Effects of Building-Wide RTI on Missouri Assessment Program (MAP) Scores in Grades 3-5

By

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ABSTRACT

The purpose of the study was to determine whether implementing a building-wide RTI program helped to increase student achievement as measured by the MAP test. The information gained helped the administrator, PLC team, and all teachers improve their RTI program so that student achievement continued to increase.

Data was collected from the school district’s report card found on the DESE website (www.dese.mo.gov). Communication Arts and Mathematics scores from 2009 and 2010 were collected and were separated into two groups: Proficient/Advanced and Basic/Below Basic. These numbers were in percentage form, and were put into an Excel Spreadsheet. That data was then put into the ASP program to calculate a t-test.

The findings suggested that there is not a significant increase in student achievement as a result of implementing a building-wide RTI program. It is recommended that the current intervention program be reviewed.
INTRODUCTION

Background, Issues and Concerns

A suburban school district located in the Midwest, referred to as LES, and has seen its enrollment grow considerably as the metropolitan area it is nearest to continues to expand. The 2010-2011 Kindergarten through fifth grade enrollment was approximately 400. The 2010-2011 third through fifth grade enrollment was 208. Student achievement, as measured by the MAP tests, was not increasing as much as was desired. There was no way to ensure that students who were not scoring in the proficient range were receiving the instruction and intervention for essential skills necessary to score in the proficient range. The administration and Professional Learning Community teams (PLC) of LES determined that a building-wide RTI would be the most successful way to help increase student achievement on standardized assessments, and implemented the program at the beginning of the 2010-2011 school year. The analysis of results will differentiate between student achievement on the MAP tests when the building has a building-wide RTI program and when it does not.

Practice under Investigation

The practice under investigation was how building-wide RTI affected student achievement on the Missouri Assessment Program (MAP Scores) in the Math and Communication Arts Sections in Grades 3-5.

School Policy To Be Informed by the Study

The administration and PLC of LES determined that a building-wide RTI would be the most successful way to help increase student achievement on standardized assessments, and implemented the program at the beginning of the 2010-2011 school year. All teachers were
required to give assessments every two weeks to determine which students are not proficient in specific Communication Arts and Math skills. Those students were then sent to Tier 2 interventions with classroom teachers, as well as resource room teachers. Students were progress monitored at the end of each week to check for growth. If at the end of those two weeks the student was proficient, they were moved out of Tier 2 and back to Tier 1 in that skill. If they were not proficient, they remain in Tier 2 for another two weeks, this time receiving a different type of intervention. Then, if at the end of four weeks in Tier 2 a student was still not proficient, a review of that student’s progress was completed and they were put into Tier 3 until they were proficient.

*Conceptual Underpinnings*

According to Huitt (2006), John Carroll proposed a model that suggested that student learning was a result of the time actually spent on learning, as opposed to the amount of time the student needed to learn new knowledge. This model, first suggested in 1963, identifies the important variables of time, perseverance, aptitude, ability to understand instruction, and quality instruction. All of these variables are also important components to the RTI program. If students are not proficient following the normal Tier 1 instruction, more time is spent during Tier 2. These students, have to show perseverance in continuing to become proficient at the skill, and the teachers also have to be perseverant, never giving up on their students, and continually trying new interventions to help. It is also of upmost important that students receive quality instruction in all Tiers of RTI to ensure fidelity, a key aspect of RTI.
School Learning = f(time spent/time needed).

aptitude, ability to understand instruction, quality instruction

opportunity, perseverance

Figure 1.1 Carroll's Model of School Learning (Huitt, 2006).

The No Child Left Behind Act (NCLB) of 2002 required that all students be at a proficient level in Communication Arts (CA) and Mathematics (MA) by 2014, as determined by their state’s standardized assessment method. Schools have felt the pressure to get all students to that proficient level and RTI was born out of that. RTI provides a way for schools to identify students that need some extra help to get proficient and then provides the time and staff resources to help those students. In addition, RTI helps schools to maintain fidelity and consistency in the intervention process.

Statement of the problem.

Student achievement, as measured by the MAP tests, was not increasing as much as was desired. There was no way to ensure that students who were not scoring in the proficient range were receiving the instruction and intervention for essential skills necessary to score in the proficient range.

Purpose of the study.

The purpose of the study was to determine whether implementing a building-wide RTI program helped to increase student achievement as measured by the MAP test. The information gained helped the administrator, PLC team, and all teachers improve their RTI program so that student achievement continued to increase.
Research questions.

RQ 1: Is there a difference in student achievement on the Missouri Assessment Program (MAP) Communication Arts section in Grades 3-5 between students that participate in the RTI program and students who do not?

RQ 2: Is there a difference in student achievement on the Missouri Assessment Program (MAP) Mathematics section in Grades 3-5 between students that participate in the RTI program and students who do not?

