2022

The Relationship Between the Implementation of Response to Intervention and Students' Achievement on Eighth Grade Minnesota Comprehensive Assessments

Ann Marie Rooney
Bethel University

The Relationship between the Implementation of Response to Intervention and Students' Achievement on Eighth grade Minnesota Comprehensive Assessments

by
Ann M. Rooney

A dissertation submitted to the faculty of Bethel University
in partial fulfillment of the requirements for the degree of
Doctor of Education

St. Paul, MN
2022

Approved by:

Advisor: Dr. Tracy Reimer

Reader: Dr. Krista Soria

Reader: Dr. Christopher Kamrath

Abstract

The purpose of this research study was to determine if there is a relationship between the implementation phase of Response to Intervention (RTI), an academic multi-tiered system of support, and eighth grade students' mathematics, reading, and science Minnesota Comprehensive Assessments (MCAs) proficiency achievement. Data for this study were collected using a RTI phase survey sent via Qualtrics to Minnesota middle school principals and publicly accessible MCA proficiency data via the Minnesota Department of Education (MDE) website. The researcher analyzed data using the Statistical Package of the Social Sciences (SPSS). Each principal's survey response was aligned with the school's eighth grade students' achievement results as measured by the MCAs. A Pearson *r* analysis was completed to determine if a relationship existed between the variables. There was no statistically significant ($p > .05$) relationship between implementation stages of RTI and eighth grade students' mathematics and science MCA proficiency achievement in Minnesota middle schools. There was a statistically significant ($p < .05$) and positive relationship between the implementation phase and eighth grade students' reading MCA proficiency achievement in Minnesota middle schools.

Acknowledgments

Many thanks are given to the remarkable people who made the completion of this journey possible. Their enduring love and support gave me the confidence to believe in myself and complete this lifelong goal.

Thank you to my Bethel team who really made the finish line come into focus. Krista's outstanding data interpretation skills paired with Chris's practical experience and hands-on knowledge brought my research to new levels. A big shout out to Tracy Reimer: without her patient and supportive approach, I could not have made it to the end of this journey.

Thank you to my wonderful family who were always understanding and complimentary about the time and effort it took to get through the years of work to reach my goal. Thank you, Brianna, for inspiring me with your challenge. Thank you, Jessica, for all the encouragement. A special thank you to my daughter Erin. Regardless of her busy full-time work schedule while raising young children, she always made time to help me work through a multitude of technical challenges. Her computer skills are unparalleled. Thank you, Bear, for all your time and talent.

Lastly, thank you to my husband Jim, my biggest cheerleader. After 43 years of marriage, your love and compassion has only grown. Thank you for all the things you did to help me and all the sacrifices you made while I worked away on my dissertation. Your belief in me gave me the strength to follow my dreams and accomplish this daunting undertaking. I could not have done it without you.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

Irwin et al. wrote that "The health of an education system is often assessed through indicators of achievement and attainment" (2021, p. 2). In accordance, every year the U.S. Department of Education administers the National Assessment of Educational Progress (NAEP) reading and mathematics achievement tests to fourth, eighth, and twelfth grade students. Their findings reveal that since 2012, there has been a trend of declining average scores in reading and mathematics for 13-year-olds (U.S. Department of Education, NAEP, 2021).

When compared to the national average, NAEP reports show that the state of Minnesota demonstrates proficiency percentages greater than the national averages in reading and math for both fourth and eighth graders (U.S. Department of Education, NAEP, 2021). While this comparison data implies academic fortitude, it also reveals that almost one-half of Minnesota students do not perform at or above proficiency levels. In 2019, 53% of Minnesota's fourth graders and 54% of eighth graders performed at or above the NAEP proficient level in mathematics. In reading, only 38% of Minnesota's fourth graders and 34% of eighth graders performed at or above proficiency levels (U.S. Department of Education, NAEP, 2021). These results elicit serious concern for Minnesota students' achievement.

In addition to national assessments, federal legislation requires state-level student achievement measures (ESSA, 2015). Minnesota established the K-12 Academic Standards, which articulate what all students are expected to learn in each content area and grade level. The Standards were implemented so all students have access to a high-quality education (Minnesota Department of Education [MDE], 2021). To meet legislative requirements, the Minnesota Comprehensive Assessments (MCAs), which are based on the Academic Standards, are administered yearly to assess students' learning in math, reading, and science (MDE, 2021).

Student MCA results are assigned one of four achievement levels: Does Not Meet the Standards, Partially Meets the Standards, Meets the Standards, and Exceeds the Standards. When a student Meets or Exceeds the Standards, they are deemed proficient in the knowledge and skills for their grade (MDE, 2021). In Minnesota, a measurable decline of eighth grade student achievement scores was reported over the four-year period between 2017 and 2021, with 50% or fewer of students proficient in mathematics, reading, and science in 2021 (MDE, 2021). This concerning trendline has led the Minnesota districts and charter schools to seek research-based frameworks and practices to better serve students (MDE, 2011).

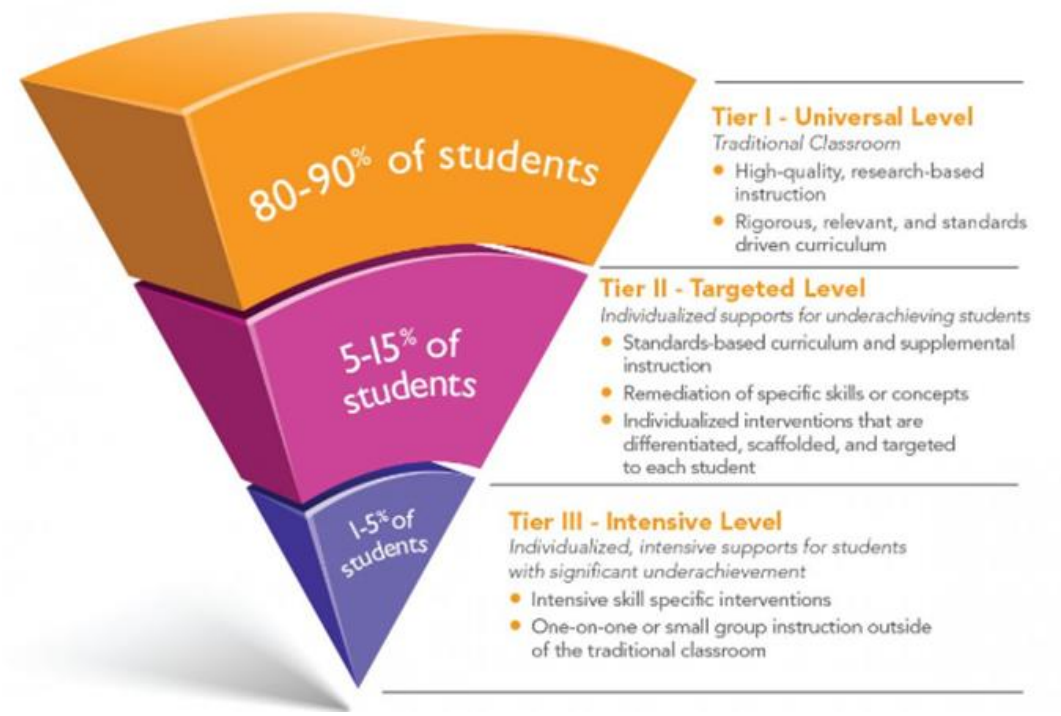
The Every Student Succeeds Act (ESSA, 2015), a federal education law for public schools, cited the multi-tiered systems of supports (MTSS) as a recommended framework to increase teaching effectiveness. In the general education classroom, interventions may be necessary to increase students' academic proficiency levels. If students are at risk of not meeting proficiency on the MCAs, increased teaching time, modification in instruction, and/or academic interventions are to be implemented in a multi-tiered system of support (MDE, 2021). The Minnesota multi-tiered system of supports (MNMTSS) is a systemic, continuous improvement framework for ensuring positive social, emotional, behavioral, developmental, and academic outcomes for every student (MDE, 2022). More than 40 states have adopted their own version of MTSS, with multiple states referring to the system as Response to Intervention (RTI; National Center for Learning Disabilities, 2019).

RTI is a three-tiered framework that supports school staff in identifying and addressing challenges for students who are struggling academically and are at high risk for poor learning outcomes (Cowan & Maxwell, 2015; RTI Action Network, 2020). With RTI, schools identify students who are at risk for inadequate learning outcomes through universal screening, provide

evidence-based interventions, monitor students' progress, and adjust the intensity and nature of interventions depending on students' response (Center on Response to Intervention & National Center on Intensive Intervention, 2014; National Center on Response to Intervention, n.d.).

Figure 1

Response to Intervention Tiers



Source: St. Croix Central School District, (2022).

Initial RTI implementation initiatives and research focused on RTI effectiveness were primarily based at the elementary level, but there is growing interest in secondary schools incorporating concepts and features of RTI (Lesh, Roberts, Cavitt, & Morales, 2021). The scarcity of research has forced secondary systems to adapt the elementary model without the guidance of evidence-based practices (Lesh et al., 2021; Pyle & Vaughn, 2012; Sansosti, Noltemeyer, & Goss, 2010). The essential components of RTI may be the same regardless of grade level or context, but how they are translated into effective practice and integrated into a

middle or high school's processes may differ from elementary school models (Center on Multi-Tiered Systems of Support, n.d.). Unlike the positive student achievement outcomes at the elementary level, RTI implementation at the secondary level has not produced improvements in students' achievement (King, Lemons, & Hill, 2012).

Statement of the Problem

Declining student academic achievement at the middle school level. The U.S. Department of Education Institute of Education Sciences National Center for Educational Statistics (McFarland et al., 2019) reported concerning statistics: only 37% of fourth graders and 36% of eighth graders performed at or above the proficient achievement level in reading on the 2017 NAEP. In mathematics, only 40% of fourth graders and 34% of eighth graders were performing at or above the NAEP proficient achievement level. Exacerbating the concern were longitudinal declines in student achievement observed in the average NAEP scores in eighth grade mathematics, and reading, which were lower in 2019 than in 2017 (National Center for Educational Statistics, 2019).

The National Research Council asserts that academic success, as defined by high school graduation, can be predicted with reasonable accuracy by knowing someone's reading skill at the end of third grade. A person who is not at least a modestly skilled reader by that time is unlikely to graduate from high school (National Research Center, 1998). Students who do not read proficiently by third grade are four times more likely to leave school without a diploma than proficient readers. For the worst readers, those who could not master even the basic skills by third grade, the dropout rate is nearly six times greater (Hernandez, 2011).

Minnesota students' achievement scores are publicly available online via the Minnesota Report Card, which allows users to view and analyze data for any public school or district in the

state. An alarming trend, following the national trend, shows a steady decline in Minnesota's eighth grade student achievement between 2017 and 2021 (MDE, 2021).

Table 1

Eighth Grade Proficiency on the Minnesota Comprehensive Assessments

	2017	2018	2019	2021
Mathematics MCA Percent Proficient	59	57	55	44
Reading MCA Percent Proficient	59	59	58	50
Science MCA Percent Proficient	46	45	43	40

Note: No data were available in 2020 due to the COVID-19 pandemic.

Response to Intervention (RTI) as a framework to improve students' achievement. In response to federal legislation requiring education systems to implement Multi-Tiered Systems of Support (MTSS) as a framework to better meet the needs of K-12 students, Minnesota initiated RTI (MDE, 2021). RTI was defined as "A framework that provides schools with an integrated system of high-quality, standards-based instruction and interventions that are matched to students' academic, social-emotional, and behavioral needs" (MDE, 2015). Regardless of students' age, implementation of the RTI framework is known to be best practice for differentiation of instruction (Fuchs & Fuchs, 2006, 2016; King et al., 2012). Studies have determined that effective implementation of all tiers leads to an increase in student academic skills (Al Otaiba et al., 2014; Morrison et al., 2020; Vaughn & Fletcher, 2012).

The RTI framework's foundation, tier 1, is core classroom instruction that supports approximately 80% of students meeting grade-level academic expectations. The remaining 20% of students are engaged in interventions specifically addressing the students' barriers to achievement. Students' progress is consistently monitored, and intervention focus, and intensity are adjusted accordingly. The aim is for 15% of students to be served in a tier 2 intervention,

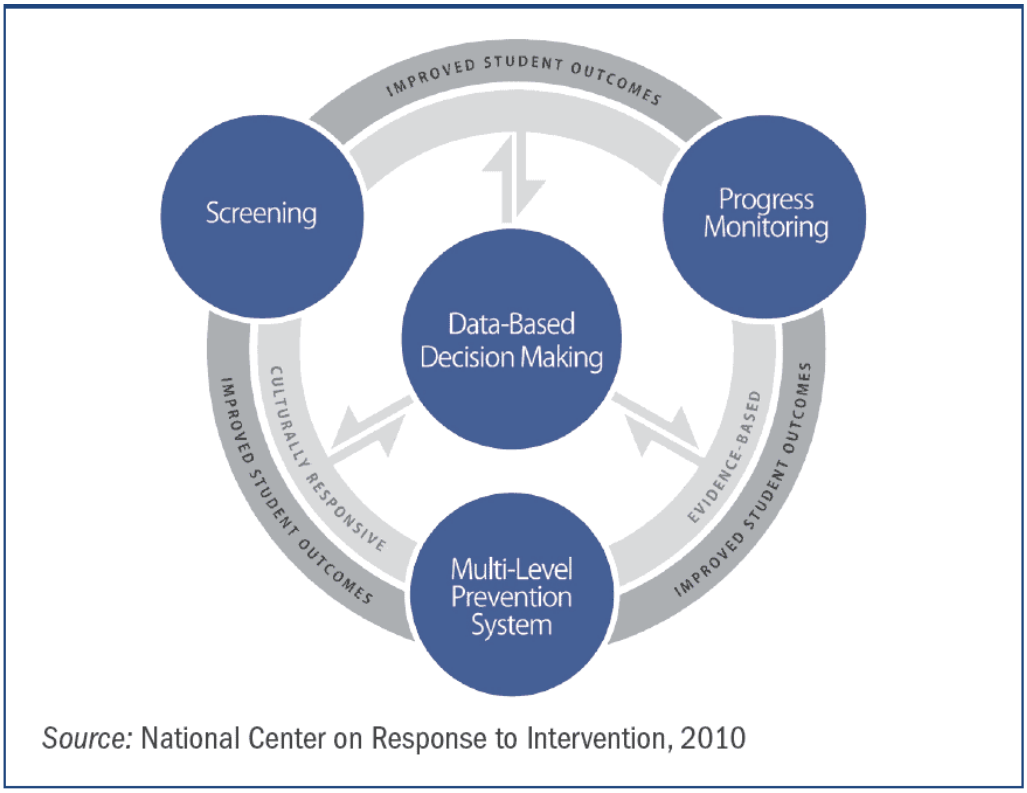
while the remaining 5% will require an intensive, individualized tier 3 intervention (Fletcher, 2009; Special Education Guide, 2022; St. Croix Central School District, 2022).

