The Effectiveness of Response to Intervention and Instructional Coaching in a Small Rural Midwestern School District

Approved: ____Karen Stinson_________________ Date: _08/04/2015___________

The Effectiveness of Response to Intervention and Instructional Coaching in a Small Rural Midwestern School District

A Seminar Paper

Presented to

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University of Wisconsin-Platteville

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Masters of Science

in

Education

by

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Abstract

This action research project evaluated the effectiveness of a Response to Intervention (RtI) period and instructional coaching on student STAR reading scores in a small rural Midwestern school district. Students identified for a reading intervention period were monitored for progress by comparing their September and May STAR scores in each school year. Students experienced a decrease in scores during the 2013-2014 school year when the intervention period was initiated, but scores returned to nearer the baseline during 2014-2015. Suggestions for future research are included.

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CHAPTER I: INTRODUCTION

The research will focus on the effectiveness of Response to Intervention (RTI) implementation in a small rural Midwestern school district. RTI uses student academic screening data to measure student learning. These data are used to determine any remediation (academic interventions) that may benefit students. The school chosen for this study has a grade 7-12 building that shares staff and operates like a junior high/high school. The building has averaged between 300 and 350 students over the ten years prior to the study, with class sizes ranging from 40 to 60 students. Student population is more than 98% white and 7.9% of city residents had income below the 2013 poverty level. The city has a population of 2,300 and is 60 miles from the nearest major population centers that have over 25,000 residents.

Many studies have been done to measure the effectiveness of RTI in elementary schools, but few have looked at RTI effectiveness in middle and secondary settings. Emerging research indicates that RTI can be very effective in these settings, especially when Tier II interventions (individualized and intense interventions based on screening data) are employed. Graves, Duesbery, Pyle, Brandon, and McIntosh (2011) investigated the impact of Tier II intervention on reading scores for sixth grade students. They found strong improvements in reading speed, accuracy, and comprehension after Tier II interventions. Vaughn et al., (2010) also studied middle school Tier II interventions in reading. They found that students who received Tier II intervention improved their reading scores at a rate higher than a control group on several reading measures.

Statement of the Problem

This research will build upon the research of Graves et al. (2011) and Vaughn et al. (2010) by looking at the impact of RTI in a small rural Midwestern school district with the implementation of an RTI period in 2013-2014 and instructional coaching for RTI teachers in 2014-2015. I chose to study reading at this school because of the consistently large gaps that exist in scores of higher and lower achieving students. I hypothesize that students will demonstrate increased growth in STAR Reading scores during the first year of having an RTI period in 2013-2014 when compared to the baseline years (2011-2012 and 2012-2013), but that those gains will increase even more after the implementation of intensive Tier II interventions and instructional coaching during the 2014-2015 school year.

Definition of Terms

Response to Intervention (RTI) – a multi-tier approach to the early identification and support of students with learning and behavior needs. The RTI process begins with high-quality instruction and universal screening of all children in the general education classroom (National Center for Learning Disabilities, 2014).

The school in this study uses a pupil services team consisting of the principal, special education director, school counselor, and RTI coordinator to review STAR Reading and STAR Math scores, as well as student test history, to identify students in need of reading and math interventions. A team consisting of the RTI coordinator and intervention teachers monitor student progress throughout the school year to adjust instruction. Students were kept in the 25-minute intervention unless at least two successive monthly STAR screening scores showed that they had met grade-level equivalency. Students not placed in an academic intervention were either identified for gifted and talented services or placed in enrichment courses that rotate throughout the school year during the RTI period. All students in the school had an assigned intervention, enrichment, or gifted and talented classroom during the RTI period in order to avoid the stigma of being singled out.

Tier I interventions – Within Tier I, all students receive high-quality, scientifically based instruction provided by qualified personnel to ensure that their difficulties are not due to inadequate instruction. All students are screened on a periodic basis to establish an academic and behavioral baseline and to identify struggling learners who need additional support (National Center for Learning Disabilities, 2014).

Tier II interventions – Students not making adequate progress in the regular classroom in Tier I are provided with increasingly intensive instruction matched to their needs on the basis of levels of performance and rates of progress. Intensity varies across group size, frequency and duration of intervention, and level of training of the professionals providing instruction or intervention (National Center for Learning Disabilities, 2014).

Instructional Coach – Instructional coaches are onsite professional development providers and change agents who use differentiated coaching to increase teacher effectiveness by teaching educators how to successfully implement effective, research-based teaching techniques and practices (Center for Early Childhood Professional Development, 2014).

STAR Reading – a challenging, interactive, and brief (about 15 minutes) assessment, consisting of 34 questions per test, that evaluates a breadth of reading skills appropriate for grades K-12. Teachers use results from STAR Reading Enterprise to facilitate individualize instruction and identify students who most need remediation or enrichment (Renaissance Learning, 2014).

Delimitations of Research

There are two major delimitations to RTI research at the school in this study. The first major delimitation is that instructional coaching is not the only change to the RTI period for 2014-2015. In 2013-2014, students were also allowed to eat breakfast in their classroom during the RTI period. This sometimes led to students being a couple of minutes late to the RTI period due to the length of the breakfast lines. Tardiness led to less instructional time for teachers and eating breakfast during instruction may have caused focus problems for students.

The second major delimitation is the school environment for 2014-2015. In April of 2014, a referendum was passed under which the school will undergo construction throughout the 2014-2015 school year. This will result in less instructional area for the school year, as well as possible distractions (noise, cramped spaces, etc.) These factors may have an impact on student learning and RTI success.

Method of Approach

I will measure the effectiveness of academic interventions in RTI via STAR Reading scores, which measure 46 reading skills in 11 domains. I will record STAR Reading scores in both September and May for the 2011-2012, 2012-2013, 2013-2014, and 2014-2015 school years to measure annual growth in percentile rank, scale score, and grade level equivalency. The IRB protocol provides further details and is attached as Appendix I. Project data collection materials are attached as Appendix II.

