EDUCATIONAL LEADERSHIP: IMPROVING STUDENT ACHIEVEMENT

By

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With the increasing responsibility and accountability on school leaders to increase student achievement; this research addressed past and present researchers’ findings of the impacts from instructional leaders’ experience and methodologies on student achievement. This study investigated the impacts professional learning communities, response to interventions, and leadership experience had on 74 randomly selected Missouri high schools’ student achievement. ANOVA tests were conducted to determine if there were significant differences in the impacts PLCs, RtI, and principal experience have on students’ composite ACT, Math, Communication Arts scores. The results from this study imply schools that incorporate professional learning communities and response to interventions do positively impact student achievement. The findings from this study also suggest that years of experience as a high school principal do not have a significant impact on student achievement outcomes.
INTRODUCTION

Background, Issues and Concerns.

Education in our nation is placing increasing pressure and expectations for schools to increase student achievement. This pressure is falling on instructional leaders, they are being held more accountable for improving student performance; therefore, instructional leaders are developing and implementing various techniques and programs to bridge the gap between expectations and present performance. Instructional leaders are using various techniques to improve classroom instruction such as Professional Learning Communities (PLCs), Response To Intervention (RtI), collaborative decision making, teacher evaluations, hiring highly effective teachers, and school culture and climate to mention a few.

Practice under investigation.

The practice under investigation are the methodologies school instructional leaders use to improve student achievement. This study also investigated the impact principal experience has on student achievement.

Conceptual underpinning.

In education, schools and leaders try to implement instructional models and programs to provide teachers and students the necessary resources to improve teacher effectiveness and student achievement, respectively. There seems to be insufficient evidence as to whether principal experience, the Professional Learning Communities model, and the Response To Intervention platform have significant positive effects on student achievement. In reviewing the Professional Learning Communities and Response To Intervention models; in theory, PLCs and
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RtI should have positive impacts on student achievement. Principal experience should also have positive impacts on student achievement, but it must be realized that school principals must be effective leaders for experience to play a part.

Statement of the problem.

There is a lack of knowledge on how PLCs, RtI and leadership experience impact student achievement. This study investigated what past researchers have found on the impacts PLCs, RtI and principal experience have on student achievement. The findings from this study provided some insight as to whether these instructional models are effective for student achievement gains. If it is determined that they are, school leaders can begin looking at incorporating these models into their schools to improve teacher effectiveness which ultimately should translate into gains in students achievement.

Purpose of the study.

The purpose of this study is to determine if there are significant differences in student achievement between schools that incorporate PLCs and RtI to those schools that have not implemented these programs. This study determined if years’ experience as a school leader significantly affects student achievement.

Research questions.

RQ 1. Is there a difference in student achievement between schools that have professional learning communities and schools that do not have professional learning communities?
RQ 2. Is there a difference in student achievement between schools that use Response To Interventions and schools that do not use Response To Interventions?
RQ 3. Is there a difference in student achievement between schools that have experienced principals and schools that do not have experienced principals?
Null Hypotheses

Ho: There is no significant difference in student achievement between schools that use professional learning communities and schools that do not use professional learning communities.

Ho: There is no significant difference in student achievement between schools that use response to interventions and schools that do not use response to interventions.

Ho: There is no significant difference in student achievement between schools that have experienced principals and schools that do not have experienced principals.

Anticipated benefits of the study.

The results of this study will allow school leaders to determine if the data suggests PLCs, RtI and leadership experience significantly affect student achievement. The research should lend itself for school leaders to decide to implement these programs or to look elsewhere.

Definition of Terms

Professional Learning Communities (PLCs) – Hord (1997) describes PLCs as “An ongoing process through which teachers and administrators work collaboratively to seek and share learning and to act on their learning, their goal being to enhance their effectiveness as professionals for students’ benefit.”