The essential components of RTI consist of universal screening, progress monitoring, multi-leveled prevention systems, and data-based decision making. The purpose of screening is to identify students who are at risk of poor learning outcomes. It includes brief assessments that are valid, reliable, and demonstrate diagnostic accuracy for predicting learning or behavioral problems and to generate appropriate interventions in a tiered system of support (Balu et al., 2015; Morrow & Gambrell, 2011). These assessments are administered multiple times per year. Progress monitoring measures students' response to instruction to estimate rates of improvement, identify students who are not demonstrating adequate progress, and compare the efficacy of different forms of instruction. Progress monitoring is done at regular intervals (weekly, biweekly, or monthly). Data-based decision making is integral at all phases of RTI implementation as well as all levels of prevention. Data are used to compare the adequacy of the core curriculum and the effectiveness of instructional and behavioral strategies.

When implementing the RTI framework, educators select and apply evidence-based practices and procedures with fidelity. Educators must ensure that cultural, linguistic, and socioeconomic factors are reflected in the RTI framework and its components to attain academic gains (IRIS Center, 2022; National Center on Response to Intervention, 2010; Special Education Guide, 2022).

Figure 2

Essential Components of a Research- Based Framework



Lack of Response to Intervention (RTI) framework implementation at the middle school level. In collaboration with the MDE, Wilder Research (2013) presented the results of a statewide survey and demonstrated that the middle school results showed a disturbing outcome, with only 10% of schools reporting full RTI implementation. The lack of RTI implementation consistency across Minnesota middle schools has been documented; yet minimal analysis of the data has been pursued and the number of follow-up studies have been marginal (Wilder, 2013).

Secondary schools must consider unique features when implementing RTI, such as student class schedules, grading requirements, course credits, and curricular focus (Ehren, n.d.; National Center on Response to Intervention, 2010). Fuchs et al. (2010) attributed the reduced effectiveness of RTI at the secondary level to the complexity of scheduling problems

encountered when working with older students. With the numerous initiatives and activities that occur in middle schools simultaneously, it is critical to align efforts to support and accelerate the implementation of RTI (Center on Multi-tiered Systems of Support, n.d.).

Practitioners are in pursuit of effective practices to invest time and energy in due to students' academic underachievement at the middle school as measured by proficiency levels attained on the MCAs. Thus, there was a need to determine if there is a relationship between the implementation of RTI in Minnesota middle schools and students' achievement on the MCAs.

Purpose of the Study

The purpose of this research study was to determine if there is a relationship between the implementation phase of RTI, an academic multi-tiered system of support, and eighth grade students' mathematics, reading, and science MCA proficiency achievement.

Research Questions

1. Is there a relationship between the implementation phase of RTI and eighth grade students' MCA mathematics proficiency achievement in middle schools?
2. Is there a relationship between the implementation phase of RTI and eighth grade students' MCA reading proficiency achievement in middle schools?
3. Is there a relationship between the implementation phase of RTI and eighth grade students' MCA science proficiency achievement in middle schools?

Significance of this Study

The RTI framework is a research-based approach to serving students' academic needs in the educational system (MDE, 2022). The multi-level prevention and intervention system includes high quality instruction and interventions matched to the needs of students to maximize student achievement (National Center on Response to Intervention, 2010). RTI has been proven

to be an effective tool to raise both individual student and overall grade-level reading scores on standardized tests (Maskill, 2012). It is a continuous improvement framework that can be overlaid across curriculum content areas and educational contexts (MDE, 2015). The MDE provided financial and professional development (PD) support to schools and districts committed to closing the achievement gap through the implementation of RTI (MDE, 2015).

While implementation of RTI at the elementary level is broadly reported, there is limited research identifying how to design and implement RTI at the secondary level (Castillo, March, Stockslager, & Hines, 2016; Fuchs, Fuchs, & Compton, 2010). Further research might emphasize crucial differences between the phase and processes of elementary and secondary implementation (Fuchs et al., 2010). In addition, further research is needed to determine if RTI implementation at the secondary level impacts students' academic achievement (Praska, 2022). To date, there has been no research focused on the relationship between the implementation of RTI in secondary schools and student proficiency achievement on the eighth grade MCAs. This study attempted to provide insight to middle school administrators and teaching teams regarding the relationship between RTI implementation and students' proficiency on eighth grade MCAs.

Practitioner significance. This study may provide information that can guide stakeholders pursuing the necessary system changes in education to better serve middle school students. Teachers are under enormous pressure to have students meet state standards in specific content areas (Ehren, n.d.). RTI provides educators with a framework to deliver quality instruction and intervention and monitor students' learning to make instructional decisions (Batsche et al., 2005). In an RTI context, focus on scientifically based instruction means that teachers examine their teaching practices to differentiate instruction and enhance students' learning. Prasse et al. (2012) highlighted the importance of teachers embedding the three-tiered

RTI model with confidence that they are employing research-based practices that better serve students (Ehren, n.d.). Educational resources of time, talent, and treasure are stretched to the limit, so it is imperative that school leaders have data to inform decisions that relate to students' and staff needs. The fiscal and human resource commitment required to effectively implement RTI are substantial investments for districts with limited resources (Buffum & Mattos, 2015).

Policy significance. Policies related to assessment and instruction affect school functioning (Mellard & Johnson, 2008). Federal policy such as The No Child Left Behind Act (NCLB, 2001) includes an emphasis on accountability, the use of scientifically based curricula, and a focus on standards as a strategy to raise achievement levels for all students (National Research Council, 2002; U.S. Department of Education, n.d.). State policies continued to emphasize these components. For example, Minnesota Statute 120B.12 requires reading proficiently no later than the end of third grade. Under subdivision 2:

> The district shall provide reading intervention to accelerate student growth and reach the goal of reading at or above grade level by the end of the current grade and school year. If a student does not read at or above grade level by the end of grade 3, the district must continue to provide reading intervention until the student reads at grade level. (Minnesota Statutes, 2021)

Historically, when interventions have failed to improve students' academic proficiency, special education referrals may have been made. In response to concerns related to the discrepancy formula used to qualify for special education services, the Individuals with Disabilities Education Improvement Act (IDEIA) was reauthorized in November 2004. The reauthorization focused on collaboration between the general education and special education services. IDEIA permitted districts to adopt alternative assessment models, including RTI, and

allowed a portion of federal special education funds to provide coordinated early intervention services to students at risk of academic failure (RTI Action Network, 2020; U.S. Department of Education, n.d.).

Although RTI implementation is rooted in the principle that it leads to improvements in students' academic achievement, it is not mandated and there are no legislated guidelines for the implementation of RTI. The lack of oversight is troubling as 43 of 50 states report having an RTI framework (National Center on Response to Intervention, 2010). This study may provide information that influences future education related legislation.

Definition of Terms

Every Student Succeeds Act: On December 10, 2015, President Barack Obama signed the Every Student Succeeds Act (ESSA) into law as Public Law Number 114-95. ESSA reauthorizes the Elementary and Secondary Education Act of 1965 "to ensure that every child achieves." ESSA is the nation's general education law and, as such, has been revised by Congress many times over the years. (U.S. Department of Education, n.d.).

Fidelity of RTI implementation: Fidelity of RTI implementation is the extent to which staff adhere to RTI procedures as they were designed (IRIS Center, 2022).

Individuals with Disabilities Education Improvement Act (IDEIA): The Individuals with Disabilities act was reauthorized in 2004 creating Individuals with Disabilities Education Improvement Act of 2004. The purpose of IDEIA is to ensure that all special needs children are provided with an equitable chance at an education equal to their peers without disabilities. (U.S. Department of Education, n.d.).

Middle School: a school usually including grades five to eight or six to eight. For this study, middle school must include eighth grade.

Minnesota Comprehensive Assessments (MCAs): The Minnesota Comprehensive Assessments (MCAs) are state tests in mathematics, reading, and science that are used to meet federal and state legislative requirements (MDE, 2021).

Multi-tiered System of Support (MTSS): MTSS refers to a framework that provides schools with an integrated system of high-quality, standards-based instruction and interventions that are matched to students' academic, social-emotional, and behavioral needs (Center on Multi-Tiered Systems of Support, n.d.; MDE 2015).

Proficient: Students who achieve the "Meets" and "Exceeds" levels on the Minnesota Comprehensive Assessment are considered proficient with regards to the knowledge, skills and abilities described in the academic standards (MDE, 2021).

Response to Intervention (RTI): A multi-tier system of support approach schools use to identify students with learning and behavior needs early. The RTI process starts with universal screening of all students in the general education setting (MDE, 2021; RTI Action Network, 2020).

Tier 1: (Primary Prevention) involves the delivery of high-quality core instruction that meets the needs of most students in the class (MDE, 2021).

Tier 2: (Secondary Prevention) Involves the delivery of research-based intervention(s) of moderate intensity to address the learning or behavioral challenges of most at-risk students. This is provided in addition to the daily core instruction (MDE, 2021).

Tier 3: (Tertiary Prevention) Involves the delivery of individualized intervention(s) of increased intensity for students who show minimal response to Tier 2 interventions (Center on Multi-Tiered Systems of Supports, n.d.; MDE, 2021).

Organization of the Remainder of the Study

The remainder of this study is organized by chapters to provide a clear documentation of processes used in the writing of this dissertation. Chapter 2 is a review of literature which builds the foundational basis for background knowledge. It includes the history of RTI, components of RTI, RTI implementation at the middle school level, barriers to RTI implementation, Training needed to implement RTI, Minnesota Comprehensive Assessments, and implementation theory. Chapter 3 focuses on the quantitative methodology to be employed in this research. It incorporates the purpose of the study, research design, research questions and hypotheses, variables, research instrument, data collection and analysis, study limitations, and ethical considerations. Chapter 4 contains the findings of the study and a summary of the findings. Finally, Chapter 5 provides an overview of the study, the research questions, the research hypothesis, study conclusions, implications for practice, recommendations for future research, and concluding comments.

Chapter 2 Literature Review

Introduction

The purpose of this research study was to determine if there is a relationship between the implementation phase of RTI, an academic multi-tiered system of support, and eighth grade students' mathematics, reading, and science MCA proficiency achievement.

Background of Response to Intervention (RTI)

The RTI framework was introduced within the 2004 reauthorization of the Individuals with Disabilities Education Improvement Act (IDEIA). Although it was not introduced as a part of the law, it was presented as a method to help identify students with specific learning disabilities (Special Education Guide, 2022; Yell, Schriner, & Katsiyannis, 2016). In essence, the legislators and the Office of Special Programs asked districts to rely not only on the discrepancy model (achievement in comparison to IQ) for identification of specific learning disabilities but to consider using interventions within RTI (Preston, Wood, & Stecker, 2016).

One of the main criticisms of the discrepancy model was that it did not prove useful in enhancing services for students, particularly providing early intervention to struggling students (Bradley, Danielson, & Doolittle, 2007). Ehren (n.d.) postulated that educators are likely to encounter at-risk students in middle, junior, and high schools who did not receive elementary intervention due to lack of qualification using the discrepancy criteria. In response to the difficulties inherent in the discrepancy model, leaders in the field of learning disabilities proposed an alternative method, RTI, as a method of identifying students with learning disabilities (Fuchs & Fuchs, 2006; Vaughn & Fuchs, 2003). RTI prevents students who struggle with reading from being labeled as students with disabilities when the difficulties they are facing could be resolved by different or more intense instruction (Ehren, n.d.; ESSA, 2015).

Table 2

Advantages of RTI

Concerns About the IQ-Discrepancy Model	Advantages of RTI
Assessments do not always discriminate between disabilities and the results of inadequate instructional strategies.	The likelihood that inadequate instruction is a cause of learning difficulties decreases.
Bias can result in the misidentification of students.	Bias inherent in the referral and the assessment processes decreases. Identification is based on actual classroom performance (i.e., progress monitoring data).
Students must first fail in order to qualify for special education services.	Fewer students struggle before receiving help. The amount of time students struggle is significantly decreased.
Results from assessments do not inform the instructional process.	The progress monitoring data aid in placement decisions and may be used to inform and evaluate the instructional process.
Many students do not meet the discrepancy criteria but would still benefit from early identification and support to remediate their skills.	Students who are struggling academically receive immediate support and intervention.

Source: Reprinted from IRIS Center, (2022).

RTI requires educators to provide students with tiers of alternative learning strategies and methodologies that are data driven and researched based before pursuing special education testing (MDE, 2021; National Center for Response to Intervention, 2010; Morin, 2021). It provides a basis for effective prevention and intervention at all achievement levels. The Center on Multi-Tiered Systems of Supports (n.d.) defines RTI as a proactive and preventative framework that integrates data and instruction to maximize students' achievement while supporting students' social, emotional, and behavior needs from a strengths-based perspective. It also provides schools with an integrated system of high-quality, standards-based instruction, and interventions (Center on Multi-Tiered Systems of Supports, n.d.; MDE, 2015).

Although RTI began as a framework to address students' outcomes for special education students, it quickly emerged as a general education initiative that supports school staff in

identifying and addressing challenges for students who are struggling academically and are at high risk for poor learning outcomes (Cowen & Maxwell, 2015; Ehren, n.d.; RTI Action Network, 2020). The theory supporting RTI contends that general education teachers can identify students' academic problems accurately and address the problems before they become pervasive enough to merit referring students to special education (Fletcher, 2009; Samuels, 2008). The I the success of the RTI approach depends upon shared responsibility and increased accountability for students' learning. RTI requires that general educators and interventionists or special educators work together to collect and evaluate data, make data-based instructional decisions, and plan and deliver instruction (IRIS Center, 2022; VanDerHeyden, Witt, & Barnett, 2005).