Null hypotheses.

H₀. Building-wide RTI does not affect scores on the Missouri Assessment Program (MAP) on the Math section in Grades 3-5.

H₀. Building-wide RTI does not affect scores on the Missouri Assessment Program (MAP) on the Communication Arts section in Grades 3-5.

Anticipated benefits of the study.

The results of this study will help administrators and teachers know if the current RTI program in their school was successful and helped to increase student achievement as measured on the Missouri Assessment Program Communication Arts and Mathematics sections. Future recommendations and goals can be set as a result of this study.

Definition of terms.

MAP: Missouri Assessment Program – the state wide assessment that serves as the measurement for No Child Left Behind criteria.

DESE: Missouri Department of Secondary and Elementary Education – the administrative part of the Missouri State Board of Education and works to maintain a strong public education system in that state.
IDEA: Individuals with Disabilities Education Act
RTI: Response to Intervention which consist of high quality instruction, assessment, and research-based interventions
NCLB: No Child Left Behind Act of 2001 which set standards and established measurable goals for all public schools to meet in order to receive federal funding
PLC: Professional Learning Communities – teachers and administrators from a school that meet to seek and maintain learning and act on that learning
MAP CA: Missouri Assessment Program Communication Arts - the state wide assessment that serves as the measurement for No Child Left Behind criteria in the areas of Reading and Language Arts
MAP MA: Missouri Assessment Program Mathematics - the state wide assessment that serves as the measurement for No Child Left Behind criteria in the area of Mathematics
Mule Time: LES’ name for their RTI program
Specials teachers: Art, Music, Physical Education and Computer teachers

Summary

LES is a Midwestern suburban elementary school in a district that has one elementary school, one middle school and one high school. The district has adopted a school calendar that implements the four day week for students. The students attend school Tuesday through Friday for 450 minutes per day. One Monday a month PLC teams meet to review data and make instructional decisions for instruction in Tier I, II and III The school practices RTI, with a building-wide RTI for the first 25 minutes of each school day, utilizing classroom teachers, specials teachers, Special Education staff, Speech Pathologists, as well as paraprofessionals.
This research investigated the difference in student achievement as measured by the MAP before and after the RTI program was implemented.
REVIEW OF LITERATURE

Since the passage of the Individuals with Disabilities Education Improvement Act in 2004, many schools have steadily increased using “Response to Intervention” as a way to more efficiently reach the needs of individual students (Fuchs & Fuchs 2006). It had become evident that teaching all students the same material at the same pace and then expecting them to all have success, was not a reasonable approach. Students were not making progress and were then being referred for special education testing. Since the testing process was based solely on the discrepancy model, many students were not able to qualify for help. Thus, they were sent back to the classroom, where the previous cycle would continue. Teachers were responsible for their students. It was not a team approach to teaching students. If a student did not master a concept, it was up to that teacher to come up with a way to teach the student. Response to Intervention gives teachers assistance in helping their students. It becomes a team effort to help students succeed.

RTI is the practice of 1) providing high-quality instruction and interventions that match students’ needs and 2) using students’ learning rate over time and level of performance to make important educational decisions. (Buffman, Mattos, Weber 2009). High-quality instruction and intervention is the implementation of core instruction and interventions that are scientifically researched to produce results in student learning. Learning rate over time refers to the student’s academic growth compared to the student’s previous level of performance or to the growth of others in the same grade. Interventions are based information regarding the student’s rate of learning over time and the level of performance (Buffman, 2009).

RTI is compromised of three tiers of instruction. Tier I is the instruction that all students receive in the regular classroom setting. This tier meets the needs of at least 75% of the students.
The first step in an intervention program is to make sure that Tier I instruction is meeting the needs of those 75% of the students. If more than 25% of the students need intervention, then Tier I instruction must be looked at and changes made. Tier II is the supplemental instruction that is to meet the instructional needs of at least 15% of the students. Tier III is for those students that need intense instruction in a subject area, and have not made progress in Tiers I and II. Tier III focuses on the needs of each individual student (Buffman, Mattos, Weber, 2009).

The first step in any RTI program is to first identify those students that are at-risk. This can be done in a variety of different ways. Previous year test scores can be looked at, and those students that score below a certain threshold would qualify. All students in a specific grade could be given a test over a particular concept and then those that perform below a benchmark would receive intervention (Fuchs 2006). Once the at-risk students have been identified, they

Figure 2.1 The pyramid response to intervention model (Buffman, 2009).
receive instruction to supplement the regular classroom time. This is done during the school day and does not supplant regular classroom instruction. RTI is done in small groups and also has frequent progress monitoring.