Response to Intervention (RtI) – “schools identify students at risk for poor learning outcomes, monitor student progress, provide evidence-based interventions and adjust the intensity and nature of those interventions depending on a student’s responsiveness, and identify students with learning disabilities or other disabilities.” (NCRTI, 2010)
Summary

This research investigated the findings of previous research conducted on Professional Learning Communities, Response to Intervention, and leadership experience and how each affect student achievement. An independent test was conducted on PLCs, RtI, and leadership experience from the data collected in this study to determine if there were significant differences in student achievement when comparing schools that have experienced principals that utilize PLCs and RTI to those schools that do not. This study will hopefully provide an insight as to whether the Professional Learning Communities model and the Response To Intervention platform are beneficial educational structures in improving student achievement. This research shall also provide school districts baseline data as to whether principal experience will result in improved student achievement.
This study was conducted to determine if leadership experience and the decisions to implement professional learning communities (PLCs) and response to interventions (RTI) could determine student achievement outcomes. The research and data analysis conducted in this investigation reviewed work from previous researchers to develop a foundation and direction for this study. Past research has determined that school leadership is the single most important role in improving student achievement (Hallinger & Murphy, 1986; 2003; Heck, Larsen, & Marcoulides, 1990; Leithwood, Louis, Anderson, & Whalsttom, 2004). Murphy, Elliott, Goldring, and Porter (2007) suggest it is vital for school leaders to create and sustain a positive school culture while implementing effective organizational changes in order to stimulate and improve student achievement. There is also evidence to suggest school leadership teams influence student performance by providing teachers the structures and processes to enhance curriculum and support students academically (Cohen & Hill, 2000; Smith, Desimone, & Ueno, 2005).

Professional learning communities (PLCs) is one method for school leaders to consider when seeking to improve student achievement. According to Gruenert (2005), there is a strong correlation between student performance in math and communication arts and schools with a collaborative culture. Evidence from professional learning communities also suggests the improvement in student achievement is derived from the improved instruction through positive and effective teacher collaboration (King & Newmann, 2001; Louis & Marks, 1998; Smylie &
Wenzel, 2003; Tighe, Wang, & Foley, 2002). Professional learning communities may look very different from school to school, but they will all share similar core characteristics. In order for schools to have effective professional learning communities, they must have strong principal leadership (Bryk, Camburn, & Louis, 1999; Louis & Marks, 1998; Youngs & King, 2002). Principals must provide teachers with time to collaborate and ensure they have proper professional development to sustain the professional learning community model (Wahlstrom & Louis, 2008). Along with strong principal leadership, professional learning communities require teachers to work collegially and be supportive of one another. Although professional learning communities do offer support for teachers; Wahlstrom and Louis (2008) suggest PLCs are much more, they also “include shared values, a common focus on student learning, collaboration in the development of curriculum and instruction, the sharing of practices, and reflective dialogue” (Kruse, Louis, & Bryk, 1995; Hord & Sommers, 2008; McLaughlin & Talbert, 2001, p. 463).

As mentioned earlier, professional learning communities are unique to their respective schools. In addition to all the characteristics that make up professional learning communities, one must consider: years of implementation, culture of the school, and leadership traits. It would be reasonable that schools with strong experienced leaders which have established a positive school culture while having implemented PLCs for several years would have more significant gains in student achievement compared to schools that do not. Later in this study, an ANOVA test was conducted on 74 randomly selected Missouri high schools to determine if there is a significant difference in student achievement between schools that have implemented PLCs to those schools that have not.
Besides professional learning communities, what other methods may a school leader consider to implement in the efforts to improve student achievement? One possible strategy to consider is Response to Intervention (RTI). Across our country today, RTI is the most discussed and researched issue in education (Burns, 2010). This study investigated what past research says about RTI and its effect on student achievement.

Before a school leader implements a new initiative, he/she must analyze and evaluate the research based results on that initiative to determine if the studies suggest there is the desired affects they are seeking (Burns, 2010). Caution to school leaders looking to implement a Response to Intervention program; because of the design of RTI and the fact that it is implemented differently based on individual schools’ needs, there are no results evaluating the RTI process as a whole (Burns, 2010). In this case, a school leader should look for a meta-analysis on RTI to be confident in the studies’ results according to Ellis (2005).