Components of Response to Intervention (RTI)

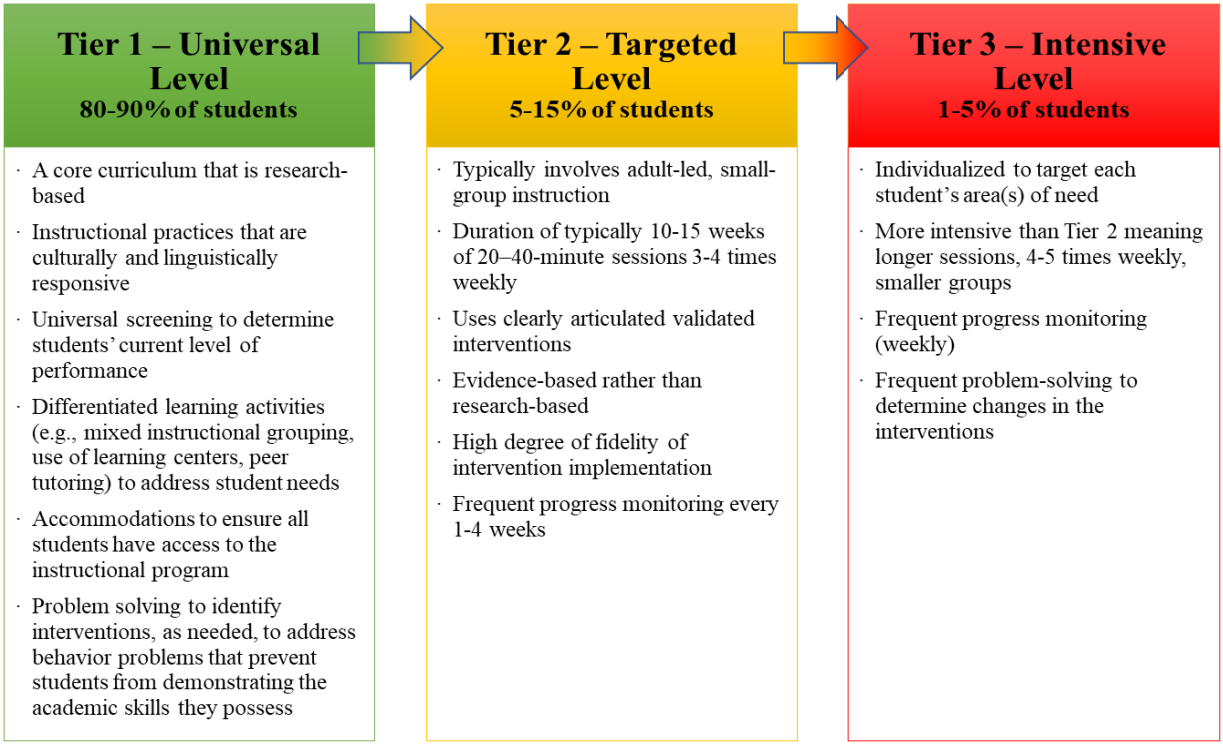
RTI is a tiered approach applied to all students within a school by providing the appropriate intensity of academic support necessary for educational progress (Batsche et al., 2005). RTI is not a set system or special education program for schools to follow, but rather research-based interventions within tiers or levels of instruction (Frasier, 2018; National Center for Response to Intervention, 2010). Key elements of RTI include the use of screening tools to identify struggling students, a tiered approach to intervention, continual progress-monitoring to facilitate data-based decision making, and highly qualified teachers (Lembke, Hampton, & Beyers, 2012; MDE, 2021; National Center on Response to Intervention, 2010). RTI strategies match the specific needs of each student using data-based decision making to maximize students' achievement (MDE, 2015; RTI Action Network, 2020).

In the RTI Framework, Tier 1, or the primary level of prevention, reflects effective core instruction for all students directed by the classroom teacher. Effective core instruction should meet the needs of approximately 80% of students. In Tier 2, or the secondary level of prevention,

small group supplementary interventions are provided for identified students by the regular classroom teacher or a team staff member. Approximately 15% of students will be engaged in a Tier 2 intervention. Tier 3 interventions, or the tertiary level, are for individual students who receive the most intense and consistent interventions. Tier 3 services involve the delivery of individualized intervention(s) of increased intensity for students who show minimal response to Tier 2 interventions. On average, only 5% of students participate in a Tier 3 intervention (Fletcher, 2009; Response to Intervention explained, 2021; Special Education Guide, 2022).

Figure 3

Descriptions of RTI Tiers



Source: Response to Intervention Framework (MDE, 2021).

Response to Intervention (RTI) Implementation at the Middle School Level

Underachieving students are likely to experience serious problems in a secondary setting (Ehren, n.d.). A well implemented RTI framework may provide a systematic way for secondary

schools to address the needs of these struggling students (Ehren, n.d.). The National Center on Response to Intervention (2011) reported that by applying RTI, schools are able to identify students at risk for poor learning outcomes, monitor students' progress, provide evidence-based interventions, and adjust the intensity and nature of those interventions depending on a student's responsiveness. The RTI initiative has provided educators with a research-based framework that can be implemented at all levels of schooling (Cowan & Maxwell, 2015).

The National Center on Response to Intervention (NCRTI, 2011) asserted that secondary schools must consider many unique features when implementing RTI (e.g., students' class schedules, grading requirements, course credits, and curricular focus). To better understand how RTI operates in a middle school setting, NCITR interviewed administrators from 42 middle schools across the country. Their findings emphasized four key factors identified by school practitioners. The first factor was to focus on the goals and outcomes of RTI implementation. Three common goals were closing the achievement gap, meeting adequate yearly progress, and addressing undesirable and oftentimes disruptive behavior. The second factor indicated was school culture. A supportive school culture is extremely important to the successful implementation of RTI. Shaping the school culture often begins with administrators setting clear expectations that RTI is vital and necessary for meeting the needs of the student body.

The third factor identified was leadership. The middle school principals reported the importance of making necessary changes to school schedules, establishing building priorities, designating time for teacher collaboration, addressing PD needs and schedules, and promoting staff understanding and knowledge. Lastly, many administrators in middle schools stated that one of the most important actions they took while exploring RTI was to assemble the RTI leadership team. A leadership team should be established to facilitate decision making about

implementation guidance, training needs, staff development, implementation of screening and progress monitoring assessments, and intervention implementation (National Center on Response to Intervention, 2011).

Barriers to RTI implementation. RTI is an essential framework for teachers to use for improving elementary and secondary grade students; however, it is more challenging to successfully implement RTI in secondary schools (IRIS Center, 2022; Thomas et al. 2020). A national study on variations to RTI literacy implementation in grades six through twelve found significant differences in implementation across the country (Savitz, Allen, & Brown, 2022). Questions persist regarding the function and most efficient means to deliver systematic multi-tier frameworks in grades six through twelve (Vaughn & Fletcher, 2012). Factors implementing RTI at the secondary level include increased complexity of the organization, difficulty of scheduling, availability of and access to technically adequate screening and progress monitoring tools, fidelity, pervasive reading difficulties, and students' engagement (Burns & Gibbons, 2012; Buffum & Mattos, 2015; Ehren, n.d.; IRIS Center, 2022; Prewett et al., 2012).

Ehren (n.d.) reported that some secondary educators may be less than enthusiastic about RTI implementation, believing that struggling adolescents are beyond help or that literacy issues should have been taken care of in elementary school. She states: "Secondary educators do not always see literacy as their role and often express the opinion that literacy should have been taught by elementary level teachers" (Ehren, n.d., para 11). Fuchs et al. (2010) reported that secondary teachers require support in areas such as screening and decision making.

In 2013, Wilder Research was commissioned by the MDE to conduct a RTI survey including elementary, middle, high schools, and charter schools to determine levels of RTI implementation. The implementation levels included not participating, exploring, partial

implementation, and full implementation. The survey examined the four areas of implementation for all students (Tier 1) and students in need of interventions (Tier 2 and Tier 3). Of the 206 participating middle schools that responded, none reported over 50% full implementation in any area. The least implemented components to full implementation at middle school levels were reported in all Tiers.

Table 3

Least Implemented Components towards Middle School RTI Full Implementation

	Tier 1	Tiers 2/3
Leadership and organization	All instructional staff understand how the RTI framework is represented in the school	School-wide RTI actions and results are regularly communicated to multiple stakeholder audiences, including all school staff, families, school board members, and the community
Curriculum and instruction	Parents/guardians are provided with materials and training in the provision of curricular support in the home setting when appropriate	Parents/guardians are engaged as active team participants at each step of the problem-solving process for students receiving supplemental interventions
Assessment	The effectiveness and efficiency of the assessment processes is reviewed regularly by school-building teams	School frequently reviews progress monitoring data to gauge if individual students are making accelerated progress toward grade level goals.
Collaboration	School teams all consistently follow a problem-solving process to make data-based decisions that promote students' academic improvement	School uses a process to collaborate with and engage parents/guardians of students receiving supplemental interventions

Source: 2013 MN Response to Intervention Implementation Survey - Middle School

The survey asked schools to identify barriers to RTI implementation. According to the 392 schools representing all grade levels, the most frequently cited problems were lack of training or PD opportunities (21%), lack of support or buy-in from staff (20%), and lack of staffing capacity necessary to fully implement RTI (18%).

As indicated by middle school respondent results on the 2013 Minnesota RTI Implementation Survey, lack of parent or guardian involvement and engagement is a barrier to full implementation. The Learning Disabilities Association of America (n.d.) emphasized parents and families must be meaningfully involved in RTI development, beginning with planning and continuing as implementation occurs. The Washington Office of Superintendent of Public Instruction (n.d.) explained that while organizations work to build systems that benefit every student, they also need to recognize that families are essential to students' success throughout RTI implementation. Family engagement occurs at the district, school, and classroom levels. A teacher must be able to communicate and interact with parents or guardians, families, school colleagues, and the community to support students' learning and well-being (Office of the Revisor of Statutes, 2016).

Training Needed to Implement Response to Intervention (RTI)

Educator preparation programs. The National Council for Accreditation of Teacher Education (2014) requires that colleges design, implement, and evaluate field experiences and clinical practice so that teacher candidates and other school professionals develop and demonstrate the knowledge, skills, and professional dispositions necessary to help students learn. In the state of Minnesota, the Office of the Revisor of Statutes (2016) drafted legislation 8710.2000 for standards of effective teacher practices: candidates for teacher licensure must show verification of completing standards in a teacher preparation program. It is the responsibility of teacher preparation programs to prepare educators with professional knowledge and pedagogical skills necessary to positively impact students' learning (Prasse et al., 2012).

Despite accreditation and legislative oversight, there is limited empirical evidence on education preservice teacher preparation courses (Harvey, Jones, & Yssel, 2015). Researchers

advocated for the development of separate RTI courses as a necessity in higher education (Muller, 2010) and that, "Colleges of Education must embrace conceptions of preparing teachers that will ready them for their roles in RTI" (Brownell, Sindelar, Kiely, & Danielson, 2010, p. 372-73). Fuchs (2012) agreed that "there are precious few preservice or in-service programs currently preparing experimental teachers for our nation's schools" (p. 270).

RTI is taught within higher education; however, there is typically not a class that focuses solely on RTI for pre-service teachers going into general education (Harvey et al., 2015). It is assumed that entering teacher**s** have acquired RTI knowledge and applied skills during their teacher preparation program, however, most entering teachers do not possess these skills (Prasse et al., 2012). Teachers are called on to demonstrate a strong knowledge base and skills set in providing RTI**,** yet most teachers are under prepared (Prasse et al., 2012).

Mizell (2010) argued college and university programs cannot provide the extensive range of learning experiences necessary for graduates to become effective public-school educators. Once students graduate, meet their state's certification requirements, and are employed, they learn through experience. Even as teacher preparation programs begin to incorporate curriculum involving RTI, ongoing professional development will be necessary at the school and district level (Richards, Pavri, Golez, Canges, & Murphy, 2007). Though many school districts are committed to implementing the RTI model, they are continually faced with the challenge of having the time and funding to provide the additional professional development required to prepare educators for this method of supporting struggling learners (Richards, et.al, 2007).

School-based professional development. Professional development (PD) is viewed as pivotal to increasing educator capacity for RTI (Danielson, Doolittle, & Bradley, 2007; Fletcher & Vaughn, 2009; Kratochwill et al., 2007). PD is defined as a variety of "learning activities

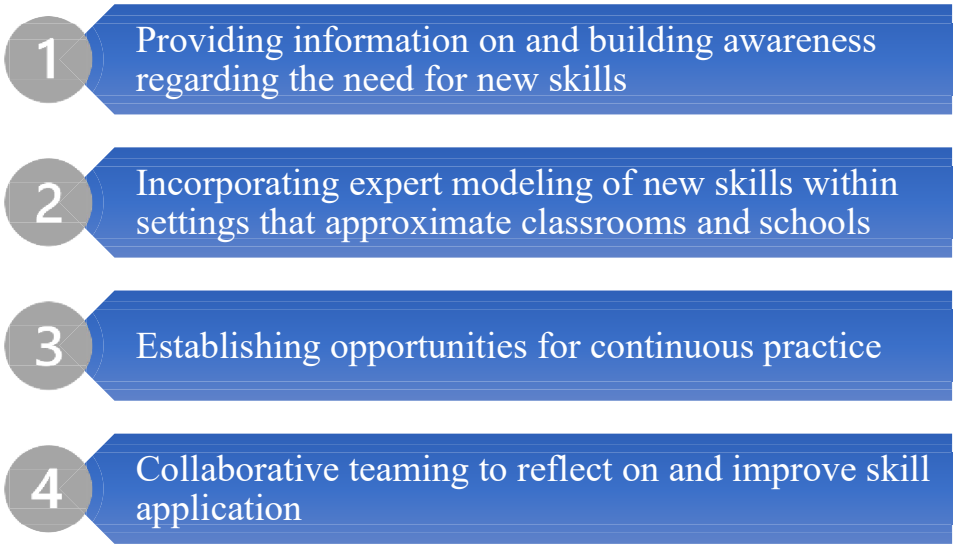
related to enhancing skills needed to successfully meet the expectations of one's occupation" (Kratochwill et al., 2007, p.621). Mizell (2010) explained the intention of PD participation is to provide educators with new knowledge and skills allowing them to improve their teaching and leadership, which ultimately increases students' learning and achievement.

In order to implement RTI efficiently, teachers need to possess knowledge of evidence-based instruction, tiered instruction, multiple assessment tools, progress monitoring, and fidelity of implementation (Danielson, Doolittle, & Bradley, 2007). Scholars suggested that PD that leads to increased assessment, instructional, and decision-making skills is necessary to facilitate RTI implementation (Berkeley, Bender, Peaster, & Saunders, 2009; Fletcher & Vaughn, 2009; Kratochwill et al., 2007; O'Conner & Witter Freeman, 2012). In effective PD, educators analyze students' achievement data during the school year to immediately identify learning problems, develop solutions, and promptly apply those solutions to address students' needs (Mizell, 2010).

Educators who receive high-quality training and on-going support implement RTI with greater fidelity than those who do not (IRIS Center, 2022). A lack of implementation fidelity can result in a practice or program being less effective, less efficient, or producing less-predictable responses (Sanetti Collier-Meek, Long, Kim, & Kratochwill, 2014). When programs implemented with fidelity are compared to programs not implemented with fidelity, the difference in effectiveness is profound. Those implemented with fidelity yield averages that are two to three times higher (Durlak & DuPre, 2008).

Figure 4

Recommendations for Optimal Professional Learning Designs



Source: Joyce & Showers, 2002

Although RTI has been adopted by almost all school districts throughout the U.S., general education teachers state they do not have adequate training to provide implementation with fidelity (Barrio, Lindo, Combes, & Hovey, 2015; Cowan & Maxwell, 2015). Teachers are called on to possess an ever-expanding knowledge base and skill set that supports the implementation of RTI; yet most teachers are under prepared (Barrio et al., 2015; Prasse et al., 2012). A common reason that educators do not obtain anticipated students' achievement results is that they have not properly implemented RTI (IRIS Center, 2022). Additional research is needed to determine how to best apply PD to improve educators' skills relative to RTI (Kratochwill, Volpiansky, Clements, & Ball, 2007).