Progress monitoring is an essential component of the RTI program. Teachers must check to make sure that at-risk students are responding to the intervention they are receiving. If they are not, a new type of intervention must be attempted. Then, if that is not successful, they would need to move to another tier, Tier 3 (Fuchs 2006). The data derived from the assessments and progress monitoring is used by teachers to drive their instruction. They use that data to plan their curriculum, materials and instructional procedures.

During frequent meetings, grade level teams are able to discuss student progress in all tiers of the program. Data is shared and decisions are made for each individual student. The team will determine which staff member is most qualified to provide the intervention instruction and the most appropriate instructional materials. Some are dismissed from intervention if adequate progress has been made and maintained. Other students will continue at the Tier they are currently in, but the type of intervention will be changed. Still others will go from Tier II to Tier III.

There are many reasons that students may not achieve at a high level. Those reasons may include the lack of prior skills, additional time is needed, Tier I teaching does not meet their instructional needs and lack of effort on the part of the student. Therefore, the type of intervention needs to be targeted to each individual student. The reason why they are not achieving must be identified, not just the fact that they are not achieving.
In order for students to increase achievement on standardized assessments, targeted instruction with frequent progress monitoring is needed. Students’ instructional needs will be met on a daily basis and more success will be seen. Giving teachers the support that they need to meet their students’ instructional needs is also a necessary component of the Response to Intervention Program. A building wide RTI program with everyone on board is imperative to the success of a building’s students.
RESEARCH METHODS

Research Design

A non-experimental, one-time survey served as the research design. The alpha level was set at 0.25 for all tests with this research. The independent variable was the whether or not building-wide RTI had been implemented. The survey will measure the results of the dependent variables, student achievement as measured by the MAP test. Tests run will include t-test.

Study Group Description

The study group for this research consisted of the 208 3-5 grade students at LES. There were ten classroom teachers and four other staff members who participated in the intervention instruction of these students. 2010-2011 Kindergarten through fifth grade enrollment was approximately 400. The 2010-2011 third through fifth grade enrollment was 208. During that same school year, 36.5% of students were eligible for the free/reduced lunch program. The average amount of professional experience for teachers at LES was 14.9 years.

Data Collection and Instrumentation

Data was collected from the school district’s report card found on the DESE website (www.dese.mo.gov). Communication Arts and Mathematics scores from 2010, 2011 and 2012 were collected and were separated into two groups: Proficient/Advanced and Basic/Below Basic. These numbers were in percentage form, and were put into an Excel Spreadsheet. That data was then put into the ASP program to calculate a t-test.

Statistical Analysis Methods

A Statistical Package (ASP) software was used to complete the statistical calculations in this study. Descriptive statistics and a t-test were calculated. Microsoft Excel was also used to compile some totals used in the research.
FINDINGS

As seen in Table 1, data was found on dese.mo.gov for percentage of students that scored proficient or advanced on the Mathematics portion of the Missouri Assessment Program in 2010 and 2011. The average percentage of students scoring in that range was then found for both years. After that data was collected, it was put into a t-chart. The results of which can be found in Table 2.

<table>
<thead>
<tr>
<th>Grade</th>
<th>No RTI 2010</th>
<th>RTI 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Grade</td>
<td>63.00%</td>
<td>70.70%</td>
</tr>
<tr>
<td>4th Grade</td>
<td>65.50%</td>
<td>53.50%</td>
</tr>
<tr>
<td>5th Grade</td>
<td>55.60%</td>
<td>62.90%</td>
</tr>
<tr>
<td>Mean</td>
<td>61.37%</td>
<td>62.37%</td>
</tr>
</tbody>
</table>

**t-test Analysis**

<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>No RTI</td>
<td>61.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTI</td>
<td>62.37</td>
<td>-1</td>
<td>-0.154</td>
<td>2</td>
<td>0.8918</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

The null hypothesis states that building-wide RTI does not affect scores on the Missouri Assessment Program (MAP) on the Mathematics sections in Grades 3-5. Without a building-
wide RTI program in place, 61.34% was the mean percentage of students in each grade 3-5 that scored proficient or advanced on the Mathematics portion on the MAP test. The first year that LES had a building-wide RTI program in place, the mean percentage of students in each grade 3-5 that scored proficient or advanced was 62.37%. The difference between the mean percentages was 1. The t-test value was -0.154 with 2 degrees of freedom. For this test, an alpha level of 0.25 was used. The p-value found was 0.8918. Since the p-value was not less than the alpha level, the null hypothesis was not rejected. Therefore, the implementation of a building-wide Response to Intervention Program did not affect the scores on the Mathematics Portion of the Missouri Assessment Program.

As seen in Table 3, data was found on dese.mo.gov for percentage of students that scored proficient or advanced on the Communication Arts portion of the Missouri Assessment Program in 2010 and 2011. The average percentage of students scoring in that range was then found for both years. After that data was collected, it was put into a t-chart. The results of which can be found in Table 4.

