FROM KNOWLEDGE TO PRACTICE: DIFFERENTIATED PROFESSIONAL LEARNING AND FIDELITY OF TIER 2 MTSS INTERVENTIONS IN A RURAL MIDDLE SCHOOL

By

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ABSTRACT

This inquiry addressed the problem of inconsistent implementation of Tier 2 interventions within the Multi-Tiered System of Support (MTSS) framework at a rural middle school in North Carolina. Teachers in grades six through eight experienced challenges implementing Tier 2 interventions with fidelity during designated intervention periods. Stallion Middle School served a diverse student population with persistent achievement gaps in reading and math despite districtwide adoption of MTSS. The complexity of the framework, coupled with time constraints and curriculum misalignment, contributed to uneven implementation across classrooms.

The purpose of this mixed methods inquiry was to examine the impact of differentiated professional learning on the fidelity of Tier 2 MTSS implementation and on teacher perceptions of students' ability to demonstrate academic growth. Differentiated professional learning was designed and delivered through three Plan-Do-Study-Act (PDSA) cycles incorporating teacher surveys, interviews, walkthroughs, and reflective journaling.

Findings indicated that differentiated professional learning positively influenced both the fidelity of Tier 2 implementation and teacher beliefs about student growth. Quantitative data showed measurable increases in teacher confidence and consistency in delivering Tier 2 interventions, while qualitative data revealed stronger collaboration, reflection, and alignment of instructional practices. Teachers valued the individualized nature of the professional learning and reported feeling more prepared to deliver research-based interventions with fidelity.

These findings were significant because they demonstrated that ongoing, differentiated professional learning can enhance teacher practice, foster collaboration, and promote equitable academic support for students. The results provided meaningful implications for school leaders seeking to sustain MTSS implementation through data-driven, teacher-centered professional learning that builds both capacity and confidence across content areas.

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DEDICATION

This dissertation is dedicated to my husband, Edward. The love and support you have shown me throughout this journey have been priceless. Without you, I could not have accomplished this milestone. To all my friends and family, thank you for believing in me, even during the times when I struggled to believe in myself.

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Ryan and Sarah, I love you and miss you every day. I am so proud of the amazing adults you have become.

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CHAPTER 1: INTRODUCTION

Most students encounter several significant academic transitions in their school lifetime. The transition from elementary to middle school is not always negative and can be a fresh start for students in terms of academics; however middle school is a steppingstone into a student's future academic journey and not all students transition easily. Of eighth grade students in the United States, 70% failed to reach proficient levels in reading and in math (Augustine et.al., 2024). Declines in academic performance and motivation are common in middle school students due to changes in the school environment and structure (Tu et al., 2020). Black and Hispanic students are the most at risk for academic decline (Snipes & Jacobson, 2021). This can be due to how teachers evaluate their students' abilities and behaviors outside of their own racial and ethnic identity (Fallon et al., 2023).

Reading and math is the cornerstone of academic achievement. Learning to read and compute basic math skills is of paramount importance, because it serves as a foundational skill. With out these foundational skills it can do immeasurable damage and affect a person's ability to achieve a fulfilling and successful life especially in sixth through eighth grades (National Literacy Institute, n.d.). A strong foundation in reading and math sets the stage for future academic success.

Data also shows that it is essential for schools and educators to understand a student's strengths and weaknesses when it comes to their reading and math skills. A Multi-Tiered System of Support, or MTSS, can meet these needs. MTSS is a framework that many schools use to promote school improvement (North Carolina Department of Public Instruction, n.d.a). MTSS supports students through academic, social and emotional researched interventions (Arden & Pentimonti, 2017).

MTSS is a complex framework with many layers that has many benefits and challenges. When 600 plus teachers and administrators from around the United States responded to the 2023 Panorama MTSS survey, 60% stated the biggest benefit of MTSS was being able to make data-based decisions; however, 48% of the responders stated that fidelity is the biggest challenge of implementing MTSS (Pendharker, 2023). Stallion Middle School, a pseudonym for a public middle school in a rural region of North Carolina, has been challenged with effectively implementing MTSS with fidelity in grades six-eight based on observational data. This inquiry aimed to increase the fidelity by equipping teachers with ongoing differentiated professional learning to more effectively and confidently do so.

Background of the Focus of Practice

The ability to meet a student's needs in 190 school public calendar days, as required in North Carolina senate bill 704 SECTION 2.11.(b) is a significant undertaking. The pressure to ensure that happens with an entire classroom can be very stressful for educators, especially in a middle school setting (Botttiani et al., 2019; von der Embse & Mankin, 2021). Educators in that domain must ensure their students are proficient in all subject areas. In 2021, the National Assessment of Educational Progress (NAEP) surveyed educators and school leaders on the impact of COVID-19 in schools. The NAEP (2023) found the data was similar among all schools researched. The data showed that students are learning slower than pre-COVID times, learning loss has affected all subgroups and academic subjects, especially disadvantaged students. Furthermore, students did not understand or retain knowledge of what they learned when they learned virtually or remotely. Data from 2023 has also shown since COVID that North Carolina is starting to make recovery gains in reading and math (North Carolina Department of Public Instruction, 2024).

Multi-Tiered System of Support

Even though many research-based initiatives have been in schools throughout the years in North Carolina, MTSS has been in practice since 2015. The multitiered framework is designed to identify at risk students and provide appropriate intervention before failure (Jefferson et al., 2017). In 2015, MTSS was introduced under the Every Student Succeeds Act and was mandated to be adopted and implemented by July 2020. This mandate required schools to identify at-risk students with universal screeners, determine their specific needs, and place them into appropriate tiers of support. MTSS also required schools to use evidence-based interventions and problem-solving teams to decipher data and determine the next steps for teachers and students. Furthermore, the mandate stated that schools would use MTSS to determine Specific Learning Disabilities (SLD) eligibility instead of the discrepancy model (Frank Webb & Michalopoulou, 2021).

North Carolina Accountability Model

Since 2014, the state of North Carolina has been assigning all public schools a school performance grade. These performance grades are required by state legislation and the Every Student Succeeds Act (ESSA). The school performance grades are based on two components: 80% achievement and 20% student academic growth (North Carolina Department of Public Instruction, 2024). These components come from the school's end-of-grade assessments. Achievement in North Carolina public schools is based on 80% of a school's performance grade that is calculated using a composite method, and growth is measured by comparing a student's actual test score to their predicted score based on past performance (North Carolina Department of Public Instruction, 2024). Stallion Middle School is growing in reading (see Figure 1) and

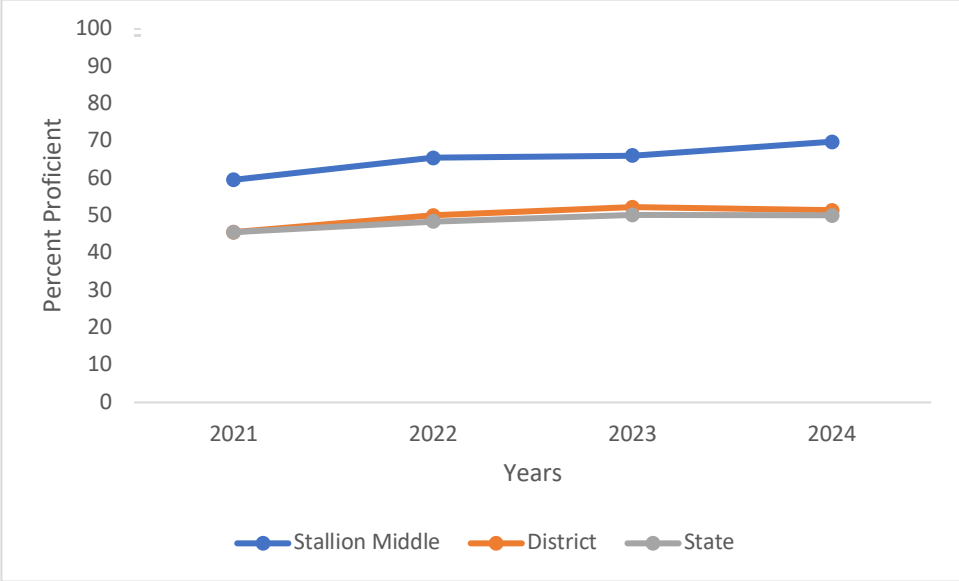


Figure 1. End of grade reading proficiency scores for Stallion Middle School grades 6-8 from 2021-2024.

math proficiency (see Figure 2); however, the number of students in grades 6-8 that are in MTSS for reading and math interventions stays the same.

Context of the Inquiry

Stallion Middle School is in the rural southeastern part of North Carolina. The military is a significant part of the economy. This region was impacted due to Hurricane Florence striking the area in 2018 over three days. It caused catastrophic damage to the area and resulted in the public school system shutting down for over a month. The overall poverty percentage in Apollo County, a pseudonym for the area where Stallion Middle School resides, is 12.6%, and the average median household income is $56,325 (United States Census Bureau, 2022). The county has 26 schools serving 13,000 students; 17 are considered Title 1 schools, and four are in restart status. Schools are classified as Title 1 schools if the school's enrollment is made up of at least 40% of low-income families (United States Department of Education, 2018).

Stallion Middle School is a high performing middle school. The school serves just over 500 students (see Figure 3). The population consists of students in sixth through eighth grade. Stallion Middle School has been designated as a "B" school by the school report card accountability model since 2017 (North Carolina Department of Public Instruction, 2024). However, the school has only exceeded growth once in over 10 years. In addition, the school and local educational agency (LEA) have adopted research-based practices, including Multi-Tiered Systems of Support (MTSS), to help close the student achievement gap, especially with our African American and Hispanic subgroups. See Figure 4 for reading proficiency by subgroup and Figure 5 for math proficiency by subgroup.

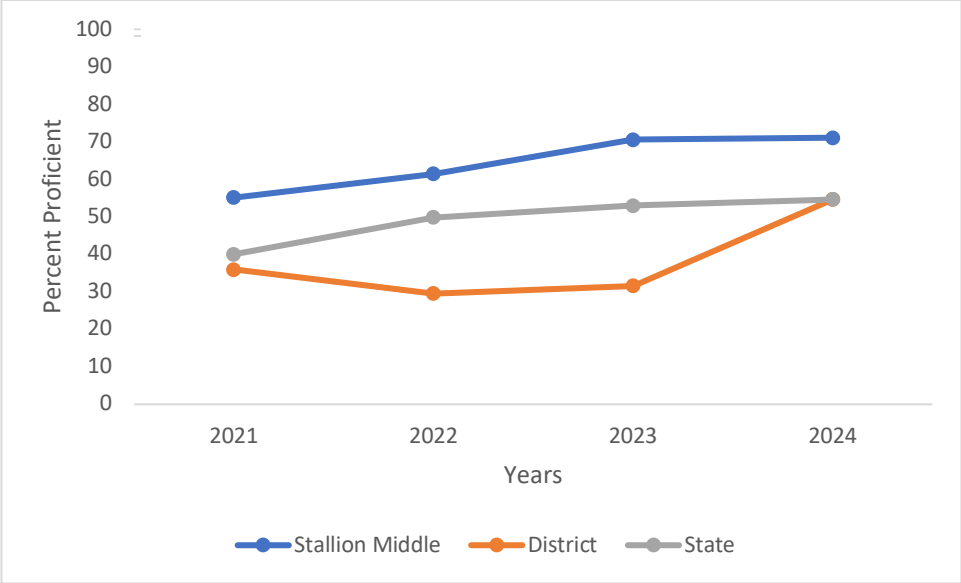


Figure 2. End of grade math proficiency scores for Stallion Middle School grades 6-8 from 2021-2024.

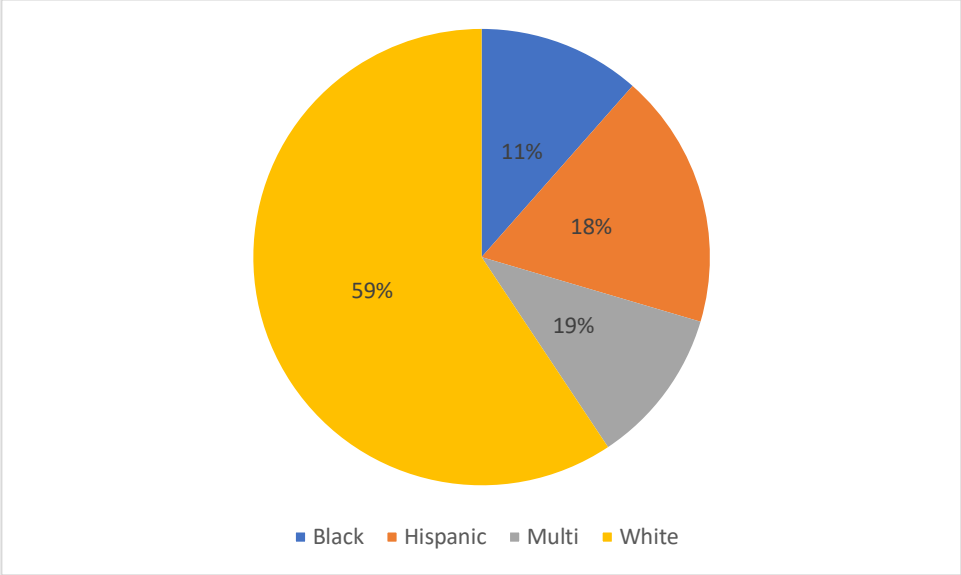


Figure 3. Stallion Middle Schools demographics for the 2023-2024 school year.

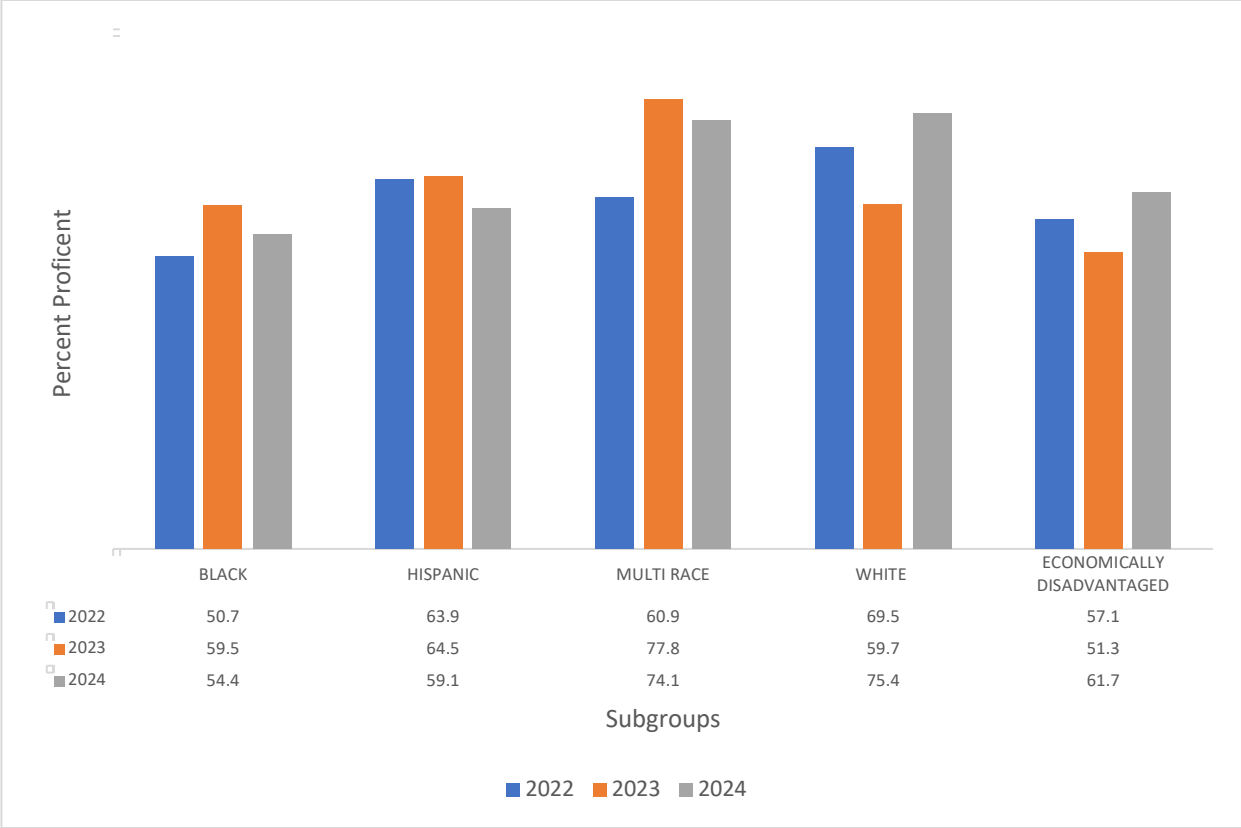


Figure 4. Stallion Middle Schools historical subgroup data for reading proficiency.