Minnesota Comprehensive Assessments (MCAs)

MCA tests in mathematics, reading, and science are used to meet federal and state legislative requirements and accountability measurements. With very few exceptions, students in public schools are required to participate in the statewide assessment program. MCAs in

mathematics are administered in grades three through eight and again in eleventh grade. MCAs in reading are administered in grades three through eight and again in tenth grade. The MCA in science is administered to students in fifth and eighth grade and in the high school grade when students take a life science or biology course (MDE, 2020).

MCAs measure students' performance relative to the Minnesota Academic Standard which specifies what students in a particular grade should know and be able to do. The mathematics MCA is aligned to the 2007 academic standards. The reading MCA is aligned to the 2010 academic standards. The science MCA is aligned to the 2009 academic standards (MDE, 2021). One purpose of MCAs is to support the evaluation of instruction, curriculum, and assessments that reflect the rigor of the standards. It is not intended to be the only factor in determining students' achievement but one of multiple data points for schools' and districts' evidence-based decision-making. The results compare student groups to help identify underlying inequities and highlight promising instructional practices that impact changes in achievement level results over time (MDE, 2021). An appropriate use of MCA results is to analyze overall proficiency for a grade, school, and district to evaluate equitable opportunities for all students to learn the Minnesota Academic Standards. MCA data allows policymakers to gauge progress in closing the achievement gap statewide.

In addition to detecting a general sense of the strengths and gaps in curriculum and instruction, schools are encouraged to use the students' MCA results to improve classroom teaching and learning. Areas of high students' achievement can be identified to reinforce the ways teaching strategies are utilized specific to the skills. Areas of lower students' achievement can be deemed as in need of improvement with increased instructional time or modifying instruction (MDE, 2021). At the district level, leaders can monitor data trends which may

identify PD needs (MDE, 2021).

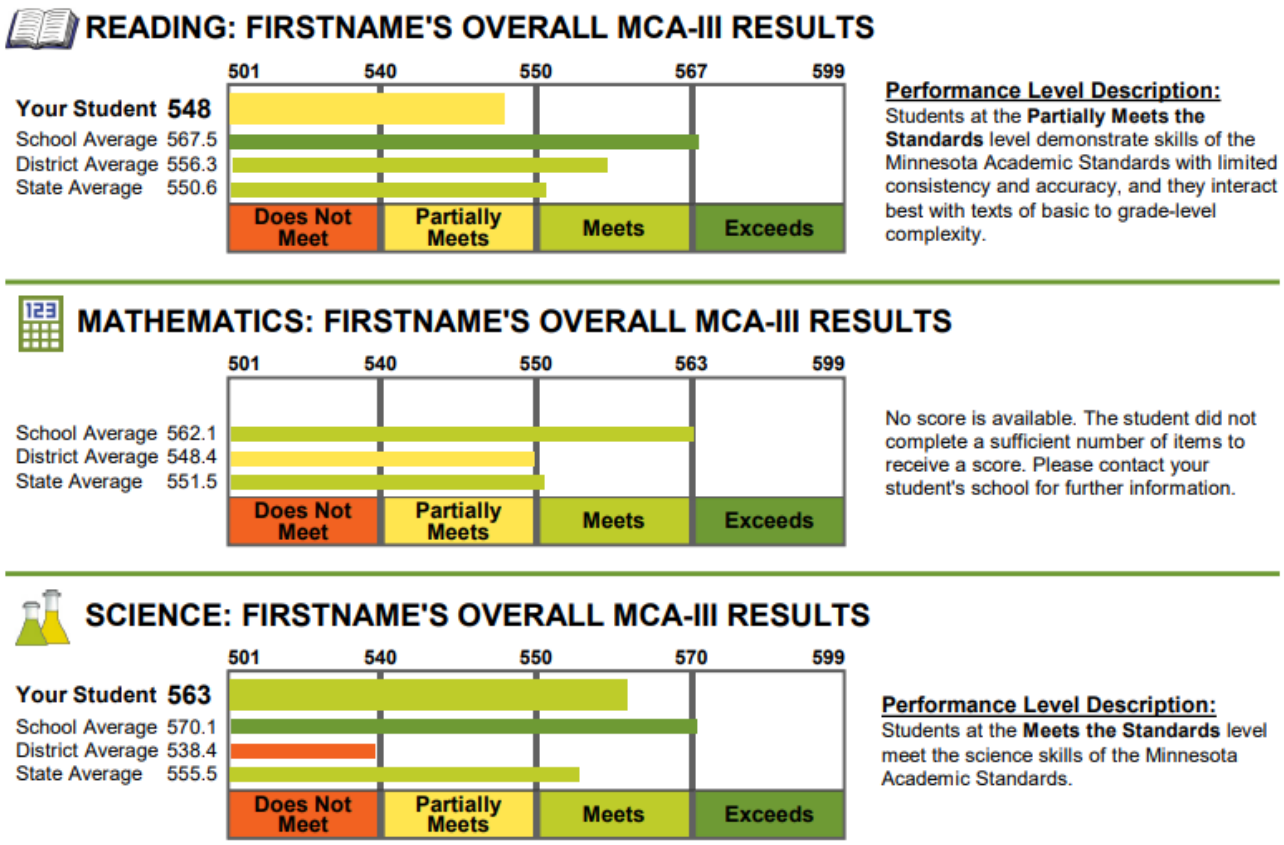
Students with an Individualized Education Plan (IEP) or 504 plan may be eligible for MCA administration accommodations. A small percentage of students with significant cognitive disabilities are eligible to take the Minnesota Test of Academic Skills (MTAS) instead of the MCAs. The MTAS is an alternate assessment based on alternate achievement standards in mathematics, reading, and science. Both the MCA and MTAS must be taken in person, even if students are enrolled in an online program. For students temporarily learning online, they will take statewide assessments when they return to school (MDE, 2020).

Students do not pass or fail MCA mathematics, reading, or science. The tests measure students' performance relative to the Minnesota Academic Standards, and each student receives a score that falls in one of four achievement levels—Does Not Meet the Standards, Partially Meets the Standards, Meets the Standards, and Exceeds the Standards. Students that achieve the "Meets" and "Exceeds" levels are considered proficient with regards to the knowledge, skills, and abilities described in the academic standards (MDE, 2021). In Minnesota, students who opt out of the Minnesota Comprehensive Assessments (MCAs) are recorded as not proficient at the school and district level (Rosell, 2021).

Individual Student Results Report. An MCA Individual Student Report (ISR) is generated for every student who participated in a mathematics, reading, and science assessments (MCA Individual Student Report Quick Guide, 2021).

Figure 5

Individual Student Reports Examples



Source: Reprinted from Spring 2022 MCA Sample Individual Student Reports

Parents or guardians receive results to compare their students' overall score per subject, the school's average, the district average, and the state average. The report describes an individual student's performance in terms of overall results, performance level, and the Minnesota Academic Standards for each subject. Nine components are reported consisting of:

1.Students' demographic information - Students' name, grade, school, district, date, and assessment

2. Performance Meter - For each reported subject, the Performance Meter shows the student's overall score as an achievement level

3. Overall Results - For each reported subject, performance is indicated by a scale score, performance level, and performance level description. A scale score represents one of four performance levels for each subject: Exceeds the Standards, Meets the Standards, Partially Meets the Standards, or Does Not Meet the Standards

4. Performance Details - Performance details in each subject are compared to state expectations

5. Learning Locator Access Code - The code provides access to a website featuring customized learning resources

6. Lexile or Quantile Measure - reading and mathematics MCAs have a predicted Lexile (reading) or Quantile (mathematics) measure of the student's ability

7. Resources for Learning - Additional information on Learning Locator codes, the Lexile framework, and the Quantile framework

8. Career and College Readiness (CCR) - A CCR Goal Score is included as an indicator that performance is on track to demonstrate career and college readiness on a college entrance exam at the end of grade 11

9. Performance History:

- Shows results for each year the MCA was given in the subjects applicable to that grade
- Students whose scores fall into the Meets the Standards or Exceeds the Standards performance levels are considered "proficient" for accountability purposes
- The achievement level reported for a grade relates to the Minnesota Academic Standards tested in that specific grade.

A MCA parent fact sheet is available to answer additional questions families may have regarding the administration of the assessments. The fact sheet explains what the MCAs are, why the tests are given, who must take the test, how they are administered, how students can prepare for the tests, and skills assessed (MDE, 2020).

Implementation Theory

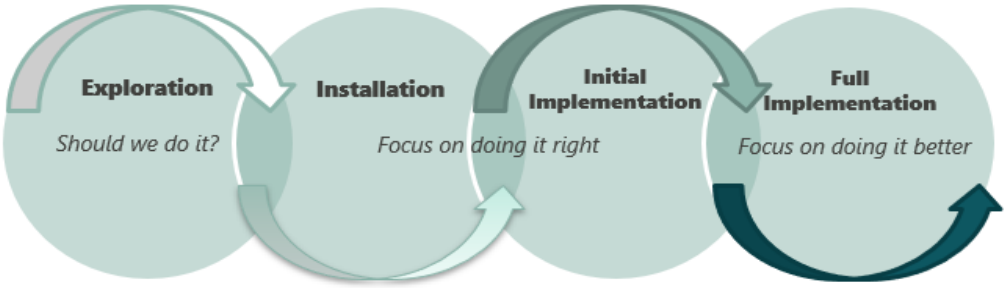
A theoretical framework provides "a lens through which a research problem is viewed" (Roberts, 2010, p. 129). Implementation science is the scientific study of methods and strategies that facilitate the uptake of evidence-based practice and research into regular use by practitioners and policymakers (University of Washington, 2022). Implementation is not an event but a process involving multiple decisions and actions (National Implementation Research Network, 2020). The implementation science framework provides school district teams with guidelines for integrating tiered implementation models and a problem-solving system that can be used to expand RTI as other evidence-based practices (Fixsen, Blase, Metz, & Van Dyke, 2013). Implementation phases do not always end as the next begins; phases often overlap, and activities can cross phases (The National Implementation Research Network, 2020). Districts employing RTI may experience various phases of implementation while applying academic interventions depending upon how the different tiered models were introduced. There may be instances in which an organization is in various phases at the same time for different programs or practices.

Successful implementation of the RTI framework requires a multi-year commitment from district and school leadership because effective implementation practices involve the careful planning of initiatives, policies, programs, or practices to ensure the highest quality results (Wilder Research, 2013). Effective implementation of the RTI framework requires that teachers use data obtained through systematic problem-solving processes to make decisions about

students' movement between tiers and to make improvements to instruction and delivery. The impact of RTI is dependent upon the ability of educators to implement the practices correctly and consistently (Goodman, Ward, & McIntosh, 2019). Proper use of RTI is an effective tool to raise both individual and overall reading scores on standardized tests (Maskill, 2012).

Figure 6

Implementation Phases



Source: Reprinted from the Washington Office of Superintendent of Public Instruction, (n.d.).

Four phases of implementation are commonly experienced by implementers of RTI (Fixsen et. al., 2013). The exploration phase occurs when a district team has not yet started training and technical assistance and is still assessing the readiness of schools to move forward with an implementation effort. The installation phase involves the active selection of a new program, the development of performance assessment processes, the initial training efforts, and the securing of resources. The initial implementation phase reflects the early steps taken to introduce a new effort and often involves a learning curve as districts adjust and integrate new changes into daily work. Full implementation is achieved when at least 50% or more of intended practitioners are using the program or practice with fidelity and outcomes are being achieved (Fixsen et al., 2013; National Implementation Research Network, 2020).

The first phase of implementation is exploration. The purpose of exploration is to identify the need for change, discover possible educational innovations that may provide solutions, and

learn what it takes to implement the innovation effectively. The next phase is installation. A variety of tasks must be accomplished prior to the installation of a new educational practice. Structural supports include ensuring the availability of funding, acquiring materials, appropriate and ongoing PD strategies, and policy or procedure development.

After the installation phase, the initial implementation occurs. Initial implementation is about trying out new skills and practices and getting better at implementation. It includes checking in on how implementation is going and developing improvement strategies based on the data. Full implementation of an evidence-based educational program can occur once the new learning becomes integrated into classroom, school, district and state practices, policies and procedures. Full implementation requires ongoing support and vigilance related to fidelity and outcomes (MDE, n.d.; National Implementation Network, 2020.)

Sustained implementation of RTI is dependent on building the capacity of the organization to lead and support the essential RTI components, which is done by leadership teams who share the responsibility to support all adults in the school building by planning, coordinating, monitoring, and adjusting RTI implementation activities (National Implementation Research Network, 2020; Washington Office of Superintendent of Public Instruction, n.d.) Goodman, Ward, and McIntosh (2019) reported state agencies provide funding support for RTI initiatives with the purpose of producing meaningful outcomes. To increase RTI tier outcomes, policies should be set, and the implementation must be designed to foster success among all students involved in the intervention (King & Coughlin, 2016).

Summary

Across the nation, there have been longitudinal declines in eighth grade mathematics and reading academic proficiency scores (National Center for Educational Statistics, 2019).

Following this concerning trend, Minnesota schools have also shown a steady decrease in eighth grade students' Minnesota Comprehensive Achievement scores between 2017 and 2021 (Minnesota Department of Education, 2021). To support students who are not making adequate progress, many Minnesota schools have implemented the RTI framework (Minnesota Department of Education, 2021).

RTI is a tiered framework applied to all students within a school by providing the appropriate intensity of academic support necessary for educational progress (Batsche et al., 2005). By applying RTI, schools can identify students at risk for poor learning outcomes, monitor students' progress, provide evidence-based interventions, and adjust the intensity and nature of those interventions depending on a student's responsiveness (The National Center on Response to Intervention, 2011). Proper use of RTI is an effective tool to raise both individual and overall reading scores on standardized tests (Maskill, 2012).

RTI implementation at the elementary level has been well researched, but there is a scarcity of research at the middle school level. (IRIS Center, 2022; Thomas et al. 2020). Available data documented barriers to middle school implementation included increased complexity of secondary schools, scheduling difficulties, lack of adequate screening and progress monitoring tools, teacher fidelity, pervasive reading difficulties, and students' engagement (Buffum & Mattos, 2015; Burns & Gibbons, 2012; Ehren, n.d.; IRIS Center, 2022; Prewett et al., 2012). Because there are unique challenges in implementing the phases of RTI at the secondary level, additional research is needed to determine if the investment improves educators' skills relative to better serve students (Kratochwill, Volpiansky, Clements, & Ball, 2007).

Chapter 3: Methodology

The purpose of this research study was to determine if there is a relationship between the implementation phase of Response to Intervention (RTI), an academic multi-tiered system of support, and eighth grade students' mathematics, reading, and science MCA proficiency achievement. The outcomes of this study may offer Minnesota middle school leaders data to inform decisions on programming investment. School leaders are required to make difficult decisions regarding monetary and human capital costs to support school programs for students' success and achievement. With insufficient resources and high demand for programming needs for students' academic success, leaders will benefit from additional research guiding the best course of action.

