

THE RELATIONSHIP AMONG PROFESSIONAL LEARNING COMMUNITIES,
A RESPONSE TO INTERVENTION FRAMEWORK
AND MATHEMATICS SCORES
IN MIDDLE AND HIGH SCHOOLS

by

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ABSTRACT

The purpose of this study was to determine the relationship between professional learning community (PLC) factors, components of an implementation of response to intervention (RTI) and student learning in mathematics at the middle and high school level. This study was designed to answer three questions: Is there a correlation between PLC characteristics and RTI components? Does participation by teachers in a PLC have a relationship with student learning in mathematics in middle schools and high schools? Does an implementation of interventions at the Tier 1 level in middle and high schools have a relationship with student learning in mathematics?

Thirty middle schools and high schools participated in the study. Professional staff were surveyed using the School Professional Staff as Learning Community Questionnaire (SPSLCQ) developed by Hord (1996). Interviews were conducted with professional staff involved in the RTI process either in person, by phone, or online, to ascertain their views on the schools RTI process using the RTI Essential Components Integrity Worksheet and Rubric scoring guide (National Center on Response to Intervention, 2010). The unit of analysis was the school. Student screener data was collected from GRASP after students completed the final school screener.

Data were analyzed from correlations and regressions on the relationship between PLCs and effective RTI implementation and the relationship each has with student learning. Results indicated a possible relationship between factors on the SPSLCQ and RTI dimensions. An analysis of a PLCs link to student learning showed no relationship; however, a relationship between aspects of an RTI process at Tier 1 and student increases in math score was noted.

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“Whatever you do, you need courage. Whatever course you decide upon, there is always someone to tell you that you are wrong. There are always difficulties arising that tempt you to believe your critics are right. To map out a course of action and follow it to an end requires some of the same courage that a soldier needs. Peace has its victories, but it takes brave men and women to win them”

- Ralph Waldo Emerson

CONTENTS

ABSTRACT	ii
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	x
CHAPTER I: INTRODUCTION TO THE STUDY	1
Background	1
Professional Learning Communities	3
Response to Intervention	3
Theoretical Framework.....	4
Conceptual Framework.....	5
Statement of the Problem.....	6
Purpose of the Study.....	7
Hypotheses	7
Research Method.....	8
Significance of the Study.....	9
Definitions of Terms.....	9
Limitations	11
Assumptions.....	12
Summary	12

CHAPTER II: REVIEW OF THE LITERATURE	14
Introduction.....	14
Professional Learning Communities	14
Shared Sense of Purpose	15
Focus on Student Learning	16
Collaboration	17
Deprivatization of Practice	18
Reflection	18
Leadership	19
Teacher Empowerment and Effectiveness	21
Professional Learning Focus	21
Professional Learning Communities and School Reform.....	22
Studies of Professional Learning Communities and Student Achievement	23
Summary of Professional Learning Communities	25
Response to Intervention	26
Components of RTI	27
Tiered System	28
Universal Screening	29
High Quality, Evidence-Based Instruction.....	30
Fidelity of Implementation	30
Data Based Decision Making	31
Professional Development.....	32
Tier 1 Instruction and Intervention.....	33

RTI in Middle and High Schools	34
The Relationship between PLCs and RTI.....	37
Student Achievement.....	37
Summary	38
CHAPTER III: METHODOLOGY	40
Introduction	40
Statement of the Problem	40
Purpose of the Study	41
Research Questions	41
Hypotheses	42
Population and Sample.....	42
Selection of Systems and Schools	42
Data Collection and Instruments	43
Demographic Data	43
Survey	44
Interviews	44
Universal Screener Data.....	45
Data Analysis	46
Summary.....	47
CHAPTER IV: RESULTS	50
Overview.....	50
Demographic Respondent Data.....	51
Descriptive Statistics	54

Reliability Coefficients	56
Correlation Analysis	58
RQ1: What is the relationship between participation in a PLC and implementation of an RTI framework?.....	61
Regression Analysis	62
RQ2: Does participation by teachers in a PLC have a relationship with student learning in mathematics in middle schools and high schools?.....	63
RQ3: Does an implementation of interventions at the Tier 1 level in middle and high schools have a relationship with student learning in mathematics?	63
Summary	66
CHAPTER V: DISCUSSION AND CONCLUSIONS	68
Purpose.....	69
Summary of Methods	69
Discussion of the Findings.....	70
Implications for Practice	75
Recommendations for Further Research.....	77
Summary	78
REFERENCES	79
APPENDICES	
A SURVEY.....	85
B PERMISSION TO USE SURVEY	89
C INTERVIEW WORKSHEET AND RIBRIC	92
D DEMOGRAPHIC DATA	111
E LETTER TO SYSTEMS	113

F INFORMED CONSENT STATEMENT 115

G. INSTITUTIONAL REVIEW BOARD APPROVAL 118

LIST OF TABLES

1.	Research Design and Methods Matrix	49
2.	Summary of Participant Demographic Data	53
3.	Response Rate of SPSLCQ Survey per School	54
4.	Minimums, Maximums, Means, and SDs for <i>ALL</i> Variables (N=30)	55
5.	Minimums, Maximums, Means, and SDs for PLC Factors (N=30)	56
6.	Reliability Correlations of PLC Overall Score and RTI Dimensions (N=30).....	57
7.	Cohen’s Kappa Inter-rater Reliability on RTI Interview.....	58
8.	Pearson Correlation Coefficients of <i>ALL</i> Variables (N=30).....	59
9.	Pearson Correlation Coefficients of PLC Factors and RTI Dimensions	60
10.	Coefficients for the Regression for PLCs Predicting Increase in Score.....	64
11.	Model Comparisons for the Stepwise Backward Regression for RTI Dimensions Predicting Increase in Score	64
12.	Coefficients for the Stepwise Backward Regression for RTI Dimensions Predicting Increase in Score	65

CHAPTER I:
INTRODUCTION TO THE STUDY

Background

The last decade could be named the era of accountability for public education. The passage of the No Child Left Behind Act of 2001 (P.L. 107-110) (NCLB) mandated sweeping changes in measuring students' academic progress as well as the rewards and consequences for schools associated with students' progress or lack thereof (Dee & Jacob, 2010). As schools and systems began to use data to analyze strengths and weaknesses, areas for improvement began to emerge.

Many aspects of K-12 education have been reevaluated in the last decade. Basic issues dealing with curriculum, assessment and instruction have been considered (Jennings & Renter, 2006). Related issues such as the school's leadership, culture, and processes have been reviewed (Linn, Baker, & Betebenner, 2002; Sailor, 2009; Shores, 2009; Supowitz, Sirinides, & May, 2009). Shores and Chester (2009) acknowledged that curriculum has been reassessed to ensure alignment with testing standards while other researchers stated that the rigor of the curriculum has been enhanced to ensure students are provided the opportunity to learn at higher levels (Linn, Baker, & Betebenner, 2002). Recent developments include a multi-state collaboration to define a set of Core Curriculum Standards for English and Math in grades K-12 (Common Core State Standards Initiative, 2011). According to Jennings and Renter (2006), the "how and when" to assess student learning has also been re-examined. Universal screening products are now a staple in assisting schools in identifying students with significant learning gaps (Mellard &

Johnson, 2008). Instruction of students has been closely scrutinized as a result of increased accountability (Shores, 2009; Jennings & Renter, 2006). Not only has reform caused politicians and educators to examine how the curriculum is being taught, it has also caused a review of the qualifications of the teacher as well (Jennings & Renter, 2006).

Marks and Printy (2003) stated that the impact school leaders have on student achievement has been re-examined. Leadership styles, involvement with teachers, and delegation of responsibilities have all been analyzed as factors impacting gains and/or losses in achievement (Hallinger & Heck, 2009; Heck & Hallinger, 2009; Pfeiffer, 2006; Supovitz, Sirinides, & May, 2009). Related school issues such as discipline, scheduling, retention, and student efficacy have been researched for impact of academic growth (Fitzpatrick, 1998; Sailor, 2009; High School Tiered Interventions Initiative, May 2010).

The Individuals with Disabilities Education Improvement Act of 2004 (P. L. 108-446) (IDEIA) provided a major shift in how schools assist students with academic deficits (Fuchs & Fuchs, 2006; Stoehr, Banks, & Allen, 2011). This re-authorization provided a fundamental change in how students were identified as special needs. The new model moved from one that waited on students to fail before additional support was provided to a structure of early intervention (Barnes & Harlacher, 2008; Fuchs, Mock, Morgan, & Young, 2003; Mellard & Johnson, 2008). The Response to Intervention (RTI) model was written into IDEIA to provide schools a methodology for this early assistance and intervention (Stoehr, Banks, & Allen, 2011). Fuchs and Fuchs (2006) stated that this revision provided “all students” (p. 93) support if they were identified as needing intervention.

Professional Learning Communities

As research into methods of improving student achievement advanced, the emergence of improved professional practice by teachers and leaders was seen as a key component (Strahan, 2003; Vaughn & Chard, 2006). Stoehr, Banks, and Allen (2011) stated that professional learning community (PLC) discussions were initiated in the 1970s as a means of “improving workplace behavior and enhancing teachers’ skills and knowledge” (p. 12). The purpose of PLCs evolved as consultants such as Hord (1997), Dufour and Eaker (1998), Little (2003), and Jennings and Rentner (2006) began to analyze a professional learning community’s effectiveness in relationship to student gains, especially in the NCLB subjects of math and reading. DuFour and Eaker (1998) described this change as a shift in focus from one of teaching to one of learning.

A consensus of professional learning community characteristics has begun to develop. Kruse, Louis, and Byrk (as cited in Louis & Marks, 1998) identified five primary attributes of professional learning communities that are similar to that of other researchers. These characteristics include: a shared sense of purpose, vision, norms, or principles, a focus on student learning, collaboration, deprivatized practice, and a reflective dialogue. Although there is some research to support the relationship between strong professional learning communities and student achievement (Ingvarson, Meiers, & Beavis, 2005; Louis & Marks, 1998; Pheiffer, 2006) the research is continuing to evolve.

Response to Intervention

At the crux of a response to intervention (RTI) process is the goal to provide every student with the opportunity to succeed (Mellard & Johnson, 2008). The design of this process is to help students before they begin to fail. According to The National Center on Response to Intervention (April, 2010), there are four basic components to the RTI process: screening,

progress monitoring, data-based decision making for instruction, and movement within the multi-layered system. There are typically three or four layers (or tiers) within the RTI process beginning with the foundational layer identified as Tier 1 (McCook, 2006; Shores, 2009; Stoehr, Banks, & Allen, 2011). There is a need to focus on more personalized interventions in higher tiers, as every student has different areas of need (Sailor, 2009).

As students progress into different grade levels (elementary, middle, high) new and often competing interests may interfere with the RTI focus. Elementary students are often at the school longer due to childcare provided after the regular school day ends. Student schedules are often flexible in the early grades as teachers adjust times in a self-contained environment to meet student needs. In middle school, these factors, as well as others change. Childcare is typically not offered at the middle school level. Students rotate between academic classes with fixed times. High schools add the burden of seat time requirements to earn Carnegie units, graduation requirements, and the competing interests of athletics and jobs that limit when students can receive extra assistance (Duffy, 2007; High School Tiered Interventions Initiative, May 2010). This makes the regular classroom a critical place for quality instruction and support, especially in middle schools and high schools (Mellard & Johnson, 2008; Sailor, 2009).

Theoretical Framework

The National Center on Response to Intervention (April, 2010) has identified school-based professional learning as one of the essential components of RTI. This professional learning was to be structured in such a way that teachers were able to “examine, reflect upon, and improve instructional practice” (p. 2). In 2009, Sailor indicated that the quality and durability of the professional learning must be considered for outcomes to be successful and described a process of “deconstructing professional silos” (p. 133). Barnes and Harlacher (2008)

described professional development as a “vital” component within an RTI model (p. 427) and identified three critical, ongoing concepts within a professional development program. These included: a discussion of beliefs and attitudes, specific knowledge to move from a state of information to one of practice and an opportunity to learn the skills needed to implement the process. Barnes and Harlacher (2008) stressed the importance of including leaders, teachers, and other support staff in the professional learning.

Each of the aforementioned descriptors of an effective RTI implementation process aligns with characteristics of PLCs previously described. In spite of possible connections, little quantitative research has been done to examine this relationship and the possible combined link of these theories with student learning, although the work of Lomos, Hofman, and Bosker (2011) and Arredondo Rucinski (2012) have both shown the possibility of PLCs having a positive relationship with student performance. This study analyzed the level of perceived PLC implementation, the degree to which RTI was being implemented at Tier 1, and the relationship each process has with student math screening scores

Conceptual Framework

There appears to be a link between characteristics of PLCs and the effectiveness of RTI in schools. Attributes of successful professional learning communities such as teacher collaboration, reflection, and a focus on learning continue to emerge in the Response to Intervention framework. I believe that there is a relationship between effective RTI programs and strong PLCs. In addition, I believe this relationship has a positive link to student learning.

Although Barnes and Harlacher (2008) considered the words “instruction” and “intervention” interchangeable at Tier 1, I chose to delineate these terms as follows: instruction refers to strategies that enable students to learn the established curriculum while interventions

reference those strategies that remediate student deficiencies. I believe this distinction provides an opportunity for educators to focus on specific skill deficits at the lowest level of the response to intervention framework.

Statement of the Problem

Curriculum, assessment, and instruction have been under increased scrutiny as schools and districts search for ways to increase student learning. One approach taken to improve achievement was to investigate the working relationships among school professionals. Although certain characteristics of learning communities emerged through the work of Dewey (1933), discussions about PLCs began in the 1970s, according to Stoehr, Banks, and Allen (2011). While the effects of professional learning communities continue to be studied, research into the relationship PLCs have with student achievement has been limited.

Response to intervention (RTI) was introduced as part of the Individuals with Disabilities Educational Improvement Act, which reauthorized the Individuals with Disabilities Education Act (IDEA) (McCook, 2006). Barnett, Daly, Jones, and Lentz (2004) described RTI as a move away from a “one-point-in-time” assessment model when making decisions about special education services, while McCook (2006) stated that the adjustment of the law provided the opportunity for school systems to use scientific, research-based interventions as part of the evaluation systems for the determination of specific learning disabilities in children. Current research on the implementation of response to intervention models has focused on elementary schools in the areas of reading and behavior (Sailor, 2009). There has been little research dedicated to the implementation of an RTI process in middle and high schools or the link this process has to mathematics. Some authors have stated that a professional learning community is

necessary when implementing an RTI framework in schools, although there is little research to support this view (Mellard & Johnson, 2008; Stoehr, Banks, & Allen, 2011).

Purpose of the Study

The purpose of this study was to determine the relationship between PLC factors and components of RTI as well as the link each process has with student learning in mathematics at the middle and high school levels. A quantitative study was conducted to answer the following research questions:

1. What is the relationship between participation in a PLC and implementation of an RTI framework;
2. Does participation by teachers in a PLC have a relationship with student learning in mathematics in middle schools and high schools; and
3. Does an implementation of interventions at the Tier 1 level in middle and high schools have a relationship with student learning in mathematics?

Hypotheses

H₁: Schools that have a stronger perceived level of PLC involvement also have a greater degree of implementation of a response to intervention framework

H₂: In schools with a greater perceived level of PLC involvement, the gain in student mathematic scores is also greater

H₃: In schools with higher ratings on RTI implementation the gain in student mathematic scores is also higher

Research Method

Middle and high schools within the state were chosen via a systematic stratified sample of districts. Basic demographic data were collected including job responsibility, grade(s) and/or subjects(s) taught and years of experience. Professional staff from these schools were given the School Professional Staff as Learning Community Questionnaire (SPSLCQ) developed by Hord (1996) to ascertain participant beliefs about their school as a learning community. This survey asked seventeen questions to investigate five factors Hord associated with PLCs. The five factors were: supportive and shared leadership, shared value and vision, collective learning, peer review and feedback in order to increase capacity, and school conditions such as conditions and capacity (Hord, 1997).

Staff members involved in the RTI process at the school were interviewed using The RTI Essential Components Integrity Worksheet and Rubric developed by the National Center on Response to Intervention. This instrument was designed to assess participant views on specific attributes associated with RTI including: the use of a screening instrument, a multi-tiered system, data-based decision making and overarching related factors. At Tier 1, specific questions on the tool and procedures used for screening, the fidelity of implementation, the articulation of teaching and learning, instruction, and school-based professional development were asked to determine the extent of RTI implementation at this level. Questions on data based decision making processes as well as items such as a prevention focus, leadership, staff qualifications, and parent communication were also posed. The growth in student scores was measured by the change in scores on the math applications universal screener from the first screening to the last school screening.

Correlations were calculated to determine the relationships between the factors of PLCs and the essential characteristics of an RTI implementation at Tier 1. Linear and step-wise regressions were run on the data to determine the link various PLC factors and RTI characteristics with student learning.

Significance of the Study

Although several articles have been published about the relationships Tiers 2, 3, and 4 have with improving student learning, research has been limited as to the effect Tier 1 interventions have on achievement (Duffy, 2007). In addition, Shores and Chester (2009), Muoneke and Shankland (2009), as well as the National Center on Response to Intervention (May, 2010) acknowledged that much of the research conducted on the effectiveness of RTI has focused on elementary schools.

This research originated as a result of the work of Hord (1997), Pfeiffer (2006), Mellard and Johnson (2008) and studies conducted by The National Center on Response to Intervention (June, 2011) and the High School Tiered Interventions Initiative (May, 2010). The overlapping themes between PLCs and an RTI process provided a link to these individual paths of study.