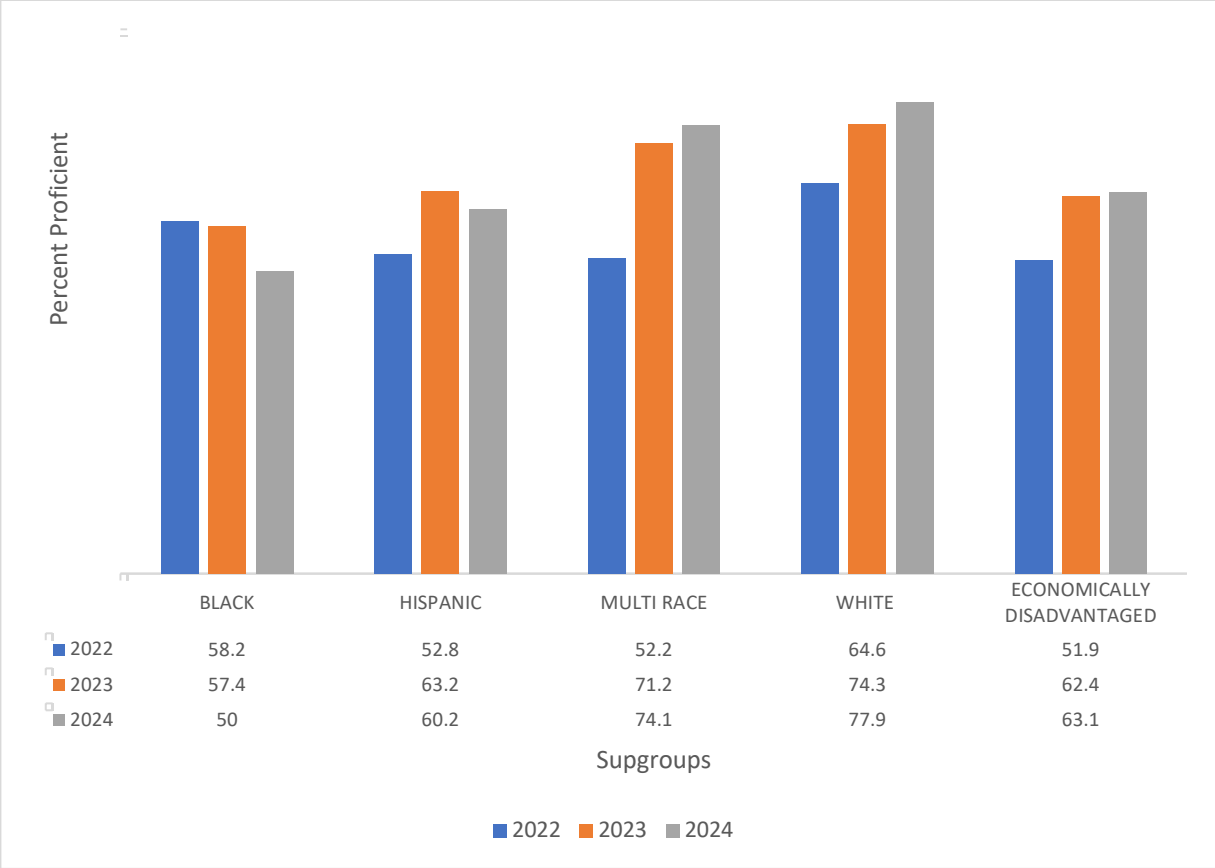


Figure 5. Stallion Middle Schools historical subgroup data for math proficiency.

Since the MTSS mandate in 2020, teachers have struggled to implement MTSS with fidelity, especially in grades six-eight. The school system realized this in early 2022. The school system's solution was to hire an MTSS interventionist at every elementary and middle school to implement intensive interventions to students, the highest level of support.

Statement of the Focus

Stallion Middle School, a rural middle school and the focus of this inquiry, is where I addressed the challenges of implementing Tier 2 interventions at a rural middle school by providing continuous differentiated MTSS professional learning to sixth through eighth grade teachers. MTSS is a framework used to identify at-risk students in academics, social and emotional needs, and behaviors (Choi et al., 2019; Choi et al., 2022; Frank Webb & Michalopoulou, 2021). When identified, students in MTSS are given various levels of support through tiered research-based interventions. The MTSS framework is a well-established framework used throughout the country to help support students especially in the area of reading.

MTSS has many complex layers that will be explained in Chapter 2. Teachers may struggle to implement all layers with fidelity. There are numerous possible reasons teachers need help implementing MTSS Tier 2 interventions with fidelity. It is essential to fully understand these teachers' perspectives on MTSS and their current experiences of implementing Tier 2 interventions in the classroom. Based upon anecdotal and experiential feedback, some approaches that may be needed to help teachers with MTSS implementation are providing ongoing differentiated professional learning, coaching, and walkthroughs. This inquiry aimed to increase the fidelity of Tier 2 interventions by equipping teachers to more effectively and confidently utilize such interventions.

Inquiry Guiding Questions

This inquiry was guided by the following questions:

1. What is the impact of differentiated professional learning on the fidelity of implementation of the Tier 2 MTSS interventions for teachers in grades 6-8 at a rural middle school?
    a. What is the impact of differentiated professional learning on the fidelity of implementation of the Tier 2 MTSS reading interventions for teachers?
    b. What is the impact of differentiated professional learning on the fidelity of implementation of the Tier 2 MTSS math interventions for teachers?
2. What is the influence of differentiated professional learning on teacher perceptions of students' ability to show growth in Tier 2 MTSS interventions?
3. How did this inquiry impact my leadership skill development as a scholarly practitioner?

The results of the inquiry determined if ongoing year-long differentiated professional learning was effective in improving the fidelity of the implementation of the Tier 2 MTSS interventions. I collected and analyzed data with inquiry partners to determine teachers' specific learning needs regarding MTSS and to answer these guiding questions. Then, in collaboration with my inquiry partners, I developed and facilitated personalized professional learning experiences for teachers based on their needs and walkthrough data.

Overview of Inquiry

To answer the questions guiding this inquiry, I used an explanatory sequential, mixed methods design grounded in improvement science. The improvement science approach conceptual holds that there are two types of knowledge: basic and profound (Lewis, 2015). Basic knowledge is having an awareness of a subject, for example, knowing the sixth grade reading

standards and instructional strategies. Profound knowledge is applying the basic knowledge and instructional strategies into classroom instruction. This is imperative in this inquiry. Teachers received the basic knowledge of how and why it is important to implement MTSS interventions from their professional learning experiences. In return, teachers should then transfer that basic knowledge into profound knowledge and implement what they have learned into their classrooms and should be evident in walkthrough observations.

I utilized the plan-do-study-act (PDSA) cycle to organize and drive the inquiry forward towards improvement. PDSA is a process of learning from practice. According to Lewis (2015), PDSA is guided by three guiding questions that drive continuous improvement:

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What change can we make that will result in improvement?

PDSA cycles and the three guiding questions accelerate learning by focusing on a problem-centered approach. The inquiry was organized into three phases of PDSA cycles.

For data collection and analysis, my inquiry partners and I used surveys to collect quantitative data to determine teachers' beliefs on MTSS relative to student growth and current professional learning through Likert-type statements. Interviews and the walkthrough protocol was used to gather qualitative data. Interviews were utilized to gain a deeper understanding of teacher's beliefs and experiences with MTSS and their beliefs on that all students can learn. The walkthrough protocol was used to determine if teachers were providing interventions with fidelity but also if they were applying what they have learned in the differentiated professional learning.

During phase I, I met with inquiry partners to determine the root cause of the lack of fidelity of interventions at the Tier 2 level. To gather baseline data, teachers were surveyed at the beginning of the 2024-2025 school year to assess their struggles with implementing Tier 2 interventions and beliefs with the MTSS framework. After completing surveys, the inquiry partners analyzed the baseline data to identify differentiated professional learning needed for teachers.

Phase II included implementing the differentiated professional learning developed from Phase I. After each individualized professional learning, interviews and walkthrough surveys with the teachers were used to determine the effectiveness of the differentiated professional learning. The inquiry partners and I analyzed the data collected to determine if any adjustments were needed to be made based on the data analysis.

Phase III entailed conducting interviews and surveys to determine the effectiveness of ongoing differentiated professional learning and the teacher's beliefs on the implementing Tier 2 MTSS interventions. After the outcome data was analyzed with the critical inquiry partners, the data was shared with stakeholders in hopes of being replicated each year or improved upon if not effective.

Inquiry Partners

Inquiry partners were used to assist in implementing this inquiry. The inquiry partners were the principal, assistant principal, all the English Language Arts and Math teachers in grades sixth through eighth, and the school Multi-Tiered Systems of Support (MTSS) interventionist. The inquiry partners brought their experience and expertise to the inquiry. The principal ensured that the inquiry supported the schools strategic plan. The assistant principal helped design and implement differentiated professional learning topics. Lastly, the MTSS interventionist helped

conduct walkthroughs to check for fidelity. All inquiry partners helped analyze data. Collection and analysis of data was done through meetings, interviews, and surveys. I am the assistant principal of the inquiry site; I used a research leadership journal. This leadership journal had entries to record my thinking when planning and delivering differentiated professional learning and when conducting walkthroughs. My leadership journal also documented engagement with inquiry partners.

Theoretical Framework

Adult Learning Theory is a "framework that considers the diverse needs of adults and the factors like prior experiences, responsibilities, and personal motivations" (New England Institute of Technology, 2024, para. 4). Adult learning theory is useful for the purpose of this inquiry as, once teachers' beliefs about MTSS were identified, tailored strategies were developed and implemented. Adult learning theory can aid in bridging the gap between theory and practice to equip teachers with skills they can immediately apply to MTSS.

Malcolm Knowles introduced the concept of the adult learning theory in 1968 (New England Institute of Technology, 2024). The adult learning theory was once referred to as Andragogy. Since its' first discovery, Knowles has provided a framework and a standard set of principles of how adults learn best. According to Knowles (2024), the principles of self-directed learning, relevance, and practical application should be emphasized. With these principles in mind, then tailored, ongoing differentiated professional learning can be provided to teachers.

Definition of Key Terms

The following key terms are used throughout this inquiry and are defined as follows:

At Risk - Students who underperform or fail on formal assessments and screeners associated with academic achievement (Franklin et al., 2023).

Core Curriculum – The core curriculum is a course of study determined by the local school district. The curriculum is required to be implemented by all schools. Core curriculum needs to be scientifically researched and provide explicit instructional strategies and routines (Hughes & Dexter, 2016).

Differentiated Instruction – When teachers adjust their instruction to maximize learning for all students (IRIS Center, 2024).

FAM-S *Survey* – A school level survey that measures the progress of MTSS implementation (North Carolina MTSS Implementation Guide 2.0, n.d.a).

Fidelity of Implementation – When a framework is implemented as intended. When a framework is implemented with fidelity, the frequency, recommended time, and instructional procedures are followed (IRIS Center, 2024).

Instructional Learning Coaches – Individuals who coach teachers in classrooms and facilitate professional learning on data, curriculum, and instructional practices (University of Wisconsin-Madison, 2021).

Intervention – Researched-based strategies that are provided to struggling students in a small group setting that vary in intensity (RTI, n.d.).

Multi-Tiered System of Support (MTSS) – A school improvement framework that looks at students' academic, behavioral, and social and emotional needs. MTSS uses data and problem-solving to increase the growth of all students (North Carolina Department of Public Instruction, n.d.a).

Differentiated Professional Learning – Coaching teachers based on their individual needs and providing targeted learning and individual areas of focus (Grierson & Woloshyn, 2013).

Progress Monitoring – Students identified as at-risk or not, meeting grade level expectations, have their interventions and academic progress monitored frequently (January et al., 2018). This frequent monitoring is done with a set of research-based measures.

Response to Intervention (RTI)- The term used prior to MTSS to identify students who needed support with learning and behavior needs (RTI, n.d.). RTI is also used to make decisions regarding instruction and interventions.

Restart School – A recurring low performing school that is given charter like flexibilities to provide unique opportunities on school reform (North Carolina Department of Public Instruction, n.d.c).

Tier 1(MTSS) – Tier 1 is the first level of support of MTSS. This tier focuses on the general education classroom and its use of a researched base core curriculum with differentiation of instruction (Jefferson et al., 2017).

Tier 2 (MTSS) – Tier 2 of MTSS is the second level of support, referred to as supplemental support. Students in Tier 2 of MTSS receive interventions because they are not meeting academic and behavioral expectations (Stevens et al., 2020).

Tier 3(MTSS) – This level of MTSS is referred to as intensive support. This tier involves increasing the intensity of instruction and interventions with the hope of closing the achievement gap (Sanchez & O'Connor, 2015).

Universal Screening – Universal screening is a critical component of MTSS. Universal screening allows schools to identify at-risk students who need intervention services (Franklin et al., 2023).

Assumptions

With this inquiry, three assumptions were made. The first assumption was that all teachers in the sixth through eighth grades at Stallion Middle School believe that the Multi-Tiered System of Support framework is effective and beneficial for all students. Therefore, when examining the data collected for this inquiry, it was assumed that the teachers were implementing the research-based Tier 2 interventions with fidelity and consistency.

The second assumption was rooted in beliefs. The assumption was that teachers were honest when completing the MTSS belief, FAM-S survey, and all data collection including interviews. This assumption was determined by their ratings in the MTSS surveys, but the true beliefs cannot be determined. This assumption was critical to the inquiry because differentiated professional learning would not be meaningful if I did not know the teacher's true feelings regarding MTSS and whether teachers believed that all students can grow.

The third assumption was teachers reflected on their teaching and learning needs regarding implementing Tier 2 interventions for students. For the sake of this inquiry, a related assumption was that teachers were willing to be coached through differentiated professional learning based on their needs. It was also assumed that the teachers and administrators involved collaborated and put students' best interests first.

Scope of Delimitations

This inquiry aimed to ensure that Tier 2 research-based interventions were implemented with fidelity and consistency at Stallion Middle School. The inquiry also hoped to see fewer students referred to Tier 3 services due to students’ academic needs being met at the Tier 2 level. The focus of this inquiry was determined by the number of low-performing students not improving in reading and math based on AIMS Web data and end-of-grade state assessments.

Further, I focused on limiting the participants to sixth through eighth-grade teachers who were providing Tier 2 interventions to students at Stallion Middle School.

Limitations

This inquiry took place at Stallion Middle School, where I am also an administrator. Therefore, teachers could have been nervous about transparency during coaching and surveys because I serve as both the scholar practitioner conducting the inquiry as well as one of their administrators and evaluators. The second limitation was that it can be difficult to assess the impact of differentiated professional learning directly on student achievement. The lack of data may have hindered the teachers and administration from seeing the direct result of professional learning. The third limitation was that teachers may have realized they have underlying beliefs regarding student growth with MTSS interventions and whether all students can truly learn.

Significance of Inquiry

The purpose of this inquiry was to address the implementation of MTSS Tier 2 interventions in sixth through eighth grades in a rural middle school by using year-long differentiated professional learning. The inquiry aimed to see if increasing the fidelity of research-based interventions within MTSS will positively impact student academic growth and change teachers' beliefs about struggling students. This inquiry targeted teachers who are currently giving Tier 2 reading and math interventions to students in grades six through eight.

This inquiry was significant in that it could support a foundation for assisting middle school teachers in implementing MTSS social emotional behavior interventions at Stallion Middle School. The inquiry took place during the 2024-2025 school year and incorporated quantitative and qualitative data collection. The data uncovered teacher struggles with

implementing Tier 2 interventions and addressed opportunities from ongoing differentiated professional learning that lead to an increase in student growth.

This inquiry addressed the inequities in a high-performing middle school by providing differentiated professional learning to teachers in sixth through eighth grades that allowed them to meet the needs of their students who are receiving Tier 2 interventions. Students who come from high poverty come to school with their own unique set of challenges that can impede academic success. “All students, regardless of income level or background, are capable of and should receive the support and resources necessary for success” (National Association of Secondary School Principals, n.d., p. 2).

By implementing ongoing differentiated professional learning around Tier 2 MTSS interventions with mentoring support, this inquiry attempted to provide equitable support for all student subgroups. For at-risk students who struggle academically and socially, the MTSS framework is designed to provide academic intervention to meet academic gaps centered around research-based interventions (Franklin et al., 2023). It should increase equity for students to access the core curriculum. The school district was failing to close the achievement gap by failing to make sure that all students have access to research-based interventions and are being given with fidelity. The data from this inquiry helped inform practices on implementing ongoing differentiated professional learning for teachers in other areas, especially Tier 2 interventions in social emotional behaviors.

Summary

This inquiry examined the process for implementing an effective differentiated professional learning plan to increase fidelity on Tier 2 reading interventions. The inquiry also explored teacher beliefs on struggling students and their perceptions and experiences on

differentiated professional learning. Chapter two will show the current literature on MTSS and the theoretical framework that was used in this inquiry. Chapter three focuses on the method of the inquiry and how the inquiry was implemented. Chapter four of the inquiry shows the results and findings of the inquiry. Chapter five focuses on any recommendations that could be made to the inquiry if replicated in the future.

CHAPTER 2: REVIEW OF LITERATURE

In the United States, 70% of eighth graders in public schools do not perform proficiently in reading, math and science on national achievement tests (Augustine et al., 2024) These statistics are even more significant for diverse learners in high-poverty areas (Graves & McConnell, 2014; Haeberlein et al., 2021). However, new research indicates that there could be hope for students beyond elementary school with frameworks like Multi-Tiered System of Support (MTSS) (Sanchez & O'Connor, 2015).

MTSS is an educational framework designed to provide a comprehensive and systematic approach to meeting the diverse academic and behavioral needs of all students in a school or district (Bahr et al., 2023; Choi et al., 2022; Frank Webb & Michalopoulou, 2021). MTSS is often used to ensure that students receive appropriate instruction and support based on their individual needs rather than a one-size-fits-all approach. This inquiry examined the fidelity of Tier 2 interventions by classroom teachers in grades six through eight at a rural middle school. This literature review focuses on the history of MTSS, its components, fidelity barriers with implementation and sustainability, and the legal ramifications of identifying special needs students.

Adult Learning Theory

Adult learning theory, also known as andragogy, is a framework that seeks to understand how adults learn and what factors contribute to effective adult education (Merriam & Bierema, 2014). According to Owusu-Agyeman (2019), understanding the characteristics of adult learning helps design and deliver compelling learning experiences that meet adult learners' unique needs and preferences. Developed by Malcolm Knowles in 1968, it contrasts with pedagogy, which studies how children learn. The adult learning theory, created by Knowles, introduced seven

assumptions about adult learners (Merriam & Bierema, 2014). Knowles' work highlighted that adults are self-directed, bring a wealth of experience, are ready to learn, are problem centered, and are motivated by intrinsic factors (See Table 1). The adult learning theory framework is essential in this inquiry because current teachers in schools are coming from various educational experiences or lack of experiences.

In practice, adult learning theory suggests that effective teaching for adults involves respecting their experiences, engaging them in self-directed learning, and making learning activities relevant and applicable to their lives or professional roles. It emphasizes a learner-centered approach in which the learner takes an active role in the learning process rather than being a passive recipient of information.

History of MTSS

MTSS has evolved over the years; however, some of the tiered components of MTSS were initially introduced to teachers and students in the Response to Intervention (RTI) framework. Tiered interventions have been around for decades with the National Centers for Disease and Control and Prevention (CDC). The CDC has used tiered interventions as a prevention strategy for the nation's public health model since the 1960s (Sailor et al., 2018; Sailor et al., 2021). Then, in the 1980s, the tiered interventions found their way into education in reading and behavior. Researchers at the University of Oregon began researching managing and remediating behaviors that affected learning (Sailor et al., 2018). Their research would later be defined as Positive Behavior Support (PBS). Years later, PBS would evolve into what we know today as Positive Behavior Intervention and Support (PBIS). The second area of research came through Vanderbilt University and the Center for Research and Learning at the University of Kansas, and their work focused on researching reading competency (Choi et al., 2022; Sailor et

Table 1

Knowles's Assumptions on Adult learning Theory

Assumptions	**Assumption Definitions**
Self-concept	Adults need to be responsible for their decisions and are motivated to learn by internal factors and beliefs.
Experience	Adults bring a wealth of experience into the learning environment, which can be used to enhance learning.
Readiness to learn	Adults are more likely to be motivated to learn when they perceive the information as immediately applicable to their lives or work.
Orientation to learning	Adults are problem-centered and task-oriented, preferring relevant learning experiences that solve real-life problems.
Motivation	Adults are motivated by intrinsic factors such as self-esteem, self-efficacy, and the desire for personal growth.
Learning styles	Adults may have different learning styles and preferences, so flexibility in teaching methods is beneficial.
Collaboration	Adults often prefer collaborative and cooperative learning environments where they can learn from their peers.