So, what is Response to Intervention (RTI)? According to the Response to Intervention Newsletter (2010), “RTI is a continuous process of teaching, intervening, assessing, and adjusting within the general education environment.” RTI is a school wide program consisting of 3 tiers of intervention. Each tier of intervention is developed around the needs of the students in those levels of intervention and incorporates three essential components: provide researched-base high quality instruction, analyze data results and performance, and modify intervention strategies based on students’ response to instruction (“Response to Intervention”, 2010).
An effective Tier 1 should include quality core instruction that is differentiated by highly qualified teachers to address approximately 80% of students’ learning abilities (Burns, 2010; “Response to Intervention”, 2010). Tier 2 is designed to incorporate the next 15% or so of students that continue to struggle academically or behaviorally and require additional specialized instruction beyond Tier 1 (Burns, Appleton, & Stehouwer, 2005; “Response to Intervention”, 2010). Students in Tier 2 interventions are strategically placed in small groups for 20-30 minutes daily based on students’ needs (Vaughn, Wanzek, Linan-Thompson, & Murray, 2007). There are several meta-analyses to confirm that small-group Tier 2 interventions have provided effective results in student comprehension when accompanying Tier 1 instruction (Elbaum, Vaughn, Hughes, & Moody, 2000). Certain studies provide strong evidence for the effectiveness of Tier 2 interventions when they emphasize reading comprehension and math skills (Gersten et al., 2009b). Tier 3 is reserved for the remaining 5% of students requiring intense very specific individualized interventions that were not present in Tier 2 (Burns et al., 2005; “Response to Intervention”, 2010).

According to Burns (2010), it is difficult to say whether the research on the Response to Intervention model has had reputable outcomes. RTI is a relatively new initiative in comparison to other educational platforms; therefore, has a much smaller data base and requires ongoing research (Burns, 2010). This makes it very difficult to evaluate the overall effectiveness of the RTI model. However, school leaders looking to implement the RTI model in their buildings can do so with confidence knowing this model has positively impacted countless students (Burns, 2010). Burns (2010) believes with continued research and the translation of research into practice, RTI will be the adopted model to support students to ensure their success.
Later in this study, an ANOVA test will be conducted on 74 randomly selected Missouri high schools to determine if RTI has significant effects on how students will score on the ACT, Math and Communication Arts tests. There are many variables and factors to consider when determining the effectiveness of the RTI model. This particular study is to develop baseline data to determine if students score higher on standardized tests who attend schools that implement the RTI model compared to students who do not attend schools that incorporate the RTI model. This is an initial study and further research and analysis will need to be conducted to get a more accurate depiction on the true effects of RTI.

There are many factors and characteristics involved when determining if school principals will be highly effective leaders in improving student achievement. Past research emphasizes the lack of data to accurately and statistically evaluate which aspects do or do not affect student achievement (Branch, Hanushek, & Rivkin, 2009). However, according to Horng, Kalogrides, and Loeb (2009), there is reliable school research on the positive impacts principals have on student achievement through hiring and retaining effective teachers, developing and communicating the school mission and goals, allocating resources effectively, and developing a solid organizational structure to support teachers and students. With the limited amount of research on how school leaders impact student achievement; there seems to be less statistical and contrasting evidence on how principal experience effects student achievement.

What does previous research say? According to Rice (2010), the research findings on how school principals impact student achievement are widely inconsistent. Evidence for this lies
in what Clark, Martorell, and Rockoff (2009) and Branch et al. (2009) say about how more experienced principals yield better results in student achievement gains compared to the findings reported by Brown, R., (1991), Chan (1992), Howell (1989), Poovatanakul (1993), Saavedra (1987), and Yang (1996) which illustrated principal experience had no impact or even possibly a negative impact on student achievement. With the discrepancies in what past researchers have reported; it is uncertain what other variables were included or omitted that would affect their outcomes to provide contrasting results. An ANOVA test will be conducted later to compare the results from the 74 randomly selected Missouri high schools’ data to the previously mentioned research outcomes to determine the significance of principal experience on student achievement gains.