A lack of research at the middle school and high school levels provided impetus for this study. Also, research dedicated to determining specific characteristics of professional learning communities that link to student achievement has been limited as are studies dedicated to improving math achievement.

Definition of Terms

Academic Capacity: “refers to changes in conditions of the school that support the provision of effective teaching and learning and enable the professional learning of the staff” (Heck & Hallinger, 2009, p. 665)

Benchmark Tests: Assessments which measure student learning against the intended curriculum at key junctures during the school year.

Deprivatize: “the frequency with which teachers observe each other’s classes to critique their colleagues’ teaching and to provide meaningful feedback, and, as well, the frequency of constructive review from supervisors” (Louis & Marks, 1998, p. 545)

NCLB: No Child Left Behind

RTI: Response to Intervention

Shared Vision: “involves all members of the school community engaged in extensive reflection and dialogue concerning the desired future” (Bassett, as cited in Gordon, 2004, p. 270)

SST: Student Support Team. A team, consisting of school administration, a school psychologist, teachers, and parents, who meet to determine if a student may have special educational needs. Students in SST are often considered to be at a Tier 3 RTI level.

Student Growth: The change in score between two administrations of the universal screener

Teacher Empowerment: “Enabling teachers for life-long learning, teaching, and leadership” (Gordon, 2004, p. 13)

Tier 1: The primary level of an RTI process. Tier 1 consists of high-quality, research-based instruction and universal screening for all students, occurs within the general education classroom, and has a large group instructional focus (Mellard & Johnson, 2008). Researchers (McCook, 2006; Shores, 2009; Stoehr, Banks, & Allen, 2011) stated that 80% - 90% of students should have their needs met at Tier 1.

Tier 2: The second level of an RTI process. Tier 2 interventions are typically provided in small groups with research-based interventions (Mellard & Johnson, 2008). Researchers (McCook, 2006; Shores, 2009; Stoehr, Banks, & Allen, 2011) stated that 5%-15% of student needs should be addressed at Tier 2.

Tier 3: The third (and often final) level of an RTI process (Stoehr, Banks, & Allen, 2011). Students in this Tier are often in the SST or Special Education referral process (Stoehr, Banks, & Allen, 2011). These interventions are typically provided in smaller (or even individualized) settings (Mellard & Johnson, 2008).

Tier 4: An optional final level of an RTI process. Students at Tier 4 are typically designated as having special educational needs (Stoehr, Banks, & Allen, 2011).

Transformational Leadership: A leadership style in which the leader motivates followers to achieve organizational goals. This style is characterized by one or more of the following: idealized influence, inspirational motivation, intellectual stimulation, or individualized consideration (Marks & Printy, 2003).

Limitations

1. This study only examined schools in one southeastern state and thus the findings will not be generalizable to other populations.
2. There may be issues not addressed by the survey that have an impact on student learning and growth in scores.
3. The possibility of confounding variables may have produced unintended results.
4. This study only analyzes data from schools that use one specific RTI screener.

Assumptions

1. Respondents will answer all survey items honestly.
2. There is a general consensus as to the basic characteristics of effective professional learning communities.
3. There is a general consensus as to the basic tiers and characteristics of RTI processes.
4. Student achievement is accurately represented by changes in student scores as measured by a universal screener.

Summary

This chapter introduced two processes developed in response to the need of schools and districts to improve student academic growth. Professional learning communities, which have their roots in the writings of Dewey (1933), have evolved into a set of professional practices that are designed to improve and enhance teacher knowledge and practice (Stoehr, Banks, & Allen, 2011). Response to intervention models were introduced to schools as part of the Individuals with Disabilities Educational Improvement Act (IDEIA) (McCook, 2006). The response to intervention (RTI) model was included in IDEIA to provide schools a methodology for early assistance and intervention (Stoehr, Banks, & Allen, 2011).

Common themes have developed within each of these processes which may imply a relationship between characteristics of a professional learning community and the implementation of a response to intervention process. Although each of these processes have been studied, little research has been available that provides information as to the link each has with student learning. Further, research on the implementation of response to intervention models has focused on elementary schools in the areas of reading and behavior.

Results from this study may confirm a relationship between PLCs and a RTI system.

This research may also serve to provide additional information about the relationship PLCs and an RTI framework have with student improvement in math scores as well as provide data on RTI processes at the middle and high school level in the area of mathematics. Chapter two provides a more detailed review of literature related to each of these models and research conducted on the relationship each has with the increase in student math scores.

CHAPTER II:
REVIEW OF THE LITERATURE

Introduction

Dee and Jacob (2010) discussed the impact the passage of the No Child Left Behind Act of 2001(P.L. 107-110) (NCLB) had on schools, especially in the area of student learning. As schools and systems began to use data to analyze strengths and weaknesses, areas for improvement began to emerge. Professional learning communities were one initiative initiated to increase student achievement by improving the professional practices that are designed to improve and enhance teacher knowledge and practice (Stoehr, Banks, & Allen, 2011).

Fuchs and Fuchs (2006) stated that the Individuals with Disabilities Education Improvement Act OF 2004 (P. L. 108-446) (IDEIA) provided a major shift in how schools mediate the academic deficits of students. The response to intervention (RTI) model was written into IDEIA to provide schools a methodology for this early assistance and intervention (Stoehr, Banks, & Allen, 2011).

This chapter examines the characteristics of professional learning communities and the research that supports PLCs link with on increased math scores. It then reviews key components of a response to intervention process and the accompanying research into RTIs effect on student learning. It concludes with linking of these two theories with PLCs being considered the infrastructure upon which an RTI framework is built.

Professional Learning Communities

As research into methods of improving student achievement advanced, the emergence of improved professional practice by teachers and leaders was seen a key component (Strahan,

2003; Vaughn & Chard, 2006). The purpose of PLCs evolved as consultants such as Hord (1997), Dufour and Eaker (1998), Little (2003), and Jennings and Rentner (2006) began to analyze a professional learning community's effectiveness in relationship to student gains, especially in the NCLB subjects of math and reading. DuFour and Eaker (1998) described this change as a shift in focus from one of teaching to one of learning.

Kruse, Louis, and Byrk (as cited in Louis & Marks, 1998) identified five primary attributes of professional learning communities. These are: a shared sense of purpose (mission and norms), a focus on student learning, collaboration, deprivatized practice, and reflective practices. Additional influences noted by researchers (Supovitz, Sirinides, & May, 2009; Hallinger & Heck, 2009; Sweetland & Hoy, 2000; Marzano, Waters & McNulty, 2005; Little, 2003; Strahan, 2003) included: leadership style, teacher empowerment, and a focus on improving teaching for learning in professional development. In 2003, Little found that characteristics including: accepting responsibility for student success, a desire to look at new instructional ideas, and collaboration with peers were strong indicators of a learning community. Although limited, there are some studies that have attempted to demonstrate a relationship between professional learning communities and student achievement (Newmann & Wehlage, 1995; Louis & Marks, 1998; Wiley, 2001; Phieffer, 2006; Dumay, 2009; Supovitz, Sirinides, & May, 2009).

Shared Sense of Purpose

Establishing a vision is an important component of an effective learning community that positively impacts student achievement. Zmuda, Kuklis, and Kline (2004) wrote that until a shared vision was established, the difference in where a school is and where it intends to be cannot be determined. Pheiffer (2006) found that schools with high student achievement had faculties that indicated the school vision for improvement was “*always focused on students, and*

learning and teaching” (p. 123). Pfeiffer said that regardless of school or student demographics, a school improvement vision that stressed both the importance of all students learning and the need for first-class teaching was key.

Levine and Marcus (2007) stated that a lack of a shared vision would impact student learning. They indicated concepts such as time and support were needed to establish a platform of common dependability, collaboration and reflective practices. Louis and Marks (1998) noted that successful schools placed more emphasis on a shared purpose and core principles than on a teacher’s zeal for the subject.

Focus on Student Learning

According to Fitzpatrick (1998), a fundamental need of quality schools is for teachers and administrators to focus on student learning outcomes. This need has been aligned within the structure of professional learning communities. Strahan (2003), as well as Louis and Marks (1998), determined that a focus on student learning was a critical component of a productive learning community. Ingvarson, Meiers, and Beavis (2005) investigated the impact of teacher’s participation in professional development programs on the teachers practice. This study looked at factors such as: school support, content emphasis, reviewing student work, feedback, and continued support through follow-up and a mediating variable of the level of professional community generated and compared these factors to four measures: knowledge, practice, student learning, and efficacy. They found that the implementation of professional learning communities were a significant mediating variable on knowledge and practice. They indicated several components of PLCs that had a positive impact including: an increase in knowledge (Cronbach Alpha = 0.92), an improvement in practice (Cronbach Alpha =0.93), improved outcomes for

students (Cronbach Alpha = 0.95) and an increase in teacher confidence in themselves (Cronbach Alpha = 0.85).

Collaboration

As early as 1996, Darling-Hammond stressed the importance of teachers working together to develop a “collective knowledge base and a common set of understanding about practice” (p. 6). Gordon (2004) described a sense of equality among school leaders that led to collaboration in all aspects of the professional development process. Levine and Marcus (2007) acknowledged that school norms often prohibited opportunities for collaboration to improve teaching and ultimately learning. Further, Levine and Marcus expressed the need to ensure that teacher collaboration “will lead them to uncomfortable, yet productive, practices of collaborative work” (p. 133). Strahan (2003) noted that as teachers began to collaborate, the work of their professional learning community was strengthened. Further, schools were able to use momentum to prioritize school improvement work and to define clear goals for teaching and learning. This provided an opportunity to align professional development work that he claimed positively affected instruction and ultimately student learning. Ingvarson et al. (2005), however, found that collaboration, at least as it pertains to student work, was the weakest characteristic of a professional learning community associated with learning. In contrast, Rosenholtz (1989) had earlier described teacher collaboration as increasing opportunities for teacher learning which she claimed led to increased knowledge exchange and expanded the range of instructional strategies at a teacher’s disposal. In 2003, DuFour encouraged leaders to insist on a collaborative culture that he defined very specifically. He called many current forms of collaboration “collaboration lite” (p. 63) including those that merely identified congenial relationships, coordinated efforts, or delegation as collaboration. He insisted that true collaboration consisted of “a systemic

process” in which school personnel “work together to analyze and impact professional practice in order to improve individual and collective results” (p. 64).

Deprivatization of Practice

Deprivatization of practice includes the sharing of resources by teachers and interaction involving teaching and learning. In 1989, Rosenholtz stated that professional isolation had severe repercussions for teacher learning, especially for those teachers new to the profession. Ingvarson et al. (2005) noted the importance of a deprivatization of practice in highly functioning professional learning communities. Hollins, McIntyre, DeBose, Hollins, and Towner (2004) found that internal professional learning such as study groups and informed conversations had a positive impact on reading achievement. Their study found that, over time, teachers began to release their proprietary feelings and beliefs and began to share ideas related to teaching and learning.

Louis and Marks (1998) provided a specific method in which schools support the deprivatization of practice. Two schools in their study used the concept of teacher teaming in various constructs to accomplish a sense of shared goals. Gordon (2004) described the benefits of peer coaching. This interaction among teachers enabled teachers to not only work together, but provided an opportunity for reflection upon teacher practices.

Reflection

Often, educators focus solely on the work ahead instead of taking time to reflect upon what has occurred. However, much can be learned from a careful analysis of past actions. Ingvarson et al. (2005) discussed reflection as a trait that effective professional learning programs provided teachers. This opportunity provided educators time to reflect on their practice and to compare their practice against a lofty goal. Gordon (2004) described three

approaches to reflection: participation in a study group, conducting action research, and writing for reflection. In 2005, Arredondo-Rucinski advocated using reflection to improve practice to develop knowledge. Her standards for reflective practice were leveled beginning with a stage in which the use of reflective practice materializes to a final stage of using reflective practice in an ethical and just manner. She argued that reflective dialogue is important to professional learning.

Leadership

The importance of the principal as the school leader has been studied as a factor in strong professional communities. The past thirty years of school reform has changed how principals lead schools. The reforms involved all aspects of curriculum, assessment, and instruction. Hallinger and Heck (2009) described this work as part of a distributed leadership process and correlated this leadership style to school improvement efforts. In 2006, Pfeiffer studied the impact principal leadership had on student learning. In addition, she examined the effect school principals had in enhancing teacher leadership traits that influence student learning. Pfeiffer indicated four attributes she found significant: high teacher expectations, trust, confidence in faculty, and the ability to communicate openly and honestly with the staff. Additionally, Pfeiffer noted that the principals of these schools identified high expectations and open communication as attributes of their schools. Principals at high performing schools developed support mechanisms to undergird their vision. Pfeiffer (2006) noted four such structures identified by both teachers and principals: the principal meets regularly with the staff, is approachable, has an open-door policy, and uses data to make decisions.

Several studies have demonstrated a link between leadership and student achievement. In 2001, Wiley studied the impact transformational school leadership and school professional community had on student achievement. This study analyzed high school math teachers and

student math achievement. She determined that as leaders developed an environment around shared transformational leadership and the professional learning community characteristics of shared beliefs and a focus on student achievement, a positive change was found in math achievement. Anderson, Ashmann, Secada, and Williams (2003), however, noted that while a distributed leadership style impacted achievement, the principal was not the main instructional leader in the best professional learning communities, but instead served as a facilitator.

In 2003, Marks and Printy studied the impact transformational leadership and shared instructional leadership had on school performance. They used both a “pedagogical quality” index (p. 379) and student achievement to measure school performance. They found that schools with an integrated leadership model had a difference of 0.6 SD higher than comparable schools. Marks and Printy hypothesized that this was a result of a shared focus on pedagogy ($p < .05$) by both the principal and the faculty.

Heck and Hallinger (2009) studied the impact leadership had on math achievement. They hypothesized that distributed leadership and academic capacity would mutually strengthen each other. In addition, they theorized that distributed leadership would be directly related to the changes in academic capacity and that the changes in academic capacity would be directly and significantly related to growth in student learning (p. 667-668). They found that strong distributed leadership had a reciprocal relationship with academic capacity. They supported the idea that a belief that leadership was distributed enhanced the idea that the academic capacity of a school could be increased. Hallinger and Heck determined that distributed leadership and academic capacity were positively associated with math achievement.

Supovitz, Sirinides, and May (2009) studied the effect principal leadership, teacher change in instruction, and peer influence had on student achievement (p. 39). Their research

included the impact principal leadership had on teacher change in instruction, teacher peer influence and the resulting changes in student achievement. They found that the leadership of the principal impacted teacher practice which ultimately had an impact on student learning.

Teacher Empowerment and Effectiveness

Sweetland and Hoy (2000) examined the relationship between school climate and teacher empowerment in addition to the relationship between teacher empowerment and school effectiveness. Empowerment was described as the leaders ability to share in the decision making process. They found a positive correlation between teacher empowerment and student achievement. Additionally, Sweetland and Hoy related teacher empowerment and the perception of effectiveness. An attribute of perceived effectiveness included: providing high-quality instruction and learning. Zmuda, Kuklis, and Kline (2004) stated all stakeholders had to feel responsible and accountable, both as individuals and as a staff, to closing the achievement gap. Additionally, they felt that this accountability had influenced not only the process, but the final outcomes. In a meta-analysis, Marzano, Waters, and McNulty (2005) found evidence for this view. They stressed the importance of a community being driven by a unified purpose and having an established, mutual process to achieve that purpose.

Professional Learning Focus

Reduced funding has had a cascading effect on the time teachers have available to plan together. This financial stress may have led to professional development opportunities focusing on the right work in the right way. Ingvarson et al. (2005) found a relationship between active learning of teachers and teacher knowledge. This relationship impacted the level of confidence in their instruction that influenced student learning outcomes and efficacy. The professional learning focused on what students were to learn and research based teaching methods.

Little (1982) identified four types of interactions that led to the achievement of continuous professional development. The first type of interaction was when teachers participated in discussions about their teaching practices. Little emphasized that these conversations needed to be “frequent, continuous, and increasingly concrete and precise about teaching practice” (p. 331). A second type of interaction was the process of regular observations with productive feedback. The opportunity for teachers to work together on material preparation was identified as a third method of achieving strong professional development. Little observed that this opportunity provided teachers a chance to collectively develop materials for student success while sharing the responsibilities of design, research, evaluation, and preparation. The final interaction described by Little was that teachers instruct each other on various aspects of their profession. Little (1982) concluded that two norms were in place in schools where the professional learning community had positive outcomes. These norms were a norm of collegiality and a norm of continuous improvement.

Strahan (2003) documented the work by administrators and teachers to plan professional development goals that would have a positive influence on instruction. His three-year case study examined the changes in culture that impacted student achievement at three elementary schools. He concluded that these schools succeeded at increasing student achievement with a foundation of setting an agenda for change that addressed students’ needs (p. 141). Teachers at these schools shared ideas to strengthen the professional community, used data to make decisions, and established professional learning needs to enhance instruction.

Professional Learning Communities and School Reform

Although aspects of professional learning communities, such as reflective thinking and sharing communities, were suggested as early as the 1930s (Dewey, 1933); Stoehr, Banks, and

Allen (2011) stated that discussions about PLCs began in the 1970s. These discussions centered on goals such as closing the achievement gap, improving student achievement, and early intervention (Stoehr, Banks, & Allen, 2011). They stated that one key weakness of professional learning at that time was the opportunity for teachers to actively participate in the design and purpose of professional learning. The purpose of professional learning communities has evolved over the last few years from using PLCs as a method of organization towards a focus on teaching and learning (Vescio, Ross, & Adams, 2008). Professional learning communities expanded role coincided with the evolution of distributed leadership and the belief that school leaders needed to share authority and accountability. Anderson, Ashmann, Secada, and Williams (2003) made a distinction between a professional group and a professional community. They argued that while a professional group may share a common interest; a professional community shared a common language, values, and norms. They went on to define a common commitment for educators – teaching for understanding for all students.