Note: (Merriam & Bierema, 2014).

al., 2018). This research work would be termed Response to Intervention (RTI). RTI focused on providing a firm foundation for determining the eligibility of students with disabilities, especially students with a learning disability, which would later become statutory in 2002 under the President's Commission on Excellence in Special Education under President George W. Bush (Sailor et al., 2018). This new statute emphasized a three-tiered framework to evaluate instruction and student performance.

Individuals with Disabilities Education Act

In 2004, there were significant changes in RTI through the Individuals with Disabilities Education Act (IDEA) due to the public outcry over students being over-identified with Specific Learning Disabilities (SLD) (Frank Webb & Michalopoulou, 2021). IDEA stated that states could not use the discrepancy model when identifying students with specific learning disabilities; instead, local educational agencies and schools were required to use research-based interventions on students to determine eligibility (Sailor et al., 2018). This allowed RTI "to potentially remove the variable of "poor instruction" from the diagnosis of learning disability, as well as to reduce the over-representation of certain groups of students in special education" (Patrikakou et al., 2020, p. 3). RTI required schools to provide research-based instruction, progress monitoring, and interventions with a multi-tiered framework. In 2007, the federal government called on states to mandate the new RTI; however, the terminology was changed to "multi-tiered levels of support" (Frank Webb & Michalopoulou, 2021; Sailor et al., 2018). The term MTSS was officially established in 2007 (Choi et al., 2022). MTSS was the combination of RTI and PBIS, so it allowed MTSS to be a more comprehensive approach (Choi et al., 2022; Frank Webb & Michalopoulou, 2021; Mercado, 2018). Both models were put together because they had the same goals: increasing student achievement and reducing the number of students recommended

for special education services through researched interventions (Bahr et al., 2023; Patrikakou et al., 2020). Many literature sources still view MTSS and RTI as the same framework and use the terminology interchangeably.

Every Student Succeeds Act

The Every Student Succeeds Act (ESSA) has been around since 1965. It was originally called the Elementary and Secondary Education Act (ESEA). ESSA replaced the No Child Left Behind Act of 2001 and was a nationwide commitment that all students would receive an equal opportunity when it came to education. (North Carolina Department of Public Instruction, n.d.b). The federal government also established the legal statute of MTSS in December 2015 under the ESSA. ESSA stated that elementary and secondary schools were encouraged to implement a school-wide prevention and an evidence-based intervention program to increase student achievement for all (Bahr et al., 2023). This was due to ESSA recognizing the effectiveness of MTSS. ESSA also pushed states to use MTSS even though they did not use the words MTSS directly.

The renewal of the ESEA in December 2015 turned the focus of MTSS into a school improvement framework for schools and districts. MTSS was intended to improve instruction and provide targeted interventions to students in various tiers. The components of MTSS were familiar to educators in North Carolina since they had been implementing RTI for the past 10 years.

In 2015, all public schools in North Carolina were mandated to adopt and implement MTSS by July 1, 2020. MTSS required schools to utilize data to identify students at risk and then be proactive in the instruction and intervention in the areas of academics, behavior, attendance, and social-emotional wellness. For the 2020 – 2021 school year, this mandate also stated that

public schools and Local Education Agencies (LEA) could no longer use the discrepancy model when identifying students with Specific Learning Disabilities (SLD) and MTSS does not automatically quality a student for special education services (North Carolina Department of Public Instruction, 2016).

Multi-Tiered System of Support

MTSS is an evolution of the RTI framework. It evolved by expanding its scope to include academic, behavioral, and social-emotional support for all students, not just students with disabilities (Choi et al., 2019; Choi et al., 2022; Frank Webb & Michalopoulou, 2021). MTSS acknowledges students' diverse needs (Sailor et al., 2018). The North Carolina Department of Public Instruction defines MTSS by utilizing a common language multi-tiered framework that promotes school improvement through engaging academic and behavioral practices (North Carolina Department of Public Instruction, n.d.a). This MTSS framework is layered and based on six critical components (Choi et al., 2019; Choi et al., 2022; Dulaney et al., 2013). All six components are necessary for the implementation of MTSS and to improve schools. Through this framework, MTSS will provide an equitable learning opportunity for all students, regardless of ability, through data-driven problem-solving through a layered continuum of evidence-based practices and systems (Bahr et al., 2023).

MTSS Components

Leadership

Leadership plays a critical role in implementing MTSS effectively. "When Principals apply their leadership influence with all students in mind, they give rise to equitable learning environments for students with all types of learning needs" (Choi et al., 2019, p. 15). To create these environments with MTSS, school leaders must embed these frameworks into their schools

to ensure teacher buy-in and that the framework used with fidelity. Once principals have received MTSS training, their choices in how they implement buy-in with MTSS are based on their previous experiences with MTSS and their understanding of the framework (Printy & Williams, 2014). If principals do not know the framework, they often contact other district administrators, asking for guidance on the MTSS framework and implementation (Vekaria, 2017).

Research has shown that principals, assistant principals, and school leadership teams play a vital role in teacher buy-in and in the early stages of implementing MTSS (North Carolina MTSS Implementation Guide 2.0, n.d.a; Vekari, 2017). The leadership must engage staff in ongoing professional learning when implementing the MTSS plan for sustainability. To make these implementations and changes, principals must be transitional and adaptive leaders so district initiatives like MTSS will be sustainable (Choi et al., 2019; Eagle et al., 2015). Transitional leaders have to be change agents. Principals tend to handle teacher buy-in in different ways. One way principals have managed teacher buy-in was to invite experts of MTSS into their school buildings to provide professional learning. In contrast, others used Professional Learning Communities (PLC) to build knowledge of MTSS and its components (Vekaria, 2017).

For equitable learning environments to occur in schools, the principal must be an instructional leader, have good communication skills, and have a clear vision and mission of improving student outcomes (Choi et al., 2019; Dulaney et al., 2013; North Carolina MTSS Implementation Guide 2.0, n.d.b). Schools must communicate the importance of MTSS and create a shared vision among staff, students, and families. To help achieve these environments, principals must build a team of multidisciplinary practitioners (Choi et al., 2019; Sailor et al., 2018). This team wants to raise student achievement and the needs of all students through the use

of data. These individuals are usually the administration team, school psychologists, counselors, and highly effective teachers (Arden & Pentimonti, 2017). The team then helps the principal sustain the implementation of MTSS by training the teachers to use classroom and student achievement data (Dulaney et al., 2013).

Building Capacity and Infrastructure for Implementation

Building capacity and infrastructure for implementation are essential when sustaining a framework like MTSS because the goal is to maintain MTSS over time. When we use the term building, we are not talking about a physical structure. Still, making or having a deeper understanding of something and capacity means the maximum that something can hold, like knowledge (Nebraska Department of Education, 2023a, para. 2). When building infrastructure for implementing MTSS, norms and expectations are put into place to implement MTSS (Nebraska Department of Education, 2023a, para. 3). Infrastructure can also address what needs to be built or refined.

Building capacity and infrastructure provides training and professional learning opportunities for teachers, staff, and administrators to increase their implementation and performance expectations and meet student needs (Nebraska Department of Education, 2023a, para. 2). They need to understand the MTSS framework, its components, and how to implement MTSS effectively at every level (Dulaney et al., 2013). Professional learning needs to be ongoing with coaching to ensure the understanding of data-based problem solving, tiered instruction and interventions, and processes for having data-rich conversations (Averill & Rinaldi, 2011). Reviewing the school's capacity and infrastructure before and during MTSS implementation is essential because schools can see where they need to start or compare where they have begun in the MTSS process (Nebraska Department of Education, 2023a, para. 4).

Communication, Collaboration and Partnerships

Communication, collaboration, and partnerships are essential components of MTSS, as they enable educators, administrators, students, and parents to work together effectively to support student success (Nebraska Department of Education, 2023b, para. 3). Communication is essential for these groups to understand one another, their roles, and how to work together. Teams need a common vocabulary or language focusing on continuous student improvement (Dulaney et al., 2013). Many initiatives fail in the early stages due to a lack of communication. This is due to a need for more agreement and feedback from all stakeholders to avoid confusion and redundancy (Nebraska Department of Education, 2023b, para. 3).

Collaboration means all groups working together towards a common goal. Through continuous improvement, MTSS and PLC combine into one collaboration system (Dulaney et al., 2013). MTSS requires teams to collaborate to solve problems, share ideas, analyze data, and make plans (Nebraska Department of Education, 2023b, para. 4). Collaboration changes the mindset of teachers from teaching as individuals to learning for all students in the school and, in return, build the capacity of teachers (Dulaney et al., 2013). Remembering to engage with families and the community when building the MTSS infrastructure is essential. With this collaboration in mind, the likelihood of success in sustainability is greater.

Professional learning committees within the school and partnerships outside the school are essential in providing an equitable education to all students (Nebraska Department of Education, 2023b, para. 4). Families and community members are essential to MTSS. These individuals have valuable information and can support teachers in the classroom with academics and behavior. This collaboration can be done during the problem-solving process.

Data-Based Decision Making

MTSS relies on data to identify students' needs and monitor their progress. Data collection and analysis is the most critical component of MTSS that informs and guides instruction over time (Arden & Pentimonti, 2017; North Carolina MTSS Implementation Guide 2.0, n.d.a). Leaders need to promote a culture of data-driven decision-making, ensuring that teachers and staff have the necessary training and resources to collect, analyze, and use data effectively. This includes data-based problem-solving. Data-based problem solving is used to solve student outcomes across all subjects, grades, and tiers and can address barriers in MTSS implementation (North Carolina MTSS Implementation Guide 2.0, n.d.a). Schools have access to a plethora of data to help make these problem-solving decisions. These data sources include reading and math universal screeners, formative and summative assessments, state assessments, and progress monitoring data. These data sources can help teachers make data-based decisions, which helps guide instruction and interventions for all students (Bahr et al., 2023). Data-based problem-solving ensures that students receive the appropriate level of support and that it is tailored to their individual needs, all while being driven by data and evidence-based practices (Choi et al., 2022).

Three-Tiered Framework

A pyramid three-tiered model aims to give educators a framework to provide high-quality instruction and support based on student needs (Franklin et al., 2023; Mercado, 2018). The three tiers are a layering of support to meet students' academic and social-emotional/behavioral needs by increasing the interventions with time and intensity (Jefferson et al., 2017; North Carolina Department of Public Instruction, n.d.a). In a typical MTSS framework (see Figure 6), the Tier 1

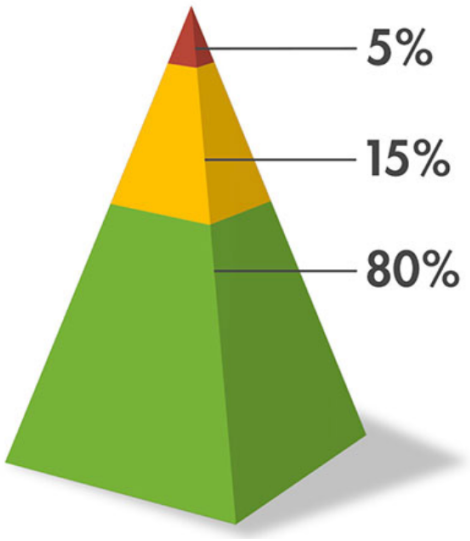
layer focuses on the core or instruction of all students (Dulaney et al., 2013; Jefferson et al., 2017). Tier 2 is referred to as supplemental support. This layer provides additional instruction and interventions for at-risk students identified in the universal screeners. The last layer is Tier 3. In Tier 3, students are provided intense interventions when Tier 2 interventions do not work (Sanchez & O'Connor, 2015).

Tier 1 - The Core. Tier 1 is the foundation of MTSS and includes strategies and supports provided to all students, regardless of their academic or behavioral needs. Tier 1 of MTSS focuses on building a solid foundation of learning for all students in the general education classroom (Arden & Pentimoni, 2017; Dulaney et al., 2013;). "For teachers to provide quality first-tier instruction, they must be responsive to individual student needs, deliver high-quality feedback during instruction, and utilize a variety of learning formats" (Graves & McConnell, 2014, p. 91). An intense core instruction should reach at least 80% of the student population in the classroom (Arden & Pentimonti, 2017). Data can be gathered from universal screeners to determine the percentage of students the core reaches (Arden & Pentimonti, 2017; Franklin et al., 2023). If the core does not reach 80% of the student population in all subgroups without additional support, then the core is inadequate. To help teachers start the process of a strong core Tier 1 instruction, a teacher needs to be aware of a student's diverse needs. "When incorporating the needs of diverse learners into classroom interventions, it is vital to learn about the family structure of each student, including family origins, discipline strategies at home, religion, food, health and hygiene, history, and relationship styles within the family" (Graves & McConnell, 2014, para. 13). The core should also focus on differentiation and research-based techniques so

Tier 1 (sometimes referred to as primary or universal prevention) is effective school-wide or classroom behavior management, which includes teaching students appropriate behavior.

Tier 2 (also referred to as targeted or secondary prevention) offers targeted supports to groups of students with similar needs.

Tier 3 (also referred to as tertiary intervention or intensive, individualized prevention) offers an individualized support plan based on assessment data.



Note. (IRIS Center, n.d.).

Figure 6. Multi-tiers systems of support.

that all students classroom-wide can access the curriculum (Arden & Pentimoni, 2017; Jefferson et al., 2017). Students who do not meet benchmark goals move to Tier 2.

Tier 2 - Supplemental Instruction. Tier 2 is the second layer of support in the MTSS framework. Tier 2 provides additional support to students who are at risk or struggling academically or behaviorally despite receiving Tier 1 interventions. Tier 2 students can also be identified by seeing who performs in the bottom 20% of the universal screener at their grade level (Jefferson et al., 2017). Arden and Pentimonti found that 15% of students will receive Tier 2 interventions at some point in their education (2017). These students receive 30 minutes of additional instructional support beyond the core using evidence-based intervention (Frank Webb & Michalopoulou, 2021). These classroom-based interventions are more specific and targeted toward the needs of individual or small groups of students. Tier 2 supports may include small-group instruction, additional academic or social-emotional assessments, and specialized interventions such as tutoring or social skills groups (Sanchez & O'Connor, 2015).

Tier 3 - Intensive Support. Tier 3 is the third layer of support in the MTSS framework. Tier 3 refers to the most intensive level of support provided to students struggling academically or behaviorally, encompassing 3-5% of students (Arden & Pentimonti, 2017; Franklin et al., 2023). Students who continue to struggle despite Tier 1 and Tier 2 interventions may receive intensive, individualized support (Sailor et al., 2018). These interventions are highly specialized and tailored to the student's unique needs. They often involve a more comprehensive assessment and individualized approach to addressing the student's challenges. Depending on the student's needs, Tier 3 interventions may include special education, one-on-one tutoring, speech therapy, or counseling (Averill & Rinaldi, 2011). The goal of Tier 3 is to provide the most intensive

support to help students make significant progress and catch up with their peers academically or behaviorally.

Essential Elements of MTSS

MTSS in North Carolina is a framework for public school improvement. According to the North Carolina MTSS Implementation Guide 2.0, (n.d.a), the framework was built on the six critical components:

- tiered interventions
- problem solving process
- data evaluation
- communication and collaboration
- capacity building
- leadership

These components are essential because they are the system of structures to implement MTSS at the school and district levels. To implement these critical components, it is essential to have elements or actions that support the implementation sustainability. The necessary elements are screening, progress monitoring, tiered instruction, and data-based decision making.

Universal Screeners

One essential element of the MTSS framework is a school-wide screening system to identify at-risk students with poor learning or behavior outcomes (Arden & Pentimonti, 2017; Pentimonti et al., 2017). The first step in universal screening is to use a screening tool on all students, which makes it universal. A universal screening tool are tools that are used to match children to curriculum and interventions to match their needs and it answers the question “Is the child performing at benchmark levels on key skills (Missouri Department of Elementary and

Secondary Education, 2023, p.1). Universal screening is a school-wide, brief, systematic screening or evaluation of all students for social, emotional, and academic behaviors based on criteria (Arden & Pentimonti, 2017). Academic screeners often assess skills like reading, math, and language, while behavioral screeners focus on social-emotional and behavioral concerns. Universal screening is conducted at preselected dates three times a year determined by the state or district. It is essential to conduct screening at those times because students may be on target at the beginning of the year but may become at risk later in the school year (Pentimonti et al., 2017).

Within the MTSS framework, universal screening is also the first step in identifying students who are at risk (Arden & Pentimonti, 2017; Franklin et al., 2023). Universal screeners help teachers and principals identify at-risk students needing intervention services and school-wide risk factors (Franklin et al., 2023). Universal screening also helps teachers identify at-risk students early and not have to wait until formal state assessment results.

Many universal screeners are available for public schools; however, schools need help determining which universal screener would be most appropriate. School districts and the state decide what universal screening will be used. In North Carolina, the state mandates that AIMS Web will be the reading universal screener for middle schools. For math, the school districts can decide what they want to use. Universal screening is usually conducted three times yearly for reading, math, and behavior to determine student progress (Graves & McConnell, 2014). Teachers often collect the data at the year's beginning, middle, and end. This data provides an equal opportunity for all students to identify risk factors of underachievement in academics and behavior (Franklin et al., 2023). Identifying at-risk students allows teachers and schools to intervene early with intervention services. Graves and McConnell (2014) have promoted and

recommended a three-tiered pyramid model for intervention services instead of using academic achievement and intelligence testing to identify at-risk students.

AIMS Web Plus

AIMS Web Plus is a research-based literacy and math universal screener It measures student's risk levels in foundational reading and math skills. Students in grades six through eight are screened with AIMS Web Plus three times per year. Once the screening is complete, all the subtest data are compiled, and individualized student reports are available on students' reading and math strengths and weaknesses. This platform can track and gather students' progress throughout the year. Schools are also encouraged to use the platform in between screening benchmark periods. This in-between screening is called progress monitoring. Students are progress monitored who show they are at risk based on the universal screening.