CHAPTER II: REVIEW OF LITERATURE

Research Question

Response to Intervention (RTI) is not a new strategy in education. Elementary schools have been implementing this responsive learning system for many year, but middle school and high school research related to RTI is still emerging. RTI fits into each district and building differently, but research shows that there are some characteristics of effective RTI that are universal. The main question addressed in my work will be whether or not RTI at a small Midwestern junior high and high school will be more effective when paired with instructional coaching.

Discussion of Prior Research

Johnson and Smith (2011) explored the framework of successful RTI models and whether they apply well to successful middle schools. They explain the differences between the various tiers of intervention used in the RTI model to promote student learning through evidence-based instruction, universal screening, progress monitoring, implementation of research-based interventions, and fidelity checks. Johnson and Smith also summarize the conditions necessary for implementation: 1) professional development, 2) engaged administrators, 3) district-level support to hire qualified teachers, 4) determination to see the process through, and 5) willingness to alter roles of staff to change the culture of learning. Their findings did not uncover the results of specific interventions, but set the stage for what an effective system might look like.

Johnson and Smith included a case story of Cheyenne Mountain Junior High in their research. The school had been implementing RTI for six years, during which the high-performing school had undergone a population shift that had increased the population of students of lower socioeconomic status. The school focused on improving reading results after a thorough review of assessment data. The result of the six-year implementation of RTI was that the school maintained its status as high-performing, student achievement in reading and writing increased, and discipline issues decreased. The school continued to refine its RTI process in middle school due to the positive results.

Other researchers have gone on to look at more specific details of the RTI framework and the impact of the system on student learning. Vaughn et al., (2010) conducted a study to "implement and evaluate the outcomes of a comprehensive researcher-provided intervention with older students with reading difficulties" (para. 6). Vaughn et al. focused even more intently on an area largely ignored by RTI research prior to that time: middle schools. Their research was a year-long project involving an intensive reading intervention for sixth-graders, which was part of a larger project examining the effectiveness of interventions as a whole. Vaughn et al. hypothesized that students receiving an intensive Tier II intervention (planned for individual students based on research) would close the reading gap faster than students receiving a Tier I intervention (an in-class intervention by a classroom teacher, usually for all students). The reading measures assessed were decoding, spelling, fluency, and comprehension. Vaughn et al. concluded that intervention students saw stronger gains than non-intervention students in most areas, but that the pre-test to post-test goals during the school year may have been too ambitious. Correlations were found between Tier 2 interventions and improved reading scores for sixth-grade students, but more research is needed at this age-level before Vaughn et al. could make more substantial recommendations.

Graves, Duesbery, Pyle, Brandon, and McIntosh (2011) had two main purposes in their research: to report their findings on the impact of Tier I and Tier II interventions on students with poor reading scores, and to create from these data a plan for a middle school RTI model. The question they researched in their three-phase study was whether or not sixth grade students who received Tier I and Tier II interventions would score significantly better than those who received only Tier I interventions or normal classroom instruction. Their findings indicated that the group with Tier II interventions coupled with a Tier I intervention demonstrated significant gains in reading scores over the control group. The researchers also demonstrated a need for developing more research-based interventions that could be utilized at the Tier II level.

Although some evidence has been uncovered that points to RTI as an effective educational tool in middle schools and high schools, less research has been done on particular interventions and the effectiveness in increasing academic achievement. Prior to the era of RTI and individualized education, reading instruction in middle and high schools was often only found in special education classrooms. Schools are now looking to increase reading remediation at the middle and high school level, but struggle to find what interventions will work for their students. Slavin, Cheung, Groff, and Lake (2008) conducted a best-evidence synthesis of reading programs for middle and high school students. Although they found that there are many limitations to the research for individual reading programs in middle and high school, there were some important patterns in their findings: 1) most programs with good evidence of effectiveness involved cooperative learning, 2) positive effects were also seen when programs were designed to improve classroom instruction through professional development for teachers, and 3) forms of computer-assisted instruction (CAI) generally had small effects.

One of the limitations of the research discussed is that many middle and high school teachers are unprepared to initiate effective interventions. Huguet, Marsh, and Farrell (2014) found that one of the key components to successful instructional coaching is building relationships with teachers; often times this is even more important than content knowledge. Teachers largely appreciate and utilize the help that instructional coaches provide as long as it is framed around improving student learning and as a way to help teachers deliver quality instruction.

Summary

Most teachers are prepared to deliver lessons in their content area, but have little specific training that enables them to design quality reading instruction. Research shows that RTI is effective and that specific interventions share key characteristics like cooperative learning and professional development. This leads to the question: would students display more dramatic reading improvements if school districts paired RTI with instructional coaching? This question applies to the situation of the school in this study. An RTI period was in place, but teachers lacked much of the time and expertise needed to interpret the data and use it to improve student learning. The 2014-2015 school year included an instructional coach to help teachers make decisions about which interventions can best help their students.

Hypothesis

I hypothesize that students will demonstrate increased growth in STAR Reading scores during the first year of having an RTI period in 2013-2014 when compared to the baseline years (2011-2012 and 2012-2013), but that those gains will increase even more after the implementation of intensive Tier II interventions and instructional coaching during the 2014-2015 school year.

CHAPTER III: METHOD

Participants

Research was conducted at a small rural Midwestern school district. The district is comprised of two buildings: a 4K-6th grade elementary building, and a 7-12 junior high/high school building.

Students participating in the research were identified by the school's pupil services team as needing a Tier 2 reading intervention for the 2014-2015 school year. The team identified students who needed a reading Tier 2 intervention by looking at STAR Reading score history. Students who received a STAR percentile rank of below 40 on the May, 2014, test were considered for needing a reading intervention. The team looked at past STAR score history to assist in making these decisions. Fifty-four students were identified for Tier 2 reading intervention according to these criteria.