Several other studies have discovered that besides principal experience; a principal’s tenure in the same school appears to have as much of an impact on student achievement as experience (Wheeler, 2006; Branch et al., 2009). Another study says that tenure as an assistant principal in the same building before becoming the principal seems to have positive gains in student achievement (Clark et al., 2009). Echoing what the research says, the expectation would be that school leaders familiar and knowledgeable of the buildings they lead would have positive impacts on student achievement. However, these school principals must be effective leaders in order to see these gains.
Research Design

Data was collected from DESE’s database to provide ACT, Math and CA scores for each of the 74 randomly selected Missouri high schools. The ANOVA test was conducted to determine if there were significant differences in test scores when comparing schools that implement PLCs and RTI to schools that do not. The ANOVA test was also used to determine if there was a significant difference in test scores when comparing schools that have experienced principals to schools that have less experienced principals. The Alpha level was set at 0.25 to determine if there was a significant difference. This study consisted of two groups. One group was the “yes” group, the other group was the “no” group. The “yes” and “no” are the answers to whether the schools have experienced principals or utilize PLCs and RTI.

The 74 schools were divided into 3 groups. Group 1 were schools with principals having 1-3 years of experience, group 2 were the schools that have principals with 4-10 years of experience, and group 3 were the schools that have principals with 11+ years of experience. The ANOVA test conducted on principal experience will determine if student achievement improves with principal experience.

*Independent Variables* were PLCs, RTI, and principal experience.

*Dependent Variables* were ACT, Math, and CA scores.

Study Group

There were two study groups. Group 1 consisted of the schools with less experienced principals who have not implemented PLCs and/or RTI. Group 2 consisted of the
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schools with more experienced principals who have implemented PLCs and/or RTI. ACT, Math, and CA scores from the 74 randomly selected Missouri high schools were investigated to determine if PLCs, RTI, and principal experience have significant positive impacts on students’ scores.

Data Collection

Archival data from DESE was linked to the 74 randomly selected Missouri high schools to answer the research questions. The data retrieved from DESE were ACT, Math and Communication Arts (CA) scores. The data was compiled into an excel spreadsheet and imported into ASP. The independent variables were recoded to create groups illustrating the number of schools that do or do not participate in PLCs and RTI. Years of experience as a principal will also be recoded to determine the number of schools with principals having 1-3 years’ experience, 4-10 years’ experience, and 11+ years’ experience. A summary of descriptive statics was created for each independent variable to highlight the number of schools in each group and the mean score for the schools in each group, respectively.

Statistical Analysis

ASP was used to conduct an ANOVA test to determine if a significant difference exists between the independent variables (PLCs, RTI and leadership experience) and their impact on the dependent variables (ACT, Math, and CA scores). The alpha level was set at .25. If the significant value is less than the alpha level set at .25, a post hoc test was conducted to determine the significant difference amongst the independent variables.
This study included 74 randomly selected Missouri high schools to identify if there was a significant difference in composite ACT scores when comparing schools that use the PLC model to those schools that do not. The 74 Missouri high schools were divided into 2 groups: group 1 consisted of the 39 schools that did not use the PLC model and group 2 were the 35 schools that did incorporate the PLC model. The schools in group 1 had a mean score of 20.38 compared to group 2 schools that had a mean score of 21.24. To determine if there was a significant difference in composite ACT scores in relation to the PLC model, an ANOVA test was conducted.

Table 1
Summary of Descriptive Statistics for ACT Scores

<table>
<thead>
<tr>
<th>PLC</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>39</td>
<td>20.38</td>
<td>0.23</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>21.24</td>
<td>0.23</td>
</tr>
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</table>

Table 2
Summary of ANOVA Test of Significance Results for ACT

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>sig.</th>
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</thead>
<tbody>
<tr>
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<td>13.41</td>
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<td>14.41</td>
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<td></td>
</tr>
<tr>
<td>PLC</td>
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<td>1.67</td>
<td>8.05</td>
<td>5.91E-3</td>
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</tbody>
</table>

Note: Significance = < 0.25

The 74 randomly selected Missouri high schools were divided into 2 groups: the 39 schools in group 1 did not use the PLC model and group 2 were the 35 schools that did utilize the
PLC model. An ANOVA test was conducted to verify the null hypothesis. The null hypothesis states that there was not a significant difference on the effect of PLCs on composite ACT scores. The significant value of 5.91E-3 is much less than the alpha level set at 0.25; therefore, the null hypothesis was rejected. This test suggests there was a significant difference in composite ACT scores when comparing schools that incorporate the PLC model to those