Studies of Professional Learning Communities and Student Achievement

There are a limited number of studies concerning the effect professional learning communities have on student achievement. In 1995, Newmann and Wehlage reported four interrelated structures that led to increased results for students in school restructuring. The first of these was a focus on student learning. They described the importance of teachers reaching consensus on what authentic and high-quality work looked like as well as identifying unambiguous goals for quality learning. They also stated that instruction and assessment that is genuine was needed so that all students could learn. The third factor Newmann and Wehlage described was one of organizational capacity. They believed that schools that have established professional learning communities were more effective in the support of student learning

outcomes. The final factor identified by Newmann and Wehlage was external support. Hord reiterated the significance of this work in her 1997 summary of professional learning communities.

Louis and Marks (1998) examined the effects professional community had on classroom organization and student achievement. Their emphasis was on authentic pedagogy and social support for achievement which they hypothesized would lead to an increase in student achievement. They found evidence to support that achievement levels were significantly higher for schools with strong professional learning communities (p. 26, $p \leq .001$). They attributed 85% of the variation in authentic assessment to the use of professional learning communities.

In 2006, Pfeiffer's work on high school principals' impact on student achievement demonstrated an association of successful schools with those that had a united school improvement vision as well as the Professional Learning Community characteristic of focusing upon student learning. This focus was needed by both teachers and school leaders in order to be effective. She found that principals of effective schools saw the need to continually improve their teams by the use of careful hiring practices, continued support, and effective communications. Supovitz, Sirinides, and May (2009) investigated the relationship between principal leadership and peer influence on instruction and student learning. Their study examined the relationship between changes made in instruction and improved student learning and the associated relationships between leadership, peer influence, change in instruction, and achievement. They found a positive association for principal and peer influence with a change in instructional practices for math and English Language Arts (ELA). They noted a standardized direct effect of leadership and peer influence on teaching and learning in ELA and mathematics. Sweetland and Hoy (2000) researched the relationship between school climate, teacher

empowerment, and school effectiveness. Their study demonstrated a significant impact on reading and math scores with a standardized beta of .26 ($p < .01$) for reading and a standardized beta of .25 ($p < .01$) for math.

In 2009, Dumay investigated the relationship that collective teacher decision-making and principal leadership had with culture homogeneity. Further, he analyzed the effect this homogeneity had on student's math achievement. His evidence contradicted previous findings. While he found a relationship between principals who are transformational leaders and teacher collaboration and discipline, he could not support the hypothesis that the teachers valuing of collaboration in regards to student work and innovation impacted student achievement in math. However, Wiley (2001) noted an interrelationship between transformational leadership and learning communities. She reported an inner-relationship between the effect of leadership and the level of professional community at a school. Each of these variables increased as the other increased. She found that transformational leadership had a positive impact on math achievement, and that use of professional learning communities had a positive impact on achievement only if transformational leadership was also in place.

In 2011, Lomos, Hofman, and Bosker conducted a meta-analysis on the effects PLCs had on student achievement. They reported an effect size ($d = .25$, $p < .05$). While small, these data indicated the possibility of PLCs having an impact on student achievement. Another meta-analysis was conducted by Arredondo Rucinski in 2012. Her research of 12 schools demonstrated a link between student gains and level of PLC implementation,

Summary of Professional Learning Communities

Although limited, research into the link between professional learning communities and student achievement demonstrates the potential of this model. Cowan's (2009) description of a

professional learning community as an “infrastructure that supports and nurtures continuous instructional effectiveness, and is not an end unto itself” (p. 20) best exemplifies the purpose of learning communities. She stressed that PLCs were a method to achieving success in student learning and a part of an overall focus on improvement.

Response to Intervention

If professional learning communities are the infrastructure of school improvement, then response to intervention (RTI) is the framework. The response to intervention model was introduced as part of the Individuals with Disabilities Educational Improvement Act that reauthorized the Individuals with Disabilities Education Act (IDEA) (McCook, 2006). Searle (2010) described this as the result of a 30-year debate as to how to make decisions about special education eligibility (p. 8). Barnett, Daly, Jones, and Lentz (2004) described RTI as a move away from a “one-point-in-time” assessment model when making decisions about special education services. This adjustment of the law provided the opportunity for school systems to use scientific, research-based interventions as part of the evaluation systems for the determination of specific learning disabilities in children (McCook, 2006). Barnes and Harlacher (2008) stated that this allowed schools to assist students as learning issues were observed instead of a process that waited for a child to fail before interventions could be provided. McCook stated that this freedom moved the monitoring and measuring of students’ response to intervention into the realm of the general classroom. As a result of this law, RTI strategies are now a core staple in assisting schools in identifying students with significant learning gaps.

Barnes and Harlacher (2008) defined RTI as “a multi-tiered method of service delivery in which all students are provided an appropriate level of evidence-based instruction based on their

academic needs” (p. 417). Shores and Chester (2009) suggested that a response to intervention framework had the potential to impact school improvement and discussed the support that RTI provided to data driven decision making models that strive to improve student learning. In 2009, Shore described RTI as a process with over thirty years of research to support its effectiveness.

High quality core instruction has been seen as the foundation of RTI (Mellard & Johnson, 2008; Meltzer, Phillip, & Kutno, 2010) and as something that can prevent the need for supplemental interventions. Fisher and Frey (2010) stressed that many students are placed in Tier 2 support as a result of “ineffective core instruction” (p. 42). Barnes and Harlacher (2008) stated that improved student performance for all students was the goal of RTI and that high-quality instruction was of utmost importance. Barnes and Harlacher (2008) felt that high-quality instruction accomplished two things: first, it increased the likelihood that students would achieve at desired levels, and second, it eliminated poor instruction as reason students were not being successful.

Components of RTI

According to Sailor (2009), there are several common characteristics defined in RTI. These include the following: 1) a three tier system that matches interventions to student needs; 2) systematic screening; 3) scientifically-based interventions; 4) progress monitoring of at-risk students; and 5) the use of interventions to determine levels of support. Barnes and Harlacher (2008) stated that “RTI is more than just a way to identify students with disabilities” but is a “way to ensure better academic performance for *all* students” (p. 419). They described key features of RTI as: multiple tiers, assessment systems, a protocol, and evidence-based instruction. According to The National Center on Response to Intervention (April, 2010) the essential components of an RTI model include: instruction that is research-based, screening of

students, progress monitoring of implementations, increased intensity of interventions as needed, and decision making about students based on data. Other concepts discussed by researchers (Mellard & Johnson, 2008; Sailor, 2009) included the fidelity of implementation and professional development.

Tiered System

Several researchers use a three-tiered model for RTI. Sailor (2009) and Shores (2009) both described a three-tiered RTI system. McCook (2006), Stoehr, Banks, and Allen (2011), and Mellard and Johnson (2008) concurred with this view. Their descriptions of each of these tiers were similar. Tier one is the foundational level of RTI and applies to all students. Universal screening and differentiated support for all students occur at Tier one. Students moved to Tier 2 require more intensive support in addition to that found in the normal classroom. Progress monitoring is more formalized at Tier 2 and students are often grouped based on need. Tier 3 is designed for students needing intensive, highly-individualized support.

Barnes and Harlacher (2008) acknowledged that a three-tiered approach was most common, but stressed the importance of all students having access to each level of support. Fuchs, Mock, Morgan, and Young (2003) discussed versions of RTI that had from two-four levels to provide support to students who need additional help.

In the selected state, the RTI process has four tiers (Georgia Department of Education, 2008). It is expected that all students receive support at Tier 1 in the regular classroom. Strategies such as standards-based instruction, differentiation and a universal screening process are components of Tier 1. If these processes are implemented with fidelity, it is expected that 80%-100% of students will be successful in the general classroom (Georgia Department of Education, 2008).

Tier 2 is considered needs-based instruction. It is provided in addition to Tier 1 support. Research-based interventions are provided based on student need and are progress monitored to determine the interventions effectiveness. Students are moved to Tier 3 in the state's pyramid when the possibility of a factor, internal to the student, may be the cause of academic struggles. Intensive interventions and frequent progress monitoring are provided to students at this level. The focus of this level is providing individualized, diagnostic, analysis and intervention. Tier 4 is reserved for students who meet eligibility requirements for special education (Georgia Department of Education, 2008).

It is important to note that a multi-tiered system of intervention is consistent with both the IDEA of 2004 and the NCLB Act of 2001 (Georgia Department of Education, 2008). The goal of these laws is to ensure all students receive support that is research-based and appropriate for decisions, including eligibility decisions. Although a general timeline for eligibility determination is 6-12 weeks, the state's Department of Education stresses that the critical point be that the interventions have been given a reasonable amount of time to work and that there is enough data to support decisions. In addition, the state provides a SST (Tier 3) bypass procedure for severe disability or other extenuating circumstances (Georgia Department of Education, 2008).

Universal Screening

A universal screener is a key component of the RTI process. The High School Tiered Interventions Initiative (2010) referenced numerous sources that indicated the effectiveness of screeners at the elementary level, but acknowledged that research at the high school level is only beginning to be conducted. In The National Center on Response to Intervention (June, 2011) middle school study, a middle school staff member stated that "screening is probably the most critical piece, because if we don't screen, we have no way of knowing whether we have a class-

wide problem or we have an individual student problem, and the interventions are so different, so that's really crucial for us" (p. 12).

One of the essential components of RTI, as identified by The National Center on Response to Intervention (April, 2010), was that universal screening was conducted on all students and implemented accurately. Shores (2009) described screening of students as a critical first step in discovering student deficits.

High Quality, Evidenced-Based Instruction

A fundamental component of the RTI process at Tier 1 is high-quality, evidence-based instruction (Sailor, 2009; Shores, 2009; Stoehr, Banks, & Allen, 2011). Searle (2010) said that evidence-based instruction would provide better student outcomes. Barnes and Harlacher (2008) described high quality, evidence-based instruction as an imperative feature of RTI, while Fisher and Frey (2010) stated that a quality core instruction was "the foundation of RTI" (p. 50).

Fidelity of Implementation

One of the keys to a successful RTI program is the fidelity of implementation (Mellard & Johnson, 2008). Mellard and Johnson defined fidelity of implementation as the delivery of instruction matching the intended design. In their 2009 webinar on fidelity, Mellard, Khan, McKnight, and Prewitt described what fidelity of an RTI process would look like in schools. They outlined seven characteristics of RTI fidelity: a valid and reliable assessment system, an evidence-based curriculum, evidence-based and standardized instructional practices, a following of data based decision making protocols, regular fidelity checks, procedures for integration and sustainability are adhered to, and regular communication. Searle (2010) stressed the importance of fidelity and quality as part of RTI procedures. She also described the importance of developing a "pyramid database" so that interventions are clearly defined at each level of

intervention. The High School Tiered Interventions Initiative (2010) identified fidelity as an essential component of RTI. At Tier 1, fidelity included monitoring the implementation of the curriculum, and evidence that teachers adhere to the materials in most instances. Sailor (2009) further delineated this concept by defining implementation fidelity as well as intervention fidelity. The first concerned the execution of establishing and maintaining the curriculum or program in the prescribed manner. The latter involved the changes expected based on data being collected and analyzed in a consistent manner.

Data Based Decision Making

One of the essential components of a RTI process indicated by The National Center on Response to Intervention (April, 2010) was analyzing data to determine if the elements of interventions, including the activities and processes associated with the interventions, are having a positive impact on learning. Searle (2010) indicated that an RTI process needed to use a data-based decision making approach, rather than “data as a compliance mechanism,” while Barnes and Harlacher (2008) described this decision making process as an “overarching principle” of the RTI process. Griffiths, Parson, Burns, VanDerHeyden, and Tilly (2007) depicted the direct line between instruction and outcomes and using outcomes to form instruction. They described the impact of a cycle involving the linking of instructional strategies to performance data. The use of data to analyze the implementation of RTI at all levels, making decisions on student progress, and making decisions on both the types and effectiveness of interventions and curriculum were considered the basics of a data based decision-making RTI model, according to Bailey (2010). Sailor (2009) described RTI as a “change agent” that provided a focus on data and therefore used data based decision-making to determine interventions.

Shapiro and Clemens (2009) indicated that the RTI model implemented at schools must be reviewed for impact and that the use of established protocols enabled teachers to determine the effectiveness of interventions and processes. McCook (2006) went so far as to say that a lack of a monitoring process was “fatal” to the intervention and support process (p. 67). He also described four advantages to using a data based decision making model for intervention: the ability to measure data on a frequent basis, the objective evaluation of an intervention’s value, the ability for all stake-holders to view the effects of an intervention, and to use data and make informed decisions on interventions and whether they should be stopped, increased or modified (p. 67).

Professional Development

Several researchers have stressed the importance of professional development as part of effective implementation of RTI (Sailor, 2009; Kashima, Schleich, & Spradlin, 2009; The High School Tiered Interventions Initiative, 2011; National Center on Response to Intervention, June, 2011). Sailor described professional development as an “essential element of systems change and transformation” in implementing an RTI process in schools. He stressed that embedded professional learning, which contained a mentoring component to assist teachers in the implementation of what was learned, was the strongest method of teacher learning.

In 2008, Mellard and Johnson described the shift in responsibilities that may occur when a school implements RTI. They stressed the importance of training to support this transition. Kashima, Schleich, and Spradlin (2009) noted that continuous professional development was critical to the implementation and sustainability of an RTI process while the National Center on Response to Intervention (June, 2011) stated that school-based professional development should

be available to teachers and provide an opportunity for them to constantly examine, reflect, and improve their instruction so that student learning increases.

Tier I Instruction and Intervention

According to The High School Tiered Interventions Initiative (2010), the focus of Tier 1 has been high-quality, evidence-based instruction that meets the needs of most students. Further, this instruction should be made available to *all* students. Barnes and Harlacher (2008) described some attributes of the core instructional program that is considered to be Tier 1 in the RTI process. High rates of opportunities to respond, feedback that is immediate and targeted, and differentiation were all discussed as key attributes of Tier 1 instruction. In addition, they stressed the importance of evidence-based instructional techniques as well as a focus on the big ideas of a subject “to ensure the principles of RTI, particularly *effective practices*, are being met” (p. 425).

McCook (2006) described six basic elements that compose Tier 1 support. These included: a high-quality program of instruction, use of research-based instructional strategies, ongoing assessment, professional development for educators, classroom interventions, and a curriculum based on scientific research principles (p. 27). McCook described several features that he considered critical at Tier 1: collection of screening data, a plan to address key weaknesses of students within the general classroom where all students learn, a methodological process for screening students three times per academic year, the setting of measurable goals, the use of problem-solving methods to remediate needs, a team approach to establishing goals and support mechanisms, a way to monitor fidelity of instruction, and the implementation of strategies in the classroom (p. 28). Sailor (2009) emphasized assessment at Tier 1 must be flexible.

Hall (as cited in Sailor, 2009) indicated that the monitoring of progress at the Tier I level placed an additional expectation on teachers who may already be over-burdened. Searle (2010) described the power associated with improved Tier 1 instruction as reducing the overused processes in the upper tiers that are more costly, both financially as well as in use of personnel and other resources.

Further investigation has shown little research or emphasis on the first tier of intervention. While considerable research exists about intervention and assessment for Tiers 2 and above, Tier 1 often is only mentioned as an assumption. Numerous researchers (McCook, 2006; Shores, 2009; Stoehr, Banks, & Allen, 2011; Meltzer, Phillips, & Kutno, 2010) have stated that Tier 1 interventions and instruction should meet the needs of at least 80% of students, yet research at this stage often merges with on-grade instructional practices instead of delineating the unique conditions posed when students do not know what they need to succeed.

RTI in Middle and High Schools

While RTI has the potential to meet the academic needs of all students; Shores and Chester (2009) stated that data on RTI for grades 6-12 were “extremely limited” (p. 17). They attributed this to the fact that the structure of middle and high schools is significantly different than that at the elementary level. Mellard and Johnson (2008) as well as the National Center on Response to Intervention (June, 2011) acknowledged this concern. They further stated that implementation may be different at higher grade levels. Muoneke and Shankland (2009) discussed the challenges faced by high schools. These included the organizational make up of high schools as well as a lack of appropriate grade level tools.

Duffy (2007) stated RTI had “important implications” at the high school level (p. 7). She described several key concepts that were needed for RTI to be effective in high schools. These

were: a need for screeners and progress monitoring tools developed for the high school curriculum, the identification of grade and subject-appropriate interventions, implementation issues exclusive to high schools, the roles of regular and special education teachers, high-quality instruction, support for collaboration, ongoing professional development, and a focus on increased communication with parents.

The National Center on Response to Intervention (2011) conducted a study on how RTI was implemented at the middle school level. A critical need to improve reading led the middle schools to investigate the possibility of implementing an RTI process to improve learning outcomes for students. One of the first issues addressed by the study was the schools culture so that it would support the implementation of RTI. The change in focus included attributes such as a belief that all students can learn and that all staff are responsible for all students.

Another important characteristic identified in the middle school study was the collaboration among staff. Goals of collaboration included: a willingness to accept the RTI framework, analysis of data and shared decision making, shared professional development planning and participation, and the teaching of the intervention classes. The importance of established times for teacher collaboration, open and frequent communication, and shared data were all attributes identified as critical to the success of the implementation of the RTI process.

