td>
<td>0.345</td>
</tr>
</tbody>
</table>

Note: Significance = < 0.25

This table is a summary of ANOVA test of significance results for ELA Performance Series mean scores. The independent variable was the Years of RTI and the dependent variable was the MAP index score. The sum of squares for the groups was 1064.25 with 2 degrees of freedom. The mean square was 532.125. The ELA Performance Series’ sum of squares was 144.5 with 1 degree of freedom. The mean square was 144.500. The f value was 3.682.

The null hypothesis stated that there is no difference in student achievement between students who receive RTI and students who do not receive RTI. The alpha level was 0.25 and the p-value was 0.345. The p-value is less than the alpha level which indicates that there is no statistical significant difference. The null hypothesis was not rejected.
Table 6: Raw Data

<table>
<thead>
<tr>
<th>Groups</th>
<th>Year</th>
<th>MAP_INDEX</th>
<th>PS Mean Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2011 - 2012</td>
<td>781.6</td>
<td>2758</td>
</tr>
<tr>
<td>2</td>
<td>2010 - 2011</td>
<td>781.4</td>
<td>2800</td>
</tr>
<tr>
<td>1</td>
<td>2009-2010</td>
<td>792.5</td>
<td>2801</td>
</tr>
<tr>
<td>1</td>
<td>2008 - 2009</td>
<td>789.4</td>
<td>2784</td>
</tr>
<tr>
<td>1</td>
<td>2007-2008</td>
<td>789.8</td>
<td>n/a*</td>
</tr>
</tbody>
</table>

*Performance test was not administered in 2007-2008.

Table six summarizes the raw data used in the study. There was a small sampling size. Group 1 was a group of students with no years of RTI. There are three pieces of data used here. Group 2 was a class of students who received 1 year of RTI. Group 3 was a group of students that had 2 years of RTI. The year with the highest MAP index score was 2009-2010, and the score was 792.5. That year was in group 1. The groups with the two lowest scores were groups 2 and 3.

Table 2 identified a significant difference between scores of students who received RTI and students who did not receive RTI. When this information is compared to the raw data a conclusion could be drawn that RTI is bringing down the scores of the MAP test.
Conclusions and Recommendations

This study performed two different ANOVA tests. The independent variables used were the number of years of RTI the class received. The independent variables were split into three groups. Group 1 received zero years of RTI. Group 2 received 1 year of RTI. Group 3 received 2 years of RTI. The first dependent variable used was the MAP Index for the grade level. The second dependent variable used was ELA Performance Series mean scores for the grade level. Two dependent variables were chosen to lessen the chance of making false conclusions.

The first ANOVA test looked at the MAP index scores for all three groups. The null hypothesis stated that there is no difference in student achievement between students who receive RTI and students who do not receive RTI. The alpha level was 0.25 and the p-value was 0.054. The p-value is less than the alpha level which indicates that there was a statistical significant difference. The null hypothesis was rejected. A post-hoc pairwise comparison was necessary. The post-hoc pairwise found that there were significant differences between groups 1 and 2. The second post-hoc pairwise indicated that there were also significant differences between groups 1 and 3. The third post-hoc pairwise indicated that there was no significant difference between groups 2 and 3.

The information from the post-hoc pairwise tests were very powerful and indicated that there is a significant difference between group 1 (which received no RTI) and both groups that did receive RTI. When you compare this data to the data in table 6, it is found that the scores for students who did not receive RTI were actually higher. This would indicate that RTI may lower test scores. After further investigation, it was
found that the school had teacher turn-over 2 years in a row and redistributed their
departmentalization 2 years in a row. Because new teachers were present, the scores
may have dropped because the new teachers were either less experienced, or were
going acquainted with the curriculum.

The second ANOVA tested ELA Performance series mean scores. The null
hypothesis stated that there is no difference in student achievement between students
who receive RTI and students who do not receive RTI. The alpha level was 0.25 and
the p-value was 0.345. The p-value is less than the alpha level which indicates that there
is no statistical significant difference. The null hypothesis was not rejected. This test
indicated that there was no significant difference between scores for students who
received RTI and students who have not received RTI.

As was stated in the review of literature section of this report, research is
inconclusive at this point regarding the effectiveness of RTI. While some studies have
shown gains with students in RTI it is unclear if these gains are because of RTI. This
study was inconclusive. The two tests offered opposing conclusions based on data. It is
not possible to determine if RTI actually makes a difference in student achievement at
this time.

It is recommended that this study be continued for more years into the future.
It is also recommended that a clear control group be identified. In the status quo,
studies are finding that some RTI groups are making progress, but these groups have not
been compared to a control group. More study is necessary in order to determine the
result of implementing RTI. Additionally a larger sample is needed. This study only had
1 group of students who received 1 year of RTI. It also only had 1 group of students
who received 2 years of RTI. These students could continue to be tracked, or similar
data can be collected over the following years. Either way, more data will be necessary
to make a solid conclusion.
References


http://www.rtinetwork.org/learn/research/field-studies-rti-programs


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