Table 1
Summary of Descriptive Statistics for Math Scores

<table>
<thead>
<tr>
<th>PLC</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>39</td>
<td>50.85</td>
<td>1.39</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>54.03</td>
<td>1.39</td>
</tr>
</tbody>
</table>

This study included the same 74 randomly selected Missouri high schools to determine if there is a significant difference in standardized Math scores when comparing schools that use the PLC model to those schools that do not. The 74 Missouri high schools were divided into 2 groups: group 1 consisted of the 39 schools that did not use the PLC model and group 2 were the 35 schools that did incorporate the PLC model. The schools in group 1 had a mean score of 50.85 compared to group 2 schools that had a mean score of 54.03. To determine if there was a significant difference in standardized Math scores when considering the PLC model, an ANOVA test was conducted.
The 74 randomly selected Missouri high schools were divided into 2 groups: the 39 schools in group 1 that did not use the PLC model and group 2 were the 35 schools that did utilize the PLC model. An ANOVA test was conducted to verify the null hypothesis. The null hypothesis stated that there was not a significant difference on the effect of PLCs on standardized Math test scores. The significant value of 0.18 was less than the alpha level set at 0.25; therefore, the null hypothesis was rejected. This test suggested there was a significant difference in standardized Math test scores when comparing schools that incorporate the PLC model to those schools that do not.

Table 2
Summary of ANOVA Test of Significance Results for Math Scores

<table>
<thead>
<tr>
<th>Source</th>
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<td>Math Scores</td>
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<td>186.82</td>
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</tr>
<tr>
<td>PLC</td>
<td>7363.05</td>
<td>1</td>
<td>102.265</td>
<td>1.83</td>
<td>0.18</td>
</tr>
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</table>

Note: Significance = < 0.25

Table 1
Summary of Descriptive Statistics for CA Scores

<table>
<thead>
<tr>
<th>PLC</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>39</td>
<td>52.05</td>
<td>1.01</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>56.13</td>
<td>1.01</td>
</tr>
</tbody>
</table>
This study included 74 randomly selected Missouri high schools to identify if there was a significant difference in standardized CA scores when comparing schools that use the PLC model to those schools that do not. The 74 Missouri high schools were divided into 2 groups: group 1 consisted of the 39 schools that did not use the PLC model and group 2 were the 35 schools that did incorporate the PLC model. The schools in group 1 had a mean score of 52.05 compared to group 2 schools that had a mean score of 56.13. To determine if there was a significant difference in standardized CA scores in relation to the PLC model, an ANOVA test was conducted.

Table 2
Summary of ANOVA Test of Significance Results for CA Scores

<table>
<thead>
<tr>
<th>Source</th>
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<th>MS</th>
<th>F</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>186.82</td>
<td>72</td>
<td>186.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLC</td>
<td>7363.05</td>
<td>1</td>
<td>102.265</td>
<td>1.83</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Note: Significance = < 0.25

The 74 randomly selected Missouri high schools were divided into 2 groups: the 39 schools in group 1 that did not use the PLC model and group 2 were the 35 schools that did utilize the PLC model. An ANOVA test was conducted to verify the null hypothesis. The null hypothesis stated that there was not a significant difference on the effect of PLCs on standardized CA scores. The significant value of 0.18 was less than the alpha level set at 0.25; therefore, the null hypothesis was rejected. This test suggests there was a significant difference in standardized CA scores when comparing schools that incorporate the PLC model to those
This study of RTI on student ACT scores uses the same 74 randomly selected Missouri high schools as the study of PLCs. The high schools were divided into 2 groups: group 1 consisted of 38 schools which do not use the RTI platform and group 2 was comprised of the 36 schools that did incorporate RTI. The mean score on the ACT was 20.15 for schools that did not use RTI and 21.46 for schools that did implement RTI. To confirm the null hypothesis which stated there was no significant difference in ACT scores when comparing schools that use RTI to schools that do not, an ANOVA test was conducted.