Professional learning was considered a necessary support for the implementation of this RTI initiative. This learning increased teachers' understanding of the RTI process and enabled teachers to provide interventions with fidelity, monitor student progress, and make decisions based on data. This study emphasized the importance of a deliberate plan when implementing RTI that addressed the needs of teachers to be included in the implementation process.

In May 2010, teams from the National Center on Response to Intervention and The High School Tiered Interventions Initiative conducted a study of RTI implementation in high schools. As in the middle schools, an instructional need led researchers to investigate whether an RTI process could help students succeed.

As part of this study on RTI in high schools, the National High School Center, National Center on Response to Intervention, and the Center of Instruction developed a contextual factors of implementation planning rubric to assist in guiding school staff in developing an action plan. (National Center for Response to Intervention, August 2011) The nine contextual dimensions included: a focus for tiered interventions (which may be different for different situations including a limit in scope of students and/or content areas tested), a school culture that supports tiered interventions, the alignment and implementation of supports, instructional organization, the role of staff in conducting interventions, student involvement, the role of interventions in meeting graduation requirements, the engagement of all stake-holders, and the resources available for instruction and assessment. Each of these concepts had associated guiding questions to assist staff in preparing a plan to implement tiered support. Eight school sites were examined in this study. Each of these sites had either three or four levels of tiered interventions. The focus of these interventions was in math and/or English at grades 9 and 10. In this study, the interventions were provided outside of the regular classroom instruction. Two sites had the regular classroom teacher providing the intervention during a seminar period, while the other six had specialists provide the intervention.

Professional development was provided at all eight schools in the high school study. The professional learning included training on the framework of RTI, coaching, modeling, and research-based instructional strategies. The fidelity of implementation was identified as a

challenge in this study. A lack of protocols available at the high school level and specific content related constraints were identified as barriers to monitoring the level of fidelity. In addition, the study found that the complexity of implementation within the high school structure may lower any fidelity measure.

The study identified several examples of strong Tier 1 research-based instruction. These included: instruction that was explicit, culturally responsive, aligned to standards, and differentiated as well as scaffolding, academic literacy, formative assessment, and expectations of class behavior.

The Relationship between PLCs and RTI

Levine and Marcus (2007) said that the potential for collaboration is often hindered by customs such as teacher isolation and non-interference. Sailor's assertion that professional learning for RTI be used to "deconstruct silos" supports this idea. Characteristics such as a high-quality and effective instruction, research-based strategies, assessment, and a team approach to problem-solving overlap in the features of both effective PLCs and strong, effective Tier 1 instruction and intervention.

In 2011, Stoehr, Banks, and Allen stated that the establishment of a PLC was one of the first steps in a timeline for implementing RTI in schools. They described PLCs as the foundation of the collaborative work of teachers. Mellard and Johnson (2008) described characteristics of PLCs such as monitoring, data-based decision making, and reflective practice being accentuated in the classroom when an RTI process is implemented (p. 20).

Student Achievement

The studies about the link PLCs and RTI have with student achievement used several different measures. Some used standardized tests such as the ACT college entrance exam or

state-mandated achievement tests (Pfeiffer, 2006; Supowitz, Sirinides, & May, 2009). Several studies used a longitudinal approach that compared student growth over time (Newmann & Wehlage, 1995; Heck & Hallinger, 2009; Louis & Marks; Marks & Printy, 2003; Wiley, 2001), while others used a change in student scores on a pre/post test or benchmark type assessment (Dumay, 2009; Shapiro & Clemens, 2009) as a means of measuring student growth.

Each of these measures has strengths and limitations. Standardized tests are often criterion referenced to a specific grade level curriculum, and while they provide information as to a student's understanding of specific grade-level concepts (Shapiro, 2011), they may not reflect student gains over time. Heck and Hallinger (2009) discussed that while a longitudinal approach provided an opportunity to track student growth over time, the possibility of omitted and confounding variables could be common sources of misleading results. While the analysis of the rate of change in student scores provides opportunities for analysis of specific concepts over time, Shapiro and Clemens (2009) cautioned that a comparison of a small number of data points at the student level would be influenced by any given score. They continued by stating that combining scores at the grade or school level reduced the impact of any one result. Shapiro and Clemens described universal screeners as a method of measuring student growth over time.

Summary

This chapter began by providing a definition of professional learning communities and synthesizing literature on PLC characteristics. Research on the relationship between PLCs and student achievement was reviewed. A synthesis of response to intervention literature concentrated on practices and procedures that led to effective implementation. Studies on the effect this implementation has on student learning were examined.

This chapter concluded by linking these two ideas in theory. Stoehr, Banks, and Allen (2011) established a relationship between PLCs and RTI. They described the process of creating a professional learning community as the first step of implementing RTI in schools. Mellard and Johnson's (2008) assertion that RTI at the school level "under the umbrella of PLC holds the promise of marked improvement in student achievement, the rapid identification of unproductive teaching techniques, and the prospect of informing professional development needs" (p. 15) emphasized the strong relationship between PLCs and a RTI process. Research on these theories as being integrated, however, is limited.

There is still a need for additional research addressing the relationship between PLCs and student achievement. Although PLCs are described as the foundation of an RTI model, studies into this relationship are few. There is also little known about the link implementation of an RTI model has at middle and high school levels, especially in the area of mathematics. Therefore research in this area may provide information into the relationships PLCs and an RTI process have with student learning. These needs provide the inspiration for the following study on middle and high schools.

CHAPTER III:
METHODOLOGY

Introduction

The idea for this study originated as a result of the work of Hord (1997), Pfeiffer (1996), Mellard and Johnson (2008) and the Center for Response to Intervention (RTI) in 2010. The overlapping themes between Professional Learning Communities (PLCs) and an RTI process provided a link to these individual paths of study. A lack of research at the middle school and high school levels and a lack of research in mathematics provided impetus for this study.

Professional learning communities have been advocated as a way to assist teachers in improving student learning. However, quantitative research into the effectiveness of their implementation is limited. Implementation of a response to intervention model has been proposed as a way to close the learning gaps for students. Although some research into the effects of RTI at the elementary school level in reading and behavior has been documented, little research exists as to the link this model has with mathematics at the middle school and high school level (Sailor, 2009).

Statement of the Problem

Curriculum, assessment and instruction have been under increased scrutiny as schools and districts search for ways to increase student learning. One approach taken to improve achievement was to investigate the working relationships of school professionals. Certain characteristics of learning communities emerged as early as the work of Dewey in 1933, however, recent discussions about PLCs began in the 1970s according to Stoehr, Banks, and

Allen (2011). Although the effects of professional learning communities continue to be studied, research into the link PLCs have with student achievement is limited.

Response to intervention (RTI) was introduced as part of the Individuals with Disabilities Educational Improvement Act which reauthorized the Individuals with Disabilities Education Act (IDEA) (McCook, 2006). Barnett, Daly, Jones, and Lentz (2004) described RTI as a move away from a “one-point-in-time” assessment model when making decisions about special education services, while McCook (2006) stated that the adjustment of the IDEA provided the opportunity for school systems to use scientific, research-based interventions as part of the evaluation systems for the determination of specific learning disabilities in children. Current research on the implementation of response to intervention models has focused on elementary schools in the areas of reading and behavior (Sailor, 2009). There is little research dedicated to the implementation of an RTI process in middle and high schools or the relationship this process has with mathematics learning. Some authors have stated that a professional learning community is a necessary condition when implementing an RTI framework in schools, although there is little research to support this argument (Mellard & Johnson, 2008; Stoehr, Banks, & Allen, 2011).

Purpose of the Study

The purpose of this study was to determine the relationship between PLC characteristics and components of RTI as well as the relationship each process had with student learning in mathematics at the middle and high school level.

Research Questions

1. What is the relationship between participation in a PLC and implementation of an RTI framework?

2. Does participation by teachers in a PLC have a relationship with student learning in mathematics in middle schools and high schools?
3. Does an implementation of interventions at the Tier 1 level in middle and high schools have a relationship with student learning in mathematics?

Hypotheses

H₁: Schools that have a stronger perceived level of PLC involvement also have a greater degree of implementation of a response to intervention framework

H₂: In schools with a greater perceived level of PLC involvement, the gain in student mathematic scores is also greater

H₃: In schools with higher ratings on RTI implementation the gain in student mathematic scores is also higher

Population and Sample

Selection of Systems and Schools

The population for this study was composed of districts whose middle and high schools use the Georgia RESA Assessment of Student Performance (GRASP) as a universal screening instrument. There are 186 public school districts in the state with approximately 429 middle schools and 336 high schools (Educationbug, 2011). Of these systems, 54 use GRASP as their universal screener. A total of 11 districts, 37 middle schools, and 18 high schools were selected by a systematic stratified sampling that represented these systems in size and region. These schools represented 8.6% of the middle schools in the state, 47.4% of the middle schools using the GRASP universal screener, 4.2% of the high schools in the state and 39.1% of the high schools which use GRASP as their screening instrument. Three systems had a student population of more than 10,000; four had a student population between 5,000 and 10,000; and

four systems have a student population of less than 5,000. Systems were located throughout the state (Georgia Department of Education, 2011). The unit of analysis was the school.

Data Collection and Instruments

Four types of data were collected: faculty demographic data, which included information about teaching experience, subject and/or grade taught, and position at the school; survey data from Hord's (1996) SPSLCQ; interview data based on the RTI Integrity Rubric from the National Center on Response to Intervention (2010), and universal screener data. The School Professional Staff as Learning Community Questionnaire (SPSLCQ) was administered through email distribution at the school. Demographic data were also collected through the electronic survey. All surveys were anonymous. Interviews were conducted with the professional staff identified by the principal as responsible for the RTI process. The interview questions were provided in advance if needed. Interviews were conducted in person or in conference via phone or internet. Some respondents preferred to write their responses and then discuss the responses with the researcher. An independent observer scored 17% of the interview responses in order to provide rater reliability. Student screener data were collected after students completed the final universal screener for the school year.

Demographic Data

Demographic data were collected from the participants. The information collected included: position (teacher, administrator, other); grade level(s) or subject(s) taught; number of years the individual had been teaching at the school and the number of years the individual had been teaching overall.

Survey

The School Professional Staff as Learning Community Questionnaire (SPSLCQ) developed by Hord (1996) was used to ascertain participant beliefs about their school as a learning community. This survey asked seventeen questions about five dimensions Hord associated with PLCs. The five dimensions were supportive and shared leadership, shared value and vision, collective learning, peer review and feedback in order to increase capacity, and school conditions such as conditions and capacity (Hord, 1997).

Meehan, Orletsky, and Sattes conducted a field test of the SPSLCQ in 1997. They concluded that Hord's instrument did distinguish among schools on the five factors analyzed as well as on the total score. The internal consistency of each factor was between .83 and .87 while the overall alpha was .94. In addition, Meehan, Orletsky, and Sattes found the content validity for using the instrument to measure the strategy of implementing PLC within K-12 professionals based on a three-stage literature review by Hord and professional staff (p. 44). The surveys were administered electronically to professional staff at each school.

Interviews

The RTI Essential Components Integrity Worksheet and rubric scoring guide was used to develop the interview protocol. These documents were designed to work together to collect data on a school's rating on specific characteristics related to RTI implementation (National Center on Response to Intervention, August 2011). The worksheet designers suggested that data be collected through interviews with school personnel. The rubric scoring guide used a 5-point rating scale and descriptions for scores of 1, 3, and 5. Scores of 2 and 4 were assigned if the researcher determined that the score fell between the ratings described.

The interview questions were designed to assess three components the National Center on Response to Intervention identified as essential to an RTI framework: Use of a screening instrument, a multi-tiered system, and data-based decision making. In addition, a fourth category of overarching factors was included. This study concentrated on the questions aligned to the screening and multi-level prevention/intervention system for the primary level (Tier 1). These questions include: the tool and procedures used for screening, the fidelity of implementation, the articulation of teaching and learning, instruction, and school-based professional development. In addition, questions about data-based decision making and overarching factors such as a prevention focus, leadership, staff qualifications and parent communication were considered.

The principal at each school indentified the individual(s) responsible for implementing RTI at the school. In some schools, this was one individual such as an Assistant Principal or Counselor while, in other schools, leadership or RTI teams participated in the interview process. Interview questions were sent to the school in advance of the interview. Interviews were conducted in person or in conversions conducted over the phone or internet between the researcher and these individuals. A second RTI specialist independently scored 17% of the interviews to confirm item ratings. A Cohen's Kappa reliability was conducted to determine inter-rater reliability.

Universal Screener Data

Student math growth was measured by scores on the math applications universal screener used at these schools, GRASP. GRASP is a web-based program that provides screeners, progress monitoring assessments, and reports for schools using an RTI process. Screener data were collected and analyzed after the final screenings for the selected schools were completed. The dependent variable, increase in math scores, was measured by the change in screener score

from the first administration to the final administration of the screener. Shapiro and Clemens (2009) described this as a “rate of improvement” measure and stated the process of giving universal screeners at predetermined times throughout the year provided information on “how students are changing over time” (p. 8).

The GRASP Math Applications screener assessments were designed in 2008 and 2009. There are math application screeners for grades 3-10. Since the state’s math performance standards (GPS) were unique to the state; a pilot test was conducted in 2008 of students in the west central part of the state to determine cut scores. Students were given 20 minutes to complete the screeners. An analysis of students determined to be on grade level (as identified on the state’s standardized test) scores was completed to determine the cut score for each grade. A second, expanded pilot was conducted in 2010 that studied students across the state and was used to recalculate cut scores.

A correlation study was conducted in 2011 that analyzed student scores on the GRASP screener, and their scores on the state’s standardized test for grades 3-8. This study determined that 88% of students who met expectations on the state’s standardized tests met the cut score for the GRASP screener. Due to a change in curriculum at the high school for the state, no determination was possible at the high school level. Further information on this product can be found at <http://grasp1.wgretc.org>.

Data Analysis

The dependent variable, increase in math scores, was measured by the change in screener score from the fall administration to the winter administration of the screener. Shapiro and Clemens (2009) described this as a “rate of improvement” and stated the administration design of

administering universal screeners at predetermined times throughout the year provided information on “how students are changing over time” (p. 8).

A Cronbach alpha measure of .770 was calculated on the SPSLCQ to ascertain reliability of the survey data. To ensure reliability of the interview data, an additional RTI specialist independently scored 17% of the school interview responses. An inter-rater reliability analysis using the Kappa statistic was performed to determine consistency among raters.

A correlation was calculated to determine the relationship between the factors of PLCs and the essential characteristics of an RTI implementation. A regression was calculated between perceived level of PLC implementation and the change in student scores. A backward step-wise multiple regression analysis was calculated between the components of RTI to ascertain each item’s influence (or combination of influences) on student math score growth. According to Ben-Horim and Levy (1984), a stepwise regression analysis the independent variables to ascertain which variables have the greatest impact of variance on the dependent variable. Cohen (1992) described a stepwise regression analysis as a method to “screen” for significant variables (p. 226).

Summary

Increased accountability for student learning has provided the impetus for schools to find systemic solutions that may increase achievement. The research conducted for this study was designed to investigate the link between PLCs, a response to intervention model and student learning.

Data collected from two administrations of the GRASP universal screener were used to calculate the dependent variable, increase in math scores, with the school being the unit of analysis. Professional staff were surveyed with the School Professional Staff as Learning

Community Questionnaire (SPSLCQ) developed by Hord (1996). In addition, interviews were conducted with a purposeful sample of faculty and administrators involved in the RTI process using The RTI Essential Components Integrity Worksheet and Rubric (National Center on Response to Intervention, August 2011) to guide and then score the interviews.

The population used for this study was systems with schools that used GRASP as their universal mathematics screener. A total of 11 systems were selected via a systematic stratified sampling. These systems had a total of 37 middle schools and 18 high schools using GRASP, which represented 47.4% of middle schools which used GRASP and 39.1% of high schools which used GRASP. Eighteen middle schools and 12 high schools completed all parts of the study. These schools represented 23.1% of all middle schools which used GRASP and 26.1% of all high schools which used GRASP.

A correlation matrix was completed on the results of the independent variables from the SPSLCQ survey and the interviews. Regression analyses were completed to determine the relationship between the perception of PLC factors, the implementation of an RTI framework, and change in student score.

Table 1

Research Design and Methods Matrix

Research Question	Instruments	Methods of Analysis
What is the relationship between participation in a PLC and implementation of an RTI framework?	SPSLCQ and RTI Rubric	Correlation
Does participation by teachers in a PLC have a relationship with student learning in mathematics in middle schools and high schools?	SPSLCQ and GRASP	Linear Regression
Does an implementation of interventions at the Tier 1 level in middle and high schools have a relationship with student learning in mathematics?	RTI Rubric and GRASP	Backward Stepwise Regression

CHAPTER IV:

RESULTS

Overview

The results of the study are presented in Chapter IV. Data were gathered from the School Professional Staff as a Learning Community Questionnaire (SPSLCQ) as well as from interview questions based on the RTI Essential Components Integrity Rubric. Student growth was measured by the difference in scores between two administrations of the Universal Screening Instrument.

The purpose of this study was to assess the relationship between PLCs, an RTI process and the change in mathematics universal screener scores. The unit of analysis was the school. Survey data from respondents were averaged for each school. The mean of paired comparisons was used to determine growth at the school level. Descriptive statistics for all variables, Pearson correlations, and multiple linear backwards regressions are included in this chapter.

The SPSLCQ, a 17 item, Likert-type questionnaire, was used to determine the perceived level of PLC implementation within a school. The 17 items are separated into 5 factors: shared decision making (2 items), shared vision (3 items), collective learning (5 items), shared practice (2 items), and supportive conditions (5 items). The survey was sent via email to certified staff at each school. A field test of the SPSLCQ was conducted by Meehan, Orletsky, and Sattes in 1997. Hord's PLC instrument was found to differentiate among schools on the five factors

analyzed as well as on the total score. The internal consistency of each dimension was between .83 and .87 while the overall alpha was .94.