Research Design

The study employed a quantitative research design. A three question survey was emailed to 260 Minnesota middle school principals asking them to identify their building's implementation phase of RTI. Criteria for participation required that the building include eighth graders that participated in the MCAs during the 2022 school year.

Students' achievement data were collected from the MDE's website, specifically, the All-Academic Accountability Tests Report for 2022 eighth grade mathematics, reading, and science MCAs. Proficiency ratings for all Minnesota schools are located within that report, which allowed for effective and efficient data analysis. This analysis identified if there were correlations between the phase of implementation of RTI and eighth grade proficiency achievement on the mathematics, reading, and science MCAs. Data analysis was completed using Pearson correlations.

Research Questions

1. Is there a relationship between the implementation phase of RTI and eighth grade students' mathematics Minnesota Comprehensive Assessment (MCA) proficiency achievement in middle schools?
2. Is there a relationship between the implementation phase of RTI and eighth grade students' reading Minnesota Comprehensive Assessment (MCA) proficiency achievement in middle schools?
3. Is there a relationship between the implementation phase of RTI and eighth grade students' science Minnesota Comprehensive Assessment (MCA) proficiency achievement in middle schools?

Hypotheses

Null Hypothesis One: There is no significant linear relationship between the implementation of RTI and eighth grade students' mathematics MCA proficiency achievement in Minnesota middle schools.

Alternative Hypothesis One: There is a significant linear relationship between the implementation of RTI and eighth grade students' mathematics MCA proficiency achievement in Minnesota middle schools.

Null Hypothesis Two: There is no significant linear relationship between the implementation of RTI and eighth grade students' reading MCA proficiency achievement in Minnesota middle schools.

Alternative Hypothesis Two: There is a significant linear relationship between the implementation of RTI and eighth grade students' reading MCA proficiency achievement in Minnesota middle schools.

Null Hypothesis Three: There is no significant linear relationship between the implementation of RTI and eighth grade students' science MCA proficiency achievement in Minnesota middle schools.

Alternate Hypothesis Three: There is a significant linear relationship between the implementation of RTI and eighth grade students' science MCA proficiency achievement in Minnesota middle schools.

Variables

The independent variable in the study was the implementation phase of RTI in Minnesota middle schools. The dependent variable was students' academic achievement, which was measured by the percent proficient on the eighth grade mathematics MCA, eighth grade reading MCA, and eighth grade science MCA.

Sampling Design

The entire population that the study uses as a reference consists of public middle school principals serving students in Minnesota. To get a representative sample of the entire population, a survey was distributed using the email addresses publicly available on the MDE website. According to the information provided, there are 265 middle school and junior high school principals serving in Minnesota's public schools. A survey was sent to each principal. Only principals leading schools serving eighth grade students completed the RTI survey.

Instrument and Measures

Two instruments were utilized in this study. The first was a three question Qualtrics survey asking respondents to give informed consent, asking if the school serves eighth grade students, and the school's implementation phase of RTI. The implementation phase options (DuFour, DuFour, Eaker, & Many, 2020) include:

- Pre-Initiation Phase - The school has not yet begun to address RTI.
- Initiation Phase - The school has tried to address RTI, but the effort has not yet begun to impact a critical mass of staff members. (Examples: Initial conversations in building leadership team meetings and/or a couple of teachers have attended an RTI institute for training.)
- Implementation Phase - A critical mass of staff members are participating in implementing RTI, but many approach the task with a sense of compliance rather than commitment. There is some uncertainty regarding what needs to be done and why it should be done. (Examples: The social studies department is not engaging in RTI but is asking questions, and/or several teachers in the building have gone to an RTI training and are implementing practices.)
- Developing Phase - Structures are being altered to support the changes, and resources are being devoted to moving them forward. Members are becoming more receptive to RTI because they have experienced some of its benefits. The focus has shifted from "Why are we doing this?" to "How can we do this more effectively?" (Examples: All staff members have attended RTI training and are implementing practices and/or staff members are asking for regularly scheduled RTI focused meetings.)
- Sustaining Phase - RTI is deeply embedded in the culture of the school. It is a driving force in the daily work of staff. It is deeply internalized, and staff would resist attempts to abandon RTI.

The second instrument for this study was the MCAs. Minnesota middle school students take the MCA annually in the spring, except for 2020 due to COVID-19. The MCAs are the standardized test the State of Minnesota utilizes to follow the federal Every Students Succeeds

Act (2015). The MCAs have been evaluated for validity and reliability. These assessments help districts measure students' progress toward Minnesota's academic standards and meet state legislative requirements (MDE, 2021).

In the mathematics, reading, and science assessments students can earn the following evaluation:

- Does Not Meet the Achievement Standards
- Partially Meets the Achievement Standards
- Meets the Achievement Standards
- Exceeds the Achievement Standards

Students are proficient when they receive a Meets the Achievement Standards or Exceeds the Achievement Standards benchmark (MDE, 2021). The proficiency label was used in this study.

Data Collection Procedures

Survey data. A letter of introduction was sent via email to all active Minnesota middle school principals (Appendix A). Within that letter was an invitation to participate in this study. Principals were provided with two weeks to complete the three item survey with a reminder sent to the non-respondents at the one-week mark as seen in Appendix B. Informed consent (Appendix C) was included with both emails.

Secondary data. For each principal who responded to the survey, students' achievement data were collected from the MDE's website, specifically, the All-Academic Accountability Tests Report. Principal A at school A had their data matched with their school A's MCA results. Data were disaggregated by year (2022), subject (mathematics, reading, and science), and eighth grade level for the schools responding to the RTI implementation survey. Students were marked as proficient if they earned a score of Meets the Achievement Standards or Exceeds the

Achievement Standards. The Minnesota Department of Education has established strict administration protocols for districts, buildings, and teachers.

Data Analysis

Statistical Package for the Social Sciences (SPSS) software was utilized for data analysis. Data analysis was completed using the Pearson correlation (Pearson *r*). The Pearson *r* is a measure of the linear correlation between the dependent variable and independent variable. The Pearson *r* determines a line of best fit between two variables, and the Pearson *r* coefficient specifies how far away the data points are away from the line of best fit. These coefficients could vary between -1 and +1. A value of 0 indicated no linear relationship while a +1 indicated a positive relationship (implementation phase and high levels of students' proficiency achievement), and a -1 indicated a negative relationship (implementation phase and low levels of students' proficiency achievement). A *p*-value of less than .05 ($p < .05$) determined statistical significance (Creswell, 2014; Patten, 2014).

The unit of analysis within this study was Minnesota middle schools. The independent variable was the implementation phase of RTI. The three dependent variables were the proficiency achievement of eighth grade students on the MCAs in mathematics, reading, and science. The three separate correlations identified if there are relationships between the phase of implementation of RTI and eighth grade proficiency achievement on the mathematics, reading, and science MCAs. The analysis outcomes of this study assisted in testing the null hypotheses.

Limitations of Methodology

This research design had inherent limitations. Using an inferential statistical method relies heavily on the assumption that there is causal inference to be made. It can be difficult to come to a deeper understanding of processes and contextual differences through questionnaires

(Muijs, 2011). Additionally, validity was dependent on participants' honesty and accuracy in reporting. There were no benefits to reporting overly positive implementation, so it was anticipated that principals would respond honestly (Adams, 2022).

A second limitation of this study was the variation in the interpretation by the middle school principals of the phase of implementation of RTI. Variations in definitions and interpretations may have been more pronounced due to self-reporting. Sample size may have been a limitation in the study. The variation within the sample may not have included outlier schools performing well above or below average performance, and findings were cautiously applied to outlier schools. As the research represents Minnesota school districts, it may have little to no application to schools across the country. In addition, the focus on students' achievement in one grade level limited the transferability to other school levels.

A third limitation was that the study does not account for other school context variables that are associated with students' MCA results (e.g., socioeconomic status, rurality, demographic composition). Additional variables not included in the study are the education levels of teachers, years of teaching experience, or student-teacher ratios.

An additional limitation of this study was the Minnesota Comprehensive Assessment as the only instrument measuring students' academic achievement. The results of standardized tests are difficult to draw conclusions from as there are a variety of factors that may influence students' performance. Lack of sleep, change in personal life, hunger, and other life events can have an impact on the outcome of an assessment (Adams, 2022; Prewett et al., 2012).

A limitation of this study was the impact of COVID-19. Abrupt shifts to remote learning over the past two school years have affected students, negatively impacting their social, emotional, and academic achievement (U.S. Department of Education, n.d.). Additionally, in

2020, MCAs were canceled due to the pandemic leaving a gap year in data collection.

Ethical Considerations

This study considered the three core principles identified in the Belmont Report (1979) on ethical issues in the research process. The study showed respect for persons by protecting the autonomy of participants. They were treated with courtesy and respect throughout the survey process. All responses were kept confidential. The purpose of the study was transparent, and results were available to participants.

The Belmont Report emphasized the importance of obtaining consent from participants. Informed consent was included with the invitations to participate. The consent form included in Appendix C contains clear language to the reader and prospective participant that the survey is voluntary. Additionally, the first question of the survey was an informed consent choice. Public data were taken from the Minnesota Report Card on the MDE website.

This study did not subject participants to harm or obvious risk factors. The beneficence philosophy of do no harm was the guiding principle throughout the study. There were no exploitative components to this study and no vulnerable adults or children were used in this research. Justice was applied with fair procedures that were well considered. All participants received the same distribution of benefits administered fairly and equally. The benefits included shared study results emailed to each participating principal. The ethical consideration of research was of paramount importance. The researcher successfully completed the Collaborative Institutional Training Initiative (CITI) program in social science research ethics. Additionally, the Institutional Review Board (IRB) approval was obtained through Bethel University prior to this study's completion. The IRB at Bethel University seeks to ensure the respectful and ethical treatment of human participants in research conducted by Bethel students and faculty or by

researchers whose participants will include members of the Bethel community (Bethel University, 2022).

The researcher used a skilled quantitative methodologist for analysis so as to not influence the findings (Creswell, 2009). When writing the findings, intentional effort was focused on not concealing, fabricating, or concocting conclusions to meet the researcher's or audience's needs (Creswell, 2009).

Chapter 4: Results

Introduction

The purpose of this research study was to determine if there is a relationship between the implementation phase of Response to Intervention (RTI) and eighth grade students' mathematics, reading, and science Minnesota Comprehensive Assessments (MCA) proficiency achievement. Data for this study were collected using a RTI phase survey sent via Qualtrics to Minnesota middle school principals and MCAs. The researcher collaborated with personnel to analyze data collected using the Statistical Package of the Social Sciences (SPSS). The Pearson correlation (Pearson *r*) was used to measure the relationship between variables. This chapter contains a discussion of the analysis results, including the assumptions and correlations.

Discussion of Sample

The researcher obtained the contact information for this study's sample from the Minnesota Department of Education (MDE). A three-question survey was emailed to 260 Minnesota middle school principals asking them to identify their building's implementation phase of RTI. Criteria for participation required that the building include eighth graders that participated in the MCAs during the 2022 school year. There were 265 members middle school principals. Five email accounts were inactive, so 260 principals were sent an invitation to participate via email (Appendix A). The first email sent by the researcher generated 27 responses, 24 agreed to participate and three declined. The researcher sent a second email containing an offer to participate (Appendix B) to the principals that had not yet responded. After the second email invitation, an additional 16 members agreed to participate. Of the 40 principals affirming participation, two did not complete the survey resulting in a sample size of 38 participants. Table 4 and Table 5 below provide detailed responses of reported data.

Table 4

List of Schools, RTI implementation phase, and Eighth Grade Percent Proficiency

School Identifier	RTI Implementation Phase	Math Proficient	Reading Proficient	Science Proficient	Free and Reduced Lunch	BIPOC
1	2	24.49%	36.05%	21.92%	32.43%	8.11%
2	4	26.77%	50.25%	16.16%	*	14.49%
3	3	14.89%	23.40%	2.17%	81.63%	100.00%
4	4	43.49%	47.51%	39.41%	17.43%	13.15%
5	2	18.22%	25.45%	14.01%	63.11%	51.64%
6	1	33.90%	40.11%	20.35%	12.37%	4.30%
7	5	49.21%	55.56%	26.61%	23.48%	24.24%
8	2	37.50%	40.91%	22.99%	32.61%	44.57%
9	4	21.43%	57.14%	38.46%	11.76%	0.00%
10	4	52.56%	59.56%	37.25%	8.15%	30.43%
11	2	25.36%	47.31%	25.18%	36.62%	45.23%
12	4	59.06%	64.33%	45.03%	20.00%	5.71%
13	3	17.86%	46.43%	30.91%	24.14%	8.62%
14	2	35.26%	43.96%	25.95%	35.78%	39.21%
15	3	44.39%	41.50%	31.28%	16.35%	11.54%
16	2	55.04%	55.86%	24.80%	21.43%	25.57%
17	2	62.46%	63.05%	39.22%	6.35%	10.48%
18	2	50.00%	47.06%	34.91%	*	23.56%
19	2	27.27%	31.69%	16.39%	*	49.79%
20	4	22.11%	40.00%	25.00%	24.24%	7.07%
21	3	47.06%	55.56%	40.40%	32.28%	17.08%
22	2	74.60%	44.44%	42.86%	35.00%	3.34%
23	3	17.50%	34.18%	10.00%	20.99%	28.39%
24	4	56.10%	53.66%	28.93%	18.60%	9.31%
25	1	52.38%	29.55%	7.50%	0.00%	11.37%
26	4	38.36%	39.19%	23.29%	25.68%	13.51%
27	4	42.14%	52.15%	25.67%	20.52%	26.38%
28	1	42.48%	43.37%	21.52%	*	36.34%
29	4	52.77%	47.97%	33.70%	21.15%	24.01%
30	3	49.17%	71.90%	44.63%	11.02%	5.51%
31	4	70.08%	71.54%	54.99%	3.73%	11.94%
32	3	40.00%	30.00%	20.00%	63.64%	45.45%
33	3	74.24%	59.09%	40.91%	19.40%	16.42%
34	2	60.47%	51.94%	34.38%	24.64%	6.52%
35	4	51.21%	59.05%	30.29%	22.58%	16.13%
36	2	37.50%	35.42%	18.75%	34.62%	3.84%
37	1	50.19%	55.56%	49.03%	22.81%	45.25%
38	1	38.91%	49.68%	42.36%	15.08%	24.93%

Note. ***** denotes free and reduced lunch percentages were not publicly available