Table 1
Summary of Descriptive Statistics for ACT

<table>
<thead>
<tr>
<th>RTI</th>
<th>N</th>
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<tbody>
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<td>1</td>
<td>38</td>
<td>20.15</td>
<td>0.19</td>
</tr>
<tr>
<td>2</td>
<td>36</td>
<td>21.46</td>
<td>0.19</td>
</tr>
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</table>

Table 2
Summary of ANOVA Test of Significance Results for ACT

<table>
<thead>
<tr>
<th>Source</th>
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<tbody>
<tr>
<td>ACT</td>
<td>31.52</td>
<td>72</td>
<td>31.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTI</td>
<td>101.80</td>
<td>1</td>
<td>1.41</td>
<td>22.29</td>
<td>1.12E-5</td>
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</tbody>
</table>

Note: Significance = < 0.25
According to the ANOVA test, there was a significant difference between groups 1 and 2 determined by the significant value of 1.12E-5 which was much less than the alpha level set at 0.25. The null hypothesis was rejected. There was a significant difference between schools using the RTI platform compared to schools not using RTI.

Table 1

Summary of Descriptive Statistics for Math Scores

<table>
<thead>
<tr>
<th>RTI</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>38</td>
<td>50.36</td>
<td>1.36</td>
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<tr>
<td>2</td>
<td>36</td>
<td>54.46</td>
<td>1.36</td>
</tr>
</tbody>
</table>

The same 74 randomly selected Missouri high schools used in the previous test were used to compare RTI and student scores on standardized Math tests. The high schools were divided into 2 groups based on whether the schools utilize RTI or not: group 1 consisted of 38 schools which do not use the RTI platform and group 2 was comprised of the 36 schools that did incorporate RTI. The mean score on the standardized Math tests was 50.36 for schools that did not use RTI and 54.46 for schools that did implement RTI. An ANOVA test was conducted to determine if the null hypothesis should be accepted or rejected. The null hypothesis stated that there is not a significant difference between scores on standardized Math tests when comparing schools that use RTI and those schools that do not.
The ANOVA test suggested there was a significant difference between schools that use the RTI platform compared to schools that do not based on the significant value of 0.08 being less than the predetermined alpha level set at 0.25. The null hypothesis was rejected. The data suggests that RTI has benefits and positively affects students’ scores on standardized Math tests.

Table 2
Summary of ANOVA Test of Significance Results for Math Scores

<table>
<thead>
<tr>
<th>Source</th>
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<td>311.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RTI</td>
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<td>1</td>
<td>100.54</td>
<td>3.10</td>
<td>0.08</td>
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</table>

Note: Significance = < 0.25

This study included the same 74 randomly selected Missouri high schools to determine if there was a significant difference in standardized CA scores when comparing schools that use the RTI model to those schools that do not. The 74 Missouri high schools were divided into 2 groups: group 1 consisted of the 38 schools that did not use the RTI platform and group 2 were the 36 schools that did incorporate the RTI model. The schools in group 1 had a mean score of 51.55 compared to group 2 schools that had a mean score of 56.54. To determine if there was a
significant difference in standardized CA scores when considering the RTI model, an ANOVA test was conducted.

Table 2

Summary of ANOVA Test of Significance Results for CA Scores

<table>
<thead>
<tr>
<th>Source</th>
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<th>MS</th>
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<tr>
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<td>460.65</td>
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<td>460.65</td>
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<tr>
<td>RTI</td>
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<td>72.30</td>
<td>6.37</td>
<td>0.01</td>
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Note: Significance = < 0.25

The results from the ANOVA test suggested there was a significant difference; therefore, the null hypothesis was rejected because the significant value of 0.01 was considerably less than the alpha level set at 0.25. According to the results, students from schools that use RTI score higher on CA tests when compared to students that attend schools that do not use the RTI model. Based on the findings in this test, RTI positively affects students’ scores on CA tests.