The degree to which a school had effectively implemented various components of an RTI process was measured by items on the National Center on Response to Intervention's RTI Essential Components Integrity Rubric. The items used were aligned as follows: RTI screening process (1 item), RTI primary level prevention/core curriculum (4 items), data-based decision making (1 item) and overarching factors (4 items). The individual(s), identified by the principal as having responsibility for the RTI process at the school, provided answers to queries based on these 10 questions. Responses were scored on a scale with values 1 to 5 based on the RTI Essential Components Rubric. An additional RTI specialist scored 17% of the school responses independently to ascertain inter-rater reliability.

Universal screener data were taken from the common program used by all schools studied: GRASP. The GRASP program has universal screeners at each grade level that are scheduled to be administered three times per year to all students. Growth was determined by the difference between the first and last administration of the screeners based on paired comparisons and then determining the mean of the differences.

Forty-one schools representing 11 school systems in the state agreed to participate in this study. Of these, 30 schools completed both the SPSLCQ and responded to the RTI interview questions for a participation rate of 73.1%.

Demographic Respondent Data

Demographic data were collected from a majority of respondents to the SPSLCQ. Table 2 shows a breakdown of the demographic data collected. Even though more middle schools than high schools participated in the study (18 middle schools to 12 high schools), the sample of

responses was about evenly distributed (49% and 51% respectively) between the levels of the schools. A majority (57.98%, n = 236) of respondents had 11 years of more experience, 19.41% (n = 79) had 7-10 years of experience, 12.29 % (n = 50) had been teaching for 4-6 years, while 10.32% (n = 42) had 3 or fewer years of experience. More than a quarter of respondents (26.78%, n = 109) stated that they had been employed at the same school for 11 or more years and an additional 19.66% (n = 80) indicated that had been at the school for 7-10 years. Another 26.04% (n = 106) responded that they had been at the same school for 4-6 years, while the remainder (27.52%, n = 112) had been at the school for 3 years or less. Almost all respondents (87.59%, n = 360) were teachers, with the remainder of respondents identifying themselves as counselors (4.14%, n = 17) administrators (3.16%, n = 13), and other (5.11%, n = 21). A majority of respondents (70.76%, n = 271) taught or supported a core academic subject, while 29.24% (n = 112) were in administration, counseling, enrichment classes or were other certified staff. As seen in table 3, all schools had a response rate of at least 10% when compared to their full-time equivalent certified staff count as reported in Local Schools Directory (2011).

Table 2

Summary of Participant Demographic Data

Category	Level	Total	Percent of total
Grade (N=343)	6	40	11.66
	7	48	13.99
	8	44	12.83
	Multi Middle School Grades	33	9.62
	9	20	5.83
	10	17	4.96
	11	16	4.67
	12	19	5.54
	Multi High School Grades	106	30.90
Years Teaching (N=407)	First Year	21	5.16
	1-3	21	5.16
	4-6	50	12.29
	7-10	79	19.41
	11+	236	57.98
Years at School (N=407)	First Year	30	7.37
	1-3	82	20.15
	4-6	106	26.04
	7-10	80	19.66
	11+	109	26.78
Position (N=411)	Teacher	360	87.59
	Counselor	17	4.14
	Administrator	13	3.16
	Other	21	5.11
Subject Taught (N=383)	Math	75	19.58
	ELA	74	19.32
	Science	39	10.18
	Social studies	31	8.10
	Special ed	52	13.58
	Enrichment	49	12.79
	Other	63	16.45

Note: The total for each topic changed as these responses were optional. Total N = 448

Table 3

Response Rate of SPSLCQ Survey per School

School	Level	FTE Faculty	Number Responses	Percent of Certified Staff
1	HS	58	6	10.3
2	HS	37	22	59.5
3	HS	71	52	73.2
4	HS	22	6	27.3
5	HS	127	19	15.0
6	HS	90	14	15.6
7	HS	68	16	23.5
8	HS	89	9	10.1
9	HS	29	8	27.6
10	HS	38	6	15.8
11	MS	38	7	18.4
12	MS	32	10	31.3
13	MS	51	14	27.5
14	MS	48	17	35.4
15	MS	58	52	89.7
16	MS	17	5	29.4
17	MS	31	21	67.7
18	MS	62	7	11.3
19	MS	66	12	18.2
20	MS	46	9	19.6
21	MS	24	7	29.2
22	MS	32	13	53.1
23	HS	23	22	95.7
24	MS	138	27	19.6
25	MS	25	16	64.0
26	HS	26	7	26.9
27	MS	21	5	23.8
28	MS	57	7	12.3
29	MS	55	14	25.5
30	MS	46	15	32.6
Totals		1525	448	29.2

Descriptive Statistics

Descriptive statistics were averaged to the school level for all independent and dependent variables. Independent variables included: faculty perception of the school as a PLC and the degree of implementation on the RTI essential components: Screening, Primary Prevention/Core

Curriculum, Data-Based Decision Making, and Overarching Factors as rated by the individual(s) responsible for implementing RTI at each school. The dependent variable was the amount of growth between the first and last administration of the universal screener within GRASP. Table 4 contains the descriptive statistics for the variables.

Table 4

Minimums, Maximums, Means, and SDs for ALL Variables (N=30)

	Minimum	Maximum	Mean	Standard Deviation
Professional Learning Community	3.2	4.27	3.68	.30
RTI – Screening Process	1.00	5.00	3.33	.96
RTI – Primary Level	1.75	4.25	3.19	.83
RTI – Data Based Decision Making	2.00	5.00	3.27	.94
RTI – Overarching Factors	1.25	4.25	3.01	.81
Average Increase in Questions Correct	0.00	4.47	1.78	.90
School Level	1	2	1.6	.50

Descriptive statistics were calculated for the five factors of PLCs. These statistics are presented in Table 5.

Table 5

Minimums, Maximums, Means, and SDs for PLC Factors (N=30)

	Minimum	Maximum	Mean	Standard Deviation
Professional Learning Community	3.20	4.27	3.68	.30
Shared Leadership	2.69	4.27	3.50	.34
Shared Vision	3.17	4.73	4.04	.35
Collective Learning	3.00	4.41	3.81	.35
Peer Feedback	1.65	3.91	2.88	.62
School Capacities	3.26	4.41	3.73	.33

Reliability Coefficients

Internal reliability coefficients were calculated for each independent variable. These data are reported in Table 6. Cronbach's Alpha measures do not provide reliability estimates for single items (Gliem & Gliem, 2003) and therefore are not reported in this table. A Cronbach's alpha of .7 or higher is considered appropriate for reliability (Kline, 1999). All items shown in Table 6, except RTI – overarching factors, had a measure of .763 or higher.

To confirm the inter-rater reliability of the RTI interviews items, a second RTI specialist independently scored 17% of the school interviews. An inter-rater reliability analysis using the Kappa statistic was performed to determine consistency among raters. The inter-rater reliability for the raters was found to be Kappa = 0.52 ($p = 0.005$), 95% CI (0.061, 0.468). Landis and Koch (1977) provided an interpretation of Cohen's Kappa. A Kappa value less than 0 was considered "poor agreement", values between 0 and 0.2 were labeled as "slight agreement", and those values between .21 and .4 were considered to have "fair agreement."

There was “moderate agreement” between variables if the Kappa was between 0.41 and 0.60, “substantial agreement” between variables was found if the Kappa value was between .61 and .80 and “almost perfect agreements for Kappa values between .81 and 1.00.

Table 6

Reliability Correlations of PLC Overall Score and RTI Dimensions (N=30)

Variable	Instrument	Number of Items	School at Unit of Analysis	
			Cronbach's Alpha	N
Professional Learning Communities	SPSLCQ	17	.763	30
RTI – Screening	RTI Essentials Component Rubric	1	-	30
RTI – Primary Level	RTI Essentials Component Rubric	4	.860	30
RTI – Data Based Decision Making	RTI Essentials Component Rubric	1	-	30
RTI – Overarching Factors	RTI Essentials Component Rubric	4	.675	30
RTI – Overall	RTI Essential Component Rubric	10	.849	30

Table 7

Cohen's Kappa Inter-rater Reliability on RTI Interview

Case	Rater 1 Totals	Rater 2 Totals	Kappa	SE	Approx. Sig.	Confidence Interval (95%)
1	28	28				
2	32	34				
3	19	19				
4	35	32				
5	38	38				
			.524	.236	.005	(.061, .468)

Correlation Analysis

Pearson's correlations coefficients were calculated on the independent variables of faculty perception of the school as a PLC, the RTI components of screening, primary level prevention, data based decision making, and overarching factors and the dependent variable of average increase in score. Pearson's correlation coefficient measures the strength as well as the direction of the association. An accepted guideline for interpreting this coefficient is based on the absolute value of the number: 0.9 – 1.0 = very strong, 0.6-0.8 = strong, 0.4-0.6= moderate, 0.2 -0.4 = weak, and 0.0-0.2 = very weak. These correlations were used to investigate hypothesis 1.

Table 8

Pearson Correlation Coefficients of ALL Variables (N=30)

	RTI – Screening	RTI - Primary	RTI – Data Based Decision Making	RTI – Overarching Factors	Avg increase in score
PLCs	.191	.059	.470**	.069	-.304
RTI – Screening		.501**	.432*	.595**	.253
RTI – Primary			.602**	.860**	.511**
RTI – Data Based Decision Making				.605**	.322
RTI – Overarching Factors					.462*

**Correlation is significant at the .01 level (2-tailed)

*Correlation is significant at the .05 level (2-tailed)

Table 9

Pearson Correlation Coefficients of PLC Factors and RTI Dimensions

RTI Items	Universal Screener	Fidelity	Articulation of Teaching and Learning	Instruction	Professional Learning	Data Based Decision Making	Prevention Focus	Leadership	Staff Qual.	Comm. with parents
PLC Factors										
Shared Decision Making	-.180	.238	.054	.013	.182	.382*	-.212	.097	.038	.417*
Shared Vision	-.013	.412*	.143	.219	.413*	.500**	.064	.359	.196	.454*
Collective Learning	.063	.280	.075	.092	.234	.481**	.298	.401*	.366	.444*
Peer Feedback	.069	.092	.048	-.147	.220	.014	.174	.124	-.088	-.148
School Capacities	-.130	.201	.105	.054	.166	.456*	.179	.280	.263	.310
All Dimensions	.191	.303	.096	.066	.300	.470**	.200	.336	.255	.366*

**Correlation is significant at the .01 level (2-tailed)

*Correlation is significant at the .05 level (2-tailed)

As reported in Table 8, the mean of the faculty's perception of PLC implementation was moderately, significantly correlated with data based decision making ($r = .470, p < .01$). In schools with a higher perceived perception of working within a PLC, the data based decision making process is also considered stronger. An RTI screening process was significantly, moderately correlated with the primary level of RTI ($r = .501, p < .01$), the RTI data based decision making process ($r = .432, p < .05$), and the related overarching factors associated with an RTI process ($r = .595, p < .01$). In schools with a more defined screening process, the primary instruction level, data based decision making and items associated with an RTI process are also higher. The primary level of prevention was moderately, significantly correlated with the data based decision making process ($r = .602, p < .01$) and strongly, significantly correlated with the related overarching factors ($r = .860, p < .01$). Schools with a stronger primary prevention system are also stronger in data based decision making and the overarching factors of RTI. Data based decision making was strongly correlated with the related overarching factors ($r = .605, p < .01$). Schools with a higher value of data based decision making are also higher in the related overarching factors.

The primary prevention level of an RTI process was moderately, significantly correlated with student learning ($r = .511, p < .01$) as were overarching factors ($r = .462, p < .05$). The higher the implementation of a primary level (Tier 1) implementation and the stronger the overarching factors the more growth there was in student score.

RQ 1: What is the relationship between participation in a PLC and implementation of an RTI framework?

A Pearson's Correlation analysis showed that PLCs had a moderate, significant correlation with the data based decision making component of an RTI framework (Table 8).

However, Table 9 shows an analysis of the five factors of the SPSLCQ and the individual items of an RTI process. The Shared Decision Making factor of PLCs was weakly correlated with the data based decision making dimension of RTI ($r = .382, p < .05$) and moderately, significantly correlated with parent communication ($r = .417, p < .05$). In schools with a perceived greater value of shared decision making, data based decision making and parent communication are higher. The factor of shared vision within a PLC was moderately correlated with the RTI items of: fidelity at the primary level ($r = .412, p < .05$), professional learning ($r = .413, p < .05$), data based decision making ($r = .500, p < .01$), and communication with parents ($r = .454, p < .05$). In schools with a greater perceived level of a shared vision, fidelity of instruction, professional learning that is reflective in nature, data based decision making, and parent communication are also seen as stronger. The factor of collective learning was significantly, moderately correlated with the RTI dimensions of data based decision making ($r = .481, p < .01$), leadership ($r = .401, p < .05$), and parent communication ($r = .444, p < .05$). When the faculty's perception of collective learning at the school level is higher, the RTI dimensions of data based decision making, leadership, and parent communication were also higher. The factor of school capacities was moderately, significantly correlated with the data based decision making dimension of RTI ($r = .456, p < .05$). In schools with a perceived stronger view of the school capacities, the data based decision making was greater.

Regression Analysis

A linear regression was calculated for the dependent variable of increase in Universal Screener score with the perception of PLCs rating. A stepwise backward multiple regression was calculated for this score based on the RTI components of universal screening, primary level of prevention, data based decision making, and overarching factors. This model was chosen

since it calculates the impact each independent variable has on the dependent variable and removes any independent variables after they are tested. Once removed, the regression is re-calculated.

RQ2: Does participation by teachers in a PLC have a relationship with student learning in mathematics in middle schools and high schools?

Table 10 shows the results from a regression analysis run on PLCs and increase in score. This model had an r-squared value of .092, which means that 9.2% of the variability in the increase in correct responses could be attributed to faculty perception of PLCs. The model was not significant $F(1, 28) = 2.844, p = .103$.

Standardized beta coefficients are used to indicate the impact the independent variable has on the dependent variable. The standardized beta coefficient in this model was $B = -.304, t(28) = -1.686, p = .103$. This indicated that faculty perception of a PLC does not significantly predict the change in increase of score. It does not appear that the faculty's view of the development of professional learning community has a link with student math scores.

RQ3: Does an implementation of interventions at the Tier 1 level in middle and high schools have a relationship with student learning in mathematics?

A stepwise backward multiple regression analysis was completed on RTI process elements and change in score. As seen in Table 11, all models showed an R^2 near .26 which means approximately 26% of the variability in the increase of correct responses could be explained by these variables. Models 2, 3, and 4 were all considered significant, but as reported in Table 12, model 4 was identified as the preferred choice. Model 4 included the RTI variable of RTI-Primary Prevention. The model had an R^2 value of .261 indicating that 26.1% of the variability in the increase of correct responses could be explained by primary prevention in an

RTI process. Table 12 shows the coefficients for the regression models. Standardized beta coefficients were used to show the impact that the independent variables had on the variance of the dependent variable. The standardized beta for model 4 was $B = .511$, $t(28) = 3.147$, $p < .01$. The model indicated that for every unit increase in RTI – primary prevention by 1, student score increases by 0.551 points. Based on these data, the implementation of interventions at Tier 1 does have a link to student learning based on universal screener data.

Table 10

Coefficients for the Regression for PLCs Predicting Increase in Score

Variable	B	Model 1 SE B	B
PLCs	-.914	.542	-.304
R ²	.092		
Adjusted R ²	.060		
F value	2.844		

Table 11

Model Comparisons for the Stepwise Backward Regression for RTI Dimensions Predicting Increase in Score

Model	R	R ²	F	Sig.
1	.514	.264	2.239	.094
2	.513	.264	3.103	.044
3	.513	.263	4.822	.016
4	.511	.261	9.902	.004

Table 12

Coefficients for the Stepwise Backward Regression for RTI Dimensions Predicting Increase in Score

Variable	Model 1		Model 2			Model 3			Model 4			
	B	SE B	B	B	SE B	B	B	SE B	B	SE B	B	
RTI – Primary	.465	.371	.431	.470	.356	.436	.471	.349	.437	.551	.175	.511**
RTI – Over Arching Factors	.109	.406	.099	.113	.393	.102	.095	.358	.086			
RTI – Screening	-.026	.201	-.027	-.024	.196	-.026						
RTI – DBDM	.014	.210	.015									
R ²	.264			.264			.263			.261		
Adjusted R ²	.146			.179			.209			.235		
F value	2.239			3.103*			4.822*			9.902**		

*p < .05 **p < .01

Summary

Chapter IV presented a synopsis of the research study, descriptive statistics, bivariate correlations, and regressions. This study focused on three hypotheses:

H₁: Schools that have a stronger perceived level of PLC involvement also have a greater degree of implementation of a response to intervention framework

H₂: In schools with a greater perceived level of PLC involvement, the gain in student mathematic scores is also greater

H₃: In schools with higher ratings on RTI implementation the gain in student mathematic scores is also higher

The first hypothesis stated that as the perceived level of professional learning communities increased the school's level of RTI implementation increased. This hypothesis was first examined by a correlation analysis of the faculty's overall perception of their school's level of PLC implementation and RTI components. The data based decision making dimension of RTI showed a moderate, significant relationship with this view. A further look at the relationships between specific factors within the PLC survey and RTI items demonstrated the possibility of a relationship as well. This hypothesis, while not supported, indicates that some factors of a PLC and facets of an RTI process may be related.