Table 5

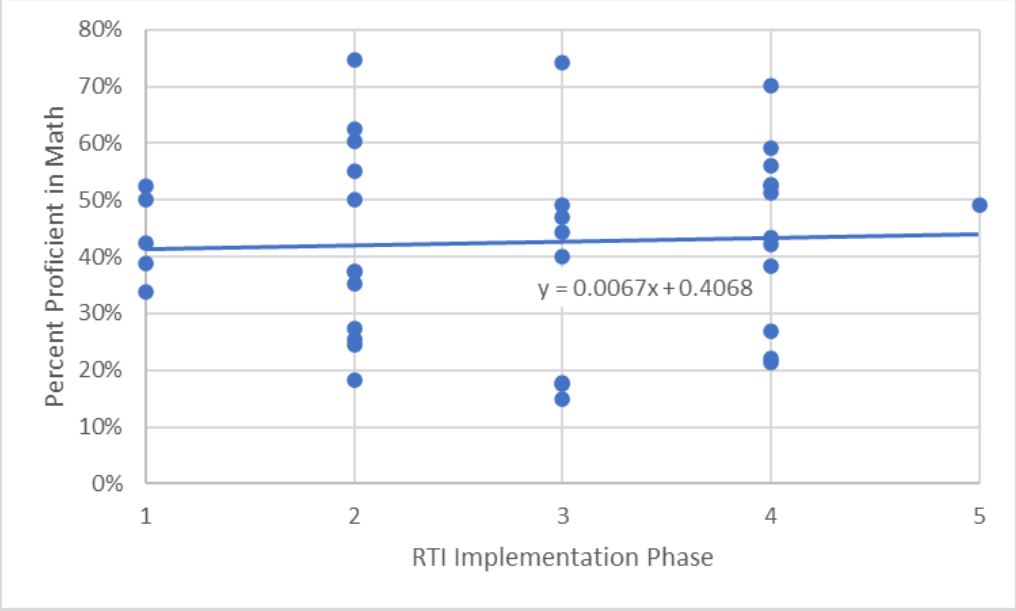
MCA Proficiency for Sample

	Mean	n	SD
Math Proficiency	42.54%	38	16.02%
Reading Proficiency	47.40%	38	11.92%
Science Proficiency	29.14%	38	11.96%

Hypothesis one. The first null hypothesis was that there would be no significant linear relationship between the implementation of RTI and eighth grade students' mathematics MCA proficiency achievement in Minnesota middle schools. The alternative hypothesis was that there is a significant linear relationship between those variables. The results suggest there is not a significant relationship between the implementation phase of RTI and math proficiency (r = .047, n = 38, p = .781; Figure 7). Therefore, the null hypothesis was not rejected. There was no significant linear relationship between the implementation phase of RTI and percent of students meeting math achievement proficiency.

Figure 7

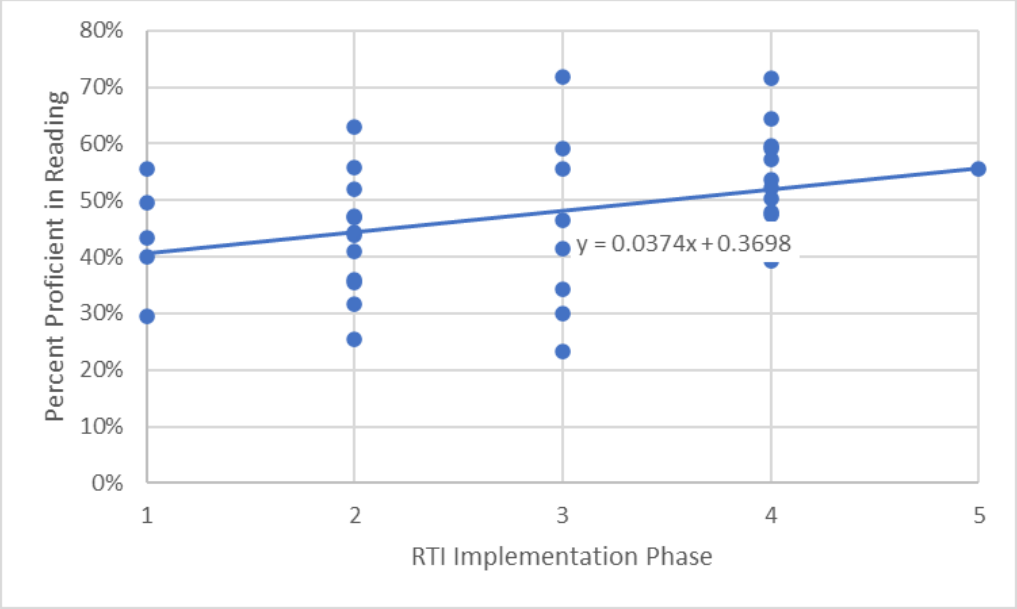
Scatterplot of the Relationship Between RTI Implementation Phase and Math Proficiency



Hypothesis two. Null hypothesis two was that there is no significant linear relationship between the implementation of RTI and eighth grade students' reading MCA proficiency achievement in Minnesota middle schools. The alternative hypothesis was that there is a significant linear relationship between the variables. The results suggest there is a significant relationship between implementation and reading proficiency (r = .351, n = 38, p = .031; Figure 8). The relationship between implementation and reading proficiency was positive and small. Therefore, the null hypothesis was rejected. There was a significant linear relationship between the RTI implementation phase and reading achievement proficiency scores.

Figure 8

Scatterplot of the Relationship Between RTI Implementation Phase and Reading Proficiency



Hypothesis three. Null hypothesis three was that there is no significant linear relationship between the implementation of RTI and eighth grade students' science MCA proficiency achievement in Minnesota middle schools. The alternative hypothesis was there is a significant linear relationship between those variables. The results suggest there is no significant correlation between implementation and the percentage of students who were

proficient in science (r = .165, n = 38, p = .322; Figure 9). Therefore, the null hypothesis was not rejected. There was no significant, linear relationship between the implementation phase of RTI And science achievement proficiency scores.

Figure 9

Scatterplot of the Relationship Between RTI Implementation Phase and Science Proficiency

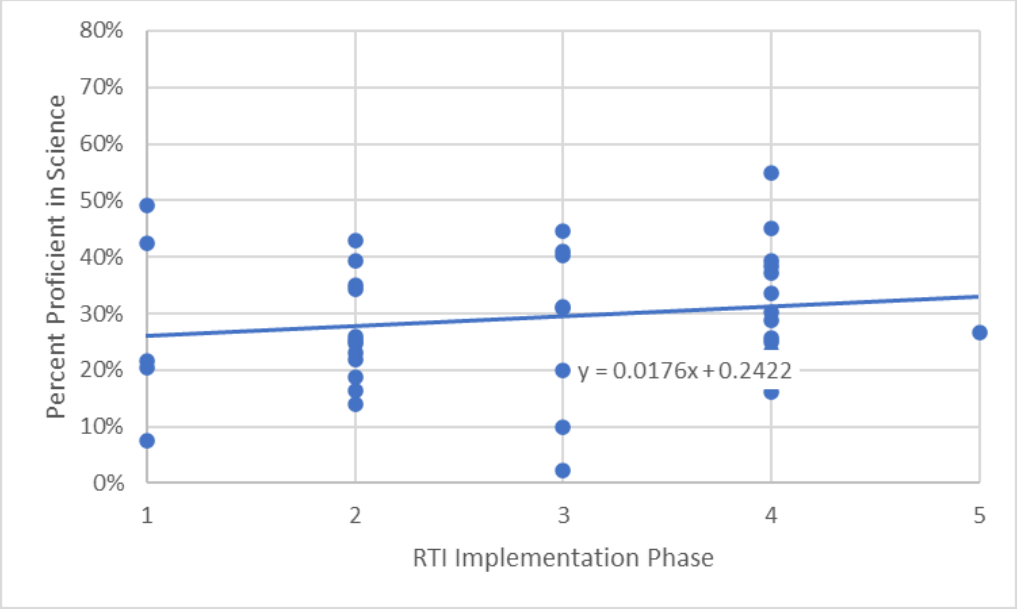


Table 6

Correlation Matrix Between the Implementation Phase of RTI and MCA Proficiency

		RTI Implementation Phase	Math % Proficient	Reading % Proficient	Science % Proficient
RTI Implementation Phase	Pearson *r*	1	.047	.351*	.165
	p		.781	.031	.322
	n	38	38	38	38
Math % Proficient	Pearson *r*	.047	1	.612**	.637**
	p	.781		<.001	<.001
	n	38	40	40	40
Reading % Proficient	Pearson *r*	.351*	.612**	1	.823**
	p	.031	<.001		<.001
	n	38	40	40	40
Science % Proficient	Pearson *r*	.165	.637**	.823**	1
	p	.322	<.001	<.001	
	n	38	40	40	40

* Correlation is significant at the 0.05 level (2-tailed)
** Correlation is significant at the 0.01 level (2-tailed)

Summary of Findings

The results suggest there is a significant linear relationship between RTI implementation and eighth grade students' reading proficiency ($r = .351$, $n = 38$, $p = .031$), which was positive and small. There is no significant correlation between RTI implementation and the percentage of eighth grade students who were proficient in math ($r = .047$, $n = 38$, $p = .781$). Finally, there is no significant correlation between RTI implementation and the percentage of eighth grade students who were proficient in science ($r = .165$, $n = 38$, $p = .322$).

Table 7

Overview of Results

Hypothesis	*r* coefficient	*p*	Finding
Null Hypothesis One: there is no significant relationship between the implementation of RTI and eighth grade students' mathematics MCA proficiency achievement in Minnesota middle schools.	.047	.781	The null hypothesis was not rejected.
Null Hypothesis Two: there is no significant Relationship between the implementation of RTI and eighth grade students' reading MCA proficiency achievement in Minnesota middle schools.	.351	.031	The null hypothesis was rejected.
Null Hypothesis Three: there is no significant relationship between the implementation of RTI and eighth grade students' science MCA proficiency achievement in Minnesota middle schools.	.165	.322	The null hypothesis was not rejected.

Chapter 5: Discussion, Implications, and Recommendations

Overview of the Study

The purpose of this research study was to determine if there is a relationship between the implementation phase of Response to Intervention (RTI), an academic multi-tiered system of support, and eighth grade students' mathematics, reading, and science MCA proficiency achievement. The data for this study was collected using an implementation phase survey sent via Qualtrics and Minnesota Comprehensive Assessment proficiency data.

The researcher analyzed data collected using the Statistical Package of the Social Sciences (SPSS). The Pearson Product-Moment Correlation (Pearson *r*) was used to measure a relationship. Chapter Five reviews this study and addresses future implications.

Research Questions

Three questions were researched within this study:

1. Is there a relationship between the implementation phase of RTI and eighth grade students' MCA mathematics proficiency achievement in middle schools?
2. Is there a relationship between the implementation phase of RTI and eighth grade students' MCA reading proficiency achievement in middle schools?
3. Is there a relationship between the implementation phase of RTI and eighth grade students' MCA science proficiency achievement in middle schools?

Conclusions

Data analysis found a significant linear relationship between the implementation phase of RTI and eighth grade students' achievement MCA reading proficiency achievement in middle schools. The relationship was positive and small. Analysis found no significant relationship between the implementation phase of RTI and eighth grade MCA proficiency in math or science.

After the Pearson *r* was analyzed, the *p*-value was found to be .031 in reading proficiency, .781 in math proficiency, and .322 in science proficiency. Thus, null hypotheses one and three were not rejected but null hypothesis two was rejected. Due to previous studies reporting that effective implementation of tiered intervention led to an increase in students' academic skills (Al Otaiba et al., 2014; Maskill, 2012; Morrison et al., 2020; Vaughn & Fletcher, 2012), it seemed plausible that there would be a positive correlation between the implementation phase of RTI and students' achievement. Based on the results of this study, it was concluded that in Minnesota middle schools, the phase of RTI had a positive correlation with increased achievement in reading but was not correlated to increased levels of students' achievement in math or science.

The implementation of tiered intervention has shown to be an effective approach to improved literacy skills (Lovett et al., 2017). Ensuring that all children, regardless of their early experiences, can read by the third grade positions students to comprehend content in later elementary grades and establishes a strong foundation for secondary school learning (Vaughn et al., 2010). Improved middle school students' reading achievement scores at a level may narrow the reading achievement gap (Brasseur-Hock, Miller, Washburn, Christ, & Hock, 2021). Given research and resources available to practitioners, it may be that RTI in reading has been most fully implemented of the three content areas included in the study. Examination of additional factors were considered in this study and are detailed in the next section regarding Implications for practice and recommended future research.

Implications for Practice

RTI is a multi-tier approach to the early identification and support of students with learning needs. It is a tiered framework Applied to all students within a school by providing the appropriate intensity of academic support necessary for educational progress (Batsche et al.,

2005). While the RTI Model has been widely used by elementary schools across the country as a proactive way to respond to student's with academic concerns (Balu et al., 2015), districts across the country are beginning to expand RTI implementation to secondary schools (Burns & Gibbons, 2012).

Recognizing the complexities of embedding RTI practices at a secondary level is important for future practice implementation. Applying appropriate staff development, allocation of resources, leadership, collaboration, and accountability are critical components to successful implementation and implications for practice at the secondary level. A well implemented RTI framework may provide a systematic way for secondary schools to address the needs of these struggling students (Ehren, n.d.). Although there is a paucity of research on the effectiveness of RTI at the middle school level, increased professional development with a pointed focus on embedding RTI may be an integral part of improved practice implications.

Recommendations for Future Research

The findings in this study suggest a need for further studies to be conducted aimed to better understand effective implementation of RTI at a secondary level. When distributing an email survey to a large population, it is anticipated that an average of 6% will respond (Qualtrics, n.d.). A good survey response rate ranges between 5% and 30% (Chung, 2022). This study's survey solicited a 15% response rate, which was important for obtaining accurate, statistically significant results. Yet, the small sample size in this study may not have produced findings representative of Minnesota middle schools at large. It may have included a disproportionate number of biased, uninformed, or high-opinion participants. In the future, incentives for participation may increase the sample size. Given the sample size of 38, there was a copious amount of data left uncollected.

This study targeted Minnesota middle schools principal responses. A larger sample and broader perspectives may be gained by surveying all Minnesota eighth grade teachers. Teachers may provide increased insight regarding the phase of implementation as they are providing daily instruction and administering formative assessments on a regular basis. A qualitative study interviewing teachers may provide information not discovered through the implementation phase survey utilized in this study. Interviewing teachers could elicit a rich, deep understanding of the influence implementation had on pedagogy and students' learning that could not be gathered in a quantitative approach.

This study focused on the implementation phase of RTI with no pre-implementation data compared to post-implementation. A future study could be conducted longitudinally, beginning with proficiency data pre-implementation followed by post-implementation proficiency data. Additionally, further research might emphasize crucial differences between the phase and processes of elementary and secondary implementation (Fuchs et al., 2010).

Lastly, while this study focused on implementation of RTI in the general education population, many school districts throughout the state of Minnesota use the RTI data collected in tiers 1, 2, and 3 to guide eligibility decisions for special education programming (RTI Action Network, 2020). Future research focused on RTI implementation specific to special education programming may provide an added level of understanding in the relationship between RTI and students' academic success.