Materials

The reading scores were generated by STAR Reading software after the participants had taken the test. The scores that were analyzed include the scale score (SS), percentile rank (PR), and grade-level equivalency (GE). These scores were placed on a data collection form and analyzed for growth or regression.

Procedures

Research began with the collection of STAR Reading scores from prior years. The first scores analyzed were taken from STAR Reading tests given during the 2011-2012 and 2012-2013 school years. The test results for September and May were recorded on the data collection form. During these two school years there was no RTI Tier 2 intervention period at the Midwestern Elementary School or the Midwestern Middle and High School. These years were used to determine a baseline for growth or regression when there was no intervention period.

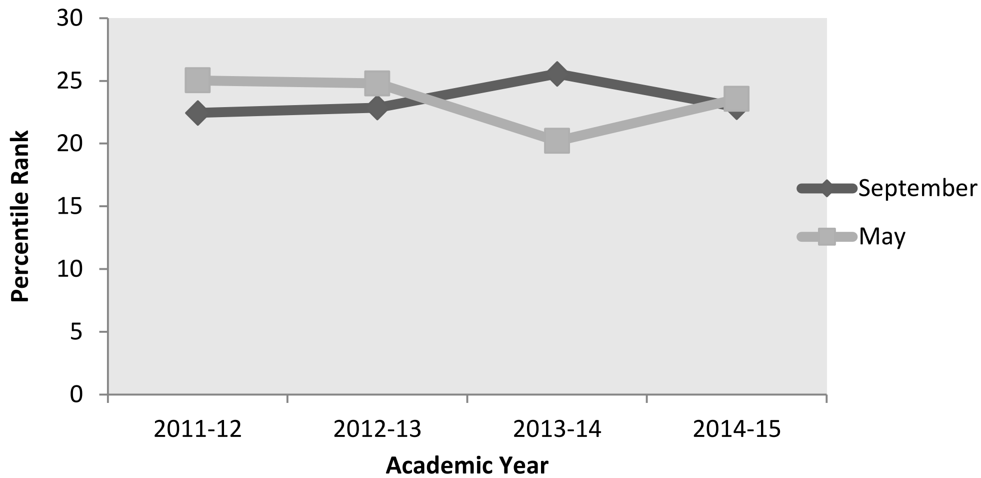
Following determination of a baseline, scores were collected for the 2013-2014 school year. During 2013-2014, a 25 minute RTI Tier 2 intervention period was created at the schools. Students were divided into RTI periods of 8-9 students, but staff was given little direction or training for delivering quality interventions. Once again, the test results for September and May were recorded on the data collection form. Growth during 2013-2014 was compared to the baseline years.

The final set of data collected was taken from the 2014-2015 school year. During 2014-2015, the schools had an RTI instructional coach available to help determine what interventions were most appropriate for individual students. The instructional coach also was able to help train teachers to implement quality interventions based on student needs. RTI Tier 2 interventions included specific work on fluency, word recognition, and comprehension. All RTI Reading classrooms included eight to ten students and the students were placed with either an English/language arts or social studies teacher. Students rotated to different teachers during the school year as a result of monthly team meetings that studied individual student needs. Classrooms often included students of two or three different grade levels depending on the prescribed intervention. Some students used *Accelerated Reader* to work on all three reading areas via independent reading practice. Other students utilized the *Ask-Read-Tell* framework to improve comprehension through in-class discussion of readings. The test results for September and May were recorded on the data collection form. Growth during 2014-2015 was then analyzed and compared to the baseline years as well as the 2013-2014 school year.

CHAPTER IV: RESULTS

I conducted an analysis of variance with year of testing (2011-12, 2012-13, 2013-14, or 2014-15) and month of testing (September or May) as independent variables and the student's percentile rank as the repeated-measures dependent variable. That analysis was then repeated with scale score and with grade level equivalency as dependent variables. On percentile rank, the interaction between year and month of testing was significant, $F(3, 84) = 2.97$, $p = .04$, $\eta^2 = .10$. As can be seen in Figure 1, 2013-2014 shows a sharp increase in September scores when compared to the baseline years of 2011-2012 and 2012-2013, but a sharp drop off in the May test result. The 2014-2015 school year scores return to levels nearer the baseline for both September and May testing.

Figure 1: Two-Way Interaction of Academic Year and Month of Testing on Percentile Rank



Also, on percentile rank the main effect of month was not significant, $F(1, 28) = 0.001$, $p = .97$, $\eta^2 < .001$. As can be seen in Table 1, there is again a slight decrease in 2013-2014 while the baseline years remain stable. The effect of year was also not significant, $F(3, 84) = 0.09$, $p = .97$, $\eta^2 = .003$.