The second hypothesis tested the perceived level of the implementation of a professional learning community's relationship with student learning. This hypothesis was not supported by data. The regression analysis exposed no relationship ($r^2 = .092$), $r = .30$.

The third hypothesis tested the relationship between an RTI process and student screener scores. A correlation analysis showed that the primary prevention level of RTI had a significant, moderate correlation ($r = .511$, $p < .05$) with the increase in score while the overarching factors

of RTI had a significant, moderate correlation ($r = .462, p < .05$). The backward stepwise regression indicated that model 4 was the strongest representation $B = .511, t(28) = 3.147, p < .01$. This indicated that for every 1 unit increase in RTI-primary prevention, student score increased by 0.511 points. In other words, the stronger the view of the implementation of primary prevention in an RTI processes the higher the growth in student score.

CHAPTER V:

DISCUSSION AND CONCLUSIONS

The advent of heightened accountability and the inclusion of measureable growth in teacher evaluation are two major changes in education over the past few years. Shores (2009) and Jennings & Rentner (2006) claimed that this increased accountability has caused instruction and teacher qualifications to be re-examined

Strahan (2003) and Vaughn and Chard (2006) saw the emergence of improved professional practice by teachers and leaders as critical pieces of improving student performance. Researchers such as Hord (1996), Little (1982), and Jennings and Rentner (2006) studied the effectiveness of using a professional learning community model in relationship to student achievement as early as the mid 1980s. Several studies have examined the relationship between professional learning communities and student achievement including: Newmann and Wehlage (1995), Louis and Marks (1998), Wiley (2001), Supovitz, Sirinides, and May (2009), and Arredondo Rucinski (2012).

In 2006, McCook described the creation of the RTI framework as the conclusion to an ongoing debate about how to best identify and serve special education students. Barnett, Daly, Jones, and Lentz (2004) described RTI as a move away from a “one-point-in-time” assessment model when making decisions about special education services. The result of this change enabled educators to monitor students in the general classroom and intervene prior to large learning gaps developing.

Purpose

The purpose of this study was to determine the relationship between perceived PLC characteristics and components of RTI, and the link each process had with student learning in mathematics at the middle and high school level. This chapter includes a summary of the research, conclusions made and a discussion of the findings. Implications for practice and further recommendations are addressed.

Summary of Methods

Surveys were used to gather data about the perceived levels of implementation of PLCs. A series of interview questions were asked to ascertain the degree to which an RTI process had been developed. Universal screener data from GRASP were used to assess student increases in math scores. Three research questions guided this study:

1. What is the relationship between participation in a PLC and implementation of an RTI framework?
2. Does participation by teachers in a PLC have a relationship with student learning in mathematics in middle schools and high schools?
3. Does an implementation of interventions at the Tier 1 level in middle and high schools have a relationship with student learning in mathematics?

Data were collected from a stratified sample of districts. Thirty middle and high schools participated in the study. The School Professional Staff as Learning Community Questionnaire (SPSLCQ) was sent to certified staff through an online survey tool link. The answers from all 448 respondents were kept confidential although general demographic data were collected. RTI interview data were collected from the individual(s) identified by the school principal as the individual or group responsible for the implementation of RTI at the school. Inter-rater reliability

of the RTI interviews items was confirmed by securing a second RTI specialist to independently score 17% of the school interviews. An inter-rater reliability analysis using the Kappa statistic was performed to determine consistency among raters. The inter-rater reliability for the raters was found to be $Kappa = 0.52$ ($p = .0005$), 95% CI (0.061, 0.468).

Student data were measured from a paired comparisons test of growth from the first to the last administration of the GRASP universal screener.

Data were aggregated to the school level as the unit of analysis. Descriptive statistics were calculated along with reliability coefficients. Bivariate correlations were conducted to test one research hypothesis. A linear regression tested a second hypothesis while a step-wise backward regression was completed to answer the third research question.

Discussion of the Findings

In order to answer research question 1, the relationship between PLCs and an RTI process at the school level was examined. A correlational analysis of PLCs and RTIs, each as a unit, showed no significant correlation. However, the data based decision making dimension of an RTI framework was moderately, significantly correlated with an overall perceived level of PLC implementation ($r = .470$, $p < .01$).

A further review of the PLC survey and RTI rubric led the researcher to look at other relationships between the instruments. A correlation analysis showed some significant relationships between the five factors of the SPSLCQ and the individual items of an RTI process. All but one factor of PLCs were weakly or moderately correlated with using data to make informed decisions. In schools that have developed a perceived shared decision-making process, a shared vision, an identified focus on collective learning, and a belief in the school capacities, decision making that uses data to meet student needs was stronger. McCook (2006) described

several advantages of using a data-based decision making model: the ability to measure data on a frequent basis, objective evaluation, ability for all stake-holders to be involved and use data, and using data to make decisions on intervention effectiveness. Wiley (2001) and Pfeiffer (2006) observed that the structure of shared decision making was identified as in place at high performing schools.

The dimension of a shared vision was positively correlated with the fidelity of instruction at the primary level ($r = .412, p < .05$) and professional learning ($r = .413, p < .05$). In schools with a perception of sharing a common vision; which included a vision for improvement, a vision focused on students, teaching and learning, and a vision for improvement targeting high-quality learning experiences for all; instruction in the regular classroom was more often conducted with fidelity and professional learning is used to improve teaching and learning than in schools with a lower perceived shared vision. Levine and Marcus (2007) stated that a lack of a shared vision would impact student learning, while in 2006, Pfeiffer indicated that schools with higher achievement scores had a vision focused on student learning. Louis and Marks (1996) indicated that a shared purpose and core principles were better indicators of successful schools than a teacher's zeal for their subject. Professional communities, according to Anderson, Ashmann, Secada, and Williams (2003) share a common language, common values, and common norms.

Collective learning was moderately correlated with the RTI item of leadership ($r = .401, p < .01$) which indicated that in schools with a perceived higher value of collective learning, leadership decisions proactively support teaching and learning than in schools with a lower perception of their collective learning. In 1996, Darling-Hammond stressed the need for teachers to develop a "collective knowledge base" (p. 6), while Rosenholtz (1989) noted that isolation by

professionals had severe repercussions for teacher learning. This is supported by the work of Little (1982) who determined that the norms of collegiality and of continuous improvement and who felt that teacher interaction led to continuous professional development. Supowitz, Sirnides, and May (2009) observed that the sharing of ideas strengthened professional learning that led to improved student learning. Sailor (2009) noted that embedded professional learning with a mentoring component was the strongest method of teacher learning.

The PLC factors of shared decision making ($r = .417, p < .05$), shared vision ($r = .454, p < .05$), and collective learning ($r = .444, p < .05$) were all correlated with parent communication. This suggested that as the faculty believed in the sharing of decisions, shared a common vision, and support learning with others, parent communication about students was also stronger. Duffy (2007) suggested that parent communication was a key component to an effective RTI process. These correlations identify the possibility that the implementation of a PLC within a school may support the framework of an RTI process.

In 2011, Stoehr, Banks, and Allen stated that the establishment of a PLC was one of the first steps in implementing RTI in schools. They described PLCs as the foundation of the collaborative work of teachers. Mellard and Johnson (2008) described characteristics of PLCs such as progress monitoring, data-based decision making, and reflective practice being accentuated in the classroom when an RTI process is implemented (p. 20). The use of professional learning to “deconstruct silos” of teacher isolation was suggested by Sailors in 2009. PLCs and an RTI process share several similar characteristics including high-quality and effective instruction, research-based strategies, assessment, and a team approach to problem-solving.

A regression analysis showed an r-squared value of .092 for the perceived faculty relationships of a PLC and increase in student scores. This indicates that 9.2% of the variability in the increase in correct responses could be attributed to faculty perceptions of PLCs. The standardized beta coefficient in this model was $B = -.304$, $t(28) = -1.686$, $p = .103$ $-.304$ ($p = .103$). This indicated that faculty perception of a PLC did not significantly predict the change in increase of correctly answered questions. A correlation analysis showed no significant relationship ($r = -.304$) between PLCs and student growth. These data support the work of Dumay (2009) whose research did not support the hypothesis that the teachers valuing collaboration in regards to student work and innovation impacted student achievement in math. However, it is in contrast to the work to recent meta-analyses that identified PLCs as having an influence on achievement (Lomos et. al., 2011, Arredondo Rucinski, 2012).

While no relationship was found between PLC implementation and student learning, it is important to note that participation may have influenced this finding. All certified staff were surveyed and asked their perceptions about the implementation of PLCs at their respective schools. It is possible that faculty perceptions of PLC implementation was incorrect and thus caused the lack of a relationship. The difference in respondents on the instruments used may have also impacted results. All certified staff were provided the opportunity to respond to the SPSLCQ, while selected staff provided RTI information. The knowledge level of these two groups as to the actual practices at the school may have differed and therefore could have impacted the perceived lack of relationship between PLCs, implementation of an RTI process, and student learning.

Shapiro and Clemens (2009) described universal screeners as a method of measuring student growth over time. A lack of research on the importance of an RTI Tier 1 focus directed

this study. While extensive research exists about the RTI process at Tiers 2 and above, Tier 1 often is only mentioned as an assumption. Numerous researchers (McCook, 2006; Shores, 2009; Stoehr, Banks, & Allen, 2011; Meltzer, Phillips, & Kutno, 2010) have stated that Tier 1 interventions and instruction should meet the needs of at least 80% of students, yet research at this stage often merges with on-grade instructional practices instead of delineating the unique conditions posed when students do not know what they need to do to succeed.

Only the variable of primary prevention was left in model 4 of the regression analysis. The model had an R^2 value of .261 which indicated that 26.1% of the variability in the increase of correct responses could be explained by primary level prevention in an RTI process. A correlational analysis showed that the primary prevention level of an RTI process ($r = .511$, $p < .05$) as well as the overarching factors of RTI ($r = .462$, $p < .05$) each has a moderate correlation with student increases in math scores. This indicated that the practices of implementing the intended curriculum with fidelity, articulating teaching and learning both horizontally and vertically, instruction in which teachers differentiate instruction and use assessment data to identify student needs and professional learning that is structured so that teachers examine, reflect upon, and improve instructional practice may have a positive relationship with student performance in mathematics at the middle and high school level. Sailor (2009) and Shores (2009) indicated that a fundamental component of the RTI process at Tier 1 was high-quality and evidence-based instruction, while Mellard and Johnson (2008) defined fidelity as one of the keys to a successful RTI program. Sailor (2009) described professional development as an “essential element of systems change and transformation” in the RTI implementation process.

Implications for Practice

Some claim that the accountability emphasis in education has created an influx of recommendations for raising student achievement. Implementation of a Professional Learning Community is one strategy that has been proposed and has shown to have some effect on student achievement and improved conditions for learning. Hord's instrument, which focuses on the attributes of shared leadership, shared vision, collaboration, shared practice, and supportive conditions, has been used to assess structures that undergird and support increased student learning. Although limited, there are some studies that have attempted to demonstrate a relationship between professional learning communities and student achievement (Newmann & Wehlage, 1995; Louis & Marks, 1998; Wiley, 2001; Phieffer, 2006; Supovitz, Sirinides, & May, 2009; Lomos, et. al., 2011; Arredondo Rucinski, 2012).

My research suggests that PLCs may not directly correlate with student math scores; however, their use may undergird and support those actions that have a more direct correlation. PLCs, at a minimum, can be seen as the "underneath of the iceberg" that provide the foundation and support for what is seen. Several factors of a PLC were moderately correlated with some RTI items. In turn, these RTI elements did have an impact on the change in student math scores. This research supports the work of Stoehr, Banks, and Allen (2011) who described the creation of a professional learning community as the first step in implementing RTI in schools and of Mellard and Johnson (2008), who asserted that RTI at the school level "under the umbrella of PLC holds the promise of marked improvement in student achievement, the rapid identification of unproductive teaching techniques, and the prospect of informing professional development needs" (p. 15).

All students should benefit from Tier one interventions, the foundational level of RTI. Universal screening and differentiated support for all students were designed to occur at this level. Without properly implementing the foundational tier of an RTI process, schools and systems risk losing the opportunity to maximize resources (fiscal, human, and time). Several researchers identified high quality core instruction as the foundation of RTI (Mellard & Johnson, 2008; Meltzer, Phillip, & Kutno, 2010) and as something that can prevent the need for supplemental interventions. In 2009, Sailor described RTI as a “change model” that provided a focus on data and therefore used data based decision-making to determine interventions. Shores and Chester (2009) described a response to intervention framework as having the potential to impact school improvement by providing data driven decision making models that strive to improve student learning.

Shores and Chester (2009) stated that although RTI had the potential to meet the academic needs of all students, data on RTI for grades 6-12 were “extremely limited” (p. 17), while Muoneke and Shankland (2009) discussed the challenges faced by middle and high schools. Some of the obstacles reported included: the structures of middle and high schools, which are significantly different than that at the elementary level, the organizational make up of high schools and a lack of appropriate grade level tools.

Several key concepts needed for RTI to be effective in high schools were described by Duffy in 2007. These concepts included a need for screeners and progress monitoring tools developed for the high school curriculum, the identification of grade and subject-appropriate interventions, implementation issues exclusive to high schools, the roles of regular and special education teachers, high-quality instruction, support for collaboration, ongoing professional development, and a focus on increased communication with parents.

Although a foundational step in an RTI process, little research has been conducted on the importance of correctly implementing interventions at Tier 1. There is still a great deal of confusion about the delineation between on-grade level instruction, interventions that occur in the general classroom, and interventions that occur more formally at the higher tiers.

Recommendations for Further Research

There appears to be a possible correlation between some factors of PLCs and facets of an RTI framework implemented with fidelity. Further research is needed to examine this hypothesis. A longitudinal study that tracked schools and students over time would increase knowledge on this idea. Although much of the primarily qualitative research on PLCs has been its impact on student achievement (with mixed results), my limited study suggests that additional research that examines PLCs as the foundation to other, more directly linked concepts to achievement studies may be needed. A PLC's impact on an RTI process, ability of the staff to differentiate, and effective teachers are all possible topics for further study.

The impact of effective Tier 1 interventions needs additional research. My research suggests that effective Tier 1 practices do link to student math scores; however, more studies are needed. Additional research on the consequences of not addressing Tier 1 effectively, possible over-identification of students, and teacher workloads would all be possible constructs for this research. Establishing a systemic model for RTI processes would also add to the literature as would the types of professional learning that positively impact this process. The screeners developed by GRASP need to be tested for validity and reliability within the scope of the new Common Core curriculum.

Finally, there is little research on middle and high schools students' math achievement. Although these topics are considered difficult to address and investigate, research is needed in

these critical areas to support teaching and learning. The research on learning communities, response to intervention models and student learning either as individual topics or combined, need further research performed in order to build on this and similar studies.

Summary

This chapter provided a discussion of the results of this research on PLCs, RTIs, and math scores and placed the study results within the background literature. A summary of methods, discussion of the findings, research question answers, implications for practice and recommendations for further study were included. This study focused on the relationship between professional learning communities and a response to intervention process and the link each process had on student math learning in middle and high schools. The researcher found a moderate correlation between a perceived level of PLCs and the RTI dimension of data based decision making. Further, there were moderate significant correlations between some factors of a PLC and specific RTI constructs. This study provided initial data that support the idea that an effective RTI process at Tier 1 can positively is related to student math scores. Schools desiring to increase math scores at the middle school and high school level may wish to consider using PLCs as the foundation on which to begin an RTI process that, instead of waiting for students to fail in order to receive assistance, provides targeted support in the general classroom as gaps are noted through the use of universal screeners.

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APPENDIX A

SURVEY

School Professional Staff as Learning Community Questionnaire

Directions: This questionnaire concerns your perceptions about your school staff as a learning organization. There are no right or wrong responses. Please consider where you believe your school is in its development of each of the five numbered descriptors shown in bold-faced type on the left. Each sub-item has a five-point scale. On each scale, circle the number that best represents the degree to which you feel your school has developed.

Date: _____

Name: _____

School: _____

1. School administrators participate democratically with teachers sharing power, authority, and decision making.	1a.	5 _____ 4 _____ 3 _____ 2 _____ 1 _____	Although there are some legal and fiscal decisions required of the principal, school administrators consistently involve the staff in discussing and making decisions about school issues.	Administrators invite advice and counsel from staff and then make decisions themselves.	Administrators never share information with the staff nor provide opportunities to be involved in decision making.
	1b.	5 _____ 4 _____ 3 _____ 2 _____ 1 _____	Administrators involve the entire staff.	Administrators involve a small committee, council, or team of staff.	Administrators do not involve any staff.

2. The staff shares visions for school improvement that have an undeviating focus on student learning, and these visions are consistently referenced in the staff's work.	2a.	5 _____ 4 _____ 3 _____ 2 _____ 1 _____	Visions for improvement are discussed by the entire staff such that consensus and a shared vision result.	Visions for improvement are not thoroughly explored; some staff members agree and others do not.	Visions for improvement held by the staff members are widely divergent.
	2b.	5 _____ 4 _____ 3 _____ 2 _____ 1 _____	Visions for improvement are always focused on students, teaching, and learning.	Visions for improvement are sometimes focused on students, teaching, and learning.	Visions for improvement do not target students, teaching, and learning.
	2c.	5 _____ 4 _____ 3 _____ 2 _____ 1 _____	Visions for improvement target high-quality learning experiences for all students.	Visions for improvement address quality learning experiences in terms of students' abilities.	Visions for improvement do not include concerns about the quality of learning experiences.