Progress Monitoring

"An essential element of effective implementation of Multi-tiered Systems of Support (MTSS) is ensuring that decisions about instruction are rooted in reliable and valid data" (Pentimonti et al., 2017, p. 34). To help gather this valid data, universal screeners are conducted only three times a year to help gather data on every student. Progress monitoring helps identify students who are at risk. During the in-between time when students are screened, at-risk tiered 2 and tiered 3 students are regularly assessed/progress monitored to determine if they are responding to intervention or their goals (Arden & Pentimonti, 2017; Pentimonti et al., 2017). Progress monitoring measures are different than universal screeners. Progress monitoring measures are brief research-based measures (Arden & Pentimonti, 2017). The data from these frequent progress monitoring is also used to determine the effectiveness of the core instruction (January et al., 2018; Arden & Pentimonti, 2017).

Before progress monitoring takes place, data teams should gather to determine the progress monitoring measure, the student's goal, and the frequency of the progress monitoring. During the progress monitoring and intervention period, collected data should be graphed. This graph helps data-based problem-solving teams determine whether the student is progressing sufficiently. If the data suggest that the student is making sufficient progress, then the progress monitoring and the intervention continue (Arden & Pentimonti, 2017). If not, the team will determine how to intensify the intervention.

Fidelity Barriers

Many district and state initiatives like MTSS have been introduced to tackle raising student achievement for all students; however, their implementation, sustainability, and impact have yet to be demonstrated and, in return, impact the fidelity of the program (Sugai et al., 2016). Fidelity evaluation is essential because, without that knowledge, it is not possible to determine if a lack of fidelity is due to a weak implementation or problems with the framework (Halvorsen, 2023). Choi et al. (2022) have researched the implementation of MTSS in schools, and their research has shown that implementing MTSS entirely is a big undertaking, and only 11% of schools have secured fidelity of full implementation. The sustainability of MTSS is imperative due to legal aspects, fiscal responsibility, and school improvement (Bahr et al., 2023).

Many factors play a role in the implementation fidelity and sustainability of MTSS. Researchers have stated that more than teacher capacity for professional learning may be needed (Bahr et al., 2023; Choi et al., 2022; Sugai et al., 2016). Bahr et al. (2023) agreed that building teacher capacity through professional learning was just a stepping stone. The 2023 State of the MTSS Report by Panorama discovered the biggest challenges with implementing MTSS was:

implementing interventions with fidelity, building faculty and staff buy-in, and finding time (Pendharker, 2023).

Teacher buy-in is important for MTSS to be successful. With schools having educators from different educational backgrounds and experiences, teachers are coming to meetings and professional learnings with different mind sets (Clayton, 2023). MTSS is often seen as another fad framework that requires a lot of work for teachers and teachers do not understand the importance of their individual roles (Clayton 2023). “Teachers recognize the importance of progress monitoring and choosing effective interventions, these educators struggle to do so without the knowledge on how it supports students” (Braun et al., 2020).

According to research, the current scheduling structures in secondary schools produce challenges with the MTSS framework (Reed, 2023). The current complex schedule structure presents challenges that prohibit students in MTSS the flexibility in their schedules to move across all tiers based on data (Capin, 2024). The Massachusetts Department of Elementary and Secondary Education (2020) recommends that middle schools can implement a school wide intervention time so students can be grouped across grade levels according to need. This time can be used for all students for either enrichment or interventions.

Measuring MTSS Implementation

To help determine these implementation barriers, North Carolina introduced the NC FAM-S in 2019. The NC Facilitated Assessment of MTSS – School Level (NC FAM-S) is an annual tool that is usually given in April- June that facilitates the assessment of MTSS at the school level (North Carolina MTSS Implementation Guide 2.0, n.d.a). It measures the progress of the implementation of MTSS. It helps the school and the district pinpoint implementation barriers. This 41-question rubric is given by an outside individual at the district level that

addresses the six critical components of MTSS. This tool allows the whole school to participate anonymously. The NC FAM-S opens communication, collaboration, and problem-solving areas by identifying the next steps in MTSS implementation and sustainability (North Carolina MTSS Implementation Guide 2.0, n.d.a).

The North Carolina MTSS Beliefs Survey was developed to measure an educator's beliefs about student learning, problem-solving, and expectations for instructional effectiveness (North Carolina MTSS Implementation Guide 2.0, n.d.b). This survey was modeled after the Florida Beliefs on the RTI Scale. The North Carolina MTSS Beliefs Survey is composed of 17 statements. Educators and Leadership teams respond anonymously to the statements by rating the statements from strongly agree to strongly disagree. Examining the beliefs of the MTSS components allows for targeted professional learning and coaching based on a district's or a school's needs (North Carolina MTSS Implementation Guide 2.0, n.d.b).

Professional Learning

Research has shown that professional learning is critical for building capacity for ongoing sustainability of the MTSS framework (Castillo et al., 2022). Professional learning for educators, also known as professional development (PD) or continuing education, is crucial for enhancing teaching effectiveness, promoting implementation of practices, and improving student outcomes (Castillo et al., 2022). In addition, effective professional learning can build teacher capacity, support staff's well-being, and increase staff retention (Bloomfield et al., 2024). Federal mandates have also significantly shaped professional learning in education by setting guidelines, requirements, and expectations for educators and educational institutions. These mandates often focus on specific areas such as curriculum standards, assessment practices, teacher qualifications, and student achievement goals (Grierson & Woloshyn, 2013).

For many years, professional learning has been a whole group approach involving all educators participating in the same professional development activities simultaneously. This approach ensures that the content is uniform and consistent for all participants, making it more efficient in terms of logistics and planning. The same session can be delivered to a larger group of educators, saving time and resources and ensuring a consistent baseline of knowledge and skills across all educators. However, Castillo et al. (2022) research showed that this form of professional learning had mixed results and little change to practices, teacher knowledge, and student outcomes (Castillo et al., 2022).

In differentiated professional learning, teachers' individual needs are considered and are addressed. Educators have varied levels of experience, expertise, and professional needs that still need to be fully addressed (Bloomfield et al., 2024 and Wood et al., 2016). Also understanding how teachers access and make meaning of the professional learning topics is essential for leadership when developing professional learning topics.

Ongoing differentiated professional learning tailors' experiences to meet educators' diverse needs and preferences based on their roles, experience levels, interests, and professional goals (Grierson & Woloshyn, 2013). Just as teachers consider how to differentiate instruction for their students, the same must be done for building teacher capacity when it comes to professional learning (Gilson et al., 2022). Wood et al. (2016) state that differentiated professional learning allows the content, format, and pacing to be customized and adjusted to meet individual or small-group needs. This personalization supports personalized growth and development aligned with specific goals and priorities and, in return, increases motivation and engagement by addressing individual learning needs and interests. While whole-group professional learning offers

efficiency and consistency, differentiated professional learning provides customization and relevance.

Teachers have expressed a need for more differentiated professional learning. This has been evident in the yearly North Carolina Teacher Working Conditions Survey (NCTWCS) that is given to teachers biennially. The NCTWCS is a comprehensive survey of educator's perceptions that focus on various topics, with one of them being professional learning (North Carolina Department of Public Instruction, 2024). Teachers want professional learning that is tailored to their needs and relevant to them and their core content (Gilson et al., 2022). For example, teachers attending professional learning on younger children, however it was not relevant to teachers who taught older students. The research around differentiated professional learning is still growing. The need for further research is needed to examine how differentiated professional learning can influence MTSS fidelity, implementation, and sustainability.

Summary

This review of the research literature discussed the history of MTSS and how it has progressed from PBIS and RTI into the MTSS framework that is used today by many states based on the ESSA mandate. This review also went into detail on the components of MTSS and its effects on the whole child regardless of ability. Chapter 3 will cover the methodology of the inquiry, which used an explanatory sequential, mixed methods design. The chapter will provide an outline of the focus questions, inquiry methods, and the rationale for the inquiry design. Chapter 3 will also cover the pilot study and the instrumentation employed in the inquiry.

CHAPTER 3: METHODS OF INQUIRY

This mixed methods inquiry focused on addressing the fidelity and effectiveness of implementing Tier 2 MTSS interventions in sixth through eighth grades. This inquiry was conducted at a public middle school by providing ongoing differentiated professional learning to teachers. The inquiry examined teachers' perceptions of MTSS and of low-performing students. During the 2024-2025 school year, quantitative and qualitative data was collected through surveys, teacher interviews, and a walkthrough protocol.

Inquiry Guiding Questions

This inquiry was guided by the following questions:

1. What is the impact of differentiated professional learning on the fidelity of implementation of the Tier 2 MTSS interventions for teachers in grades 6-8 at a rural middle school?
    a. What is the impact of differentiated professional learning on the fidelity of implementation of the Tier 2 MTSS reading interventions for teachers?
    b. What is the impact of differentiated professional learning on the fidelity of implementation of the Tier 2 MTSS math interventions for teachers?
2. What is the influence of differentiated professional learning on teacher perceptions of students' ability to show growth in Tier 2 MTSS interventions?
3. How did this inquiry impact my leadership skill development as a scholarly practitioner?

The results of this inquiry determined if ongoing year-long differentiated professional learning was effective in improving the fidelity of the implementation of the Tier 2 MTSS interventions. I collected data in various ways with inquiry partners to determine teachers' specific learning needs regarding MTSS and to answer these guiding questions. Then, I

developed and facilitated differentiated professional learning experiences for teachers based on their needs.

Inquiry Design and Rationale

Teachers at Stallion Middle School in sixth through eighth grades struggled to grow low performing students in reading and math. According to Stallion Middle School's AIMS Web data from the 2023-2024 school year, 15% of the students were performing below or well below the benchmark in math and 11% in reading. The data was comparable to the End of Grade reading and math assessments, where 30 % of students were nonproficient in reading and 29% were nonproficient in math. My inquiry partners and I analyzed the implementation of Tier 2 interventions of the MTSS framework and how differentiated professional learning on the implementation impacted student achievement and teacher beliefs.

This inquiry employed an improvement science methodology with an explanatory sequential, mixed methods design. An improvement science approach is a problem-solving approach centered on small, measurable, and individualized changes that give valuable feedback to inform improvements on root cause problems (Perry et al., 2020). The inquiry examined the impact of teacher beliefs on MTSS at Stallion Middle School and student achievement and growth with interventions through differentiated professional learning.

A mixed methods explanatory sequential design combines quantitative and qualitative data collection where the quantitative phase of data collection and analysis takes place first, followed by the qualitative phase of data collection and analysis (Harvard Catalyst, 2024). This data was collected through the collaboration of the inquiry partners. In the school setting, the inquiry partners and I collected data and analyzed the implementation and fidelity of Tier 2 interventions within the MTSS framework through descriptive statistical and thematic analysis. Data was

collected through interviews and surveys. In collaboration with inquiry partners, I created instruments that aligned to my inquiry (see Table 2).

The data collected to answer the inquiry questions was quantitative and qualitative to understand the implementation of Tier 2 MTSS interventions and teachers' beliefs. Quantitative data was collected and analyzed using the AIMS Web platform, End of Grade assessments, and Rate of Improvement progress monitoring charts. This data was collected from the beginning of the 2024 school year to 2025 to help determine pre- and post-student achievement. This data was collected at various times during the year, depending on the testing window for the district. Qualitative data was collected during interviews and after any professional learning. It was essential to gather this data to determine teachers' beliefs on the MTSS interventions and the differentiated professional learning process.

Qualitative data in interviews was collected and analyzed to determine teacher beliefs about the MTSS interventions. This data helped plan ongoing differentiated professional learning to meet the teacher's needs related to student growth and target any misconceptions.

Inquiry Partners

Many inquiry partners were used for this inquiry. The inquiry partners included the principal, assistant principal, and the Multi-Tiered Systems of Support (MTSS) interventionist. The principal has been at the school for three years. He has served as an assistant principal and principal at Stallion Middle School. Engagement with these inquiry partners was essential in this inquiry process so that these partners were open and honest during the professional learning and the qualitative data collection process.

Table 2

Alignment of Inquiry Questions and Data Sources

Inquiry Question	Data Sources	Phase of Inquiry	Data Analysis
What is the impact of differentiated professional learning on the fidelity of implementation of the MTSS framework for teachers in grades 6-8 at a rural middle school?	• Pre and Post MTSS Surveys	• 1 and 3	• Descriptive Statistical Analysis
	• AIMS Web Plus Assessment	• 1 and 3	• Descriptive Statistical Analysis
	• Walkthroughs	• 2	• Thematic Analysis
	• Progress Monitoring ROI Chart	• 2	• Descriptive Statistical Analysis
	• Teacher Interviews	• 1 and 3	• Thematic Analysis
What is the influence of differentiated professional learning on teacher perceptions of student's ability to show growth in Tier 2 MTSS interventions?	• Pre and Post MTSS Surveys	• 1 and 3	• Descriptive Statistical Analysis
	• Teacher Interviews	• 1 and 3	• Thematic Analysis

Ethical Considerations

Before the collection of data for this inquiry, I completed the thirteen self-paced online modules with the Collaborative Institutional Training Initiative (CITI) that focused on Social/Behavioral Research Investigators and Key Personnel. At the conclusion of the modules, I received a CITI certification that is valid for three years. The purpose of the CITI modules is to demonstrate an understanding of ethical integrity and compliance when conducting research with human participants. I applied for district approval and then completed the application to the Internal Review Board (IRB's) at East Carolina University. The institution's IRB requires the CITI certification.

Upon approval from the IRB, I conducted the inquiry at Stallion Middle School. I choose the participants in this inquiry. This means teachers in sixth through eighth grades giving Tier 2 research-based reading and math interventions were the sole participants of this inquiry. As part of the informed consent process, I met with each participant to inform them of the research, discussed the data collection process, and assured them of confidentiality during the inquiry (see Appendix B). The participants were also informed that participating in this inquiry would not affect their evaluations. District, school, and participant confidentiality was maintained throughout this inquiry using pseudonyms. All data collected for this inquiry was confidential and anonymous. To maintain confidentiality, any identifying data was de-identified. The data was also stored in a secure database to which only I will have access to.

Instrumentation

This inquiry utilizes an explanatory sequential, mixed methods design. This inquiry aimed to implement research-based interventions primarily in Tier 2 of the Multi-Tiered System of Support framework in sixth through eighth grades. The inquiry aimed to see if increasing the

fidelity of research-based interventions within MTSS would positively impact student academic growth and change teachers' beliefs about struggling students. In this mixed methods design grounded in improvement science, I used different instruments to collect data to determine the effectiveness of Tier 2 interventions and teacher beliefs on the MTSS framework. Qualitative data was collected by conducting teacher interviews and observations over a one-year period. This data was collected during each PDSA cycle to make decisions regarding professional learning.

Pilot Study

In this inquiry, a pilot study was conducted in August of 2024 to ensure the validity of the MTSS survey and teacher interview protocol that would be used for quantitative and qualitative data collection in Phase I and Phase III. The pilot study allowed to identify potential concerns with the questions. After the pilot study was conducted, the MTSS survey and teacher interview protocol and questions were revised based on participants responses. The questions were adjusted to better address the focus questions in this inquiry and to eliminate any bias from myself or misconceptions by the participants.

The survey consisted of seven Likert type statements with the purpose of determining the teacher beliefs on the MTSS framework and student growth through MTSS interventions. The statements were rated on a six-point Likert type scale and with two additional questions focused on capturing demographic data. The survey questions used in this pilot study can be found in Appendix C and D. The teacher interview protocol consisted of five questions designed to foster open and honest conversations regarding the MTSS framework and addressed how teachers prefer to receive professional learning. The teacher interview protocol with questions can be

found in Appendix E. Both the survey instrument and the interview protocol reviewed what the inquiry would be about.

Participants in the pilot study included two science teachers and two math teachers. These teachers were chosen as they did not participate in the full implementation of the inquiry. These teachers were selected to participate in the pilot study because they would not implement Tier 2 interventions in the inquiry and would provide honest feedback. Following the survey and interview pilot, I asked the participants to give feedback on the questions asked. The feedback did yield some wording concerns and the participants came up with additional questions that could be asked. Adjustments and additions were then made to the questions.

Interviews

The teacher interviews in this inquiry were semi-structured to allow the use of both closed-ended and open-ended questions, in addition to follow-up questions to participants for clarification. Teacher interviews did take more time to conduct, but they provided more insight than a traditional survey. The interviews were recorded and transcribed using Voice Memos. To ensure the validity of the interview protocol, the pilot study was conducted with non-participants prior to conducting the official inquiry.

Surveys

Collaborative inquiry partners and I used surveys within Qualtrics to ensure the confidentiality of the participants. The surveys used Likert-type scales, which allow a researcher to evaluate attitudes, opinions, and perceptions. The participants were asked to evaluate a variety of statements and rate them from strongly agree to strongly disagree. To ensure the validity of the MTSS survey, the pilot study was conducted with non-participants prior to conducting the official inquiry.

Observations

I conducted a walkthrough protocol. The protocol monitored progress toward the goals of this inquiry and drove the topics for differentiated professional learning for teachers. Additionally, it monitored the fidelity of Tier 2 interventions. This walkthrough protocol was also used to maintain consistency across all classroom visits. Field notes were also taken during each walkthrough to document observations and reflective journaling.

Inquiry Procedures

I focused on teachers at the Stallion Middle School for this inquiry and the implementation of reading and math researched-based interventions. The inquiry aimed to see if increasing the fidelity of research-based interventions within MTSS will positively impact student academic growth and change teachers' beliefs about struggling students. This inquiry was implemented in three PDSA cycles. The PDSA cycles were conducted separately because each cycle builds on the previous cycle (see Figure 7). Before implementation, I implemented a pilot study to ensure the validity of the survey and interview protocol.

The pilot study was conducted with non-participants. Prior to implementation of the inquiry, I obtained approval from the school district and the Institutional Review Board (IRB). Then, a recruitment letter was sent to teachers requesting their participation in the inquiry. I then met with the participants so the participants would understand that there would be minimal

*Note. (*New York Department of Education Improvement Science Handbook*,* n.d.).

Figure 7. Annotated diagram of a PDSA cycle.

risk to them. The data collected would be confidential and anonymous, and the inquiry would not be tied to the participant's evaluations.

Cycle One- Baseline Data Collection

After the beginning of the year AIMS Web screener was given, a group of students and teachers in sixth through eighth grades were identified before the inquiry. The students were already placed into groups and assigned teachers with interventions. These students were receiving Tier 2 reading and math interventions. After IRB approval as seen in Appendix A, I gathered informed consent forms from the participants (see Appendix B).