Concluding Comments

Low literacy skills among adolescents remains a concern. In 2022, the average NAEP reading score at both fourth and eighth grade decreased by three points compared to 2019. In fourth grade, the average reading score was lower than all previous assessments since 2005. In

eighth grade, the average reading score was lower compared to all previous assessment years since 1998 (U.S. Department of Education, NAEP, 2022).

The consequences of low reading proficiency levels can be harmful in many ways for both the individuals concerned and their communities in terms of health, political, social and economic outcomes (Durda, Artelt, Lechner, Rammstedt, & Wicht, 2020). If we do not get significantly more children on track as proficient readers, the U.S. will lose a growing and essential proportion of its human capital to poverty, and the price will be paid not only by individual children and families, but by the entire country (Fiester, 2009).

A main benefit of RTI is that it provides extra help before students fall significantly behind their classmates (Morin, 2021). Academic skill acquisition screening makes it easier to identify early on which kids are struggling in the general education classroom. Successful implementation of the RTI framework requires a multi-year commitment from district and school leadership because effective implementation practices involve the careful planning of initiatives, policies, programs, or practices to ensure the highest quality results (Wilder Research, 2013). Research regarding the implementation of RTI at middle school and its effectiveness in improving Minnesota state assessments has been minimal. Data analysis in this study found there was a significant linear relationship between the RTI implementation phase and eighth grade students' MCA reading achievement proficiency scores. The study's finding of a positive relationship between RTI implementation and reading achievement proficiency was enlightening and holds hope that the RTI framework may be a tool for better preparing young readers for successful academic outcomes.

References

Adams, W. E. (2021). *The relationship between the implementation phase of the DuFour model of professional learning communities and students' achievement* (Unpublished dissertation). Bethel University.

Al Otaiba, S., Connor, C. M., Folsom, J. S., Wanzek, J., Greulich, L., Schatschneider, C., & Wagner, R.K. (2014). To wait in tier 1 or intervene immediately: A randomized experiment examining first grade response to intervention in reading. *Exceptional Children, 81*(1), 11-27. doi.org/10.1177/0014402914532234

Balu, R., Zhu, P., Doolittle, F., Schiller, E., Jenkins, J., & Gersten, R. (2015). *Evaluation of Response to Intervention practices for elementary school reading* (NCEE 2016-4000). Washington, DC: U.S. Department of Education.

Barrio, B. L., Lindo, E. J., Combes, B. H., & Hovey, K. A. (2015). Ten years of Response to Intervention: Implications for general education teacher preparation programs. *Action in Teacher Education, 37*(2), 190-204.

Batsche, G., Elliott, J., Graden, J. L., Grimes, J., Kovaleski, J. F., Prasse, D. (2005). *Response to Intervention policy considerations and implementation*. Reston, VA: National Association of State Directors of Special Education.

Belmont Report. (1979). *The Belmont Report: Ethical principles and guidelines for the protection of human subjects of research*. Retrieved from https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/read-the-belmont-report/index.html

Berkeley, S., Bender, W. N., Peaster, L. G., & Saunders, L. (2009). Implementation of response to intervention: A snapshot of progress. *Journal of Learning Disabilities, 42*(1), 85-95.

Bethel University. (2022). *Institutional Review Board*. Retrieved from https://www.bethel.edu/academics/irb/

Bradley, R., Danielson, L., & Doolittle, J. (2007). Responsiveness to intervention: 1997 to 2007. *Teaching Exceptional Children*, *39*(5), 8-12. doi:10.1177/004005990703900502

Brownell, M. T., Sindelar, P. T., Kiely, M. T., & Danielson, L. C. (2010). Special education teacher quality and preparation: Exposing foundations, constructing a new model. *Exceptional Children*, *76*(3), 357-377.

Brasseur-Hock, I. F., Miller, W., Washburn, J., Christ, A. J., & Hock, M. F. (2021). The effects of a comprehensive and supplemental middle school reading program. *International Journal for Research in Learning Disabilities,* 25-41. doi:10.28987/5.1.25

Buffum, A., & Mattos, M. (2015). *It's about time: Planning interventions and extensions in secondary school.* Bloomington, IN: Solution Tree Press.

Burns, M. K., & Gibbons, K. (2012). *Response to intervention implementation in elementary and secondary schools: Procedures to assure scientific-based practices* (2nd ed.). New York, NY: Routledge.

Castillo, J. M., March, A. L., Stockslager, K. M., & Hines, C. V. (2016). Measuring educators' perceptions of their skills relative to response to intervention: A psychometric study of a survey tool. Assessment for Effective Intervention*, 41*(2), 94-108.

Center on Multi-Tiered Systems of Supports. (n.d.). *Secondary schools*. Retrieved from https://mtss4success.org/special-topics/secondary-schools

Center on Response to Intervention & National Center on Intensive Intervention. (2014). *Response to Intervention glossary of terms*. Washington, DC. Retrieved from https://www.rti4success.org/sites/default/files/ CenterOnRTIGlossary.pdf

Chung, L. (2022). *What is a good survey response rate for online customer surveys?* Retrieved from https://delighted.com/blog/average-survey-response-rate

Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.

Cowan, C., & Maxwell, G. (2015). Educators' perceptions of response to intervention implementation and impact on student learning. *Journal of Instructional Pedagogies, 16,* 1-11.

Crowe, E. (2010). *Measuring what matters: A stronger accountability model for teacher education*. Retrieved from http://www.americanprogress.org/

Danielson, L., Doolittle, J., & Bradley, R. (2007). Professional development, capacity building, and research needs: Critical issues for Response to Intervention implementation. *School Psychology Review*, *36*(4), 632-637.

DuFour, R., DuFour, R. B., Eaker, R. E., Many, T. W., & Mattos, M. (2020). *Learning by doing: A handbook for professional learning communities at work*. Solution Tree Press.

Durlak, J., & DuPre, E. (2008). Implementation matters: A review of research on the influence of implementation on program outcomes and the factors affecting implementation. *American Journal of Community Psychology*, *41*(3), 327-350.

Durda, T., Artelt, C., Lechner, C. M., Rammstedt, B., & Wicht, A. (2020). Proficiency level descriptors for low reading proficiency: An integrative process model. *International Review of Education, 66*(2-3), 211-233. doi:10.1007/s11159-020-09834-1

Ehren, B. (n.d.). *RTI in Secondary Schools*. Retrieved from http://www.rtinetwork.org/learn/rti-in-secondary-schools

Every Student Succeeds Act (2015). *Public law 114-95.* Retrieved from

https://www.congress.gov/114/plaws/publ95/PLAW-114publ95.pdf

Fiester, L. (2009). *Early warning! Why reading by the end of third grade matters.* Annie E. Casey Foundation. Retrieved from http://files.eric.ed.gov/fulltext/ED509795.pdf

Fixsen, D., Blase, K., Metz, A., & Van Dyke, M. (2013). Statewide implementation of evidence-based programs. *Exceptional Children, 79*(2), 213-230.

Fletcher, J. (2009). Response to intervention: Preventing and remediating academic difficulties. *Child Development Perspectives, 3*(1), 30-37.

Fraser, A. (2018). Implementation of a Response to Intervention in rural early and middle schools. *BU Journal of Graduate Studies in Education, 10(*2), 8-13.

Fuchs, D., & Fuchs, L. (2006). Introduction to Response to Intervention: What, why, and how valid is it? *Reading Research Quarterly, 41*(1), 93-99. doi:10.1598/rrq.41.1.4

Fuchs, L. S., Fuchs, D., & Compton, D. L. (2010). Rethinking Response to Intervention at middle and high school. *School Psychology Review, 39*(1), 22-28. doi:10.1080/02796015.2010.12087787

Fuchs, D., & Fuchs, L. S. (2016). Responsiveness-To-Intervention: A "systems" approach to instructional adaptation. *Theory Into Practice, 55*(3), 225-233. doi:10.1080/00405841.2016.1184536

Fuchs, D., & Fuchs, L. S. (2017). Critique of the national evaluation of Response to Intervention: A case for simpler frameworks. *Exceptional Children, 83*(3), 255-268. doi:10.1177/0014402917693580

Goodman, S., Ward, C., & McIntosh, K. (2019). *Four key actions for State Education Agency teams to support implementation of Multi-Tiered Systems of Support*. University of North Carolina at Chapel Hill. National Implementation Research Network.

Gozali-Lee, E., & Gehrig, S. (2013). *Minnesota Response to Intervention Implementation survey.* Wilder Foundation Research. Retrieved from http://education.state.mn.us/

Hagermoser Sanetti, L. M., & Collier-Meek, M. A. (2019). Increasing implementation science literacy to address the research-to-practice gap in school psychology. *Journal of School Psychology*, *76*, 33-47. https://doi.org/10.1016/j.jsp. 2019.07.008

Harvey, M., Jones, R., & Yssel, N. (2015). Response to Intervention preparation for preservice teachers: What is the status for Midwest institutions of higher education. *Teacher Education and Special Education, 38*(2), 105-120.

Hernandez, D. J. (2011). *Double jeopardy: How third-grade reading skills and poverty influence high school graduation.* Annie E. Casey Foundation. Retrieved from https://eric.ed.gov/?id=ED518818

IRIS Center. (2022). *What is RTI for mathematics?* Vanderbilt Peabody College. Retrieved from https://iris.peabody.vanderbilt.edu/module/rti-Mathematics/cresource/q1/p02/

Irwin, V., Zhang, J., Wang, X., Hein, S., Wang, K., Roberts, A., York, C., Barmer, A., Bullock Mann, F., Dilig, R., and Parker, S. (2021). *Report on the Condition of Education 2021* (NCES 2021-144). U.S. Department of Education.

Jimmerson, S. R., Burns, M. K., & VanDerHayden, A. M. (Eds.). (2016). *Handbook of Response to Intervention: The science and practice of multi-tiered systems of support* (2nd ed.). Springer.

Joyce, B., & Showers, B. (2002). *Student achievement through staff development* (3rd ed.). Alexandria, VA: Association for Supervision and Curriculum Development

King, D., & Coughlin, P. K. (2016). Looking beyond RTI standard treatment approach: It's not too late to embrace the problem-solving approach. *Preventing School Failure:*

Alternative Education for Children and Youth, 60(3), 244-251. https://doi.org/10.1080/1045988X.2015.1110110

King, S. A., Lemons, C. J., & Hill, D. R. (2012). Response to Intervention in secondary schools: Considerations for administrators. *NASSP Bulletin, 96*(1), 5-22. doi:10.1177/0192636511430551

Kratochwill, T. R., Volpiansky, P., Clements, M., & Ball, C. (2007). Professional development in implementing and sustaining multitier prevention models: Implications for Response to Intervention. *School Psychology Review*, *36*(4), 618-631. https://doi.org/10.1080/02796015.2007.12087921

Learning Disabilities Association of America. (n.d.). *Parents response to RTI*. Retrieved from https://ldaamerica.org/info/the-role-of-parentsfamily-in-response-to-intervention/

Lembke, E. S., Hampton, D., & Beyers, S. J. (2012). Response to Intervention in mathematics: Critical elements. *Psychology in the Schools*, *49*(3), 257-272. https://doi.org/10.1002/pits.21596

Lesh, J. J., Roberts, C., Cavitt, D., & Morales, D. L. (2021). Urban secondary school administrators and faculty perceptions of multitiered system of supports/response to intervention. *NASSP Bulletin*, *105*(4), 225-249. https://doi.org/10.1177/01926365211060798

Lovett, M. W., Frijters, J. C., Wolf, M., Steinbach, K. A., Sevcik, R. A., & Morris, R. D. (2017). Early intervention for children at risk for reading disabilities: The impact of grade at intervention and individual differences on intervention outcomes. *Journal of Educational Psychology, 109*(7), 889-914. doi:10.1037/edu0000181

McFarland, J., Hussar, B., Zhang, J., Wang, X., Wang, K., Hein, S., Diliberti, M., Forrest

Cataldi, E., Bullock Mann, F., and Barmer, A. (2019). *The Condition of Education 2019* (NCES 2019-144). U.S. Department of Education.

Maskill, M. (2012). *Study of the effectiveness of Response to Intervention used in elementary school. Master's theses and doctoral dissertations.* Eastern Michigan University.

MCA Sample Individual Student Reports. (2022). Retrieved from http://minnesota.pearsonaccessnext.com/resources/resources-training/reporting/MN%20MCA%202022%20ISRs_Final.pdf

McDaniel, S., Albritton, K., & Roach, A. (2013). Highlighting the need for further Response to Intervention research in general education. *Research in Higher Education Journal, 20,* 1-12.

Mellard, D. F., & Johnson, E. (2008). *RTI: A practitioner's guide to implementing Response to Intervention*. Thousand Oaks, CA. Corwin Press,

Merriam Webster. (2021). *Middle school.* Retrieved from https://www.merriam-webster.com/

Meyer, M. M., & Behar-Horenstein, L. (2015). When leadership matters: Perspectives from a teacher team implementing Response to Intervention. *Education & Treatment of Children, 38*(3), 383-402

Minnesota Department of Education. (n.d.). *Stages of implementation*. St. Paul, MN: Author.

Minnesota Department of Education. (2011). *Response to intervention (RtI) overview.* St. Paul, MN: Author.

Minnesota Department of Education. (2014). *2014 Implementation Portrait of Multi-Tiered Systems of Support and English Language Standards.* St. Paul, MN: Author.

Minnesota Department of Education. (2015). *2015 Minnesota English Language Arts Standards and Multi-Tiered System of Supports Implementation Survey.* St. Paul, MN: Author.

Minnesota Department of Education. (2018). *Statewide testing.* Retrieved from http://education.state.mn.us/MDE/dse/test/

Minnesota Department of Education. (2020). *MCA parent fact sheet.* Retrieved from https://education.mn.gov/mdeprod/groups/educ/documents/basic/mdaw/mdmx/~edisp/031107.pdf

Minnesota Department of Education. (2021). *Minnesota Report Card*. Retrieved from education.mn.gov

Minnesota Department of Education. (2022). *Minnesota Multi-Tiered Systems of Supports (MNMTSS).* Retrieved from https://education.mn.gov/mde/dse/mtss/

Minnesota Department of Education. (2022). *Minnesota Multi-Tiered System of Support Framework*. St. Paul, MN: Author.

Minnesota Statutes. (2021). Retrieved from https://www.revisor.mn.gov/statutes/

Mizell, H. (2010). *Why professional development matters.* Retrieved from https://learningforward.org/wp-content/uploads/2017/08/professional-development-matters.pdf

Morin, A. (2021). *Response to intervention explained*. Retrieved from https://www.specialeducationguide.com/pre-k-12/response-to-intervention/

Muijs, D. (2011). *Doing quantitative research in education with SPSS* (2nd ed.). Thousand Oaks, CA: Sage.