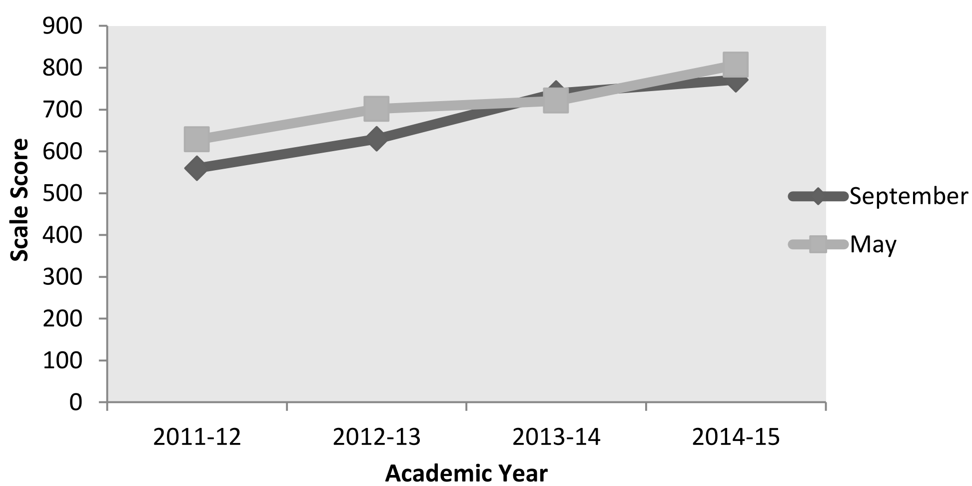
I also conducted an analysis of variance with year of testing (2011-12, 2012-13, 2013-14, or 2014-15) and month of testing (September or May) as independent variables and the student's scale score as the repeated-measures dependent variable. On scale score, the interaction between year and month of testing was significant, $F(3, 84) = 3.53$, $p = .02$, $\eta^2 = .10$. As can be seen in Figure 2, 2013-2014 shows a bigger increase in September scores when compared to the baseline years of 2011-2012 and 2012-2013, but a drop off in the May test result. The 2014-2015 school year scores return to levels nearer the baseline for both September and May testing.

Table 1

Means and Standard Errors for Main Effects on Percentile Rank

	Four Year Comparison (*N* = 29)		Three Year Comparison (*N* = 39)	
	Mean	*Standard Error*	*Mean*	*Standard Error*
Month				
September	23.44	1.52	22.14	1.39
May	23.40	1.64	22.43	1.41
Academic Year				
2011-12	23.74	2.43		
2012-13	23.83	1.80	23.36	1.55
2013-14	22.88	1.94	21.42	1.63
2014-15	23.22	1.52	22.06	1.55

Figure 2: Two-Way Interaction of Academic Year and Month of Testing on Scale Score



For scale score the main effect of month was significant, $F(1, 28) = 5.70$, $p = .02$, $\eta^2 = .17$. As can be seen in Table 2, annual growth in scale score remains steady across all four years of the study. The effect of year was also significant, $F(3, 84) = 30.50$, $p < .001$, $\eta^2 = .52$.

When a three-year analysis was conducted (N=39) the increase in mean scale score was 51.18 between 2012-2013 and 2013-2014. The increase in mean scale score from 2013-2014 to 2014-2015 was larger at 72.32.

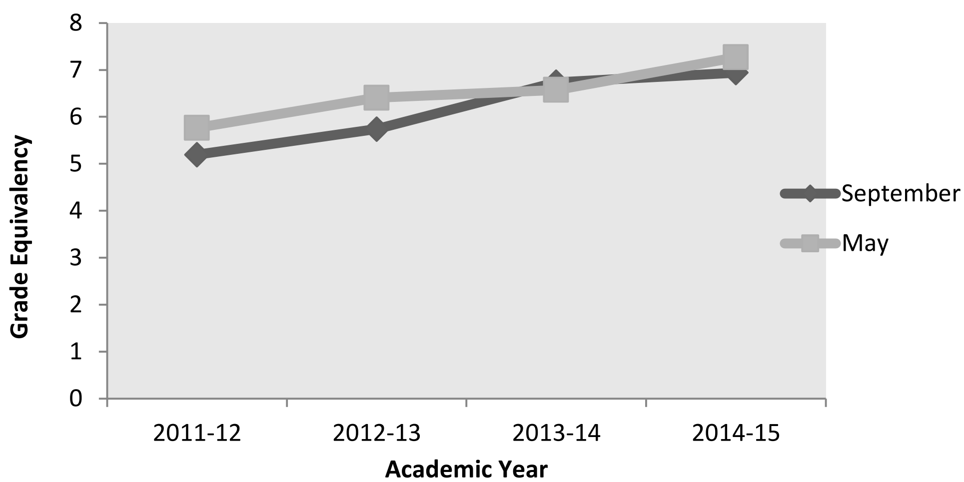
Table 2

Means and Standard Errors for Main Effects on Scale Score

	Four Year Comparison (N = 29)		Three Year Comparison (N = 39)	
	Mean	*Standard Error*	*Mean*	*Standard Error*
Month				
September	674.92	33.57	679.74	27.71
May	714.20	30.74	724.72	25.28
Academic Year				
2011-12	593.85	35.94		
2012-13	665.47	31.27	644.00	25.00
2013-14	729.97	35.46	695.18	29.23
2014-15	788.97	32.25	767.50	28.05

The final study was an analysis of variance with year of testing (2011-12, 2012-13, 2013-14, or 2014-15) and month of testing (September or May) as independent variables and the student's grade equivalency as the repeated-measures dependent variable. On grade equivalency, the interaction between year and month of testing was significant, $F(3, 84) = 2.84$, $p = .04$, $\eta^2 = .10$. As can be seen in Figure 3,

Figure 3: Two-Way Interaction of Academic Year and Month of Testing on Grade Equivalency



2013-2014 shows a bigger increase in September grade equivalency when compared to the baseline years of 2011-2012 and 2012-2013, but a drop off in the May test result. The 2014-2015 school year scores return to levels nearer the baseline trend for both September and May testing.

For grade equivalency the main effect of month was significant, $F(1, 28) = 5.72$, $p = .02$, $\eta^2 = .17$. As can be seen in Table 3, annual growth in scale score remains steady across all four years of the study. The effect of year was also significant, $F(3, 84) = 26.82$, $p < .001$, $\eta^2 = .49$.

Table 3

Means and Standard Errors for Main Effects on Grade Equivalency

	Four Year Comparison (N = 29)		Three Year Comparison (N = 39)	
	Mean	*Standard Error*	*Mean*	*Standard Error*
Month				
September	6.15	.30	6.17	.25
May	6.50	.29	6.58	.24
Academic Year				
2011-12	5.48	.33		
2012-13	6.07	.29	5.87	.23
2013-14	6.66	.33	6.35	.27
2014-15	7.10	.29	6.91	.25

CHAPTER V: DISCUSSION

The purpose of my study was to examine the effectiveness of Response to Intervention (RtI) and instructional coaching in a rural Midwestern school district. The study measured the effectiveness of both in relation to STAR Reading scores. Improving reading scores for entire schools and closing achievement gaps are daily pressures for schools throughout our country.