Table 1

Summary of Descriptive Statistics for ACT

<table>
<thead>
<tr>
<th>YRS ADM</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
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<td>20.59</td>
<td>0.07</td>
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<td>2</td>
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</tbody>
</table>
This study used the same 74 randomly selected Missouri high schools to identify if there was a significant difference in years of experience as an administrator on composite ACT scores. The 74 schools were divided into three groups based on their principal’s experience as an administrator. Group 1 consisted of schools that had principals with experience ranging from 1 to 3 years. Group 2 consisted of schools that had principals with experience ranging from 4 to 10 years. Group 3 were schools with principals of 11 plus years of experience. There were 25 schools in group 1, 24 schools in group 2, and 25 schools in group 3. Schools in group 1 had a mean ACT score of 20.59, schools in group 2 had a mean ACT score of 20.99, and group 3 schools had a mean ACT score of 20.78.

Table 2
Summary of ANOVA Test of Significance Results for ACT

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>2.00</td>
<td>71</td>
<td>0.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YRS ADM</td>
<td>131.32</td>
<td>2</td>
<td>1.85</td>
<td>0.54</td>
<td>0.59</td>
</tr>
</tbody>
</table>

Note: Significance = < 0.25

An ANOVA test was conducted on the 74 randomly selected Missouri high schools to determine if there was a significant difference on ACT scores in relation to principal experience. The significant value was found to be 0.59 which is higher than the predetermined alpha level of 0.25 which suggests there was no significant difference. Therefore, the null hypothesis was accepted. According to this study, years of experience as a principal do not reflect a significant positive affect on student scores on the ACT.
This study used the same 74 randomly selected Missouri high schools to identify if there was a significant difference in years of experience as an administrator on standardized Math scores. The 74 schools were divided into three groups based on their principal’s experience as an administrator. Group 1 consisted of schools that had principals with experience ranging from 1 to 3 years. Group 2 consisted of schools that had principals with experience ranging from 4 to 10 years. Group 3 were schools with principals of 11 plus years of experience. There were 25 schools in group 1, 24 schools in group 2, and 25 schools in group 3. Schools in group 1 had a mean Math score of 50.87, schools in group 2 had a mean Math score of 52.40, and group 3 schools had a mean Math score of 53.79.

Table 1
Summary of Descriptive Statistics for Math Scores

<table>
<thead>
<tr>
<th>YRS ADM</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>50.87</td>
<td>2.81</td>
</tr>
<tr>
<td>2</td>
<td>24</td>
<td>52.40</td>
<td>2.87</td>
</tr>
<tr>
<td>3</td>
<td>25</td>
<td>53.79</td>
<td>2.81</td>
</tr>
</tbody>
</table>

Table 2
Summary of ANOVA Test of Significance Results for Math Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math</td>
<td>106.94</td>
<td>71</td>
<td>53.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YRS ADM</td>
<td>7442.92</td>
<td>2</td>
<td>104.83</td>
<td>0.51</td>
<td>0.60</td>
</tr>
</tbody>
</table>

Note: Significance = < 0.25
An ANOVA test was conducted to determine whether to accept or reject the null hypothesis. The results suggest that there was not a significant difference between Math scores and years of experience as a principal. Therefore, the null hypothesis was accepted. The evidence was in the significant value of 0.60 which was higher than the alpha level set at 0.25. In regards to the test data, years of experience as a principal do not have a significant effect on student Math scores.

This study used the same 74 randomly selected Missouri high schools to identify if there was a significant difference in years of experience as an administrator on CA scores. The 74 schools were divided into three groups based on their principal’s experience as an administrator. Group 1 consisted of schools that had principals with experience ranging from 1 to 3 years. Group 2 consisted of schools that had principals with experience ranging from 4 to 10 years. Group 3 were schools with principals of 11 plus years of experience. There were 25 schools in group 1, 24 schools in group 2, and 25 schools in group 3. Schools in group 1 had a mean CA score of 52.54, schools in group 2 had a mean ACT score of 53.91, and group 3 schools had a mean CA score of 55.49.