3. The staff's collective learning and application of the learnings (taking action) create high intellectual learning tasks and solutions to address student needs.	3a.	5 _____ 4 _____ 3 _____ 2 _____ 1	The entire staff meet to discuss issues, share information, and learn with and from one another.	Subgroups of the staff meet to discuss issues, share information, and learn with and from one another.	Individuals randomly discuss issues, share information, and learn with and from one another.
	3b.	5 _____ 4 _____ 3 _____ 2 _____ 1	The staff meet regularly and frequently on substantive student-centered educational issues.	The staff meet occasionally on substantive student-centered educational issues.	The staff never meet to consider substantive educational issues.
	3c.	5 _____ 4 _____ 3 _____ 2 _____ 1	The staff discuss the quality of their teaching and students' learning.	The staff does not often discuss their instructional practices nor its influence on student learning.	The staff basically discuss non-teaching and non-learning issues.
	3d.	5 _____ 4 _____ 3 _____ 2 _____ 1	The staff, based on their learnings, make and implement plans that address students' needs, more effective teaching, and more successful student learning.	The staff occasionally act on their learnings and make and implement plans to improve teaching and learning.	The staff do not act on their learnings.
	3e.	5 _____ 4 _____ 3 _____ 2 _____ 1	The staff debrief and assess the impact of their actions and make revisions.	The staff infrequently assess their actions and seldom make revisions based on the results.	The staff do not assess their work.

4. Peers review and give feedback based on observing one another's classroom behaviors in order to increase individual and organizational capacity.	4a.	5 _____ 4 _____ 3 _____ 2 _____ 1	Staff members regularly and frequently visit and observe one another's classroom teaching.	Staff members occasionally visit and observe one another's teaching.	Staff members never visit their peers' classrooms.
	4b.	5 _____ 4 _____ 3 _____ 2 _____ 1	Staff members provide feedback to one another about teaching and learning based on their classroom observations.	Staff members discuss non-teaching issues after classroom observations.	Staff members do not interact after classroom observations.

5. School conditions and capacities support the staff's arrangement as a professional learning organization.

5a.	5 _____ 4 _____ 3 _____ 2 _____ 1	Time is arranged and committed for whole staff interactions.	Time is arranged but frequently the staff fail to meet.	Staff cannot arrange time for interacting.
5b.	5 _____ 4 _____ 3 _____ 2 _____ 1	The size, structure, and arrangements of the school facilitate staff proximity and interaction.	Considering the size, structure, and arrangements of the school, the staff are working to maximize interaction.	The staff take no action to manage the facility and personnel for interaction.
5c.	5 _____ 4 _____ 3 _____ 2 _____ 1	A variety of processes and procedures are used to encourage staff communication.	A single communication method exists and is sometimes used to share information.	Communication devices are not given attention.
5d.	5 _____ 4 _____ 3 _____ 2 _____ 1	Trust and openness characterize all of the staff members.	Some of the staff members are trusting and open.	Trust and openness do not exist among the staff members.
5e.	5 _____ 4 _____ 3 _____ 2 _____ 1	Caring, collaborative, and productive relationships exist among all staff members.	Caring and collaboration are inconsistently demonstrated among the staff members.	Staff members are isolated and work alone at their task.

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APPENDIX B
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Thank you, again, for your interest in SEDL's **School Professional Staff as Learning Community Questionnaire**. If you have questions about SEDL's License Agreement, please contact me at 800-476-6861, ext. 6548 or 512-391-6548, or by e-mail at nancy.reynolds@sedl.org.

Sincerely,


Nancy Reynolds for SEDL

November 14, 2011
Date signed

Agreed and accepted:

Signature 

11/12/11
Date signed

Printed Name Nicole C Spiller

APPENDIX C

INTERVIEW WORKSHEET AND RUBRIC

RTI Essential Components Integrity Rubric

The RTI Essential Components Integrity Rubric is for use by individuals who are responsible for monitoring school-level fidelity of RTI implementation. The rubric is aligned with *Essential Components of RTI: A Closer Look at Response to Intervention* (National Center on Response to Intervention, 2010).

Item	1	3	5
Screening — <i>The RTI framework accurately identifies students at risk of poor learning outcomes or challenging behaviors.</i>			
Screening Tools	Insufficient evidence that the screening tools are reliable; or that correlations between the instruments and valued outcomes are strong; or that predictions of risk status are accurate.	Evidence indicates that the screening tools are reliable and that correlations between the instruments and valued outcomes are strong. However, there is insufficient evidence that predictions of risk status are accurate.	Evidence indicates that the screening tools are reliable, correlations between the instruments and valued outcomes are strong, and predictions of risk status are accurate.
Universal Screening	Neither condition is met: (1) Screening is conducted for all students (i.e., is universal); (2) procedures are in place to ensure implementation accuracy (i.e., all students are tested; scores are accurate; cut points/decisions are accurate).	Only one condition is met: (1) Screening is conducted for all students (i.e., is universal); (2) procedures are in place to ensure implementation accuracy (i.e., all students are tested; scores are accurate; cut points/decisions are accurate).	Both conditions are met: (1) Screening is conducted for all students (i.e., is universal); (2) procedures are in place to ensure implementation accuracy (i.e., all students are tested; scores are accurate; cut points/decisions are accurate).



Item	1	3	5
Multi-level Prevention/Intervention System —The framework includes a school-wide, multi-level system for preventing school failure.			
Primary Level Prevention/Core Curriculum			
Research-Based Curriculum Materials	The core curriculum materials are largely not research-based for the target population of learners (including sub-groups).	Some of the core curriculum materials are research-based for the target population of learners (including sub-groups).	All of the core curriculum materials are research-based for the target population of learners (including sub-groups).
Fidelity	Neither condition is met: (1) Procedures are in place to monitor the fidelity of implementation of the core curriculum; (2) the preponderance of evidence supports fidelity (i.e., the teacher rarely deviates from the materials or vendor-recommended activities, such as lesson content or pacing).	One condition is met: (1) Procedures are in place to monitor the fidelity of implementation of the core curriculum; (2) the preponderance of evidence supports fidelity (i.e., the teacher rarely deviates from the materials or vendor-recommended activities, such as lesson content or pacing).	Both conditions are met: (1) Procedures are in place to monitor the fidelity of implementation of the core curriculum; (2) the preponderance of evidence supports fidelity (i.e., the teacher rarely deviates from the materials or vendor-recommended activities, such as lesson content or pacing).
Articulation of Teaching and Learning (in and across grade levels)	Neither condition is met: (1) Teaching and learning is well articulated from one grade to another; (2) teaching and learning is well articulated within grade levels so that students have highly similar experiences, regardless of their assigned teacher.	Only one condition is met: (1) Teaching and learning is well articulated from one grade to another; (2) teaching and learning is well articulated within grade levels so that students have highly similar experiences, regardless of their assigned teacher.	Both conditions are met: (1) Teaching and learning is well articulated from one grade to another; (2) teaching and learning is well articulated within grade levels so that students have highly similar experiences, regardless of their assigned teacher.
Instruction	Neither condition is met: (1) Most or all teachers differentiate instruction; (2) teachers use students' assessment data to identify the needs of students.	Only one condition is met: (1) Most or all teachers differentiate instruction; (2) teachers use students' assessment data to identify the needs of students.	Both conditions are met: (1) Most or all teachers differentiate instruction; (2) teachers use students' assessment data to identify the needs of students.
School-Based Professional Development	The school has no well-defined, school-based professional development mechanism to support continuous improvement of instructional practice.	Some forms of professional development are available to teachers to support continuous improvement of instructional practice, but most are not school-based and do not establish a mechanism to continuously improve instructional practice.	School-based professional development is institutionalized and structured so that all teachers continuously examine, reflect upon, and improve instructional practice.



Item	1	3	5
Secondary Level Prevention			
Evidence-Based Intervention	The secondary level interventions are not evidence-based.	The secondary level interventions consist of a variety of strategies, of which only some are evidence-based and some are not.	All secondary level interventions are evidence-based.
Complements Core Instruction	Secondary level prevention is poorly aligned with core instruction and incorporates different topics, even though those topics are not foundational skills that support core instruction.	Secondary level prevention is generally aligned with core instruction but only occasionally incorporates foundational skills that support core instruction.	Secondary level prevention is well aligned with core instruction and incorporates foundational skills that support core instruction.
Fidelity	Neither condition is met: (1) Procedures are in place to monitor the fidelity of implementation of secondary level interventions; (2) secondary level implementation is generally implemented with fidelity in accordance with developer guidelines.	Only one condition is met: (1) Procedures are in place to monitor the fidelity of implementation of secondary level interventions; (2) secondary level implementation is generally implemented with fidelity in accordance with developer guidelines.	Both conditions are met: (1) Procedures are in place to monitor the fidelity of implementation of secondary level interventions; (2) secondary level implementation is generally implemented with fidelity in accordance with developer guidelines.
Instruction	Neither condition is met: (1) Secondary level interventions are led by well-trained staff; (2) group size is optimal (according to research) for the age and needs of students.	Only one condition is met: (1) Secondary level interventions are led by well-trained staff; (2) group size is optimal (according to research) for the age and needs of students.	Both conditions are met: (1) Secondary level interventions are led by well-trained staff; (2) group size is optimal (according to research) for the age and needs of students.
Determining Responsiveness to Secondary Level Prevention	Neither condition is met: (1) Decisions about responsiveness to intervention are based on reliable and valid progress monitoring data to reflect slope of improvement or final status at the end of secondary level prevention; (2) these decision making criteria are implemented accurately.	Only one condition is met: (1) Decisions about responsiveness to intervention are based on reliable and valid progress monitoring data to reflect slope of improvement or final status at the end of secondary level prevention; (2) these decision making criteria are implemented accurately.	Both conditions are met: (1) Decisions about responsiveness to intervention are based on reliable and valid progress monitoring data to reflect slope of improvement or final status at the end of secondary level prevention; (2) these decision making criteria are implemented accurately.
Addition to Primary	Secondary level interventions replace core instruction.	Secondary level interventions sometimes supplement core instruction and sometimes replace core instruction.	Secondary level interventions supplement core instruction.



Item	1	3	5
Tertiary Level Prevention			
Evidence-Based Intervention	Neither condition is met: (1) Tertiary level interventions are evidence-based standard protocols or based on validated progress monitoring methods for individualizing instruction; (2) tertiary interventions are more intensive than secondary interventions.	Only one condition is met: (1) Tertiary level interventions are evidence-based standard protocols or based on validated progress monitoring methods for individualizing instruction; (2) tertiary interventions are more intensive than secondary interventions.	Both conditions are met: (1) Tertiary level interventions are evidence-based standard protocols or based on validated progress monitoring methods for individualizing instruction; (2) tertiary interventions are more intensive than secondary interventions.
Fidelity	Neither condition is met: (1) Procedures are in place to monitor the fidelity of implementation of tertiary level interventions; (2) the preponderance of evidence supports fidelity.	Only one condition is met: (1) Procedures are in place to monitor the fidelity of implementation of tertiary level interventions; (2) the preponderance of evidence supports fidelity.	Both conditions are met: (1) Procedures are in place to monitor the fidelity of implementation of tertiary level interventions; (2) the preponderance of evidence supports fidelity.
Instruction	Neither condition is met: (1) Tertiary level interventions are led by well-trained staff; (2) group size is optimal (according to research) for the age and needs of students.	Only one condition is met: (1) Tertiary level interventions are led by well-trained staff; (2) group size is optimal (according to research) for the age and needs of students.	Both conditions are met: (1) Tertiary level interventions are led by well-trained staff; (2) group size is optimal (according to research) for the age and needs of students.
Determining Responsiveness to Tertiary Level Prevention	Neither condition is met: (1) Decisions about responsiveness to intervention are based on reliable and valid progress monitoring data to reflect slope of improvement or final status at the end of tertiary level prevention; (2) these decision making criteria are implemented accurately.	Only one condition is met: (1) Decisions about responsiveness to intervention are based on reliable and valid progress monitoring data to reflect slope of improvement or final status at the end of tertiary level prevention; (2) these decision making criteria are implemented accurately.	Both conditions are met: (1) Decisions about responsiveness to intervention are based on reliable and valid progress monitoring data to reflect slope of improvement or final status at the end of tertiary level prevention; (2) these decision making criteria are implemented accurately.
Relationship to Primary	Neither condition is met: (1) Decisions regarding student participation in both primary and tertiary levels of prevention are made on a case-by-case basis, according to student need; (2) tertiary level interventions address the general education curriculum in an appropriate manner for students.	Only one condition is met: (1) Decisions regarding student participation in both primary and tertiary levels of prevention are made on a case-by-case basis, according to student need; (2) tertiary level interventions address the general education curriculum in an appropriate manner for students.	Both conditions are met: (1) Decisions regarding student participation in both primary and tertiary levels of prevention are made on a case-by-case basis, according to student need; (2) tertiary level interventions address the general education curriculum in an appropriate manner for students.



Item	1	3	5
Progress Monitoring —Ongoing and frequent monitoring of progress quantifies rates of improvement and informs instructional practice and the development of individualized programs.			
Progress Monitoring Tools	Selected progress monitoring tools meet no more than one of the following criteria: (1) Has at least nine alternate forms of equal and controlled difficulty; (2) specifies minimum acceptable growth; (3) provides benchmarks for minimum acceptable end-of-year performance; (4) reliability and validity information for the performance level score are available.	Selected progress monitoring tools meet two or three of the following criteria: (1) Has at least nine alternate forms of equal and controlled difficulty; (2) specifies minimum acceptable growth; (3) provides benchmarks for minimum acceptable end-of-year performance; (4) reliability and validity information for the performance level score are available.	Selected progress monitoring tools meet all of the following criteria: (1) Has at least nine alternate forms of equal and controlled difficulty; (2) specifies minimum acceptable growth; (3) provides benchmarks for minimum acceptable end-of-year performance; (4) reliability and validity information for the performance level score are available.
Monitoring Progress	Neither condition is met: (1) Frequency is at least monthly for students receiving secondary level interventions and at least weekly for students receiving tertiary interventions; (2) procedures are in place to ensure implementation accuracy (i.e., appropriate students are tested; scores are accurate; decision making rules are applied consistently).	Only one condition is met: (1) Frequency is at least monthly for students receiving secondary level interventions and at least weekly for students receiving tertiary interventions; (2) procedures are in place to ensure implementation accuracy (i.e., appropriate students are tested; scores are accurate; decision making rules are applied consistently).	Both conditions are met: (1) Frequency is at least monthly for students receiving secondary level interventions and at least weekly for students receiving tertiary interventions; (2) procedures are in place to ensure implementation accuracy (i.e., appropriate students are tested; scores are accurate; decision making rules are applied consistently).
Data-Based Decision Making —Data-based decision making processes are used to inform instruction, movement within the multi-level system, and disability identification (in accordance with state law).			
Decision making Process	The mechanism for making decisions about the participation of students in the prevention levels meets no more than one of the following criteria: the process (1) is data-driven and based on validated methods; (2) involves a broad base of stakeholders; (3) is operationalized with objective criteria.	The mechanism for making decisions about the participation of students in the prevention levels meets two of these criteria: the process (1) is data-driven and based on validated methods; (2) involves a broad base of stakeholders; (3) is operationalized with objective criteria.	The mechanism for making decisions about the participation of students in the prevention levels meets all of these criteria: the process (1) is data-driven and based on validated methods; (2) involves a broad base of stakeholders; (3) is operationalized with objective criteria.



Item	1	3	5
Overarching Factors—Factors that relate to the entire RTI framework.			
Prevention Focus	Staff perceive RTI as a pre-referral process that students must complete in order to be referred to special education.	Differences are noted among staff regarding their understanding of the purpose of RTI.	Staff believe that the primary purpose of RTI is to use early interventions as a way to prevent students from having academic and/or behavioral problems.
Leadership	Decisions and actions by school and district leaders undermine the effectiveness of the essential components of the RTI framework at the school.	Decisions and actions by school and district leaders are inconsistent and only somewhat supportive of the essential components of the RTI framework at the school.	Decisions and actions by school and district leaders proactively support the essential components of the RTI framework at the school and make the RTI framework more effective.
Staff Qualifications	Staff responsible for providing secondary and tertiary level interventions have not been adequately trained for their responsibilities.	Some of the staff responsible for providing secondary and tertiary level interventions have been trained, but gaps exist in the professional development of some staff or in their use of the evidence-based interventions.	All of the staff responsible for providing secondary and tertiary level interventions have been fully trained on RTI and on evidence-based interventions, and ongoing professional development is available as needed.
Culturally and Linguistically Responsive	Core instruction and secondary and tertiary interventions do not account for cultural, linguistic, and socioeconomic factors.	Core instruction and secondary and tertiary level interventions strive to consider cultural, linguistic, and socioeconomic factors, but some areas need improvement.	Core instruction and secondary and tertiary level interventions reflect cultural, linguistic, and socioeconomic factors.
Communications With and Involvement of Parents	No conditions are met: (1) A description of the school's essential components of RTI is shared with parents; (2) a coherent mechanism is implemented for updating parents on the progress of their child who is receiving secondary or tertiary interventions; (3) parents are involved during decision-making regarding participation of their child in the prevention levels.	At least one condition is met: (1) A description of the school's essential components of RTI is shared with parents; (2) a coherent mechanism is implemented for updating parents on the progress of their child who is receiving secondary or tertiary interventions; (3) parents are involved during decision making regarding participation of their child in the prevention levels.	All conditions are met: (1) A description of the school's essential components of RTI is shared with parents; (2) a coherent mechanism is implemented for updating parents on the progress of their child who is receiving secondary or tertiary interventions; (3) parents are involved during decision making regarding participation of their child in the prevention levels.