I hypothesized that student STAR Reading scores would improve relative to the baseline during the first year of RtI period implementation in 2013-2014, and that those gains would increase due to the implementation of more intensive Tier II interventions and instructional coaching during the 2014-2015 school year. My hypothesis was consistent with results of RtI studies conducted by Vaughn et al. (2010) and Graves et al. (2011).

One of the more unusual findings of the study was the result of 2013-2014 STAR tests. Having a regression in scores for so many students show that there may have been multiple factors present that affected the validity of that school year's results. Most of the students who experienced a drop in their May, 2014 score bounced back toward the baseline with their September, 2014 scores. These results indicate the need to rely upon more than just STAR scores to identify students in need of academic intervention in reading. It also indicates the need to regularly progress monitor with STAR in order to identify trends in scores. It is entirely plausible that poor STAR test administration and/or environmental factors in school may have had a dramatic impact on 2013-2014 scores. If test scores had been monitored more closely during this period it may have been beneficial to retest students who scored dramatically different from what could have been expected.

The results of my study did not indicate that the implementation of instructional coaching in 2014-2015 led to significant gains in STAR reading scores. This could be attributed to one of the major delimitations I identified: an altered school environment in 2014-2015 due to a major school construction and remodeling project that continued throughout the entire school year. The extensive project led to only one computer lab that could be used to conduct the all-school screeners from which the scores for students receiving Tier II interventions were derived. This meant that students were tested in larger groups and during a much tighter timeframe than had been used in earlier years. Although schools generally prefer to have student's complete standardized tests and academic screening in small groups, research does not necessarily support the belief that students will achieve at higher levels because of this. Kiger (2005) conducted a randomized block field trial in a Wisconsin school to determine if 10th grade students scored better on the 2004 Wisconsin Knowledge and Concepts Exams (WKCE) when placed in a classroom setting in comparison to an arena environment. The research did not find any significant differences between the groups.

One of the implications of the findings of this study is that improving STAR reading scores of middle and high school students goes far beyond the simple existence of instructional coaching. Pyle and Vaughn (2012) suggest that instruction goes far beyond this and should include extensive professional development for staff in all curricular areas. This training should involve strategies for improving literacy and skills for data interpretation. Staff training was not possible for the 2014-2015 school year due to extraordinary budget concerns and other school initiatives. In order for an instructional coach to be most effective a system needs to be in place for the coach to work with staff on a regular, consistent basis to develop high quality interventions using the data available to the school. This is even truer when small schools are forced to rely on teachers who are not reading teachers to deliver reading interventions.

Further study is needed to determine the long-range impact of RtI and instructional coaching on STAR reading scores at a Midwestern Middle School and High School. The RtI period has only been in existence for two years and instructional coaching for one year. Construction completion will change the environment for the 2015-2016 school year and school procedures, space, and technology will be very different. Future research should investigate the effects of smaller STAR test groupings and test administration procedures (proctor training, adherence to test directions).

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APPENDIX I: IRB APPROVAL LETTER

UNIVERSITY OF WISCONSIN
PLATTEVILLE
INSTITUTIONAL REVIEW BOARD

9/18/2014

Boone A Tollefson
Sponsor: Dr. Joan Riedle
Department of School of Education
University of Wisconsin-Platteville

RE: IRB Protocol #2014-15-02

Project Title: The Effectiveness of Response to Intervention and Instructional Coaching at Fennimore MS/HS

Approval Date: 9/17/2014
Expiration Date: 9/16/2015

Your project has been approved by the University of Wisconsin-Platteville IRB via a Full Board Review. This approval is subject to the following conditions, otherwise approval may be suspended:

1. No participants may be involved in the study prior to the IRB approval date listed above or after the expiration date.
2. All unanticipated or serious adverse events must be reported to the IRB.
3. All modifications to procedures, participant selection, and instruments used (surveys, consent forms, etc) must be reported to the IRB chair prior to their use. Extensive modifications may require full board approval.
4. If the project will continue beyond the expiration date, then the researcher must file for a continuation with the IRB at least 14 days prior to the expiration date. If the IRB approval for this project expires before approval for continuation is given, then a new protocol must be filled out and submitted. Federal guidelines allow for no exceptions to this rule. <u>Any data collected after the expiration date cannot be used in the study</u>.

If you have any questions, please contact the IRB chair at the address below. Include your protocol # on all correspondence.

Sincerely,

Dr Barb Barnet

Dr. Barb Barnet
Institutional Review Board Chair
Professor, Mathematics Department
Gardner 451
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APPENDIX II: RESEARCH MATERIALS