**Table 3: Percent of Students Scoring Proficient/Advanced on the Missouri Assessment Program – Communication Arts**

<table>
<thead>
<tr>
<th>Grade</th>
<th>No RTI (2010)</th>
<th>RTI (2011)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd Grade</td>
<td>46.6%</td>
<td>38.7%</td>
</tr>
<tr>
<td>4th Grade</td>
<td>53.4%</td>
<td>52.1%</td>
</tr>
<tr>
<td>5th Grade</td>
<td>58.7%</td>
<td>64.5%</td>
</tr>
<tr>
<td>Average</td>
<td>52.9%</td>
<td>51.76667%</td>
</tr>
</tbody>
</table>
T-test Analysis

Table 4: t-test Analysis Results for Building Wide RTI and Missouri Assessment Program (MAP) Communication Arts Scores

<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>No RTI</td>
<td>52.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTI</td>
<td>51.77</td>
<td>-3.33</td>
<td>-1.4378</td>
<td>2</td>
<td>0.28705</td>
</tr>
</tbody>
</table>

Note: Significant when p<=0.25

The null hypothesis states that building-wide RTI does not affect scores on the Missouri Assessment Program (MAP) on the Communication Arts sections in Grades 3-5. Without a building-wide RTI program in place, 52.9% was the mean percentage of students in each grade 3-5 that scored proficient or advanced on the Communication Arts portion on the MAP test. The first year that LES had a building-wide RTI program in place, the mean percentage of students in each grade 3-5 that scored proficient or advanced was 51.77%. The difference between the mean percentages was -3.33. The t-test value was -1.4378 with 2 degrees of freedom. For this test, an alpha level of 0.25 was used. The p-value found was 0.28705. Since the p-value was not less than the alpha level, the null hypothesis was not rejected. Therefore, the implementation of a building-wide Response to Intervention Program did not affect the scores on the Communication Arts Portion of the Missouri Assessment Program.
CONCLUSIONS AND RECOMMENDATIONS

The null hypothesis stated that building-wide RTI does not affect scores on the Missouri Assessment Program (MAP) on the Communication Arts and Math sections in Grades 3-5. The results of this study indicate that the building-wide RTI utilized by LES did not affect scores on the MAP in the area of Math, but did affect scores in the area of Communication Arts.

One area that could be changed would be to make sure that the most qualified staff members are providing the intervention to students. Paraprofessionals, while they are qualified to work with students, should not be providing the intensive intervention required to ensure students are mastering content. Likewise, the Title Reading instructors should be providing reading intervention and not math intervention. This would be an area where the administration would need to get involved and look at where each staff member is teaching during intervention. Then, the administrator would need to make changes. After those changes are made, though, the administrator will need to continuously monitor student progress and make changes where needed.

The materials being used for intervention are another area that warrants being reviewed. In order for intervention to be successful, the materials used must be research based. The building could look at forming a committee to research different intervention materials that could be bought and utilized for the entire school. There could also be a committee formed to look at the materials that are currently being used and determine whether or not they are effective forms of intervention.
Many times students are being tested on skill that they don’t even have the foundational skills needed in order to be successful. This is another area that could be looked at in order to make the intervention program more efficient. The PLC team and administration needs to meet and look at all the essential concepts for each grade level and determine the perquisite skills for those essential concepts. Once that has been completed, that information will need to be brought back to each grade level team so that they can formulate a plan to ensure that students have the prerequisite skills necessary to learn and master the essential concepts of their current grade level. Making sure that grade levels communicate with each other about individual students is an important component of this, as well.

With the findings showing that the building-wide intervention program did help Communication Arts scores, but did not affect Mathematics scores, perhaps more focus could be put on Mathematics during intervention time. Reading is always considered the most important of the core subjects, because without reading, it is very difficult to do any other subject. LES always puts priority on Communication Arts, meaning that if a student were to qualify for intervention in both Communication Arts and Mathematics, they would go to Communication Arts intervention. Perhaps, a solution would be to look at each student on a case by case basis. If the student is needing intervention in that Mathematics concept in order to move on in class, they would be better served to receive intervention in that skill as opposed to a Communication Arts skill that could be re-taught during class time. Also, LES has Reading Improvement Plans in place for students that are below grade level in Communication Arts. Creating Math Improvement Plans for those students performing below grade level in Mathematics would be another possible solution in helping the intervention program to be more successful.
Finally, a survey should be created by the PLC team and administration and sent to all staff members. That survey should ask the teachers what they felt worked with the intervention program and what they felt like could be improved upon. The results of those surveys should then be used by the PLC team and administrators as they come up with their plan to help make the building-wide RTI program more effective.
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