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National Center on
Response to Intervention

Page 6

August 2011



RTI Essential Components Integrity Worksheet

School: _____ District: _____ Date: _____
Grades of Student Population: K 1 2 3 4 5 6 7 8 9 10 11 12
Persons Interviewed: _____
Interviewer: _____

Focus Area:	<input type="checkbox"/> Reading/Language Arts	Grades: _____
	<input type="checkbox"/> Mathematics	Grades: _____
	<input type="checkbox"/> Behavior	Grades: _____

The RTI Essential Components Integrity Rubric and the RTI Essential Components Integrity Worksheet are for use by individuals responsible for monitoring the school-level fidelity of Response to Intervention (RTI) implementation. They may also be used by schools for self-appraisal; however, they were not designed for compliance monitoring and therefore should not be used for this purpose.

The rubric and the worksheet are designed to be used together and are aligned with the *Essential Components of RTI: A Closer Look at Response to Intervention* (National Center on Response to Intervention, 2010).

Instructions—The purpose of this worksheet is to provide a framework for collecting relevant information and for recording a school's rating on various items related to RTI implementation. Descriptions of ratings for each item are provided on the RTI Essential Components Integrity Rubric.

Information about school-level implementation should be collected through interviews with school personnel (sample interview questions are provided below) and through observations and document review. After all of the information has been collected, use your notes and the RTI Essential Components Integrity Rubric to rate the school on each item. The Rubric provides a five-point rating scale and descriptions of practices that would score a 1, 3, and 5. If you judge a school's practice to fall between the described ratings, assign the school a rating of 2 or 4. For example, if you judge a school to be performing at a level higher than the Rubric describes for a 3 rating but not quite at the level described for a 5, rate the school as performing at a 4.



Item	Sample Interview Questions	Comments/Remarks	Ratings
<i>Screening—The RTI system accurately identifies students at risk of poor learning outcomes or challenging behaviors.</i>			
1. Screening Tools	<p>What tools do you use for universal screening? When your school selected the screening tool(s), how much attention was paid to the evidence from the vendor regarding the validity, reliability, and accuracy of the tool?</p> <p>Does your school have documentation from the vendor that these tools have been shown to be valid, reliable, and accurate (including with sub-groups)?</p> <p>Do you have reason to believe that the screening tool(s) that you use may have issues with validity, reliability, or accuracy (including with sub-groups)? If so, please explain.</p>		① ② ③ ④ ⑤
2. Universal Screening	<p>Are all students at the target grade levels screened at the beginning of the school year?</p> <p>Does your school conduct screening throughout the school year? If so, how many times during the school year are students in the target grade levels typically screened?</p> <p>Is a well-defined cut score used to identify students at risk?</p> <p>Do you conduct a follow-up assessment to ensure that the results of the initial screening were accurate before placing a student in secondary prevention? If so, please describe.</p> <p>Describe the process for conducting the screenings.</p> <p>To what extent is this process consistently followed?</p> <p>How closely does the administration of the screening follow the developer guidelines?</p> <p>Are there differences in the process for different students? If yes, describe these differences.</p> <p>Is there anything about the process that you feel would jeopardize the accuracy of the results? If so, please describe.</p>		① ② ③ ④ ⑤



Item	Sample Interview Questions	Comments/Remarks	Ratings
<i>Multi-Level Prevention/Intervention System—The framework includes a school-wide, multi-level system for preventing school failure.</i>			
Primary Level Prevention/Core Curriculum			
3. Research-Based Curriculum Materials	<p>When your school selected its core instructional materials, how much attention was paid to the evidence from the vendor regarding effectiveness of the materials when used with fidelity?</p> <p>Does your school have a practice of maintaining documentation from the vendor about the evidence of the effectiveness of the materials when used with fidelity?</p>		① ② ③ ④ ⑤
4. Fidelity	<p>Is the core curriculum delivered with fidelity? If so, what evidence indicates this?</p> <p>Are procedures in place to monitor the fidelity of delivery of the core curriculum?</p>		① ② ③ ④ ⑤



Item	Sample Interview Questions	Comments/Remarks	Ratings
5. Articulation of Teaching and Learning (in and across grade levels)	<p>What efforts have been made to articulate teaching and learning from one grade to another?</p> <p>Describe the process that supports the articulation of teaching and learning from one grade to another.</p> <p>What efforts have been made to articulate teaching and learning within grade levels or subject areas?</p> <p>Describe the process that supports the articulation of teaching and learning from one teacher to another within the same grade.</p> <p>How consistent is the learning experience among students in the same grade and subject with different teachers?</p>		① ② ③ ④ ⑤
6. Instruction	<p>To what extent do teachers use student assessment data and knowledge of student readiness, language, and culture to offer different teaching and learning strategies that address individual needs?</p> <p>How consistent is this effort among the teaching staff?</p>		① ② ③ ④ ⑤
7. School-Based Professional Development	<p>Do the teachers regularly participate in school-based professional development that is structured so that teachers continuously examine, reflect upon, and improve instructional practice?</p> <p>If so, please describe this professional development.</p> <p>How frequently is professional development provided?</p> <p>What percentage of the teaching staff participates?</p>		① ② ③ ④ ⑤



Item	Sample Interview Questions	Comments/Remarks	Ratings
Secondary Level Prevention			
8. Evidence-Based Intervention	<p>What program(s) does your school use for secondary intervention?</p> <p>Have these programs demonstrated efficacy with the target populations (e.g., has research shown that the interventions positively impact student achievement)?</p>		① ② ③ ④ ⑤
9. Complements Core Instruction	<p>How do the instructors of the secondary level intervention ensure that the content that they address is well aligned and complements the core instruction for each student?</p> <p>How are foundational skills that support core instruction incorporated into secondary level intervention?</p>		① ② ③ ④ ⑤
10. Fidelity	<p>Are procedures in place to monitor the fidelity of implementation of the secondary level interventions? If so, please describe.</p> <p>Does the evidence indicate that the intervention is implemented with fidelity?</p>		① ② ③ ④ ⑤



Item	Sample Interview Questions	Comments/Remarks	Ratings
11. Instruction	<p>Are the secondary level interventions always led by staff adequately trained to implement the interventions with fidelity? If not, who provides the secondary level intervention and what is their background?</p> <p>Are the secondary interventions always conducted with small groups of students?</p> <p>What is the maximum small group size?</p> <p>Describe a typical secondary level experience for students.</p>		① ② ③ ④ ⑤
12. Determining Responsiveness to Secondary Level Prevention	<p>Are the decisions about whether or not a student is responding to secondary level interventions based on progress monitoring data?</p> <p>Are the decisions made based on the slope of a student's progress or on the student's final status at the end of secondary level prevention?</p> <p>Are the criteria implemented accurately and consistently?</p>		① ② ③ ④ ⑤
13. Addition to Primary	<p>Are the secondary level interventions always implemented as a supplement to the core curriculum?</p> <p>If no, please explain.</p>		① ② ③ ④ ⑤



Item	Sample Interview Questions	Comments/Remarks	Ratings
Tertiary Level Prevention			
14. Evidence-Based Intervention	<p>What evidence-based instructional practices are implemented at the tertiary level?</p> <p>How were the interventions used at the tertiary level developed?</p> <p>Are the tertiary level interventions more intense than the secondary level intervention? If so, how are they more intense?</p>		① ② ③ ④ ⑤
15. Fidelity	<p>Are procedures in place to monitor the fidelity of implementation of the tertiary level interventions?</p> <p>How do you ensure that the individualized instruction at the tertiary level includes evidence-based instructional practices?</p>		① ② ③ ④ ⑤
16. Instruction	<p>Are the tertiary level interventions always led by staff adequately trained to implement the interventions as designed? If not, who provides the tertiary level intervention and what is their background?</p> <p>Does the group size allow for the interventionist to adjust and individualize instruction to address the needs of each student?</p> <p>What is the maximum small group size?</p> <p>Describe a typical tertiary level experience for students.</p>		① ② ③ ④ ⑤



Item	Sample Interview Questions	Comments/Remarks	Ratings
17. Determining Responsiveness to Tertiary Level Prevention	<p>Are the decisions about whether or not a student is responding to tertiary level interventions based on progress monitoring data?</p> <p>Are the decisions made based on the slope of a student's progress, or on the student's final status at the end of tertiary level prevention?</p> <p>Are the criteria implemented accurately and consistently?</p>		① ② ③ ④ ⑤
18. Relationship to Primary	<p>Are the tertiary level interventions always implemented as a supplement to the core curriculum or do tertiary level interventions replace the core curriculum for some students?</p> <p>How do you decide if a student receiving tertiary instruction should remain in primary prevention?</p> <p>How do you ensure meaningful connections exist between tertiary intervention and the core curriculum?</p>		① ② ③ ④ ⑤



Item	Sample Interview Questions	Comments/Remarks	Ratings
<i>Progress Monitoring—Ongoing and frequent monitoring of progress quantifies rates of improvement and, informs instructional practice and the development of individualized programs.</i>			
19. Progress Monitoring Tools	<p>What tools are used for progress monitoring? How many alternate forms of equal difficulty are available?</p> <p>When your school selected the progress monitoring tool(s), how much attention was paid to the evidence from the vendor regarding the validity, reliability, and accuracy of the tool(s)?</p> <p>Does your school have documentation from the vendor that these tools have been shown to be valid, reliable, and accurate (including with sub-groups)?</p> <p>Do you have reason to believe that the progress monitoring tool(s) used may have issues with validity, reliability, or accuracy (including with sub-groups)? If so, please explain.</p> <p>Has the tool been validated for use with student populations similar to yours?</p> <p>Does the scoring manual or other information provided by the vendor provide benchmarks for acceptable growth?</p>		① ② ③ ④ ⑤

Item	Sample Interview Questions	Comments/Remarks	Ratings
20. Monitoring Progress	<p>How often is the progress of students at the secondary level monitored?</p> <p>How often is the progress of students at the tertiary level monitored?</p> <p>Is progress monitoring conducted frequently enough to show a trend in academic (or behavioral) development over time?</p> <p>Describe the process used for monitoring progress.</p> <p>Are the progress monitoring measures administered according to developer guidelines?</p> <p>To what extent is this process consistently followed?</p> <p>Are there differences in the process for different students? If yes, describe these differences.</p> <p>Is there anything about the process that would jeopardize the accuracy of the results? If so, please describe.</p>		① ② ③ ④ ⑤
<i>Data-Based Decision Making—Data-based decision making processes are used to inform instruction, movement within the multi-level system, and disability identification (in accordance with state law).</i>			
21. Decision Making Process	<p>Describe how decisions are made to move students between levels.</p> <p>Who is involved in decision making?</p> <p>What data are used to inform those decisions, and how are they used?</p> <p>What criteria and guidelines are used for making decisions?</p> <p>Do you have reason to believe that the decision-making process may be subject to bias or inappropriate influence?</p> <p>To what extent are the screening, progress monitoring, and other assessment data used to inform instruction at all levels, including the core instruction?</p> <p>Are consistent decision making rules used with all students?</p>		① ② ③ ④ ⑤



Item	Sample Interview Questions	Comments/Remarks	Ratings
<i>Overarching Factors—Factors that relate to the entire RTI framework.</i>			
22. Prevention Focus	<p>To what extent do you believe the teaching staff views the purpose of RTI as primarily to prevent students from having academic and/or behavioral problems?</p> <p>What portion of the teaching staff view RTI as primarily a means for special education identification?</p>		① ② ③ ④ ⑤
23. Leadership	<p>To what extent are the school and district administrators aware of the RTI framework at your school?</p> <p>To what extent do the actions taken and decisions made by district administrators improve the effectiveness of the RTI framework at your school?</p> <p>To what extent do the actions taken and decisions made by school administrators improve the effectiveness of the RTI framework at your school?</p> <p>Does your school have a designated person who oversees and manages RTI implementation?</p> <p>If yes, what percentage of that person's time is devoted to overseeing and managing RTI?</p>		① ② ③ ④ ⑤
24. Staff Qualifications	<p>Describe the training and qualifications for staff who provide the secondary and tertiary interventions.</p> <p>What ongoing professional development is available to staff who provide secondary and tertiary interventions?</p>		① ② ③ ④ ⑤



Item	Sample Interview Questions	Comments/Remarks	Ratings
25. Culturally and Linguistically Responsive	What efforts have been made to ensure that core instruction and secondary and tertiary level interventions take into account cultural, linguistic, and socioeconomic factors for students?		① ② ③ ④ ⑤
26. Communications With and Involvement of Parents	<p>Are parents knowledgeable about the RTI framework in your school?</p> <p>How are parents of students at the secondary or tertiary level kept informed of the progress of their child?</p> <p>How are parents involved in decision making regarding the participation of their child in secondary or tertiary levels of prevention?</p>		① ② ③ ④ ⑤

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APPENDIX D
DEMOGRAPHIC DATA

Date:

Thank you for taking time to complete this survey! Please provide some demographic information about yourself.

Position: (teacher, administrator, counselor, etc.)

Grade level(s) taught:

Content Area:

Number of years teaching at this school:

Total Number of years teaching:

APPENDIX E
LETTER TO SYSTEMS

Date

[**Recipient Name**]
[**Title**]
[**School Name**]
[**Street Address**]
[**City, ST ZIP Code**]

Dear [**Recipient Name**]:

As a follow up to our previous communication, I am writing to ask permission to include the following schools in a study of Professional Learning Communities and Response to Intervention at Tier 1. As you may recall, this study is my Ed.D. dissertation, which is being supervised by Dr. Daisy Arredondo-Rucinski at the University of Alabama. The purpose of this study is to determine the relationship between PLC characteristics and components of RTI as well as the link each process has on student learning in mathematics at the middle and high school level.

The survey will be given to all professional staff. Interviews will be conducted with appropriate staff at the aforementioned schools either in person or online. Teachers can choose or decline to participate. I anticipate the survey on PLC characteristics taking approximately 15 minutes. The interview will follow a scripted series of questions about RTI. I will be using student screener data from the GRASP database to examine the relationship between PLC's and RTI implementation on student learning.

All responses will be kept confidential and school leaders will be given school results for continued professional development.

Thank you for your time and consideration.

Sincerely,

Nicole Spiller

Enclosure

cc: Superintendent

APPENDIX F
INFORMED CONSENT STATEMENT

The University of Alabama

Human Research Protection Program

Consent to Participate in a Research Study

University of Alabama Institutional Review Board

Title of Research: The relationship among professional learning communities, a response to intervention framework and mathematics scores in middle and high schools

Researcher: Nicole Spiller, Doctoral student at the University of Alabama

Purpose:

There is currently little research dedicated to several aspects of this study. Although some authors have stated that a professional learning community is necessary to implementing an RTI framework in schools, there is little research to support this view. Current studies on RTI focus primarily on the elementary level. In addition, much of this research investigated reading and behavioral issues. There is a need for schools to provide early intervention to all students with learning needs in a timely, efficient manner. Successful early intervention has several advantages: it is in the best interests of students, it helps prevent over-identification of students in special education, and it is a key aspect of keeping learning gaps from widening as students progress in their educational career.

The purpose of this study is to determine the relationship between PLC characteristics and components of RTI as well as the link each process has with student learning in mathematics at the middle and high school level.

Participants:

Middle and high schools in the state selected who use GRASP as the universal screening instrument will be selected. A total of 11 districts, 37 middle schools, and 18 high schools will be selected by a systematic stratified sampling that represents these systems in size and region will be selected. Systems are located throughout the state.

Professional staff at the selected schools will be administered the School Professional Staff as Learning Community Questionnaire (SPSLCQ) developed by Hord (1996). Staff involved in the RTI process will be interviewed to ascertain their views on the RTI Essential Components Integrity Worksheet and Rubric scoring guide. The unit of analysis will be the school.

Risks and Benefits:

There will be no foreseeable risks to the participants. There will be no benefits to the participants. Society may benefit in that the information bank is being increased. Participants do not have to answer any question or provide any information if they so choose. Participation is on a voluntary basis.

Confidentiality:

All of the information collected will remain confidential. Your name will not be used in any of the research. The surveys will remain in a secure location. All study materials will be destroyed at the conclusion of the research.

Questions:

Direct questions or concerns to: Nicole Spiller (678) 326-1301/nspiller@garesa.org or Dr. Daisy Arredondo-Rucinski at (205) 348-7826/darredo@bamaed.ua.edu

Other Information:

Participants do not give up any legal rights by signing this consent form. Participants will be given a copy of this consent form to keep for reference purposes.

I have read the information above and understand the terms of my participation. I understand that my participation is voluntary and that I can withdraw my consent at any time. Under these terms and conditions, I certify that I am willing to participate in this research.

I understand that if I have any questions or concerns about this research, I should contact Nicole Spiller at (678) 326-1301 or nspiller@garesa.org. If I have any concerns that my rights are being violated, I may also contact the University of Alabama Institutional Review Board for the Protection of Human Subjects at (205) 348-5152.

Name: _____ Date: _____

Signature: _____

Signature of Researcher: _____

APPENDIX G
INSTITUTIONAL REVIEW BOARD APPROVAL

Office for Research
Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
R E S E A R C H

March 5, 2012

Nicole Spiller
Department of Higher Education Administration
College of Education
Box 870302

Re: IRB#: 12-OR-086 "The Impact of Professional Learning Communities and a Response to Intervention Framework on Mathematics Achievement in Middle and High Schools"

Dear Ms. Spiller:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies

Your application will expire on March 4, 2013. If your research will continue beyond this date, complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, complete the Modification of an Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the Request for Study Closure.

Please use reproductions of the IRB approved stamped consent forms to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,



Carpatho T. Myies, MSW, CIM
Director & Research Compliance Officer
Office of Research Compliance
The University of Alabama

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