I then gathered baseline data. The first data set collected was a pre-assessment MTSS survey. This quantitative data was in the form of a secure electronic survey that I created in collaboration with my inquiry partners and administered using Qualtrics software. The survey used a Likert scale to determine the participants' attitudes, opinions, and perceptions of MTSS and leadership at Stallion Middle School. It also consisted of questions that addressed the participants' background information. All participants were given the same survey. I then conducted teacher interviews to gather qualitative data using the teacher interview protocol. Interviews was chosen over focus groups, so the participants would have a private space to talk freely and share their true beliefs and feelings regarding MTSS. A face-to-face time and location were set up that was convenient for the participants. I sought permission from the participants to record the interviews via Voice Memos so that the interview could be recorded and transcribed for further review. The interview was semi-structured, with all participants receiving the same five questions during the interviews. This allowed me to have an opportunity to ask additional clarifying questions to the participants and gain a deeper understanding of any root causes based

on the participant's responses. At no time did I ask questions that were biased. After the teacher interviews were conducted, I ensured the quality of the data collected.

During this portion of the cycle, I took the baseline data and met with collaborative inquiry partners to look for themes in the data. To uncover the themes in the data, the collaborative inquiry partners and I coded and categorized the data. The baseline data was also used to identify areas of teacher support in implementing research-based interventions and teacher beliefs in struggling students. The baseline data from cycle one was used for comparison throughout the inquiry. After the baseline data had been analyzed, the collaborative inquiry partners and I developed an initial differentiated professional learning plan for the participants. Cycle one lasted three months (see Figure 8).

Cycle Two- Developing and Providing Differentiated Professional Learning

At the start of this cycle, I and the collaborative inquiry partners made a detailed list of initial topics for each participant's differentiated learning plan. Professional learning focused on each participant's specific needs. The topics ranged from implementing research-based interventions to progress monitoring to beliefs about struggling readers. For the cycle's next phase, I provided professional learning coaching support based on the baseline data collected and analyzed in cycle one. After the professional learning and implementation began, I coached each teacher to ensure that interventions were being implemented with fidelity.

I conducted a walkthrough protocol during the inquiry. A walkthrough form was used to determine the impact of professional learning and the implementation of research-based interventions. These results were combined with field notes collected by me. The field notes documented observations during and after professional learning and walkthroughs. Some

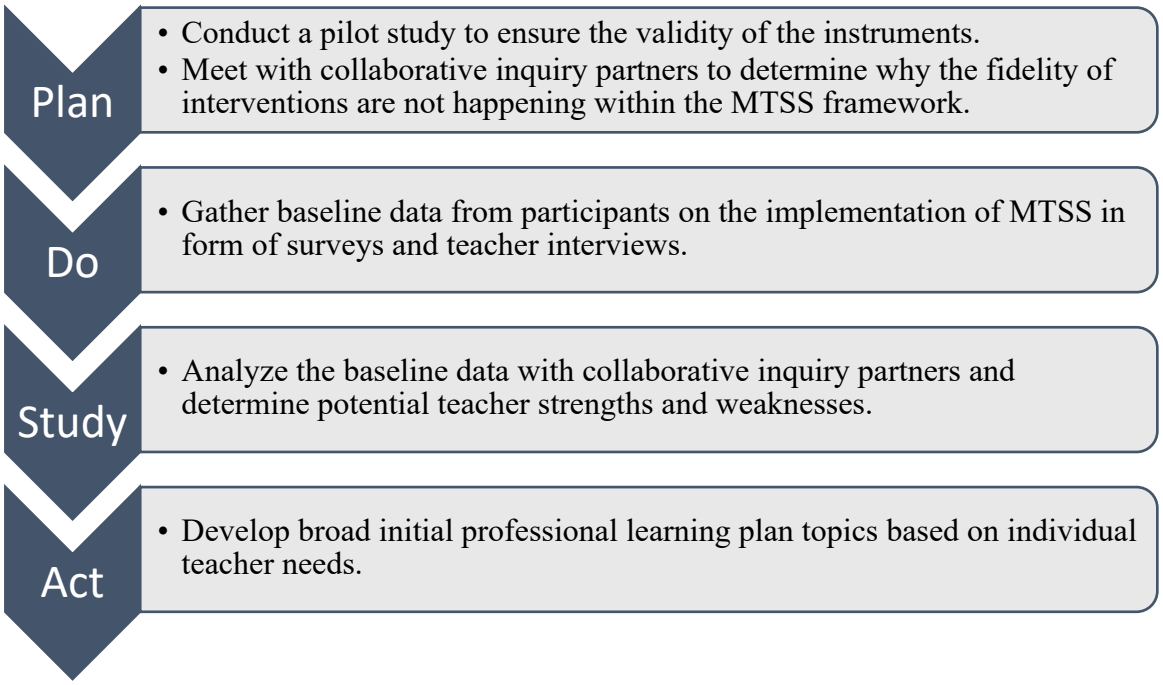


Figure 8. PDSA cycle 1 timeline.

of the items that the field notes captured were the engagement of participants during their differentiated professional learning and my leadership impact. The last set of data collected during cycle two was AIMS Web progress monitoring data placed on the ROI charts. This data was used to determine if the participants were conducting progress monitoring and if students were benefiting from the Tier 2 interventions.

The professional learning was designed to meet teachers' individual learning needs; adjustments to the professional learning topics were made based on the data collected and coaching throughout the two-month period. These adjustments were made throughout cycle two with the collaborative inquiry partners. Cycle two lasted three months (see Figure 9).

Cycle Three- Outcome of the Inquiry

For this concluding cycle, I collected outcome data to determine the effectiveness of differentiated professional learning in implementing MTSS in the classroom. The first set of data collected was in the form of a survey. The survey from cycle one was resent to the participants through Qualtrics. The inquiry looked for changes from the original data regarding attitudes, opinions, and perceptions of MTSS at Stallion Middle School.

I then conducted teacher interviews with the same teachers from cycle one. The interview questions were new, based on the data collected from cycle two. The collaborative inquiry partners and I analyzed and coded the outcome data to see if any growth in implementation or beliefs had changed over the inquiry period. The collaborative inquiry team also looked for themes and patterns. The outcome data was shared with stakeholders, including the participants and the superintendent. The results of this inquiry will hopefully inform

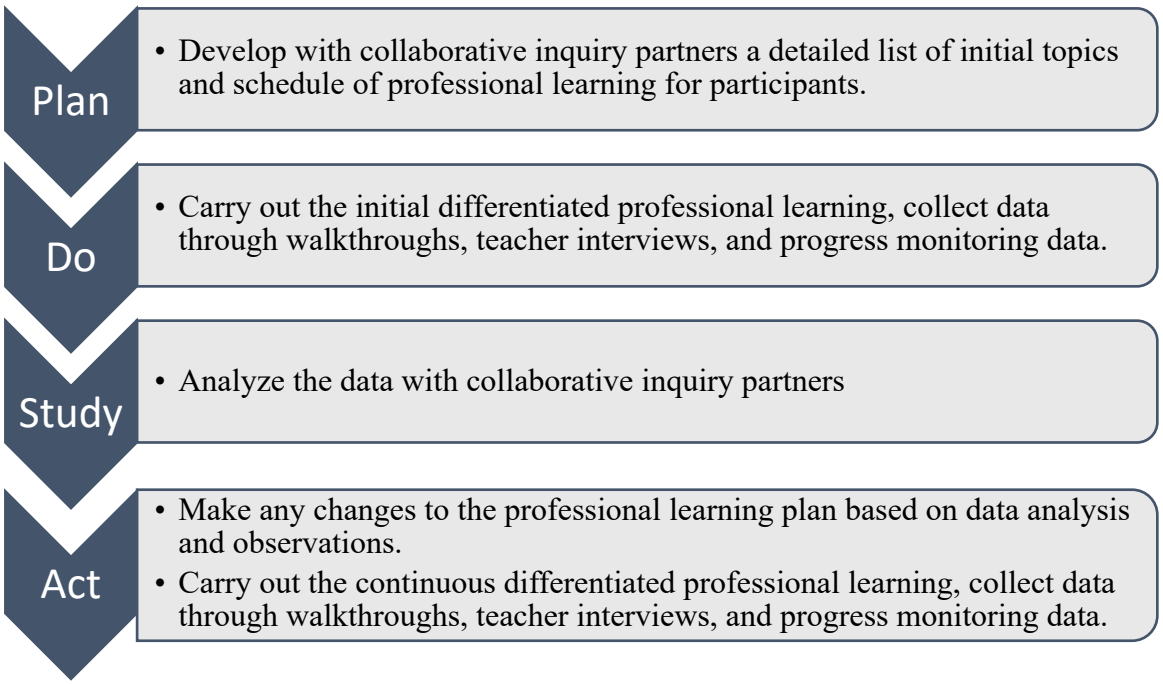


Figure 9. PDSA cycle 2 timeline.

future instructional leadership and improve MTSS implementation at Stallion Middle School. Cycle three lasted three months (see Figure 10).

Inquiry Design Rigor

An explanatory sequential, mixed methods design was used for this inquiry. Quantitative and qualitative data was collected from the participants to gain a better understanding of the problem. This data was gathered to answer the three guiding questions of the inquiry. When qualitative research is being conducted, the trustworthiness of the inquiry findings needs to be ensured. This is done through four elements: credibility, transferability, dependability, and confirmability (Mertler, 2019, p. 178-180) (see Table 3). I utilized the techniques of persistent and prolonged engagement, peer debriefing with the participants and collaborative inquiry partners, member checking, and purposeful sampling (Mertler, 2019, p. 178-180).

Persistent and prolonged engagement with this inquiry at Stallion Middle School served many roles since I am the assistant principal at the site. Being part of the administration at Stallion Middle School allowed for establishing and maintaining relationships, which led to trustworthiness. It also helped in knowing the culture of the site and the classrooms and identifying patterns and expected and unexpected behaviors in the participants of the inquiry.

Peer debriefing was used with the collaborative inquiry team. The collaborative inquiry partners reviewed the questions in both the qualitative teacher interviews and quantitative surveys for this inquiry prior to administering them to limit bias. Peer debriefing with the inquiry team also allowed for reflection and discussion on the survey and interview questions, identifying themes and biases, and receiving feedback on the research.

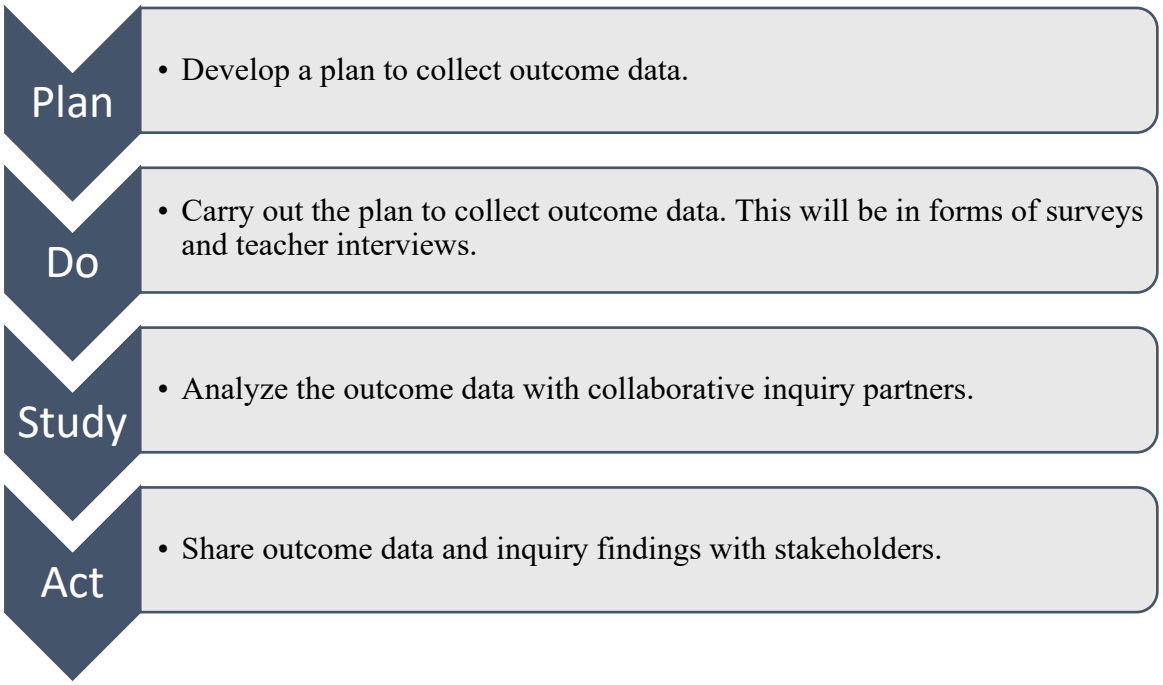


Figure 10. PDSA cycle 3 timeline.

Table 3

Techniques to Address Trustworthiness in Qualitative Data

Criterion	Strategy Employed
Credibility	• Prolong and Persistent Engagement • Peer Briefing • Triangulation • Member Check • Thick Description
Transferability	• Thick Description • Purposive Sampling
Dependability	• External Auditing • Triangulation
Confirmability	• Reflexivity • Triangulation

Note. (Mertler, 2019, p. 179-180).

After data was collected from the participants, member checking took place to ensure the credibility of the data. This was done by having the participants verify the data that was collected during teacher interviews. The collaborative inquiry partners and I reviewed data together. The collaboration with the inquiry team also allowed for adjustments to the professional learning topics based on changing participant needs.

Delimitations, Limitations, and Assumptions

With this inquiry, three assumptions were made. The first assumption is that all teachers in the sixth through eighth grades at Stallion Middle School believe that Tier 2 interventions in Multi-Tiered System of Support framework is effective and beneficial for all students. Therefore, when examining the data collected for this inquiry, it was assumed that the teachers were implementing the research-based Tier 2 interventions given to them with fidelity and consistency.

The second assumption was rooted in belief and cannot be proven. The assumption was that teachers were honest when completing the MTSS belief and FAM-S survey. This assumption could only be determined by their ratings in the MTSS surveys, but the true beliefs cannot be determined. This assumption was critical to the inquiry because ongoing differentiated professional learning would not be meaningful if I did not know the teacher's true feelings regarding MTSS.

The third assumption was teachers would reflect on their teaching and learning needs regarding implementing Tier 2 interventions for students. For the sake of this inquiry, a related assumption was that teachers were willing to be coached through differentiated professional learning based on their needs. It was also assumed that the teachers and administrators involved would collaborate and put students' best interests first.

Scope and Delimitations

This inquiry aimed to ensure that Tier 2 reading and math interventions were implemented with fidelity Stallion Middle School. The inquiry also hoped to see fewer students referred to Tier 3 services due to students' academic needs being met at the Tier 2 level. The focus of this inquiry was determined by the number of low-performing students not growing in reading and math based on AIMS Web data and end-of-grade state assessments. This inquiry focused on limiting the participants to sixth through eighth-grade teachers providing Tier 2 interventions to students at Stallion Middle School and choosing to focus on reading and math instead of social emotional behavior. I also had a vested interest in this inquiry because this is a trend in many schools within the county.

Limitations

The research of this inquiry took place at Stallion Middle School, where I am also an administrator. Therefore, teachers may be nervous about transparency during coaching and surveys because I was conducting the inquiry and was one of their administrators and evaluators. The second limitation was that no data can measure the impact of differentiated professional learning on student achievement. The lack of data may hinder the teachers and administration from seeing the direct result of differentiated professional learning. The third limitation was teachers may need to realize they may have underlying beliefs regarding student growth with MTSS interventions.

Role of the Scholarly Practitioner

I served as the assistant principal at Stallion Middle School. I saw the workings of the school and happenings in the classroom and have background knowledge of the participants in the inquiry. The MTSS framework, especially the giving of research-based interventions, was

not being done with fidelity in some of the classrooms in sixth through eighth grades. The inquiry aimed to see if increasing the fidelity of research-based interventions within MTSS would positively impact student academic growth and change teachers' beliefs about struggling students. I did this work by facilitating differentiated professional learning and coaching based on the participant's needs. The data collected determined these areas of need. This data was in the form of surveys and teacher interviews. The data was analyzed with the assistance of the collaborative inquiry partners. This was done to minimize any bias in the inquiry.

Summary

An explanatory sequential, mixed methods design grounded in improvement science was employed to determine if implementing a continuous differentiated professional learning would increase the fidelity of Tier 2 reading and math inventions at a rural middle school. The research was conducted using a PDSA continuous improvement model in three phases. Three focus questions guided the inquiry. Inquiry partners were used to help analyze data and determine professional learning based on the data collected from surveys and teacher interviews. The inquiry partners included myself, the principal, assistant principal, and school-based MTSS interventionist. Chapter 4 presents the results of the inquiry by examining both quantitative and qualitative data collected throughout the research. This chapter highlights how differentiated professional learning influenced teachers' implementation of Tier 2 interventions with greater fidelity and shaped their perceptions of student growth within the MTSS framework.

CHAPTER 4: RESULTS

The purpose of this inquiry was to address the challenges of implementing Tier 2 interventions at a rural middle school in Eastern North Carolina, Stallion Middle School. We hoped by providing continuous differentiated MTSS professional learning to sixth through eighth grade teachers to see an increase in the fidelity of research-based interventions within MTSS and will positively impact student academic growth and change teachers' beliefs about struggling students. MTSS is a framework used to identify at-risk students in academics, social and emotional needs, and behaviors (Choi et al., 2019; Choi et al., 2022; Frank Webb & Michalopoulou, 2021). To help the sixth through eighth grade teachers, we used inquiry questions that would allow us to determine teachers' specific learning needs regarding MTSS. The questions guiding the inquiry were as follows:

1. What is the impact of differentiated professional learning on the fidelity of implementation of the Tier 2 MTSS interventions for teachers in grades 6-8 at a rural middle school?
    a. What is the impact of differentiated professional learning on the fidelity of implementation of the Tier 2 MTSS reading interventions for teachers?
    b. What is the impact of differentiated professional learning on the fidelity of implementation of the Tier 2 MTSS math interventions for teachers?
2. What is the influence of differentiated professional learning on teacher perceptions of students' ability to show growth in Tier 2 MTSS interventions?
3. How did this inquiry impact my leadership skill development as a scholarly practitioner?