Middle School and High School - RTI STAR Reading Score History

Student		STAR Score - 2011-12			STAR Score - 2012-13			STAR Score - 2013-14			STAR Score - 2014-15		
		Sept	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)
A1	PR (Percentile Rank)	16	14	-2	24	39	+15	7	5	-2	8	8	—
	SS (Scale Score)	304	352	+48	412	559	+147	365	394	+29	451	478	+27
	GE (Grade-level Equivalency)	2.6	3.0	+0.4	3.6	5.3	+1.7	3.2	3.4	+0.2	4.0	4.3	+0.3
A2	PR (Percentile Rank)							50	19	-31	34	20	-14
	SS (Scale Score)							781	578	-203	762	669	-93
	GE (Grade-level Equivalency)							7.0	5.4	-1.6	6.8	6.0	-0.8
A3	PR (Percentile Rank)	24	54	+30	22	28	+6	25	18	-7	30	41	+11
	SS (Scale Score)	340	533	+193	401	500	+99	496	518	+22	624	809	+185
	GE (Grade-level Equivalency)	2.8	5.0	+2.2	3.5	4.6	+1.1	4.6	4.8	+0.2	5.7	7.1	+1.4
A4	PR (Percentile Rank)	6	15	+9	9	24	+15	10	11	+1	21	17	-4
	SS (Scale Score)	235	356	+221	322	478	+156	391	462	+71	557	565	+8
	GE (Grade-level Equivalency)	2.2	3.1	+0.9	2.7	4.4	+1.7	3.4	4.2	+0.8	5.1	5.2	+0.1
A5	PR (Percentile Rank)	39	43	+4	7	34	+27	14	9	-5	12	18	+6
	SS (Scale Score)	401	486	+85	301	531	+230	433	450	+17	483	580	+197
	GE (Grade-level Equivalency)	3.5	4.5	+1.0	2.6	5.0	+2.4	3.7	4.0	+0.3	4.3	5.3	+1.0
A6	PR (Percentile Rank)	38	37	-1	23	32	+9	27	17	-10	20	15	-5
	SS (Scale Score)	394	461	+67	407	525	+118	507	511	+4	556	559	+3
	GE (Grade-level Equivalency)	3.4	4.2	+0.8	3.5	5.0	+1.5	4.7	4.7	0.0	5.1	5.1	—
A7	PR (Percentile Rank)	18	31	+13	45	35	-10	18	15	-3	10	37	+27
	SS (Scale Score)	316	436	+120	505	497	-8	449	464	+15	469	750	281
	GE (Grade-level Equivalency)	2.7	3.8	+1.1	4.7	4.6	-0.1	4.0	4.2	+0.2	4.2	6.7	+2.5
A8	PR (Percentile Rank)	5	8	+3	10	17	+7	42	26	-16	24	22	-2
	SS (Scale Score)	231	302	+71	327	445	+118	587	579	-8	577	612	+35
	GE (Grade-level Equivalency)	2.2	2.6	+0.4	2.7	3.9	+1.2	5.5	5.4	-0.1	5.3	5.6	+0.3
A9	PR							11	28	+17	26	24	-2
	SS							471	652	+81	679	718	+39
	GE							4.3	6.1	+1.8	6.1	6.4	+0.3
A10	PR							4	7	+3	18	17	-1
	SS							381	459	+77	605	639	+34
	GE							3.3	4.1	+0.8	5.5	5.8	+0.3

Middle School and High School - RTI STAR Reading Score History

Student		STAR Score - 2011-12			STAR Score - 2012-13			STAR Score - 2013-14			STAR Score - 2014-15		
		Sept	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)
B1	PR (Percentile Rank)							31	4	-27	20	15	-5
	SS (Scale Score)							617	415	-202	627	619	-8
	GE (Grade-level Equivalency)							5.7	3.6	-2.1	5.7	5.6	-0.1
B2	PR (Percentile Rank)				8	14	+6	11	25	+14	7	5	-2
	SS (Scale Score)				441	531	+90	507	704	+197	540	515	-25
	GE (Grade-level Equivalency)				3.8	5.0	+1.2	4.7	6.5	+1.8	4.9	4.7	-0.2
B3	PR (Percentile Rank)				26	11	-15	8	21	+13	5	5	—
	SS (Scale Score)				580	499	-81	468	670	+202	507	544	+37
	GE (Grade-level Equivalency)				5.4	4.6	-0.8	4.3	6.2	+1.9	4.6	5.0	+0.4
B4	PR (Percentile Rank)				8	13	+5	1	7	+6	4	5	+1
	SS (Scale Score)				443	523	+80	348	503	+155	487	533	+46
	GE (Grade-level Equivalency)				3.8	4.8	+1.0	3.0	4.6	+1.6	4.4	4.9	+0.5
B5	PR (Percentile Rank)										1	1	—
	SS (Scale Score)										280	271	-9
	GE (Grade-level Equivalency)										2.5	2.5	—
B6	PR (Percentile Rank)							2	7	+5	6	7	+1
	SS (Scale Score)							347	461	+114	467	506	+39
	GE (Grade-level Equivalency)							3.0	4.2	+1.2	4.2	4.6	+0.4
B7	PR (Percentile Rank)							6	2	-4	3	3	—
	SS (Scale Score)							414	355	-59	401	420	+19
	GE (Grade-level Equivalency)							3.6	3.1	-0.5	3.5	3.7	+0.2
B8	PR (Percentile Rank)							10	20	+10	36	14	-22
	SS (Scale Score)							462	586	+124	790	613	-177
	GE (Grade-level Equivalency)							4.2	5.5	+1.3	7.0	4.0	-3.0