Muller, E. (2010). Addressing response to intervention within personnel preparation programs: Six approaches. *National Association of State Directors of Special Education (NASDSE)* Retrieved from https://nasdse.org/docs/83_e5c5ae6b-5385-4dd0-94ab-42756ebf5df3.pdf

National Center for Educational Statistics. (2019). *The Condition of Education, 2019.* Retrieved

from https://nces.ed.gov/pubs2019/2019144.pdf

National Center for Learning Disabilities. (2019). *Multi-tier system of supports.* Retrieved from https://www.ncld.org/get-involved/understand-the-issues/multi-tier-system-of-supports-response-to-intervention/

National Center on Response to Intervention. (2010). *What is RTI?* Retrieved from https://files.eric.ed.gov/fulltext/ED526859.pdf

National Center on Response to Intervention. (2011*). RTI implementation processes for middle schools.* U.S. Department of Education.

National Center on Response to Intervention. (n.d.). *Essential components of RTI*. Retrieved from https://mtss4success.org/sites/default/files/2020-07/rtiessentialcomponents_042710.pdf

National Implementation Research Network. (2020). *Implementation stages planning tool*. Chapel Hill, NC: University of North Carolina at Chapel Hill.

National Research Council. (1998). *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

National Research Council. (2002). *Investigating the influence of standards: A framework for research in mathematics, science, and technology education.* Washington, DC: The National Academies Press.

National Research Council. (2010). *Preparing teachers: Building evidence for sound policy*. Washington, DC: National Academies Press.

O'Conner, E. P., & Witter Freeman, E. (2012). District-level considerations in supporting and sustaining RTI implementation. *Psychology in the Schools*, *49*(3), 297-310. doi: 10.1002/pits.21598

Office of the Revisor of Statutes. (n.d.). *Statutes*. Retrieved from revisor.mn.gov/rules/8710.2000

Patten, M. L. (2014). *Understanding research methods: An overview of the essentials* (9th ed.). Glendale, CA: Pyrczak Publishing.

Praska, B. A, (2022). *Implementation of tiered systems of support at secondary schools in Minnesota.* (Unpublished dissertation). Bethel University.

Prasse, D. P., Breunlin, R. J., Giroux, D., Hunt, J., Morrison, D., & Thier, K. (2012). Embedding multi-tiered system of supports/Response to Intervention into teacher preparation. *Learning Disabilities: A Contemporary Journal, 10*(2), 75-93.

Preston, A. I., Wood, C. L., & Stecker, P. M. (2016). Response to intervention: Where it came from and where it's going. *Preventing School Failure, 60*(3), 173-182.

Prewett, S., Mellard, D. F., Deshler, D. D., Allen, J., Alexander, R., & Stern, A. (2012). Response to intervention in middle schools: Practices and outcomes. *Learning Disabilities Research & Practice, 27,* 136-147. doi: 10.1111/j. 1540 5826.2012.00359.x

Pyle, N., & Vaughn, S. (2012). Remediating reading difficulties in a response to intervention model with secondary students. *Psychology in the Schools, 49*(3), 273-284. doi:10.1002/pits.21593

Qualtrics. (n.d.). *Determining sample size*. Retrieved from https://www.qualtrics.com/experience-management/research/determine-sample-size/

Richards, C., Pavri, S., Golez, F., Canges, R., & Murphy, J. (2007). Response to intervention: Building the capacity of teachers to serve students with learning difficulties. *Issues in Teacher Education, 16*(2), 55.

Richmond Public Schools. (n.d.) Academic programs. Retrieved from rvaschools.net/academics/

Roberts, C. M. (2004). *The dissertation journey: A practical and comprehensive guide to*

planning, writing, and defending your dissertation. Thousand Oaks, CA: Corwin Press.

Ross, S. W., & Lignugaris-Kraft, B. (2015). Multi-tiered systems of support preservice residency: A pilot undergraduate teacher preparation model. *Journal of the National Association for Alternative Certification, 10*(1), 3-20.

Rosell, P. M. (2021). *Opting out in Minnesota: Examining the variables associated with opting out of the Minnesota Comprehensive Assessment*. (Unpublished doctoral dissertation). Bethel University.

RTI Action Network. (2020). *About RTI.* Retrieved from rtinework.org

Samuels, C. A. (2008). Embracing Response to Intervention. *Education Week, 27*(20), 22-24.

Samuels, C.A. (2008). Response to Intervention on NEA's agenda. *Education Week*, *28*(15), 9.

Sanetti, L., Collier-Meek, M., Long, A., Kim, J., & Kratochwill, T. (2014). Using implementation planning to increase teachers' adherence and quality to behavior plans. *Psychology in Schools*, *51*, 879-895.

Sansosti, F., Noltemeyer, A., & Goss, S. (2010). Principals' perceptions of the importance and availability of response to intervention practices within high school settings. *School Psychology Review, 39*(2), 286-295. doi:10.1080/02796015.2010.12087779

Savitz, R. S., Allen, A. A., & Brown, C. (2022). Variations in RTI literacy implementation in grades 6-12: A national study. *Literacy Research and Instruction, 61*(1), 18-40.

Special Education Guide. (2022). *Understanding the components of RTI*. Retrieved from https://www.specialeducationguide.com/pre-k-12/response-to-intervention/understanding-the-components-of-rti/

St. Croix Central School District. (2022). *Response to Intervention.* Retrieved from https://www.scc.k12.wi.us/page/response-to-intervention

The National Council for Accreditation of Teacher Education. (2014). *Standards.* Retrieved from http://www.ncate.org/Default.aspx

The National Center for Education Statistics at IES. (2019). *The Condition of Education, 2019.* Retrieved from https://files.eric.ed.gov/fulltext/ED594978.pdf

The National Center for Education Statistics at IES. (2021). *The Condition of Education, 2021.* Retrieved from Https://nces.ed.gov/pubs2021/2021144.pdf

The National Report Card. (2021). *Report card data.* Retrieved from nationsreportcard.gov/

The Office of Revisors of Statutes. (2016). *Minnesota administrative rules.* Retrieved from https://www.revisor.mn.gov/rules/?id=8710.2000

Thomas, C. N., Allen, A. A., Ciullo, S., Lembke, E. S., Billingsley, G., Goodwin, M., & Judd, L. (2020). Exploring the perceptions of middle school teachers regarding response to intervention struggling readers. *Exceptionality: A Special Education Journal, 30*(4), 261-278. doi:10.1080/09362835.2020.1729765

Thomas, E. R., Conoyer, S. J., & Lembke, E. S. (2020). Districtwide evaluation of RTI implementation: Success, challenges, and self-efficacy. *Learning Disabilities Research and Practice, 35*(3), 118-125. doi:10.1111/ldrp. 12226

University of Minnesota. (2022). *Teaching handbook.* Retrieved from https://academics.cehd.umn.edu/teaching-handbook/pre-12-teacher-education-standards-state-of-minnesota/

University of Washington. (2022). *Implementation overview.* Retrieved from https://impsciuw.org/implementation-science/learn/implementation-science-overview/

U.S. Department of Education, National Assessment of Educational Progress (NAEP). *2015 Mathematics and Reading Assessments*. Retrieved from

http://www.nationsreportcard.gov/reading_Mathematics_2015/#reading?grade=4

U.S. Department of Education, National Center for Educational Statistics. (2016). *Trends in High School Dropout and Completion Rates in the United States: 2013*. Retrieved from http://nces.ed.gov/pubs2016/2016117.pdf

U.S. Department of Education, National Assessment of Educational Progress (NAEP), various years, 2000-2019 Mathematics Assessments.

U.S. Department of Education, National Center for Educational Statistics. (2022). *NAEP Reading: Reading Highlights Report Card 2022*. Retrieved from https://www.nationsreportcard.gov/highlights/reading/2022/

U.S. Department of Health and Human Services, Office of Human Research Protection (1976). *The Belmont Report.* Retrieved from https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html

Vaughn, S., Cirino, P. T., Wanzek, J., Wexler, J., Fletcher, J. M., Denton, C. D., Francis, D. J. (2010). Response to intervention for middle school students with reading difficulties: Effects of a primary and secondary intervention. *School Psychology Review, 39*(1), 3-21. doi:10.1080/02796015.2010.12087786

Vaughn, S., & Fletcher, J. M. (2012). Response to intervention with secondary school students with reading difficulties. *Journal of Learning Disabilities, 45*(3), 244-256. doi:10.1177/0022219412442157

Vaughn, S., & Fuchs, L. (2003). Redefining learning disabilities as inadequate response to instruction: The promise and potential problems. *Learning Disabilities Research and Practice,* 18, 137-14

VanDerHeyden, A. M., Witt, J. C., & Barnett, D. A. (2005). The emergence and possible future

of Response to Intervention. *Journal of Psychoeducational Assessment*, *23*, 339-361

Washington Office of Superintendent of Public Instruction. (n.d.). *MTSS*. Retrieved from https://www.k12.wa.us/student-success/support-programs/multi-tiered-system-supports-mtss/mtss-components-and-resources

Wilder Research. (2013). *Minnesota Response to Intervention Implementation survey-Middle school*. Retrieved from education.mn.gov/mdeprod/groups/educ/documents/basic/mdaw/mduz/~edisp/053907.pdf

Wilder Research. (2013). *Minnesota Response to Intervention Implementation survey*. Retrieved from https://education.mn.gov/mdeprod/groups/educ/documents/basic/mdaw/mduz/~edisp/053692.pdf

Yell, M. L., Shriner, J. G., & Katsiyannis, A. (2006). Individuals with disabilities education improvement act of 2004 and IDEA regulations of 2006: Implications for educators, administrators, and teacher trainers. *Focus on Exceptional Children, 39*(1), 1-24.

Appendix A

Initial Email Invitation

Subject: Doctoral research on the relationship between RTI and MCAs
Dear [Principal Name],

My name is Ann Rooney and I am currently a doctoral student at Bethel University. My dissertation research centers on the relationship between the implementation of Response to Intervention and students' achievement on 8th Grade Minnesota Comprehensive Assessments (MCAs). I am requesting your participation by completing a **very brief, one-minute** online survey.

If you agree to participate in the survey, please click here or enter this URL into your web browser:https://bethel.yul1.qualtrics.com/survey-builder/SV_50HsurXF7kO3tJk/edit?SurveyID=SV_50HsurXF7kO3tJk
Informed consent is attached to this email. Completing the survey implies your consent. Please complete this survey **no later than October 2, 2022.**

Participation is voluntary and you are free to withdraw from the study at any time. You may withdraw by not completing the survey or emailing the researcher and requesting to withdraw. A choice to withdraw will remove all school site data from the study. If the results of this study were to be published, no identifying information will be used. Email addresses will be removed from responses so that responses are confidential. Any information obtained in connection with this study that can be identified with you will remain confidential and will be disclosed only with your permission.

If you have any questions about this study, you may contact me (anr52374@bethel.edu). This study has been reviewed and approved by the Bethel University Institutional Review Board (IRB).

I thank you in advance for assisting me in completing this study.

Sincerely,

Ann M. Rooney
Bethel University doctoral student

Appendix B

Reminder Email

Dear [Principal Name],

Please consider completing my **one minute** survey on the relationship between the implementation of Response to Intervention and students' achievement on 8th Grade Minnesota Comprehensive Assessments (MCAs). If you agree to participate in the survey, please click here or enter this URL in your web browser: https://bethel.yul1.qualtrics.com/survey-builder/SV_50HsurXF7kO3tJk/edit?SurveyID=SV_50HsurXF7kO3tJk Informed consent is attached to this email. Completing the survey implies your consent. Please complete this survey no later than October 2, 2022.

I thank you in advance for assisting me in completing this study.

Sincerely,
Ann M. Rooney
Bethel University doctoral student

Appendix C

Informed Consent

You are invited to participate in a study of Response to Intervention. You were selected as a possible participant in this study because you are a principal in Minnesota middle school or junior high school. This research is being conducted as part of my dissertation at Bethel University.

If you decide to participate, I will use this information for my dissertation. The purpose of this study is to determine the relationship between the implementation of Response to Intervention and students' achievement on 8th Grade Minnesota Comprehensive Assessments (MCA). This brief survey will take approximately one minute to complete. Your personal identity will not be disclosed and collected information will benefit principals in understanding the relationship between the implementation of Response to Intervention and students' achievement on 8th Grade Minnesota Comprehensive Assessments (MCA). Any information obtained in connection with this study that can be identified with you will remain confidential and will be disclosed only with your permission. Only the primary researcher and quantitative methodology experts will have access to the de-identified data. In any written reports or publications, no one will be identified, or identifiable and only aggregate data will be presented. The outcomes of this study will be shared with various institutions, such as the Minnesota Association of School Administrators. The outcomes will not include personally identifiable information. If you decide to participate, you are free to discontinue participation at any time.You may withdraw by not completing the survey or emailing the researcher and requesting to withdraw. A choice to withdraw will remove all school site data from the study.

This research project has been reviewed and approved in accordance with Bethel's Levels of Review for Research with Humans. If you have any questions about the research and/or research participants' rights, please call (651.635.8502) or email (t-reimer@bethel.edu) Tracy Reimer, My dissertation advisor. You may keep a copy of this document for your records. Completing the survey implies your consent.

Appendix D

Survey

Title: The Relationship between the Implementation of Response to Intervention and Students' Achievement on 8th Grade Minnesota Comprehensive Assessments (MCAs).

Does your school serve eighth grade students? Yes or No

Please choose the option that best reflects your school's implementation phase of Response to Intervention (RTI).

- Pre-Initiation Phase
  The school has not yet begun to address Response to Intervention (RTI).

- Initiation Phase
  The school has made an effort to address Response to Intervention, but the effort has not yet begun to impact a critical mass of staff members. (Examples: Initial conversations in building leadership team meetings and/or a couple of teachers have attended an RTI institute for training).

- Implementation Phase
  A critical mass of staff members is participating in implementing Response to Intervention (RTI), but many approach the task with a sense of compliance rather than commitment. There is some uncertainty regarding what needs to be done and why it should be done. (Examples: The Social Studies department is not engaging in Response to Intervention but is asking questions and/or several teachers in the building have gone to an RTI training and are implementing practices).

- Developing Phase
  Structures are being altered to support the changes, and resources are being devoted to moving them forward. Members are becoming more receptive to Response to Intervention (RTI) because they have experienced some of its benefits. The focus has shifted from "Why are we doing this?" to "How can we do this more effectively?" (Examples: All staff members have attended RTI training and are implementing practices and/or staff members are asking for regularly scheduled RTI focused meetings).

- Sustaining Phase
  Response to Intervention (RTI) is deeply embedded in the culture of the school. It is a driving force in the daily work of staff. It is deeply internalized, and staff would resist attempts to abandon RTI.

Adapted from Learning by Doing (2020). DuFour, DuFour, Eaker, and Many

I have read fully the Informed Consent and I freely give consent to participate in this study