To answer the questions guiding this inquiry, my inquiry partners and I conducted an explanatory sequential mixed methods design grounded in improvement science. The improvement science approach, as described by Lewis (2015), recognizes two types of knowledge: basic and profound. Basic knowledge refers to having an awareness of a subject, such as understanding sixth grade reading or math standards or instructional strategies. Profound knowledge involves applying that basic knowledge within the classroom to improve instructional practices. This distinction was important in this inquiry. Teachers received the basic knowledge of how and why it is important to implement MTSS interventions through differentiated professional learning. In turn, they were expected to transfer that basic knowledge into profound knowledge by applying what they learned in their classrooms. This transfer of knowledge was monitored and documented through walkthrough observations.

To organize and guide the inquiry toward improvement, I used the Plan-Do-Study-Act (PDSA) cycle. PDSA is a model of learning from practice and is grounded in three guiding questions that support continuous improvement (Lewis, 2015):

1. What are we trying to accomplish?
2. How will we know that a change is an improvement?
3. What change can we make that will result in improvement?

These guiding questions and the PDSA cycles allowed the inquiry to stay focused on a problem-centered approach. The inquiry was carried out in three phases aligned to the PDSA framework. The data collection and analysis, both quantitative and qualitative methods were used to gather data about teachers' beliefs related to MTSS, student growth, and current professional learning using Likert-type statements. Interviews and walkthrough protocols were used to collect qualitative data. Interviews helped gain deeper insight into teachers' beliefs and experiences with

MTSS and their views on student learning. The walkthrough tool was used to assess whether teachers were implementing interventions with fidelity and whether they were applying strategies learned through professional development. The remainder of Chapter 4 will focus on the demographics of the teacher participants, followed by the data collection process, the analysis used with the data, and the results of the analysis.

Participants

The participants in this inquiry consisted of 12 sixth through eighth grade teachers. Of the 12 participants, one of the participants is Black, one of the participants is Hispanic, while the remaining 10 participants were White. As the scholarly practitioner leading this inquiry, I worked with four teachers from each grade level, sixth through eighth grade. Of the 12 teachers, two teachers had 1-5 years of teaching experience, one teacher had 6-10 years' experience, one had 11-15 years of experience, and 10 teachers had 16-20 years' experience. The demographics of the participants and their years' experience are represented in Table 4.

Implementation and Data Collection

Participants in this inquiry were selected based on the core content areas they taught at Stallion Middle School. Six of the 12 teachers provided instruction in reading, while the remaining six taught math. All 12 teachers volunteered to participate in the inquiry, which utilized multiple quantitative data instruments to examine the delivery of Tier 2 interventions in the classroom and to gather teachers' perceptions of student growth within the MTSS framework. The inquiry employed an explanatory sequential mixed methods design, organized around three Plan-Do-Study-Act (PDSA) improvement cycles to guide both data collection and continuous improvement efforts. Data collection in cycle one was

Table 4

Demographics of Stallion Middle School Participants

Participants	Years Exp	Sex	Race	Subject
#1	1	Female	White	Math
#2	15	Female	White	Math
#3	4	Female	Hispanic	Math
#4	18	Female	White	Math
#5	17	Female	Black	Math
#6	17	Female	White	Math
#7	17	Female	White	Reading
#8	15	Female	White	Reading
#9	17	Female	White	Reading
#10	8	Female	White	Reading
#11	27	Female	White	Reading
#12	16	Female	White	Reading

used to establish a baseline and to inform the development of differentiated professional learning for implementation in cycle two.

Cycle one began in January 2025 with the collection of baseline data from pre-existing sources, including results from previous North Carolina End-of-Grade (EOG) assessments. To ensure the validity of the research instruments, I conducted a pilot study with non-participant teachers to test the interview and survey protocols. In January 2025, I scheduled meetings with each participant during their designated planning periods. All 12 participants provided informed consent, completed an MTSS Likert-type survey for either reading (see Appendix C) or math (see Appendix D) based on their core instructional area, and participated in pre-implementation interviews. The survey was designed to gather quantitative data by capturing teachers' initial perceptions of students' capacity to demonstrate growth through Tier 2 MTSS interventions, while the interviews gathered qualitative data. This data provided a deeper understanding of participants' current practices, perspectives, and perceived challenges related to implementation. The participant's responses were captured by Voice Memos.

PDSA Cycle two involved the implementation of differentiated professional learning designed to strengthen the fidelity of Tier 2 MTSS intervention delivery and enhance teachers' confidence in their instructional effectiveness. This phase focused on equipping teachers with effective instructional strategies tailored to their needs and included classroom observations, utilizing the walkthrough protocol to monitor practices and provide targeted, data-informed feedback. Post-conference discussions allowed teachers to reflect on their instructional approaches, while my own journaling captured insights and documented the process. Inquiry partner debriefing sessions supported data analysis and contributed to ensuring the credibility and validity of the findings. The results from this cycle informed the refinement and finalization

of the differentiated professional learning content for PDSA Cycle three. PDSA Cycle two was conducted from February 2025 through May 2025.

The third and final PDSA cycle began in May 2025 and concluded in August 2025. This cycle focused on collecting outcome data to determine the impact of the inquiry. All 12 participants engaged in a post-implementation survey and a semi-structured interview to reflect on their experiences with the differentiated professional learning and its effect on implementing Tier 2 MTSS interventions in their classrooms.

Data Analysis

To address inquiry questions one and two, both descriptive statistical analysis and qualitative thematic analysis were employed. Descriptive statistics was applied to the pre-implementation and post-implementation survey data to summarize and organize the results. All statistical calculations were conducted using Qualtrics, and the outputs were reviewed for accuracy. The resulting descriptive data informed cycles one and three.

For the qualitative data analysis, I recorded all participant interviews and transcribed the audio recordings verbatim. A multilevel coding process was then employed to analyze the data. Thematic analysis began with initial coding to identify significant ideas within the interview transcripts. Next, I applied focused coding by hand to refine and consolidate these codes into broader categories. From these categories, thematic coding was used to identify and define emerging themes. As a final step in the coding process, I input the data into Chat GPT, an AI tool to compare the themes generated by my hand coding with those identified through AI. This comparison served as an additional layer to confirm consistency of the findings. This systematic process ensured that the analysis accurately represented the participants' voices while providing

deeper insight into how differentiated professional learning influenced their instructional practices.

Results

The results for this inquiry have been organized by each inquiry question and the respective data collection instrumentation used.

Inquiry Question 1

What is the impact of differentiated professional learning on the fidelity of implementation of the MTSS framework for teachers in sixth through eighth grades at a rural middle school?

MTSS Survey

The comparison of the pre-implementation MTSS survey (January 2025) and the post-implementation survey (August 2025) for both reading and math provides insight into how differentiated professional learning influenced teacher practice and perceptions. The survey, which included informed consent, contained seven Likert-type statements that measured changes in teacher beliefs and implementation of Tier 2 interventions.

Reading. For reading, the findings show the importance of professional learning. On Question #8, all teachers (100%) agreed that differentiated professional learning supported their implementation of Tier 2 interventions in the classroom (see Table 5). This demonstrates that the professional learning was relevant and beneficial to their practice. Question #4 also supports this outcome, with 83% of teachers reporting that recurring meetings around progress monitoring and student growth were taking place, highlighting the importance of collaboration (see Table 6).

At the same time, some contradictions emerged in the data. At the beginning of the inquiry, 83% of participants felt their reading peers were implementing Tier 2 interventions with

Table 5

MTSS Reading Likert-Type Survey Response for Statement: "I believe that differentiated professional learning on implementing Tier 2 reading interventions in the classroom can be effective."

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	33%	67%	0%	0%	0%	0%
August 2025	67%	33%	0%	0%	0%	0%
Percentage Change	+33%	-33%	NA	NA	NA	NA

Table 6

MTSS Reading Likert-Type Survey Response for Statement: "Re-occurring Tier 2 meetings to discuss progress monitoring and student growth take place at Stallion Middle School."

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	17%	67%	0%	17%	0%	0%
August 2025	33%	50%	17%	0%	0%	0%
Percentage Change	+17%	-17%	+17%	-17%	NA	NA

fidelity. By the end of the inquiry, that percentage dropped to 50% (see Table 7). This suggests that while professional learning improved teachers' own skills and confidence, it also made them more aware of gaps in how consistently their peers were applying interventions. This perception is inconsistent with Question #2, where 66% of participants indicated, they felt adequately trained to implement Tier 2 interventions (see Table 8).

Math. For math, the results show growth across all areas. On Questions #8 and #4, the math teachers rated their responses the same as the reading teachers. All math teachers (100%) agreed that differentiated professional learning supported their implementation of Tier 2 interventions in the classroom. This demonstrates that the professional learning was meaningful and beneficial to their practice as well (see Table 9 and 10, respectively). Question #7 further supports this outcome, with 66% of teachers reporting that ongoing professional learning on Tier 2 supports was effective and was taking place. This was a 33% increase from the beginning of the inquiry and highlights the value of collaboration (see Table 11).

On Question #3, math teachers' perceptions did not change regarding whether their peers were implementing Tier 2 math interventions with fidelity from the beginning to the end of the inquiry (see Table 12). However, there was a positive increase of 33% in teachers agreeing that they had been adequately trained to implement Tier 2 interventions in the classroom (see Table 13). This suggests that while perceptions of peer fidelity remained stable, professional learning increased teachers' own sense of preparedness and ability to deliver interventions effectively.

Table 7

MTSS Reading Likert-Type Survey Response for Statement: "Teachers in our school in grades 6-8 are implementing Tier 2 reading interventions with fidelity."

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	17%	67%	17%	0%	0%	0%
August 2025	0%	50%	33%	17%	0%	0%
Percentage Change	-17%	-17%	+17%	+17%	NA	NA

Table 8

MTSS Reading Likert-Type Survey Response for Statement: "I have been adequately trained on how to implement Tier 2 reading interventions."

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	50%	17%	33%	0%	0%	0%
August 2025	17%	50%	33%	0%	0%	0%
Percentage Change	-33%	+33%	0%	NA	NA	NA

Table 9

MTSS Math Likert-Type Survey Response for Statement: "I believe that differentiated professional learning on implementing Tier 2 reading interventions in the classroom can be effective."

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	50%	33%	17%	0%	0%	0%
August 2025	50%	50%	0%	0%	0%	0%
Percentage Change	0%	+17%	-17%	NA	NA	NA

Table 10

MTSS Math Likert-Type Survey Response for Statement: "Re-occurring Tier 2 meetings to discuss progress monitoring and student growth take place at Stallion Middle School."

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	17%	67%	17%	0%	0%	0%
August 2025	33%	50%	17%	0%	0%	0%
Percentage Change	+17%	-17%	0%	NA	NA	NA

Table 11

MTSS Math Likert-Type Survey Response for Statement: "Current professional learning provided on Tier 2 supports is effective."

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	0%	33%	50%	17%	0%	0%
August 2025	33%	33%	33%	0%	0%	0%
Percentage Change	+33%	0%	-17%	-17%	NA	NA

Table 12

MTSS Math Likert-Type Survey Response for Statement: "Teachers in our school in grades 6-8 are implementing Tier 2 math interventions with fidelity."

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	17%	50%	33%	0%	0%	0%
August 2025	33%	33%	33%	0%	0%	0%
Percentage Change	+17%	-17%	0%	NA	NA	NA

Table 13

MTSS Math Likert-Type Survey Response for Statement: "I have been adequately trained on how to implement Tier 2 math interventions"

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	33%	17%	33%	0%	17%	0%
August 2025	33%	50%	0%	17%	0%	0%
Percentage Change	0%	+33%	-33%	+17%	-17%	NA

Universal Screening Data

AIMS Web Plus data was also collected and analyzed for inquiry question one at Stallion Middle School during the 2024–2025 academic year. This data provided valuable insight into how differentiated professional learning influenced both teacher practice and student outcomes. Reading AIMS Web data (Table 14), and math AIMS Web data (Table 15) were compiled during the Fall universal screener in the week of September 9, 2024, the Winter screener during the week of January 13, 2025, and the Spring screener during the week of May 6, 2025. To ensure comparability across time points, students who transferred in or out of the school during the year were excluded from the analysis, leaving a total of 465 students who completed the universal screener in both reading and math.

Following the Fall screener, 30 students were identified as needing Tier 2 reading interventions and 36 students as needing Tier 2 math interventions from a core classroom teacher. Although some overlap existed due to students qualifying for multiple interventions, the data presented reflects distinct Tier 2 student groups.

For reading, the AIMS Web Plus universal screener was administered to students in grades sixth through eighth and included subtests in reading comprehension, vocabulary, and fluency to generate a composite score. Based on their performance, students were classified as high risk, medium risk, or low risk. Data was collaboratively analyzed by myself, the MTSS interventionist, and classroom teachers to determine Tier 2 eligibility and ensure research-based interventions were assigned appropriately.

Table 14 summarizes the performance of Tier 2 reading students across the 2024–2025 school year. The screener was administered online through the TestNav app, with students logging in using assigned credentials. Results were automatically uploaded to the AIMS Web

Table 14

Number of Tier 2 6-8 Grade Students Who Receive Reading Research-Based Interventions at Stallion Middle School During the 2024-2025 School Year

Universal Screening Data Composite Scores			
Date	High Risk	Medium Risk	Low Risk
9/9/24	6	24	0
1/13/25	9	10	13
5/6/25	13	7	13

Table 15

Number of Tier 2 6-8 Grade Students Who Receive Math Research-Based Interventions at Stallion Middle School During the 2024-2025 School Year

Universal Screening Data Composite Scores			
Date	High Risk	Medium Risk	Low Risk
9/9/24	14	22	0
1/13/25	9	11	16
5/6/25	13	12	11

platform. At the Fall administration in September, 30 students were identified for Tier 2 reading interventions: six were classified as high risk and 24 as medium risk. At the Winter administration, those same students performed as follows: nine were classified as high risk, 10 as medium risk, and 13 as low risk. In the Spring, the data showed that of the same group of Tier 2 students, 13 were considered high risk, seven medium risk, and thirteen low risks.

In math, the AIMS Web Plus universal screener was administered to students in grades sixth through eighth and consisted of subtests in number sense fluency, number comparison fluency–triads, mental computation fluency, and concepts and applications. These subtests were combined to generate a composite score, which categorized students as high risk, medium risk, or low risk. The MTSS interventionist, classroom teachers, and I reviewed the data collectively to confirm Tier 2 placement and to align students with appropriate research-based interventions.

Table 15 provides a summary of Tier 2 math student performance over the course of the 2024–2025 school year. Similar to reading, the screener was delivered digitally through the TestNav platform, with students completing the assessments using their unique login credentials. Scores were automatically recorded and stored in the AIMS Web system. In September, during the Fall administration, 36 students were identified for Tier 2 math support, with 14 classified as high risk and 22 as medium risk. By the Winter assessment, the performance of these students shifted, with nine identified as high risk, 11 as medium risk, and 16 as low risk. At the Spring administration, the results showed another change: 13 students were categorized as high risk, 12 as medium risk, and 11 as low risk.

Teacher Interviews

The analysis of teacher responses revealed two major themes that highlighted the challenges of implementing Tier 2 interventions in the classroom at Stallion Middle School.

These themes included the frustration with the use of structured materials and persistent barriers related to time and scheduling. Together, these themes provided valuable insights into teachers' experiences and the contextual factors influencing fidelity of Tier 2 MTSS implementation (See Table 16).

Frustration with Use of Structured Materials

The first theme to emerge from the teacher interview data was the frustration teachers experienced when relying on research-based, county-approved programs to guide Tier 2 instruction. While these intervention curriculums were designed to provide structured support, several teachers noted that the content did not consistently align with grade-level standards or assessments. This misalignment created frustration, as teachers felt the lessons were not adequately preparing students for classroom expectations or standardized testing.

Participant #11 expressed that the interventions be more aligned to the standards:

> At this stage in the school year, some of the lessons we are to present are too childish. The kids aren't interested in them because they seem like baby stuff… they think they've been successful, but they cannot replicate that and apply it to grade level assignments or tests.

Similarly, participant #4 agreed with her frustration with the intervention curriculum:

> Sometimes with the program we currently have, it doesn't necessarily pinpoint the area that the kids necessarily need. Some of the lessons are more generic and I look at the kids and I wish I could dive deeper into multiplication facts… I wish that we could get to a place where it was schoolwide and I was working with sixth, seventh, and eighth graders that all need this skill instead of just eighth graders that need math Tier 2 intervention.

Table 16

Progression from Codes to Categories to Themes with Analysis of Teacher Interviews

Codes	Categories	Themes
"using Delta Math lessons" "scripted source" "county-approved program"	• Reliance on structured and research-based materials	• Frustration with Use of Structured Materials
"doing it the same time every day" "consistent routine" *"*hard to get everyone in the right place at the right time"	• Consistency • Daily implementation barriers	• Time and Scheduling Challenges
"students are excited to hit the goal" "they're proud when they get it" "some don't want to do it" "throws the group off"	• Increased Student engagement • Lack of Student motivation •	• Student Motivation and • Resistance

Participant # 2 had concerns regarding using the intervention curriculum and still not meeting their student's needs:

> Sometimes it's a struggle to get through the scripted stuff and still feel like I'm meeting the kids where they are.

Based on the participants interviews the teachers expressed clear frustration with the intervention curriculum, noting that it often limited their ability to adapt instruction to meet the diverse needs of their students. Several participants described the materials as rigid and overly structured, which made it difficult to differentiate effectively or incorporate strategies they knew would engage their students. Others shared that the pacing and scripted nature of the lessons created challenges in balancing intervention requirements with regular classroom instruction. These frustrations reflected teachers' concerns that the intervention curriculum, while intended to provide support, sometimes hindered their instructional flexibility and left them feeling constrained in their professional judgment.

Time and Scheduling as Barriers

The second theme identified through interviews showed that the teachers at Stallion middle felt they had difficulty finding time for Tier 2 interventions, managing pull-outs, or aligning with other demands. This showed how teachers struggle with consistency, routine, and fitting interventions into the day.

Participant # 7 felt that that the daily schedules, school wide interruptions or logistical challenges made it difficult to consistently hold Tier 2 intervention. This teacher shared:

> We're supposed to do it consistently, but it doesn't always happen because the schedule gets interrupted or other things come up.

Participant #10 shared their frustration of students struggling to get to intervention on time. This leads to teachers being frustrated due to the limited time they must complete interventions. Participant #10 shared:

> Just when I do when, like getting all the kids in the right place at the right time — that's probably the hardest part. Getting them consistent every day is tough.