APPENDIX II: RESEARCH MATERIALS

Middle School and High School - RTI STAR Reading Score History

Student		STAR Score - 2011-12			STAR Score - 2012-13			STAR Score - 2013-14			STAR Score - 2014-15		
Student		Sept	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)
C1	PR (Percentile Rank)				23	36	+13	21	26	+5	21	35	+14
	SS (Scale Score)				560	718	+158	604	715	+111	720	914	+194
	GE (Grade-level Equivalency)				5.3	6.6	+1.3	5.6	6.5	+0.9	6.4	8.0	+1.6
C2	PR (Percentile Rank)							21	28	+7	29	34	+5
	SS (Scale Score)							553	651	+98	708	838	+130
	GE (Grade-level Equivalency)							5.2	6.1	+0.9	6.3	7.4	+1.1
C3	PR (Percentile Rank)				20	25	+5	14	26	+12	17	11	-6
	SS (Scale Score)				543	628	+85	538	719	+181	666	645	-21
	GE (Grade-level Equivalency)				5.1	5.8	+0.7	5.1	6.6	+1.5	6.0	5.8	-0.2
C4	PR (Percentile Rank)				5	34	+29	24	27	+3	22	17	-5
	SS (Scale Score)				401	697	+296	623	729	+106	725	725	—
	GE (Grade-level Equivalency)				3.5	6.4	+2.9	5.8	6.6	+0.8	6.5	6.5	—
C5	PR (Percentile Rank)							56	5	-51	16	20	+4
	SS (Scale Score)							833	428	-405	581	669	+88
	GE (Grade-level Equivalency)							7.5	3.7	-3.8	5.3	6.0	+0.7
C6	PR (Percentile Rank)				5	18	+13	1	2	+1	12	4	-8
	SS (Scale Score)				399	566	+167	348	400	+52	608	512	-96
	GE (Grade-level Equivalency)				3.5	5.3	+1.8	3.0	3.5	+0.5	5.5	4.7	-.8
C7	PR (Percentile Rank)				47	5	-42	27	18	-9	24	40	+16
	SS (Scale Score)				741	439	-302	652	633	-19	765	969	+204
	GE (Grade-level Equivalency)				6.7	3.8	-2.9	6.1	6.0	-0.1	6.8	8.5	+1.7
C8	PR (Percentile Rank)				44	41	-3	21	25	+4	24	55	+31
	SS (Scale Score)				725	779	+54	595	713	+118	771	1149	+378
	GE (Grade-level Equivalency)				6.6	7.0	+0.4	5.6	6.5	+0.9	6.8	10.7	+3.9

Middle School and High School - RTI STAR Reading Score History

Student		STAR Score - 2011-12			STAR Score - 2012-13			STAR Score - 2013-14			STAR Score - 2014-15		
Student		Sept	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)
D1	PR (Percentile Rank)							24	5	-19	6	12	+6
	SS (Scale Score)							818	558	-260	563	713	+150
	GE (Grade-level Equivalency)							7.4	5.2	-2.2	5.1	6.4	+1.3
D2	PR (Percentile Rank)	35	45	+10	30	25	-5	22	38	+16	32	11	-21
	SS (Scale Score)	721	915	+194	790	821	+31	789	967	+178	936	694	-242
	GE (Grade-level Equivalency)	6.6	8.4	+1.8	7.1	7.4	+0.3	7.1	8.9	+1.8	8.2	6.2	-2.0
D3	PR (Percentile Rank)	43	33	-10	40	13	-27	48	21	-27	29	29	—
	SS (Scale Score)	809	807	-2	895	660	-235	1057	798	-259	909	928	+19
	GE (Grade-level Equivalency)	7.3	7.3	0.0	8.1	6.2	-1.9	9.7	7.2	-2.5	8.0	8.1	+0.1
D4	PR (Percentile Rank)	39	20	-19	30	24	-6	36	19	-17	38	22	-16
	SS (Scale Score)	768	655	-113	790	810	+20	921	773	-148	993	863	-130
	GE (Grade-level Equivalency)	6.8	6.1	-0.7	7.1	7.3	+0.2	8.5	6.9	-1.6	8.8	7.6	-1.2
D5	PR (Percentile Rank)	21	30	+9	16	24	+8	32	42	+10	26	32	+6
	SS (Scale Score)	601	773	+172	621	808	+113	899	1008	+109	882	957	+75
	GE (Grade-level Equivalency)	5.6	6.9	+1.3	5.8	7.3	+1.5	8.2	9.3	+1.1	7.7	8.4	+0.7
D6	PR (Percentile Rank)	11	10	-1	2	3	+1	22	16	-12	17	22	+5
	SS (Scale Score)	510	553	+43	408	497	+89	795	639	-156	771	861	+90
	GE (Grade-level Equivalency)	4.7	5.2	+0.5	3.5	4.6	+1.1	7.2	6.0	-1.2	6.8	7.6	0.8
D7	PR (Percentile Rank)	16	20	+4	18	28	+10	8	14	+6	10	12	+2
	SS (Scale Score)	555	652	+97	645	855	+210	605	690	+85	644	708	+64
	GE (Grade-level Equivalency)	5.2	6.1	+0.9	6.1	7.7	+1.6	5.6	6.4	+0.8	5.8	6.3	+0.5
D8	PR (Percentile Rank)	29	26	-3	11	29	+18	32	39	+7	37	26	-11
	SS (Scale Score)	666	718	+52	564	866	+202	895	974	+79	976	909	-65
	GE (Grade-level Equivalency)	6.2	6.6	+0.4	5.3	7.8	+2.5	8.1	9.1	+1.0	8.6	8.0	-0.6
D9	PR	12	10	-2	13	10	-3	25	12	-13	30	35	+5
	SS	519	545	+26	588	627	+39	833	664	-169	913	996	+83
	GE	4.8	5.1	+0.3	5.5	5.8	+0.3	7.5	6.2	-1.3	8.0	8.8	+0.8
D10	PR	9	35	+26	20	3	-17	16	18	+2	12	25	+13
	SS	489	837	+348	661	514	-147	703	759	+56	683	895	+212
	GE	4.5	7.5	+3.0	6.2	4.7	-1.5	6.5	6.8	+0.3	6.1	7.8	+1.7