<table>
<thead>
<tr>
<th>YRS ADM</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>52.54</td>
<td>2.10</td>
</tr>
<tr>
<td>2</td>
<td>24</td>
<td>53.91</td>
<td>2.15</td>
</tr>
<tr>
<td>3</td>
<td>25</td>
<td>55.49</td>
<td>2.10</td>
</tr>
</tbody>
</table>
To determine if there was a significant difference in CA scores and principal experience, an ANOVA test was conducted. The test determined that the significant value was 0.50 which is greater than the alpha level of 0.25. This suggests that there was not a significant difference in CA scores and principal experience, thus the data supported the null hypothesis. The ANOVA tests conducted on years of experience as a principal all reveal similar results. Each test determined that years of experience as a principal do not significantly affect student scores on ACT, Math, or CA tests.

Table 2
Summary of ANOVA Test of Significance Results for CA Scores

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA</td>
<td>108.53</td>
<td>71</td>
<td>54.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YRS ADM</td>
<td>5557.89</td>
<td>2</td>
<td>78.28</td>
<td>0.69</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Note: Significance = < 0.25
CONCLUSIONS AND RECOMMENDATIONS

This study was conducted to discover what past research said about how PLCs, RTI, and school leadership experience impacts student achievement and compare it to the baseline data analyzed in this study to determine if there was a correlation between the two. The findings from the tests conducted on the 74 randomly selected Missouri high schools in this study mirror the results from previous research studies. However, with the limited number of studies on the effects of PLCs, RTI, and principal experience on student achievement, it would be difficult at this point to say with a great degree of certainty that these factors will positively affect student achievement outcomes.

This research was an initial study to develop baseline data to determine if PLCs, RTI, and principal experience were significant factors in positively affecting student achievement. The data suggests there are significant differences in ACT, Math, and CA scores when schools implement PLCs and RTI programs to those schools that do not. Though the data suggests PLCs have positive impacts in student achievement, remember in order for PLCs to be effective, schools must have strong principal leaders (Bryk, Camburn, & Louis, 1999; Louis & Marks, 1998; Youngs & King, 2002). Surprisingly, there was no evidence from this study that suggests schools with more experienced principals have students that score higher on ACT, Math, and CA tests compared to schools with less experienced principals. Though there are still many uncertainties of the true effects of PLCs and RTI on positively impacting student achievement; schools should direct their attention and research to these two models as possible platforms to
implement. Based on initial research, PLCs and RTI have both had significant positive results in improving student performance. On the other hand, it is much more unclear as to the effects of principal leadership on student achievement based on all the contrasting results of past research (Rice, 2010). However based on the data from this study, schools looking for new principals should not limit their search to experienced principals with advanced degrees. The ANOVA test conducted on principal experience as it relates to student achievement on ACT, Math, and CA tests determined there was no significant difference in student performance based on principal experience.

The background research and the results from this study suggests there are significant differences in students’ ACT, Math, and CA test scores when comparing students’ scores from schools that use PLCs and RTI to students’ scores from schools that do not. However, it has been determined that principal experience does not make a significant difference in student achievement outcomes. The evidence from the ANOVA test suggests that principal experience may actually negatively impact student achievement. The results from the test on principal experience and student achievement are similar to the results from past research. There is vastly inconsistent data which makes it very difficult at this point to determine the true effects. Further investigations would need to be performed in order to develop a more accurate representation of how principal experience impacts student achievement.

The results from this study have provided a general understanding to the effects of how Professional Learning Communities and Response To Intervention impact student achievement.
EDUCATIONAL LEADERSHIP AND STUDENT ACHIEVEMENT

It is realized that further investigations will need to be conducted to better understand the true impacts, but it is believed that the results from this study suggests these educational platforms are beneficial and could provide improvements in student achievement.

This study provides significant data to support the implementation of Professional Learning Communities and/or Response To Intervention. The results suggest that mean student scores on the ACT, Math, and CA tests were significantly better from students that attended schools that use the PLCs and/or the RTI models compared to those students that attended schools that do not. It is the recommendation of this study to encourage schools to begin seriously looking at how to incorporate PLCs and RTI in their schools. Schools must realize the models will likely need to be modified and adjusted to address the specific needs of their students and staff, but should do so confidently, know that there is data to support their initiatives.
REFERENCES


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