Participant #6 agreed that the Tier 2 intervention lessons often ran long or required more time than the 30-minute block allowed, making it difficult to complete them as intended. The teacher shared, "Sometimes the lessons take longer than they're supposed to, and it's hard because we don't always have enough time to finish them in the block."

Based on the participant's responses I noted that improvements needed to be made to help address the expressed frustration with the lack of adequate time and the challenges posed by scheduling when implementing Tier 2 interventions. Several noted that the 30-minute intervention block was insufficient to provide the depth of instruction their students required, often leaving them wishing for additional time within their own classrooms to address specific needs. Others described the difficulty of balancing intervention with core instruction, as student groups frequently shifted based on changing needs, which disrupted continuity. Teachers also highlighted the strain of sharing students across content areas, noting that students who required additional reading support might simultaneously need math support, leading to scheduling conflicts and reduced access to intervention. These time and scheduling barriers left teachers feeling as though they could not fully meet the needs of their students, despite valuing the purpose and structure of the intervention block.

Once the teacher interviews concluded and the data was coded and analyzed by hand, and the themes that were determined, I used the themes to determine next steps in the differentiated professional learning.

Inquiry Question 2

What is the influence of differentiated professional learning on teacher perceptions at Stallion Middle School of students' ability to show growth in Tier 2 MTSS interventions?

MTSS Survey

The comparison of the pre-implementation MTSS survey (January 2025) and the post-implementation survey (August 2025) for both reading (Table 17) and mathematics (Table 18) provides insight into how differentiated professional learning influenced teacher perceptions on student's ability to show growth with Tier 2 interventions regardless on home environment or behavior. The same survey was used to answer inquiry question one with an additional question to answer inquiry question two.

Reading. For reading, the findings indicated areas of growth. On Question #5, 50% of teachers agreed that all students can make gains with Tier 2 reading interventions regardless of home environment or behavior. This reflects a 17% increase from the pre-implementation survey and suggests that the professional learning was both relevant and beneficial to their instructional practice (see Table 17).

Math. For math, the findings also demonstrated growth. On the same question, math teachers responded consistently with the reading teachers, with 83% agreeing that differentiated professional learning supported their belief in students' ability to demonstrate growth through Tier 2 interventions. This represented a 17% increase from the pre-implementation survey,

Table 17

MTSS Reading Likert-Type Survey Response for Statement: "All students can show gains with Tier 2 reading interventions regardless of home environment or behavior."

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	33%	0%	50%	17%	0%	0%
August 2025	17%	33%	33%	17%	0%	0%
Percentage Change	-17%	+33%	-17%	NA	NA	NA

further illustrating the positive influence of professional learning on teacher practice (see Table 18).

Teacher Interviews

The next set of data collected to address inquiry question two was teacher feedback gathered through interviews following the MTSS implementation survey. The analysis of teacher responses revealed one theme (See Table 16). The theme to emerge from the teacher interview data when discussing student growth was the frustration teachers experienced was some students embraced goals, while others resisted or refused to participate, disrupting group dynamics. This lack of engagement or behaviors during Tier 2 intervention led to some teachers believing that those students would not be as successful.

Participant #6 expressed that even with personalized goals with some students that was not enough:

> Our goal is always to get five out of six questions right. The kids know that's the goal and it's kind of like — they're excited to hit that goal, especially the ones that have been struggling. … But there are always a couple who just don't want to do it, and that can throw the group off.

Participant #3 agreed with how engagement impacts student growth:

> It's intensive instruction, but sometimes with certain groups, it's hard to keep them focused the whole time when we're using the scripted source.

Across the teacher interviews, student motivation and resistance emerged as a recurring theme influencing teacher perceptions and their beliefs in the effectiveness of Tier 2 interventions. Several teachers described how students were motivated by clear and measurable

Table 18

MTSS Math Likert-Type Survey Response for Statement: "All students can show gains with Tier 2 math interventions regardless of home environment or behavior."

Pre/Post Survey Administration	Strongly Agree	Agree	Somewhat Agree	Somewhat Disagree	Disagree	Strongly Disagree
January 2025	17%	50%	17%	17%	0%	0%
August 2025	33%	50%	0%	0%	17%	0%
Percentage Change	+17%	0%	-17%	-17%	+17%	NA

goals during small-group instruction. Teachers noted that this sense of accomplishment often boosted confidence among students who had previously struggled.

At the same time, teachers identified persistent challenges with student resistance. Students resisted intervention lessons when they perceived the materials as developmentally inappropriate or "too childish." This lack of buy-in led to disengagement and, at times, disruptive behavior. In addition, scripted programs sometimes limited flexibility, making it difficult for teachers to adjust instruction in ways that sustained student interest. Teachers expressed that while individualized approaches could spark motivation and lead to visible improvement, maintaining consistent engagement across all students remained a challenge.

Inquiry Question 3

How did the impact of this inquiry impact my leadership as a scholarly practitioner? This inquiry had a significant impact on my leadership. Engaging in the PDSA cycles strengthened my ability to lead with both evidence and collaboration. The process required me to balance data-driven decision making with the experiences of teachers, which enhanced my capacity to design and facilitate differentiated professional learning that was purposeful and responsive. Rather than seeing leadership as simply providing direction, I came to understand it as guiding a process in which teacher voice and feedback played a central role.

Walkthrough Tool

A key part of my growth came from using the walkthrough tool to gather personal reflections during classroom visits. These reflections allowed me to critically examine how teachers were implementing Tier 2 interventions and to connect those observations back to the differentiated professional learning that had been provided. Documenting my own insights through this process not only helped me monitor fidelity of implementation but also deepened

my self-awareness as a leader. It pushed me to reflect on how my leadership decisions influenced classroom practice and how I could better support teachers in real time.

Through this work, I also grew in my practice of inquiry-based leadership. Listening carefully to participants' perspectives, analyzing multiple data sources, and adjusting strategies to meet the needs of teachers and students reinforced the idea that leadership is a continuous cycle of learning, reflection, and improvement. This experience taught me that lasting change does not come from a single initiative, but from ongoing efforts that are studied, refined, and sustained over time.

Most importantly, this inquiry shaped my understanding of leadership within the framework of improvement science. I learned to approach challenges with a mindset of continuous improvement and to position myself as a partner in the work rather than just a leader of it. This shift strengthened my credibility with teachers and built stronger relationships, as they saw me not only as an administrator, but as a fellow learner committed to supporting their growth and the success of all students.

Journaling

Throughout the inquiry process, I engaged in reflective journaling during walkthroughs and post-conferences as a means of deepening understanding of teacher implementation and professional growth. Journaling served as both a data collection tool and a reflective practice. During classroom walkthroughs, I documented observations related to the fidelity of Tier 2 interventions, instructional strategies, and student engagement. These notes provided immediate insight into how teachers were applying strategies introduced through differentiated professional learning. Following each walkthrough, I reflected on teacher feedback and record personal reflections on leadership and facilitation of professional learning. This journaling process

strengthened my ability to connect observational data with teacher perceptions, shaping future professional learning sessions and fostering a culture of reflective practice within the MTSS implementation process.

Summary

Chapter four presented the findings from the explanatory sequential, mixed methods approach to the data collected during this inquiry. The results from the pre- and post-implementation MTSS surveys highlighted areas of growth in teacher beliefs and practices, particularly in how differentiated professional learning supported the fidelity of Tier 2 intervention implementation in both reading and math. In addition, the AIMS Web Plus universal screener data provided evidence of student progress across the school year, showing movement of students from higher to lower risk categories. The teacher interviews further supported these findings by revealing common themes such as the importance of consistency and routine, the use of structured intervention materials, and the challenges of time and scheduling barriers. Together, these data sources demonstrated that differentiated professional learning had a meaningful impact on teacher practice and perceptions of student growth, while also identifying ongoing challenges that must be addressed for sustained success. Chapter 5 provides a comprehensive discussion of the findings, connecting the results of the inquiry to the existing literature and the guiding questions of the inquiry. Chapter 5 also addresses the implications for practice, outlines the limitations of the inquiry, and offers recommendations for future research and continued improvement in Tier 2 MTSS implementation.

CHAPTER 5: SUMMARY, CONCLUSION, & RECOMMENDATIONS

The purpose of this inquiry was to examine the impact of differentiated professional learning on the fidelity of Tier 2 MTSS implementation and on teacher perceptions of student growth at Stallion Middle School, a rural middle school serving students in grades 6–8. Guided by improvement science and organized through three PDSA cycles, the inquiry sought to determine how differentiated professional learning could build teacher capacity to deliver Tier 2 interventions consistently and effectively across reading and math. This inquiry further aimed to explore how teachers' beliefs about student growth were influenced when supported with targeted differentiated professional learning and ongoing reflection, feedback, and collaboration.

This chapter presents the summary, conclusions, and recommendations that emerged from the inquiry. It begins by revisiting the inquiry's findings in relation to the guiding research questions, followed by conclusions that connect these results to the literature and framework. The chapter concludes with recommendations for practice, leadership, and future research to strengthen MTSS implementation and sustain improvement efforts in similar educational contexts.

Summary of the Findings

In this inquiry, I sought to determine the effectiveness of differentiated professional learning on the fidelity of interventions within the MTSS framework at Stallion Middle School. I also examined the teachers' perceptions of the interventions being implemented as well as their overall perceptions of students being able to show growth within the MTSS framework.

The purpose of this inquiry was guided by three inquiry questions:

1. What is the impact of differentiated professional learning on the fidelity of implementation of the Tier 2 MTSS interventions for teachers in grades 6-8 at a rural middle school?
2. What is the influence of differentiated professional learning on teacher perceptions of students' ability to show growth in Tier 2 MTSS interventions?
3. How did this inquiry impact my leadership skill development as a scholarly practitioner?

The first goal of this inquiry was to determine how differentiated professional learning influenced teachers' fidelity in implementing Tier 2 MTSS interventions within a rural middle school. Specifically, the inquiry sought to examine whether professional learning experiences that were tailored to teachers' content areas and instructional needs could strengthen the fidelity of Tier 2 intervention practices with the MTSS framework. By focusing on the fidelity of implementation, this goal addressed the need for instructional practices that not only comply with district expectations but also ensure that students identified for Tier 2 support receive interventions delivered with fidelity.

The second goal of this inquiry was to explore how differentiated professional learning shaped teachers' beliefs about student growth with Tier 2 MTSS interventions. This goal focused on understanding whether providing targeted professional learning opportunities not only supported instructional fidelity but also influenced teacher perceptions of students' capacity to make academic progress, regardless of factors such as home environment or behavior. By examining changes in teacher beliefs alongside changes in practice, this goal addressed the question of how professional learning impacts both the implementation of MTSS and the expectations surrounding student achievement.

The objective of the first improvement cycle was to establish a clear baseline of teacher perceptions and practices related to Tier 2 MTSS implementation. This cycle focused on collecting and analyzing pre-implementation data, including survey responses and teacher interviews, to identify existing challenges, strengths, and gaps in Tier 2 intervention delivery. Additionally, this cycle included a pilot study with non-participants to validate the research instruments and ensure the reliability of the data collection process. By clarifying the current state of MTSS implementation at Stallion Middle School, the first cycle provided the evidence base needed to design and deliver differentiated professional learning.

The objective of the second improvement cycle was to implement differentiated professional learning designed to strengthen the fidelity of Tier 2 MTSS intervention delivery among teachers. This cycle emphasized providing targeted differentiated professional learning opportunities that addressed the specific instructional needs of reading and math teachers. In addition to professional learning, the cycle incorporated classroom walkthroughs, post-conference reflections, and personal journaling to monitor instructional changes and provide timely feedback. The aim of Cycle 2 was to determine whether differentiated professional learning and ongoing support structures could improve the consistency and alignment of Tier 2 practices across content areas.

The objective of the third improvement cycle was to evaluate the impact of differentiated professional learning on teacher implementation of Tier 2 MTSS interventions and to determine the extent to which the professional learning sustained changes in teacher practice and perceptions of student growth. This cycle focused on analyzing post-implementation data, including surveys, interviews, and walkthrough observations, to assess growth from the baseline established in cycle one and the interventions applied in cycle two. Additionally, cycle three

aimed to identify which elements of the differentiated professional learning were most effective in supporting fidelity of implementation and in shaping teacher beliefs. The findings from this cycle informed the conclusions and recommendations for sustaining MTSS practices at Stallion Middle School and for determining future professional learning efforts.

In general, the results of this inquiry demonstrated that differentiated professional learning positively influenced both the fidelity of Tier 2 MTSS implementation and teacher perceptions of student growth. Quantitative survey data indicated measurable increases in teacher confidence and consistency in delivering Tier 2 interventions across both reading and math. Teachers reported stronger beliefs that all students, regardless of external factors, were capable of making academic progress when provided with targeted interventions. Qualitative data from interviews and walkthroughs reinforced these findings, revealing that teachers felt more prepared and supported in implementing Tier 2 interventions though challenges such as time, scheduling, and lack of curriculum alignment. Overall, the inquiry showed that differentiated professional learning was effective in building teacher capacity and shaping a culture of higher expectations for student achievement within the MTSS framework.

Teacher participants expressed that the inquiry provided meaningful opportunities for professional growth and collaboration. They valued the differentiated nature of the professional learning, noting that it was directly connected to their instructional contexts in reading and math rather than being a generic or one-size-fits-all approach. Several teachers reported that the professional learning sessions, combined with walkthrough feedback and post-conference discussions, helped them feel more confident in delivering Tier 2 interventions with greater fidelity. They also appreciated that their voices were included in the process through surveys,

interviews, and reflection, which reinforced a sense of shared ownership in improving Tier 2 practices at Stallion Middle School.

At the same time, participants acknowledged that challenges remained, particularly in the areas of time, scheduling, and the lack of alignment of intervention materials to grade-level standards. While these barriers created frustration, teachers emphasized that the inquiry allowed them to collaboratively identify solutions and strengthened their belief that students could show growth when interventions were implemented consistently. Overall, the teachers viewed the inquiry as a valuable and supportive experience that not only improved their instructional practices but also fostered a culture of collaboration and continuous improvement.

This inquiry also reshaped my leadership skill development by transforming how I approached teachers and their needs. Engaging in differentiated professional learning with teachers deepened my understanding of leadership as an adaptive process rather than a fixed role. The inquiry required me to navigate complex dynamics among staff, data, and instructional practices, and in doing so, I developed a more reflective, responsive, and evidence based approach to leading change within the MTSS framework.

At the beginning of the inquiry, my leadership focus was largely operational, ensuring interventions were implemented correctly and that data collection systems functioned as intended. However, as I progressed through the PDSA cycles, I began to see leadership as a process of continuous learning. The inquiry encouraged me to move beyond management to mentorship. By engaging with teachers as partners in improvement, I practiced distributive leadership that emphasized collaboration, trust, and shared accountability. Teachers' willingness to reflect openly during post-conferences and professional learning sessions demonstrated that

leadership grounded in empathy and transparency fosters deeper engagement and ownership of the improvement process (Choi et al., 2022; Castillo et al., 2022).

Reflective journaling served as a foundation of my leadership development throughout the inquiry. Writing after walkthroughs and professional learning sessions allowed me to analyze and reflect on my decision-making, communication style, and facilitation techniques. This process mirrored what Lewis (2015) describes as cultivating "profound knowledge"—the ability to recognize how one's leadership decisions interact with the larger system. Through journaling, I learned to pause, question assumptions, and identify areas for growth, particularly in balancing leadership with collaborative inquiry.

Another significant area of leadership growth emerged in my ability to manage change with persistence and optimism. Implementing an MTSS framework requires long-term commitment and continuous refinement, which often challenges existing routines and beliefs. There were moments when time constraints, scheduling barriers, and curriculum misalignment created frustration among staff. Instead of viewing these as setbacks, I learned to frame them as opportunities for problem-solving and continuous improvement.

Ultimately, the inquiry redefined my identity as a leader. It taught me that leadership is not about directing others but about cultivating the conditions for others to grow. I emerged from the process with greater self-awareness, confidence in data-informed decision-making, and an appreciation for reflective practice. The skills I developed strategic communication, data analysis, facilitation, and reflective inquiry will continue to influence my leadership beyond this research. Most importantly, the inquiry affirmed that scholarly practice involves leading with humility, curiosity, and an enduring commitment to learning values that will sustain both my leadership and the systems I support in the years to come.

Interpretation of the Findings

The findings of this inquiry revealed that differentiated professional learning had a positive impact on both the fidelity of Tier 2 MTSS implementation and on teacher perceptions of student growth at Stallion Middle School. Quantitative data from the pre- and post-implementation MTSS surveys demonstrated growth in teacher confidence and understanding of Tier 2 interventions, while qualitative data from teacher interviews provided insight into the challenges that continued to affect implementation. Both data sources support the conclusion that when professional learning is differentiated and ongoing, teachers are better able to translate new learning into improved instructional practices.

These results align with Arden and Pentimonti (2017), who emphasized that effective implementation within a multi-tiered system of supports requires data-based decision-making and professional learning that is practical and responsive to teacher needs. Through differentiated professional learning during PDSA Cycle two, teachers moved beyond compliance with intervention protocols to a deeper understanding of why interventions are important, and the role teachers play. This shift reflects the move from “basic knowledge” to “profound knowledge” as defined by Lewis (2015), where improvement occurs not through isolated training sessions, but through intentional coaching and reflection.

Similarly, Averill and Rinaldi (2011) stated that the success of MTSS implementation is dependent on system-wide collaboration and sustained professional development that helps educators feel competent and confident in delivering interventions. The findings from this inquiry support that research. Teachers reported greater confidence in their ability to deliver Tier 2 interventions effectively after engaging in differentiated professional learning that was tailored to their content area and individual experiences. Immediate walkthrough feedback and post-

conference reflections indicated that professional learning translated into more consistent instructional practices, which, in turn, contributed to increased student engagement and observable growth within Tier 2 groups.

Despite these gains, the inquiry also reaffirmed ongoing challenges frequently cited in the literature review. Teachers continued to express frustration with time constraints, scheduling conflicts, and the rigidity of intervention programs that were not always aligned with grade-level standards. Augustine et al. (2024) noted that middle schools often struggle with structural barriers that limit instructional flexibility, particularly in balancing core instruction with intervention time. These structural challenges were evident at Stallion Middle and highlight that fidelity of MTSS implementation is not solely a function of teacher will or training, but also of organizational systems and leadership support.

Another key finding centered on the impact of differentiated professional learning on teacher perceptions of student growth. Teachers' post-survey and interview responses indicated an increased belief that all students can make academic progress with targeted Tier 2 interventions, regardless of external factors such as home environment or behavior. This shift in mindset supports the findings of Arden and Pentimonti (2017), who suggested that teacher belief systems are critical to sustaining MTSS practices. As teachers became more confident in their intervention delivery, their expectations for student success also increased.