APPENDIX II: RESEARCH MATERIALS

Middle School and High School - RTI STAR Reading Score History

		STAR Score - 2011-12			STAR Score - 2012-13			STAR Score - 2013-14			STAR Score - 2014-15		
Student		Sept	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)
E1	PR (Percentile Rank)	6	21	+15	26	27	+1	14	1	-13	11	12	+1
	SS (Scale Score)	414	593	+179	643	730	+87	604	462	-142	657	673	+16
	GE (Grade-level Equivalency)	3.6	5.6	+2.0	6.1	6.6	+0.5	5.6	4.2	-1.4	5.9	6.1	+0.2
E2	PR (Percentile Rank)	22	34	+12	30	48	+18	48	34	-14	21	32	+11
	SS (Scale Score)	555	693	+138	672	947	+275	952	907	-45	789	919	+130
	GE (Grade-level Equivalency)	5.2	6.4	+1.2	6.3	8.7	+2.4	8.7	8.3	-0.4	7.0	8.1	+1.1
E3	PR (Percentile Rank)	10	25	+15	40	16	-24	10	13	+3	20	33	+13
	SS (Scale Score)	462	622	+160	780	617	-163	555	667	+112	786	926	+140
	GE (Grade-level Equivalency)	4.2	5.8	+1.6	7.0	5.7	-1.3	5.2	6.2	+1.0	6.9	8.1	+1.2
E4	PR (Percentile Rank)	30	37	+7	15	24	+9	15	7	-8	30	22	-8
	SS (Scale Score)	613	717	+104	551	691	+140	616	586	-30	896	824	-72
	GE (Grade-level Equivalency)	5.7	6.6	+0.9	5.2	6.4	+1.2	5.7	5.5	-0.2	7.9	7.2	-0.7
E5	PR (Percentile Rank)							13	3	10	10	21	+11
	SS (Scale Score)							584	493	-91	641	809	+168
	GE (Grade-level Equivalency)							5.5	4.5	-1.0	5.8	7.1	+1.3
E6	PR (Percentile Rank)							31	16	-15	28	17	-11
	SS (Scale Score)							798	706	-92	878	755	-123
	GE (Grade-level Equivalency)							7.2	6.5	-0.7	7.7	6.7	-1.0
E7	PR (Percentile Rank)	7	23	+16	41	31	-10	36	21	-15	21	5	-16
	SS (Scale Score)	423	606	+183	789	782	-7	856	773	83	790	532	-258
	GE (Grade-level Equivalency)	3.7	5.6	+1.9	7.1	7.0	-0.1	7.7	6.9	-0.8	7.0	4.9	-2.1
E8	PR (Percentile Rank)				28	29	+1	19	20	+1	25	36	+11
	SS (Scale Score)				661	761	+100	656	761	+105	845	965	+120
	GE (Grade-level Equivalency)				6.2	6.8	+0.6	6.2	6.8	+0.6	7.4	8.5	+1.1
E9	PR	11	5	-6	14	30	+16	31	24	-7	22	22	—
	SS	467	430	-37	538	772	+234	800	809	+9	807	819	+12
	GE	4.3	3.7	-0.6	5.1	6.8	+1.7	7.2	7.3	+0.1	7.1	7.2	+0.1
E10	PR										13	17	+4
	SS										679	760	+81
	GE										6.1	6.7	+0.6

Middle School and High School - RTI STAR Reading Score History

		STAR Score - 2011-12			STAR Score - 2012-13			STAR Score - 2013-14			STAR Score - 2014-15		
Student		Sept	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)	Sept.	May	(+ or -)
F1	PR (Percentile Rank)	13	1	-12	14	4	-10	21	1	-20	11	6	-5
	SS (Scale Score)	601	416	-185	677	533	-144	808	467	-341	710	596	-114
	GE (Grade-level Equivalency)	5.6	3.6	-2.0	6.3	5.0	-1.3	7.3	4.3	-3.0	6.4	5.4	-1.0
F2	PR (Percentile Rank)	29	10	-19	25	21	-4	25	23	-2	32	13	-19
	SS (Scale Score)	781	633	-148	822	805	-17	857	870	+13	1011	772	-239
	GE (Grade-level Equivalency)	7.0	6.0	-1.0	7.4	7.3	-0.1	7.7	7.8	+0.1	9.0	6.8	-2.2
F3	PR (Percentile Rank)							9	7	-2	6	10	+4
	SS (Scale Score)							627	625	-2	597	710	+113
	GE (Grade-level Equivalency)							5.8	5.8	0.0	5.4	6.4	+1.0
F4	PR (Percentile Rank)	53	52	-1	28	34	+6	41	25	-16	34	26	-8
	SS (Scale Score)	1031	1104	+73	857	923	+66	1013	888	-125	1035	948	-87
	GE (Grade-level Equivalency)	9.5	10.4	+0.9	7.7	8.5	+0.8	9.4	8.1	-1.3	9.3	8.3	-1.0
F5	PR (Percentile Rank)	41	54	+13	45	45	+0	39	34	-5	28	50	+22
	SS (Scale Score)	903	1124	+221	1002	1066	+64	973	968	-5	957	1236	+279
	GE (Grade-level Equivalency)	8.2	10.7	+2.5	9.3	9.7	+0.4	9.1	9.0	-0.1	8.4	12.7	+4.3
F6	PR (Percentile Rank)	16	7	-9	9	26	+17	23	20	-3	26	27	+1
	SS (Scale Score)	635	582	-53	618	866	+248	830	831	+1	930	952	+22
	GE (Grade-level Equivalency)	6.0	5.5	-0.5	5.7	7.8	+2.1	7.4	7.5	+0.1	8.2	8.4	+0.2
F7	PR (Percentile Rank)	36	22	-14	36	30	-6	29	31	+2	22	47	+25
	SS (Scale Score)	859	791	-68	918	900	-18	900	941	+41	900	1215	+315
	GE (Grade-level Equivalency)	7.7	7.1	-0.6	8.4	8.2	-0.2	8.2	8.6	+0.4	7.9	12.2	+4.3
F8	PR (Percentile Rank)	16	4	-12	20	15	-5	35	38	+3	30	16	-14
	SS (Scale Score)	626	522	-104	757	711	-46	946	1024	+76	974	818	-156
	GE (Grade-level Equivalency)	5.8	4.8	-1.0	6.8	6.5	-0.3	8.7	9.4	+0.7	8.6	7.2	-1.4