In summary, the interpretation of findings suggests that differentiated professional learning served as a steppingstone for growth among teachers at Stallion Middle School. It increased their ability to implement Tier 2 interventions with fidelity and strengthened their belief in students' potential for growth. However, the inquiry also revealed that sustained improvement requires continued attention to scheduling barriers that impact implementation.

These findings reinforce the literature's emphasis on teacher capacity, systemic support, and ongoing professional learning as essential components of effective MTSS implementation in middle schools.

Limitations of the Inquiry

While this inquiry provided meaningful insight into how differentiated professional learning influenced the fidelity of Tier 2 MTSS implementation, four limitations should be acknowledged. First, the duration of the inquiry posed a limitation. The three PDSA cycles occurred within one academic year, which limited the ability to measure long term outcomes of professional learning and student growth. Long term implementation over multiple years would provide a clearer picture of Tier 2 intervention fidelity and its long-term influence on teacher practice and student achievement.

Second, while multiple data sources survey, interviews, AIMS Web Plus screeners, and walkthrough observations strengthened the inquiry, my dual role as both researcher and school leader may have introduced bias. To mitigate this, member checking, peer debriefing, and collaborative data analysis with inquiry partners were used to strengthen trustworthiness; however, complete elimination of bias was not possible.

Third, because the inquiry relied on self-reported teacher data through surveys and interviews, responses may have been influenced by participants' perceptions of administrative expectations. Although anonymity was maintained to encourage honest feedback, this limitation should still be acknowledged.

Fourth, the small sample size of 12 teacher participants, six in reading and six in math, reflected the overall size of the faculty at Stallion Middle School, a rural campus with limited staffing. While the data provided detailed and meaningful insight into teacher perceptions and

experiences, the small sample restricted the range of perspectives represented. Because the inquiry occurred in a rural setting with a smaller teaching population, the findings may not be generalizable to larger or more urban schools.

Implications of the Findings for Practice

This inquiry has meaningful implications for both classroom practice and schoolwide systems of support. The results demonstrated that differentiated professional learning enhanced teachers' understanding of Tier 2 intervention fidelity and positively influenced their confidence in implementing interventions effectively. These findings suggest that ongoing, targeted professional learning aligned with teacher needs should remain a priority.

The inquiry showed that differentiated professional learning that incorporates coaching, and teacher feedback leads to greater engagement. Teachers expressed that professional learning was most beneficial when it addressed their specific instructional challenges. Therefore, school leaders should continue to structure professional learning that is responsive to teacher needs rather than relying solely on whole group professional learning.

Then teacher interviews highlighted that curriculum alignment and access to structured materials directly influence teacher efficacy in implementing interventions. When teachers understand the importance of research based and systematic interventions, and how they tie to student needs, they are more likely to implement Tier 2 interventions with fidelity. Thus, future school improvement efforts should include structured resource reviews for teacher understanding of the interventions.

Finally, the inquiry emphasized that leadership plays a pivotal role in sustaining MTSS implementation. My use of walkthrough tools, coaching, reflective journaling, and inquiry partner debriefings demonstrated that a culture of shared inquiry can support continuous

improvement. School leaders should create environments where teachers feel supported to reflect, refine, and adapt their instructional practices.

Recommendations for Practice

The results of this inquiry provided valuable insights into the impact of differentiated professional learning on the fidelity of Tier 2 MTSS implementation at Stallion Middle School. Based on the findings, I identified several recommendations for practice to further strengthen Tier 2 implementation and enhance teacher efficacy within the rural middle school setting.

The first recommendation is to continue and differentiate professional learning opportunities for staff. Teachers indicated that differentiated professional learning increased their confidence and ability to implement Tier 2 interventions with fidelity. Ongoing professional learning should remain a priority to sustain MTSS implementation. Future sessions should continue to be responsive to teacher needs and grounded in data collected through progress-monitoring and observation. Differentiating professional learning by content area, experience level, or instructional need will allow teachers to engage in more personalized growth, promoting both individual and collective efficacy across grade levels.

The second recommendation is to review intervention curriculums. Several teacher participants expressed frustration when intervention programs were not fully aligned to content standards or assessment content. To address this, school leaders should consider conducting systematic intervention curriculum reviews to ensure teachers understand that Tier 2 intervention materials connect to the specific learning needs of the students. These reviews should also provide teachers with opportunities to deepen their understanding of how the intervention materials support skill development. Where gaps exist, supplemental resources and planning

support should be provided. Strengthening this alignment will help teachers feel more confident that intervention instruction directly contributes to student success in the core classroom.

The third recommendation is to build support to sustain MTSS fidelity**.** Consistency in Tier 2 practices requires strong leadership support and clear expectations. Administrators should maintain established procedures for Tier 2 to ensure continuity. Continued use of walkthrough tools, post-conference reflections, and coaching will help maintain accountability and highlight areas of growth. Additionally, leadership visibility, communication, and recognition of teacher efforts will reinforce a culture of collective ownership and continuous improvement.

Implementing these recommendations has the potential to enhance both the fidelity and sustainability of Tier 2 MTSS interventions. By prioritizing differentiated professional learning, intervention curriculum reviews, and continuing strong leadership with high expectations, Stallion Middle School can continue building a cohesive and data-driven support system that promotes equitable student growth and teacher empowerment.

Recommendations for Future Study

This inquiry provided valuable insight into the impact of differentiated professional learning on the fidelity of Tier 2 MTSS implementation, opportunities remain for continued research. The findings from this inquiry generated several recommendations for future research that could deepen the understanding of effective Tier 2 practices in middle school settings.

Future studies could expand the sample size to include additional schools within the district. A broader participant base would strengthen the findings and offer comparative perspectives on the implementation of differentiated professional learning within varying school environments. Examining how school size, demographics, and available resources influence

MTSS implementation could provide a more comprehensive understanding of the challenges and supports unique to rural middle schools.

Then, future researchers may wish to conduct a longitudinal study to examine the sustained impact of differentiated professional learning over time. This type of study could track teacher perceptions, fidelity of Tier 2 implementation, and student growth data across multiple academic years. Long-term analysis would provide valuable evidence regarding the effectiveness and sustainability of differentiated professional learning as a strategy for ongoing improvement.

Next, future studies could examine student perspectives regarding universal screeners, progress monitoring, and Tier 2 interventions. Incorporating student voice would provide a deeper understanding of how intervention strategies affect engagement, motivation, and perceived academic growth. This insight could help refine intervention delivery and strengthen the alignment between student needs and instructional practices.

Finally, researchers may consider exploring the role of instructional leadership in supporting MTSS implementation. Investigating how principals, instructional coaches, and interventionists use data, feedback, walkthroughs, and reflective practices to sustain improvement could identify leadership strategies that most effectively promote fidelity.

Overall, future inquiries that extend this line of inquiry would contribute to the growing body of research on MTSS implementation in rural secondary settings and the impact of differentiated professional learning on teacher practice. Continued exploration through the lens of Improvement Science can further support schools in developing equitable, continuous systems of support that promote both student achievement and educator growth.

Conclusions

This inquiry sought to examine the impact of differentiated professional learning on the fidelity of Tier 2 MTSS implementation and on teacher perceptions of student growth at Stallion Middle School, a rural middle school committed to continuous improvement. Through the use of Plan-Do-Study-Act (PDSA) cycles of improvement, I gained a deeper understanding of how professional learning, collaboration, and reflective practice influence teachers' ability to implement Tier 2 interventions with fidelity.

The findings revealed that when professional learning was differentiated and aligned to teacher and student needs, teachers demonstrated increased confidence, improved instructional consistency, and stronger collaboration during data discussions. Teachers recognized the value of consistent progress monitoring and expressed a desire for ongoing support, protected time, and alignment between intervention materials and core curriculum. The results of this inquiry affirmed that when educators are provided with targeted, job-embedded professional learning, their capacity to deliver interventions with fidelity increases, ultimately supporting student growth.

The recommendations for practice emphasized the importance of continuing differentiated professional learning, strengthening collaborative data structures, supporting MTSS fidelity through leadership, and embedding reflective practices into professional learning. Recommendations for future study highlighted the need to expand the research scope, explore long-term impacts, include teacher and student perspectives, and investigate the role of leadership in sustaining improvement.

Through this inquiry, I not only facilitated meaningful professional learning for teachers but also grew as a reflective leader who values data-informed decision making and collaborative continuous improvement. The lessons learned from this inquiry will continue to guide future

efforts at Stallion Middle School and contribute to the broader understanding of how differentiated professional learning can strengthen Tier 2 MTSS implementation in rural middle schools.

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APPENDIX A: IRB APPROVAL

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
Willis Building · Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office **252-744-2914** · Fax **252-744-2284** ·
rede.ecu.edu/umcirb/

Notification of Exempt Certification

From: Social/Behavioral IRB
To: Courtney Merkel
CC: Travis Lewis
Date: 1/2/2025
Re: UMCIRB 24-002242
OVERCOMING BARRIERS AND BELIEFS

I am pleased to inform you that your research submission has been certified as exempt on 1/2/2025. This study is eligible for Exempt Certification under category # 1 and 2B.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

Document	Description
C. Merkel Informed Consent (0.04)	Consent Forms
C. Merkel Interview Protocol(0.01)	Interview/Focus Group Scripts/Questions
C. Merkel IRB(0.02)	Study Protocol or Grant Application
C. Merkel Survey Protocol (0.01)	Surveys and Questionnaires
C.Merkel Walkthrough Protocol (0.01)	Data Collection Sheet

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: INFORMED CONSENT

INFORMED CONSENT

OVERCOMING BARRIERS AND BELIEFS; THE IMPACT OF DIFFERENTITED PROFESSIONAL LEARNING ON IMPROVING FIDELITY IN TIER 2 INTERVENTIONS IN THE CLASSROOM

Principal Investigator: Courtney Lester-Merkel

You are being invited to participate in a research study titled "OVERCOMING BARRIER AND BELIEFS; THE IMPACT OF DIFFERENTITED PROFESSIONAL LEARNING ON IMPROVING FIDELITY IN TIER 2 INTERVENTIONS IN THE CLASSROOM" being conducted by Courtney Lester-Merkel, a doctoral student at East Caroline University in the College of Education LEED department. You are being invited to participate in this study because you are a 6-8 teacher here at Tucker Creek Middle School where I am an assistant principal, who will be implementing the research. The goal is to conduct surveys and interviews with teachers who implement Tier 2 researched based interventions in their classroom at Stallion Middle School. The survey should take approximately 5-10 minutes to complete. Interviews should take approximately 15-30 minutes to complete. Survey questions and interviews will be provided to participants before being formally administered which again allows participants the opportunity to decide whether to participate or not. Interviews will be audio recorded during the interview session via Voice Memos, and I will directly quote your responses. Your responses will be kept confidential and anonymous and will be known by the scholarly practitioner. An identifying key will be kept by the practitioner, signed consent and all data including audio recordings, surveys, and teacher interviews will be stored in a secure file that only the researcher will have access too. No data will be released or used with your identification attached. Your participation in the research is **voluntary**. You may choose not to

answer any or all questions, and you may stop at any time. There is **no penalty for not taking part** in this research study.

Name of Participant _____

Signature of Participant _____ Date_____

Signature of Scholarly Practitioner_____

APPENDIX C: MTSS READING SURVEY QUESTIONS

MTSS Pre and Post Implementation Survey Questions

Greetings Prospective Participant,

You are being invited to participate in an inquiry titled "OVERCOMING BARRIERS ND BELIEFS; THE IMPACT OF DIFFERENTITED PROFESSIONAL LEARNING ON IMPROVING FIDELITY IN TIER 2 INTERVENTIONS IN THE CLASSROOM", being conducted by Courtney Lester-Merkel, a doctoral student at East Carolina University in the Educational Leadership department. The goal is to survey teachers in grades 6-8 who give Tier 2 reading and math research-based interventions at Stallion Middle School and to better understand the participant's knowledge, misconceptions, and beliefs on the implementation of Tier 2 interventions within the MTSS Framework. The survey will take approximately 10 minutes to complete. Your responses will be kept confidential, and no data will be released or used with your identification attached. Your participation in the research is voluntary. You may choose not to answer any or all questions. There is no penalty for not taking part in this research inquiry.

Please give yourself a pseudonym name that only you will know and list here: _____

1. How many years have you been teaching?
   - ☐ 1-3 Years
   - ☐ 4-6 Years
   - ☐ 7-9 Years
   - ☐ 10+ Years

Now please indicate your level of agreement with each of the following statements.

2. I have been adequately trained on how to implement Tier 2 reading interventions.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

3. Teachers in our school in grades 6-8 are implementing Tier 2 reading interventions with fidelity.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

4. Re-occurring Tier 2 meetings to discuss progress monitoring and student growth take place at Stallion Middle School.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

5. All students can show gains with Tier 2 reading interventions regardless of home environment or behavior.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

6. I find it difficult to implement Tier 2 reading interventions in the classroom.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

7. Current professional learning provided on Tier 2 supports is effective.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

8. I believe that differentiated professional learning on implementing Tier 2 reading interventions in the classroom can be effective.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

APPENDIX D: MTSS MATH SURVEY QUESTIONS

MTSS Pre and Post Implementation Survey Questions

Greetings Prospective Participant,

You are being invited to participate in an inquiry titled "OVERCOMING BARRIERS ND BELIEFS; THE IMPACT OF DIFFERENTITED PROFESSIONAL LEARNING ON IMPROVING FIDELITY IN TIER 2 INTERVENTIONS IN THE CLASSROOM", being conducted by Courtney Lester-Merkel, a doctoral student at East Carolina University in the Educational Leadership department. The goal is to survey teachers in grades 6-8 who give Tier 2 reading and math research-based interventions at Stallion Middle School and to better understand the participant's knowledge, misconceptions, and beliefs on the implementation of Tier 2 interventions within the MTSS Framework. The survey will take approximately 10 minutes to complete. Your responses will be kept confidential, and no data will be released or used with your identification attached. Your participation in the research is voluntary. You may choose not to answer any or all questions. There is no penalty for not taking part in this research inquiry.

Please give yourself a pseudonym name that only you will know and list here: _____

1. How many years have you been teaching?
   - ☐ 1-3 Years
   - ☐ 4-6 Years
   - ☐ 7-9 Years
   - ☐ 10+ Years

Now please indicate your level of agreement with each of the following statements.

2. I have been adequately trained on how to implement Tier 2 math interventions.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

3. Teachers in our school in grades 6-8 are implementing Tier 2 math interventions with fidelity.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

4. Re-occurring Tier 2 meetings to discuss progress monitoring and student growth take place at Stallion Middle School.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

5. All students can show gains with Tier 2 math interventions regardless of home environment or behavior.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

6. I find it difficult to implement Tier 2 math interventions in the classroom.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

7. Current professional learning provided on Tier 2 supports is effective.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

8. I believe that differentiated professional learning on implementing Tier 2 math interventions in the classroom can be effective.
   - ☐ Strongly Agree
   - ☐ Agree
   - ☐ Somewhat Agree
   - ☐ Somewhat Disagree
   - ☐ Disagree
   - ☐ Strongly Disagree

APPENDIX E: PRE-IMPLEMENTATION INTERVIEW PROTOCOL

Date & Time of Interview:

Location:

Interviewer:

Interviewee: Pseudonym:

Years of Experience as a Teacher: _____

Teaching Assignment: (grade level, subject area): _____

Briefly describe the inquiry to the interviewee.

Today's interview will take approximately 15-30 minutes to complete. Interview questions will be based off the data collected in the teacher survey. The purpose of the interview is to gain a better understanding of the participant's knowledge, misconceptions, and beliefs on the implementation of Tier 2 reading or math interventions within the MTSS Framework. The questions developed will assist us in planning the next steps needed to see the possible correlations between MTSS and gains in student achievement in grades 6-8. The hope is that the information collected will assist the administration and instructional leadership team at Stallion Middle School to better understand the implementation of research-based interventions in classrooms. The goal of this inquiry is to determine the effectiveness of Tier 2 research-based strategies within the Multi-Tiered System of Support Framework while examining teacher's perceptions and beliefs of MTSS and its effectiveness relating to student achievement and academic growth. Lastly, I will be recording this interview via Voice Memos.

1. What does implementing Tier 2 interventions look like to you?
2. Can you tell me about the struggles or frustrations you have with implementing Tier 2 interventions in the classroom?
3. What is going well with implementing Tier 2 interventions in the classroom?
4. What type of individualized professional learning do you need to better implement Tier 2 interventions?
5. Do you believe that your struggling students are benefiting from Tier 2 interventions? Why or why not?

That concludes the interview. I would like to thank you for your participation and honesty.

APPENDIX F: POST-IMPLEMENTATION INTERVIEW PROTOCOL

Date & Time of Interview:

Location:

Interviewer:

Interviewee: Pseudonym:

Years of Experience as a Teacher: _____

Teaching Assignment: (grade level, subject area): _____

Introduction and Opening Questions

For this postimplementation interview, the goal is to assess the implementation of personalized professional learning on Tier 2 reading and math researched based interventions in the classroom and your beliefs on MTSS. The focus will be on the changes if any since this inquiry has started. Lastly, I will be recording this interview via Voice Memos.

Questions to be Asked, Listed Fully and in Order

1. After receiving personalized professional learning regarding Tier 2 interventions and beliefs on using MTSS, what session did you find most beneficial? Least beneficial?
2. What have you changed in implementing Tier 2 interventions since this inquiry has started?
3. Can you tell me any frustrations or struggles you may still be having implementing Tier 2 interventions?
4. Have your beliefs changed with struggling students benefiting from receiving Tier 2 interventions in the classroom? Why or why not?

APPENDIX G: SCHOLARLY PRACTITIONER WALKTHROUGH PROTOCOL

Teacher Initials: _____

Observation Date: _____ Observation Time: _____

1. Is the participant implementing Tier 2 reading or math interventions?
   - ☐ Yes
   - ☐ No

2. Is the participant using the interventions that were provided to them by instructional leadership team?
   - ☐ Yes
   - ☐ No

   If not, what is the participant using?

3. Did the participant use the intervention time effectively? (Not rushing, doing the complete lesson, etc.)
   - ☐ Yes
   - ☐ No

   If not, what is the participant doing?

4. Do you see any opportunities for growth for this participant when implementing Tier 2 interventions?

5. What was going well during this classroom observation during Tier 2 intervention time?